

Česká zemědělská universita v Praze

Fakulta lesnická a dřevařská

Katedra ochrany lesa a entomologie



**Česká zemědělská
univerzita v Praze**

**Využití terrikolních nosatců podčeledi
Entiminae (Coleoptera: Curculionidae)
palearktické a afrotropické oblasti k
identifikaci původnosti lesních biotopů**

**Application of tericolous weevils of subfamily Entiminae (Coleoptera:
Curculionidae) from Palaeartic and Afrotropic region for identification of
original forest habitats**

Disertační práce

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Název práce

Využití terrikolních nosatců podčeledi Entiminae (Coleoptera: Curculionidae) palearktické a afrotropické oblasti k identifikaci původnosti lesních biotopů

Název anglicky

Application of tericolous weevils of subfamily Entiminae (Coleoptera: Curculionidae) from Palaearctic and Afrotropic region for identification of original forest habitats

Cíle práce

1. Vytvořit novou tribální klasifikaci jihoafrických Entiminů na základě kladistické fylogenetické analýzy všech známých taxonů, popsanych i nově popisovaných
2. Porovnání výsledků klasické morfoanatomické kladistické analýzy a analýzy postavené na základě molekulárních dat
3. Vytvoření určovacích klíčů a check-listu dosud známých i nově popsanych rodů a druhů, doplněných fotografickou dokumentací morfologických a anatomických znaků
4. Doplnit seznam druhů bionomickými nároky jednotlivých taxonů, aby byla specifikovaná vazba na jednotlivé typy biotopů

Metodika

Cílem projektu je vytvořit novou vyšší klasifikaci terrikolních Entiminů Jižní Afriky, založenou na morfoanatomických znacích a molekulárních datech dostupných taxonů. Materiál pro tyto analýzy bude pocházet z velkých evropských muzeí, kde je jihoafrický materiál deponován (především British muzeum Londýn, Naturhistoriska Riksmuseet Stockholm, Museum of Zoology Lund, Royal Museum of Central Africa v Tervuren), severoamerických muzeí (např. Canadian Museum of Nature, Ottawa) a z jihoafrických muzeí (především National Collection of Insects Pretoria a Ditsong National Museum of Natural History Pretoria) a také z vlastních terénních exkurzí do Jihoafrické republiky. Bude studován typový materiál dosud popsanych taxonů na úrovni druhu, především ale typové druhy dosud popsanych rodů, které budou přepracovány a jejich anatomické struktury budou vypitvány a uloženy do glycerolu anebo zality do Solakrylu. Budou definovány znaky, použitelné pro stanovení taxonů na úrovni rodu i druhu, které budou vycházet z celé škály znaků již používaných, anebo při studia této skupiny nosatců poprvé použitých. Bude provedena redeskripce a redefinice již popsanych rodů a druhů, nové rody a druhy budou popsány, zařazeny do klíčů k určení, katalogizovány, ilustrovány. Ke klasifikaci bude použito 78 morfologických i anatomických znaků, které budou po ohodnocení původních a odvozených statusů tvořit matici pro zpracování v programu WinClada, v. 1.00.08 (NIXON 1999). Tyto znaky vychází z již použité metodiky (BOROVEC 2009), a jsou doplněny o znaky specifické pro afrotropické druhy. 52 znaků jsou svrchní morfologické, 8 znaků spodní morfologické, 18

znaků jsou znaky anatomické. Pro molekulární analýzu budou sekvenovány fragmenty COI, výsledek standardní morfoanatomické analýzy bude porovnán s výsledkem molekulární analýzy.



Doporučený rozsah práce

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„Prohlašuji, že jsem disertační práci na téma *Využití terrikolních nosatců podčeledi Entiminae (Coleoptera: Curculionidae) palearktické a afrotropické oblasti k identifikaci původnosti lesních biotopů* vypracoval samostatně a s použitím uvedených literárních zdrojů a na základě konzultací a doporučení školitele. Souhlasím se zveřejněním disertační práce dle zákona č. 111/1998 Sb. O vysokých školách v platném znění a to bez výsledku na výsledek její obhajoby.“

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Rád bych na tomto místě poděkoval všem, kteří mne podporují v mém výzkumu, a jsou ochotni tolerovat mou častou absenci, když pobývám v terénu, sedím nad mikroskopem, nad literaturou, píšu, kreslím...

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Anotace

V současné době je popsáno cca 62 000 druhů nosatcovitých brouků, což z nich činí jednu z druhově nejbohatších nadčeledí nejen brouků, ale hmyzu vůbec. Faunistické zpracování takto bohaté skupiny fytofágních brouků umožňuje poměrně přesné vyhodnocení jednotlivých typů území, i jednotlivých typů biotopů. Největší podčeleď nosatců, Entiminae, zahrnuje druhy bez vyvinutých blanitých křídel, dokonce se srostlými krovkami, jejichž možnosti pohybu jsou velmi omezené, takže na svých původních stanovištích jako jsou lesní porosty, ale také přirozené travní porosty až savany, anebo stepi buď přežívají z dob přirozeného rozvoje tohoto typu biotopu, anebo vymírají, protože nejsou schopni adaptace na změněná prostředí, ani přesunu na podobné biotopy jiných lokalit. Indikují tedy nejen přirozený biotop, ale co je důležité, také jeho nepřetržitou kontinuitu. Využití Entiminů pro možnosti vyhodnocování lokalit a biotopů brání velmi neutěšená situace ve znalosti této skupiny terrikolních a polyfágních druhů, nerevidovaná taxonomie naddruhové úrovně přináší velké obtíže při zařazení druhů nejen do rodů, ale i do tribů. Předložená práce si tedy vytkla za cíl redefinovat triby terrikolních Entiminů, redefinovat rody a eventuálně popsat rody nové, rozdělit do těchto rodů dosud nasbíraný materiál a nepopsané druhy vědecky popsat. Pro objektivní rozdělení materiálu do rodů byly použity statistické metody vycházející z analýzy morfo-anatomických znaků, i znaků molekulárních, založených na sekvenování mitochondriální COX. Byl popsán jeden nový tribus, 12 nových rodů a 104 nových druhů. Z těchto nových taxonů bylo popsáno 12 druhů z Palearktické oblasti, a 1 nový tribus, 12 nových rodů a 92 nových druhů z Afrotropické oblasti. Všechny studované a popsané druhy jsou bezkřídlé a proto plně využitelné pro indikaci lesa, ale i jiných biotopů. U lesních porostů 81 % bylo vyhodnoceno jako druhy reliktní, u nelesních porostů Afrotropické oblasti je to dokonce 92 % druhů. U lesních porostů Palearktické oblasti do kategorie reliktních druhů patří 78 % zkoumaných druhů. Molekulární analýza pak byla použita jako zásadní podpůrný argument nejen pro rozdělení množství nových druhů na nové rody, ale především také k popisu nového tribu. Celkově získané výsledky pak byly publikovány v celkem 24 člácích, postupně zpracovávajících výše zmíněná témata.

Klíčová slova: Nosatci, Curculionidae, Entiminae, taxonomie, bionomie, Palearkt, Jihoafrická Republika

Annotation

The number of described weevil species is about 62 000, which makes this superfamily one from the most speciose group not only among beetles, but insect in general. Faunistic treatment of such a numerous group of phytophagous beetles allowed relatively exact assessment of individual type of areas, as well as individual type of habitats. The biggest subfamily of family Curculionidae, Entiminae, comprises polyphagous species with rudimentary membraneous wings, or even with elytra grown together, their possibilities of movement are very limited. Thus they survived on their original habitats, as original woods and forests, original grasslands or savannah, steppic habitats, or become extinct by inability to adapt to changing conditions of environment, nor movement to similar habitats of different localities. They indicate not only original habitats, but also uninterrupted continuity of habitats, which is important. But utilization of entimine weevils for the possibility to evaluate habitats is highly limited by dismal situation in our knowledge, chaotic view on taxonomy of mainly generic level, lacking revision papers bringing difficulties to identify species and classify them to genera and also to tribes. Majority of material is impossible to identify as already described species, and if yes, these species is impossible to list under any valid and well defined genus name. The aim of the present paper is redefinition of tribes of tericolous Entiminae mainly in Afrotropical region, redefinition of genera or, if need, description of new genera and description of undescribed species. For objective sorting of material into genera statistical methods were used, coming from analyses of morpho-anatomical characters, and also molecular data, based on sequencing of mitochondrial COX. A new tribe was described and also 12 new genera and 104 new species. From these new taxa 12 species were described from Palaearctic region, and 1 new tribe, 12 new genera and 92 new species were described from Afrotropical region. All examined species are wingless and fully useable for indication of original forests, but also other original habitats. In Afrotropical region 81 % species from forest were evaluated as relict species, in non forest habitats it is even 92 % of species. In Palaearctic region 78 % of examined species belongs to category of relict species. Analysis of molecular data was used as fundamental supporting argument for splitting of species to newly described genera, but mainly for description of a new tribe. In total, obtained results were published in 24 published articles, progressively processing above mentioned topics.

Key words: Weevils, Curculionidae, Entiminae, taxonomy, bionomy, Palearctic region, Republic of South Africa

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Seznam používaných symbolů a zkratek

A – adaptabilní

COX – cytochrom oxidáza

DNA – deoxyribonukleová kyselina, z anglického deoxyribonucleic acid

et al. – a jiní, a další, z latinského et alii, nebo et aliae

KOH – hydroxid draselný

NDR – Německá demokratická republika

Obr. – obrázek

pers. comm. – osobní sdělení, z anglického personal communication

R – reliktní

♂ – samec

♀ – samice

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1. Úvod

Přirozený, původní les, je porost svou skladbou, ale i stabilitou, nejblíže podobný lesním porostům před příchodem a ovlivněním člověkem. Druhová skladba těchto porostů je maximálně přizpůsobena klimatickým podmínkám, ve kterých les roste, je založena na určité diversitě druhové skladby stromů i podrostu, ale i na diversitě věkové struktury jednotlivých stromů. V podmínkách Evropy je lesů tohoto typu již velmi málo, a zpravidla se jedná o buď chráněné plochy, anebo malá refugia ve víceméně nepřístupných částech různých pohoří.

V podmínkách Jižní Afriky byl les v nížinách velmi často vykácen, zachoval se především v údolích větších řek anebo v horských pásmech východní části země. Mnohá místa mikroklimaticky ani les v minulosti nehostila. Ale i v podmínkách Jižní Afriky vítězí snaha o ekonomické vytěžení jednotlivých území a dochází k přesazování původní skladby lesů např. různými introdukovanými druhy borovic, které zde nepatří mezi druhy původní (Obr. 11). Vznikají tak nové plochy jednodruhového lesního porostu stromů stejného stáří, pod kterými se nezachovalo původní keřové a bylinné pásma.

V mnoha případech ale dochází i k přesazování menších částí porostů původními druhy stromů a keřů, anebo ke snaze obnovit les na místech, kde byl předtím dříve nevhodně vykácen, anebo i vypálen.

Posuzování původnosti a kontinuity lesních porostů je pak otázkou odborníků na lesnictví. Původnost podobných porostů lze hodnotit podle druhové skladby keřového anebo bylinného patra, ale také podle fauny.

Pro tento posledně uvedený způsob posuzování je nejvhodnější terrikolní fauna lesní hrabanky, neboť druhy žijící v zemi, na kořenech bylin, anebo živící se rozkládající organickou hmotou jsou natolik přizpůsobeny životu v zemi, že ztrácí křídla, schopnost letu, pohybují se velmi pomalu a jejich schopnosti osídlit nová nekontinuální území jsou velmi omezená. Také velká druhová diversita terrikolních organismů umožňuje dobré vyhodnocení druhové skladby těchto organismů.

Na druhou stranu terrikolní fauna lesní hrabanky patří mezi nejméně známé součásti fauny, jak tomu napovídají v poslední době publikované taxonomické revize s velkým počtem nově objevených a popsanych druhů.

Ideální modelovou skupinou pro tento způsob hodnocení je skupina nosatců podčeledi Entiminae. To jsou nosatci, u kterých došlo ke zkrácení nosce pro možnost pohybu v hrabance anebo hlíně. Tyto druhy patří nejen mezi bezkřídlé nosatce, ale mají také srostlé krovky. Znalost jejich druhové struktury a jejich bionomických nároků je ovšem, zvláště na území Jihoafrické republiky, v úplných začátcích. V současné literatuře existuje jen několik náhodně popsanych taxonů, v nepříliš kompletních muzejních sbírkách je deponován téměř výlučně neurčený materiál, dodnes neexistují klíče na určení tribů, rodů a druhů. Základní práce postavené na základním taxonomickém zpracování u terrikolních nosatců jižní Afriky v literatuře chybí.

Pro praktické využití této skupiny je potřeba jednotlivé druhy popsat, pojmenovat, zařadit do vyšších taxonomických jednotek, vytvořit klíče k jejich určení a také definovat jejich bionomické nároky. Tyto zásadní body jsou proto úkolem předkládané disertační práce. Autor si je ale vědom, že obrovskou druhovou diversitu půdní fauny Jihoafrické republiky nelze kompletně zpracovat v krátkém čase, a tak předložená disertační práce vytváří především základ studia terrikolní fauny celé oblasti a naznačuje směr, jakým se další studie mohou ubírat.

2. Cíle práce

1. Vytvořit novou tribální klasifikaci jihoafrických Entiminů na základě kladistické fylogenetické analýzy všech známých taxonů, popsaných i nově popisovaných
2. Porovnání výsledků klasické morfoanatomické kladistické analýzy a analýzy postavené na základě molekulárních dat
3. Vytvoření určovacích klíčů a check-listu dosud známých i nově popsaných rodů a druhů, doplněných fotografickou dokumentací morfologických a anatomických znaků
4. Doplnit seznam druhů bionomickými nároky jednotlivých taxonů, aby byla specifikovaná vazba na jednotlivé typy biotopů

3. Rozbor problematiky (literární rešerše)

3.1 Charakteristika nosatcovitých (Curculionoidea)

Brouci z nadčeledi nosatcovitých (Curculionoidea), se svými 62 000 popsanými validními druhy v cca 5 600 rodech, patří k pravděpodobně největší nadčeledi živočichů na naší planetě (Oberprieler et al. 2007). V literatuře bylo již citováno číslo 100 000 druhů nosatců (Astrin et al. 2012), toto číslo se ale vztahuje k celkovému počtu popsaných jmen, kam spadají i synonyma a historické infrasubspecifické taxony. Elektronický katalog WTaxa takto uvádí k dnešnímu datu lehce přes 130 000 jmen nosatcovitých brouků (www.wtaxa.csic.es) (Alonso-Zarazaga, pers. comm.). Ve svém stěžejním díle, *Systema naturae* z roku 1758, Karel Linné popsal 86 prvních druhů nosatců. Bylo to cca 20 % popsaných druhů brouků ve stejném díle, a zhruba stejný podíl popsaných druhů tvoří nosatci i v dnešním systému (Oberprieler et al. 2007). Schönherr se svými spolupracovníky (1833–

1845) popsali 6 808 druhů nosatců v 627 rodech (Thompson, 1992). Předpokládaný počet žijících druhů nosatců je 220 000 a tento odhad vychází z koeficientů, stanovených pro jednotlivé oblasti podle poměrů dosud popsaných druhů a druhů nově popsaných, v recentních recenzích (Oberprieler et al. 2007). Pravděpodobný počet druhů nosatců bude ale asi vyšší, protože současné práce orientované na dosud neznámou faunu terrikolních nosatců tento koeficient významně navyšují.

Nosatci se vyskytují po celé zeměkouli, od arktické zóny na severu po subatlantické ostrovy na jihu, od pláží na břehu moří a oceánů po vrcholky hor, na všech typech biotopů od pouští po deštné pralesy. Jako potrava jim slouží všechny typy rostlinných pletiv, především krytosemenné, ale i nahosemenné rostliny, kapradiny, lišejníky, výjimečně také řasy anebo bakterie. Nahosemenné rostliny jako hostitelské rostliny využívají především basální, fylogeneticky starší čeledi (Oberprieler et al. 2007). Larvy žijí především uvnitř rostlinných pletiv, uvnitř kořenů, stonků, listů, pupat nebo květů a semen. Část nosatců takto využívá nemocná anebo uvadající rostlinná pletiva, část se dokáže vyvíjet i ve zdravých rostlinných pletivech. Malá část larev žije také vně pletiv, na listech (např. tribus Hyperini), anebo v zemi na kořenech (Entiminae, Cyclominae).

Brouci nadčeledi Curculionoidea jsou v drtivé většině druhů výlučně fytofágní, v larválním stadiu tak i ve stadiu dospělců. Z tohoto obecného schématu je známo jen několik výjimek, např. zástupci rodu *Anthrribus* Geoffroy, 1762, s larvami i dospělci masožravými (Silvestri 1919, Wanat 2005), larvy australského rodu *Tentegia* Pascoe, 1873 (Cryptorhynchinae) jsou koprofágní, několik druhů čeledí Brentidae a Curculionidae jsou myrmekofilní, s dospělci žijícími v hnízdech mravenců (Oberprieler et al. 2014). Vzhledem k úzké vazbě na některé části rostlin je mnoho druhů počítáno mezi významné škůdce v zemědělství i lesnictví, snad současný nejvýznamnější škůdce z nosatcovitých brouků na našem území je lýkožrout smrkový (*Ips typographus* Linnaeus, 1758) (Kudela 1970). Naopak, monofágní anebo oligofágní druhy nosatců vyvíjející se na generativních částech rostlin považovaných za plevele mohou být počítáni i jako druhy užitečné, některé druhy lze počítat i za význačné opylovače některých rostlin jako jsou cykasy anebo palmy.

Morfologicky nejvýznamnějším znakem nosatcovitých je prodloužení hlavy v různě dlouhý nosec, který je naopak u podčeledí žijících ve dřevě anebo v zemi sekundárně zkrácený. Morfologie larev odpovídá převládajícímu životu buď uvnitř rostlinných pletiv, anebo vně kořenů ale v zemi. Larvy mají mírně zahnuté, slabě sklerotizované tělo, beznohé tělo s poměrně dobře sklerotizovanou hlavou, pouze malá část larev, které žijí vně rostlinných pletiv nadzemní části rostlin mají vyvinuté nohy. Kukly jsou volné, s dobře zřetelnou

strukturou těla dělenou na hlavu, štít a krovky, noscem zahnutým pod těla a mezi nohy a nohami s holeněmi zahnutými pod stehna, typu pupa aedeptica exarata libera (Oberprieler et al. 2014).

Ačkoli fosilní nálezy ostatních čeledí brouků bývají velmi často nedostatečně početné, také vzhledem k obtížnému zařazování do čeledí, fosilní nálezy nosatců jsou relativně početnější, vzhledem k tomu, že podle vyvinutého nosce je možné nosatcovité brouky snadno určit. Současné velké množství popisů ale navzájem příliš nekoreluje, také vzhledem k tomu, že mnoho znaků, kterými jednotlivé čeledi a podčeledi nosatců charakterizujeme, není vždy dostatečně viditelný u materiálu zalitým v jantaru. Nejstarší nálezy jsou ze Svrchní Jury anebo Spodní Křídly (Oberprieler et al. 2014).

3.2 Charakteristika podčeledi Entiminae

Se svými více než 12 000 popsánymi druhy (Oberprieler et al. 2007) jsou nosatci podčeledi Entiminae největší podčeledí čeledi nosatcovitých. Jsou nejen druhově a rodově početnou podčeledí nosatců (Curculionidae), mají ale také velké rozšíření a ve výjimečných případech mohou dosáhnout i velké abundance. Patří tak mezi ně i mnoho významných škůdců v lesnictví a zemědělství. V České republice např. lalokonosec libečkový (*Otiorhynchus ligustici* Linnaeus, 1758), jehož larvy na kořenech a dospělci na listech dokáží udělat významné škody např. ve chmelnicích anebo na polích s cukrovou řepou, anebo skoro všechny druhy listopasů (*Sitona* Germar, 1817), jejichž larvy škodí na kořenech všech kulturně pěstovaných vikvovitých plodin vyžíráním rhizobiálních hlízek (Miller 1956).

Jejich základní charakteristikou je krátký a široký nosec s adelognátními ústními orgány (prementum při pohledu ze spodu překrývá ústní dutinu), mandibuly nesou opadavý hrot, který pomáhá čerstvým dospělcům opustit kukelní komůrku, a tento hrot dospělci ztrácí. Larvy mají polštářkovitý tykadlový sensorický aparát. Zatímco znak na larvách je pro celou podčeleď unikátní, morfologické znaky dospělců mají i homoplastický výskyt u některých dalších skupin nosatců s terrikolním způsobem života, jako např. u podčeledi Brachycerinae. Mnoho rodů podčeledi Entiminae má ještě různé vyvinuté košíčky na zadních holeních, ale tento znak není universálně platný pro celou podčeleď, a opět, je možné ho najít i u podčeledi Brachycerinae (Oberprieler et al. 2007).

Bionomie nosatců podčeledi Entiminae je nejméně známou částí našich znalostí. Dospělci většiny druhů žijí na nadzemních částech rostlin, kde okusují zpravidla listy. Typické pro ně jsou boční, obloučkovité výkusy, kterými zpravidla vroubkují okraje listů.

Část druhů žije florikolně na nižší vegetaci, část žije arborikolně ve stromovém patře. Mnoho druhů má u dospělců noční aktivitu, kdy dospělci jsou přes den schováni v kořenech rostlin a k okusu listové plochy vylézají pouze v noci. Většina druhů podčeledi Entiminae jsou polyfágní a preferují mikroklimatické podmínky před výběrem hostitelské rostliny. Menší část Entiminů má preferenci alespoň rodů rostlin, např. některé druhy velmi běžného rodu *Otiorhynchus* Germar, 1822 preferují stromy rodů jako *Syringa*, *Ligustrum* apod. Jen velmi malá část nosatců podčeledi Entiminae je monofágní (Dieckmann 1980).

Velmi pozoruhodnou bionomickou zvláštností nosatců podčeledi Entiminae je partenogeneze a polyploidie. V Palearktu mnoho druhů Entiminů je partenogenetických a v jejich populacích se nacházejí pouze samice. Tyto druhy pak vykazují poměrně velkou variabilitu morfologických znaků, protože se jednotlivé další populace klonují bez rekombinace znaků. U mnoha druhů známe partenogenezi jako jediný známý způsob rozmnožování, u velké skupiny středo- a severoevropských druhů pak známe geograficky limitovanou partenogenezi, kde populace většiny areálu se rozmnožují partenogeneticky, zatímco na malém území zpravidla na jižním okraji bývalého zalednění má stejný druh omezené enklávy druhu s amfigonním způsobem rozmnožování a normálním poměrem pohlaví v populaci 1 : 1 (Borovec 2009). U několika málo výjimečných druhů jsou amfigonní populace vázány na refugia populací horských pásem střední Evropy (Benedikt 2009). Partenogeneze, jako jediná možnost rozmnožování, nikoli přepínání mezi pohlavním a nepohlavním rozmnožováním v pravidelných cyklech, nebo podle podmínek prostředí, je v živočišné říši mnohem méně známá než v říši rostlinné (Enghoff 1978). Podle Whita (1973) je thelytokie více častá u méně pohyblivých živočichů, protože větší genetická uniformita se lépe adaptuje, uplatní, v ekologických nikách s menší variabilitou podmínek prostředí, která jsou obsazována méně pohyblivými živočichy. Právě počet druhů nosatců podčeledi Entiminae je v tomto směru vyšší, než u ostatních živočišných skupin. Obecně je partenogeneze známa u méně než 0,1% živočišných druhů (White 1973), např. u terrikolních mnohonožek (Diplopoda) je frekvence partenogenetických druhů vyšší, 0,16% (Enghoff 1976). U palearktického tribu Trachyphloeini (Curculionidae: Entiminae) Borovec (2009) na vzorku 196 druhů napočítal 146 druhů oboupohlavních, 41 druhů partenogenetických a 9 druhů s geografickou partenogenezí. Frekvence partenogenetických druhů zde tvoří velmi vysokých 25,5%.

Partenogeneze Entiminů je thelytokie (Suomalainen et al. 1987). Potomstvo vzniká z neoplozených vajíček a je geneticky identické s mateřskou populací. Takenouchi (1965) potvrdil u partenogenetických samic triploiditu, kterou následně potvrdil i Petryszak (1975).

Suomalainen (1961) zjistil, že stupeň polyploidity varíruje geograficky také v rámci jediného druhu, tak u některých horských druhů rodu *Otiorhynchus* je popsáno několik různých stupňů polyploidity. Enghoff (1976) doporučil neuplatňovat biologický koncept druhu pro tyto genetické odchylky a nestanovovat jim jména na úrovni druhu anebo poddruhu.

Na rozdíl od poměrně dobré znalosti partenogeneze a polyploidity samotné znalosti bionomie i dobře známých a běžnějších středoevropských druhů jsou dodnes téměř nulové. Zatímco u větších druhů s několika zemědělsky a lesnický důležitými druhy jako je rod *Otiorhynchus* jsou eucephalní a apodní larvy známy a popsány a známe i jejich bionomii, neboť žijí ektofágně na kořenovém systému živných rostlin, u celé řady i běžně známých a sbíraných rodů, jako jsou ve střední Evropě např. běžní *Exomias* Bedel, 1883, *Trachyphloeus* Germar, 1817, *Cathormiocerus* Schoenherr, 1842, *Foucartia* Jacquelin du Val, 1854 a mnoho dalších, nejsou larvy dosud vůbec známe a o jejich bionomii nevíme vůbec nic.

Taxonomické zpracování podčeledi je chaotické. V současné době velmi používaný a uznávaný katalog rodů a nadrodových kategorií celé nadčeledi Curculionoidea v celosvětovém měřítku (Alonso-Zarazaga & Lyal 1999) uvádí 55 tribů v podčeledi Entiminae, naopak např. Thompson (1992), anebo Marvaldi (1997, 1998) dělí celou podčeď na 5 tribů. Mezi těmito krajními počty tribů existuje ještě několik dalších pojetí, jak celou podčeď třídit. Je zřejmé, že určitá tendence některé triby sjednotit a systém zjednodušit bude z praktického hlediska účelná, celý systém by měl ale především respektovat fylogenetické vztahy a fylogenetický vývoj jednotlivých skupin. Ze současně platných prací je zřejmé, že hledisko hodnocení morfo-anatomických znaků není schopno objektivně posoudit členění takto velké podčeledi a současné práce hodnotící fylogenetické vztahy postavené především na mitochondriální DNA (např. Haran et al. 2013,) situaci významně nevyjasnily. Řešením se zdá být rozsáhlý K1 projekt, jehož hlavním řešitelem je McKenna (University of Memphis), který se pokusí celý systém přehodnotit na bázi analýzy různých fragmentů nukleární DNA. Z dosud známých parciálních výsledků se potvrzuje, že současné členění, kdy autoři historických a dosud přejímaných prací zahrnovali rody a jejich typové druhy jižní polokoule pod popsané triby lépe známého Palearktu není nadále únosné, a tak např. u afrotropických zástupců tribu Otiorhynchini anebo Peritelini neexistuje žádná návaznost na jejich palearktické zástupce (McKenna, pers. comm.). V tomto směru pak bude potřeba zástupce některých tribů Afrotropického, ale i Orientálního a Australského regionu, oddělit do samostatných nadrodových kategorií (Oberprieler, pers. comm.).

3.3 Historie vývoje znalostí o systematice

Tato kapitola volně interpretuje přehled historie systematiky, jak byl publikován Borovcem a Skuhrovcem (2010) v katalogu českých a slovenských nosatců (Benedikt et al. 2010).

První rozsáhlou monografií, která představila klasifikaci dnešní nadčeledi nosatcovitých, publikoval Schoenherr se svými spolupracovníky (Schoenherr 1823–1847). Rozdělil nosatce na dvě skupiny, na nosatce s přímými tykadly, tzv. „Orthoceri“ a nosatce s lomenými tykadly, „Gonatoceri“. Tuto skupinu s lomenými tykadly pak rozdělil na dvě legie, „Brachyrhynchi“, kam zařadil nosatce s krátkým a širokým noscem a „Mecorhynchi“, nosatci s dlouhým a úzkým noscem. Obě skupiny pak ještě rozdělil na devět, resp. šest divizí. Schoenherr mezi nosatce zařadil také Bruchidae, ale naopak do nich nezařadil Scolytidae a Platypodidae.

Další zásadní prací rozdělující celou nadčeď byla rozsáhlá monografie Lacordaire (1863, 1866). V ní autor rozdělil celou nadčeď na pět čeledí: „Curculionides“, „Scolytides“, „Brentides“, „Anthribides“ a „Bruchides“. Poprvé rozdělil první z čeledí na „Adelognatha“ se šesti triby, kam zařadil nosatce kde prementum z ventrálního pohledu zakrývá maxily a „Phanerogantha“, kde prementum z ventrálního pohledu nechává maxily volně viditelné, v této skupině rozeznával 76 tribů. Později byl těmto tribům přidělen status podčeledí (Pascoe 1870).

Crowson (1955) rozdělil nadčeď na devět čeledí: Nemonychidae, Anthribidae, Belidae, Oxycorynidae, Aglycyderidae, Attelabidae, Brentidae, Apionidae a Curculionidae. Některé fylogeneticky starší původní podčeledi poprvé povýšil na čeledi (Oxycorinidae, Belidae, Apionidae a Attelabidae), naopak Scolytinae a Platypodinae ponížil na úroveň podčeledí Curculionidae a Bruchidae přesunul do nadčeledi Chrysomeloidea.

Aktuální klasifikace nosatců má dvě rozlišné struktury. Alonso-Zarazaga & Lyal (1999) publikovali světový katalog rodů s typovými druhy, který je v současnosti nejvíce používanou základní databází nadruhových taxonů pro skoro všechny taxonomické práce. Rody jsou zde zařazeny do celkově 22 čeledí, včetně tří čeledí vymřelých nosatců, známých jen z fosilií. Katalog vychází z rekonstrukce fylogeneze, jak ji představil Thompson (1992) a později i Zimmerman (1993, 1994a, 1994b).

Druhá klasifikace pravděpodobně více kopíruje fylogenetické základy jednotlivých skupin, a je založena na pracích Kuschel (1995), Marvaldi & Morrone (2000), Marvaldi et al. (2002), Marvaldi (2003), Marvaldi & Lanteri (2005) a Oberprieler et al. (2007). Tato

klasifikace rozeznává sedm základních čeledí, tak jak budou stručně charakterizované v následujícím výčtu:

Nemonychidae – malá čeleď s cca 70 druhy ve 20 rodech (Oberprieler et al. 2007) žijících především na jižní polokouli, ale s bohatým fosilním materiálem z jurských vrstev (Kuschel 1983, Zherikhin & Gratshev 1995). Příslušníci této čeledi nesou množství primitivních znaků morfologických, ale také bionomických. Jsou vázáni především na nahosemenné rostliny, často na rostliny čeledi Araucariaceae (Oberprieler et al. 2007). Ve střední Evropě žijí tři druhy, řazené do tří různých rodů.

Anthribidae – čeleď s cca 3 800 druhy ve 371 rodech (Oberprieler et al. 2007), obývající celý svět, především ale tropické oblasti. Jsou to často mycetofágní druhy, ale také na lišejníku, dřevu, semenech, ale i hmyzu. Některé analýzy je řadí jako sesterskou linii k čeledi Nemonychidae (např. Kuschel 1995), především stavbou ovipositoru a ústních orgánů dospělců a tykadel larev, některé novější práce (Marvaldi & Morrone 2000, Marvaldi et al. 2002) staví čeleď Anthribidae do odvozené pozice vzhledem k malému množství synapomorfních znaků.

Belidae – malá, reliktní čeleď s cca 370 druhy a 40 rody (Oberprieler et al. 2007), téměř výhradně známá jen z jižní polokoule. Hostitelskými rostlinami jsou nahosemenné rostliny, ale u podčeledi Belinae i krytosemenné rostliny. Řazení podčeledi Oxycorinae do této čeledi není všeobecně přijímáno, ačkoli je podporováno fylogenetickými analýzami (např. Kuschel 1995). I postavení tribu Aglycyderini, který zasahuje několika málo druhy až do mediteránu, není přesně definováno, a tak bývá v některých pracích tento tribus povyšován na podčeleď.

Attelabidae – celosvětově rozšířená čeleď s cca 2 500 druhy a 150 rody (Oberprieler et al. 2007). Stejně jako Anthribidae jsou troficky vázáni na plísň, které jim na rostlinných tkáních zpřístupňují potravu pro larvy. Na rozdíl od nich již ale místo pro kladení vajec připravují samice s pomocí různě utvářeného nosce. U fylogeneticky mladších rodů, samice připravují hnízda např. rolováním listů, kam kladou vajíčka a současně naočkují spory plísní, která přenáší ve speciálních mycetangiích poblíž zadních kyčlí (Oberprieler et al. 2007). Většina druhů je vázána na krytosemenné rostliny, jen několik vývojově primitivnějších skupin je vázáno i na nahosemenné rostliny. Čeleď je definována kombinací znaků molekulárních, morfologických i ekologických (Marvaldi et al. 2002). Fosilie čeledi pochází ze spodní a střední křídy (Gratshev 1998, Kuschel et al. 1994). Obě podčeledi, Attelabinae a Rhynchitinae, jsou zastoupeny i ve středoevropské fauně.

Caridae – nejmenší čeleď s pouze 4 rody a 6 popsány druhy (Oberprieler et al. 2007), známá z Jižní Ameriky, Austrálie a Nově Guinei, je nesporně další reliktní, s vývojem na

koniferách. Postavení čeledi bylo dlouho nejasné a její zástupci byli postupně řazeni do jiných čeledí, její samostatnost definoval Zimmerman (1994a) a byla později potvrzena jako sesterský taxon k Brentidae a Curculionidae na základě morfologických i molekulárních znaků (Marvaldi et al. 2002).

Brentidae – celosvětově rozšířená čeleď s cca 400 rody a 4 000 druhy (Oberprieler et al. 2007). Do této čeledi patří několik morfologicky navzájem nepodobných podčeledí, z nichž především Apioninae a Nanophyinae jsou početně zastoupení také ve středoevropské fauně. Celá čeleď je až na malé výjimky vázána na krytosemenné rostliny.

Curculionidae – se svými cca 4 600 rody a 51 000 popsányými druhy (Oberprieler et al. 2007) tvoří zhruba 80 % dosud známých taxonů. Celá čeleď je definována především apomorfními znaky larev, ale také několika apomorfiemi dospělců, z nichž nejdůležitější je lomení tykadel a oddělená kompaktní palička. Nejstarší popsaná fosilie pochází z vrstev pozdní spodní křídly (Zherikhin 1993). Taxonomické rozdělení této obří čeledi prošlo poměrně mohutnými změnami v průběhu i posledního půlstoletí. Počet podčeledí se mění podle pojetí různých autorů. Basální podčeledi, které si udrželi primitivní orthocerní typ samčích genitálií (Morimoto 1962, Kuschel 1971, Thompson 1992) se odlišují od největší skupiny nosatcovitých brouků, Curculionidae sensu stricto. Tyto podčeledi jsou v současné době předmětem mnoha studií, založených nejen na morfologii dospělců, ale i larev a také studii na molekulární úrovni. Katalog světových rodů nosatců (Alonso-Zarazaga & Lyal 1999) pro tuto skupinu sensu stricto uvádí 16 podčeledí, Marvaldi et al. (2002) pro tuto skupinu uvádí podčeledí 28: Amycterinae, Anthonominae, Aterpinae, Bagoinae, Baridinae, Camatorinae, Ceutorhynchinae, Conoderinae, Cossoninae, Cryptorhynchinae, Curculioninae, Cyclominae, Derelominae, Dryophthorinae, Entiminae, Erihinae, Gonipterinae, Hipporhininae, Hyperinae, Lixinae, Mecininae, Molytinae, Ocladiinae, Otidocephalinae, Platypodinae, Rhamphinae, Rhythirrininae a Scolytinae. O největší podčeledi Entiminae je pojednáno v samostatné kapitole.

3.4 Významné sbírky pro studium nosatců

Umístění sbírkového materiálu významných entomologů bylo publikováno v Horn et al. (1990a, 1990b). Jedná se o prostý výčet entomologů se jmény muzeí, kde jsou sbírky deponovány. Následující kapitola tedy vychází z této publikace, ale je doplněna o vlastní komentáře autora, vycházející jednak z osobních konzultací s kurátory muzeí, ale

především z vlastních návštěv autora v jednotlivých muzeích, viz seznam navštívených muzeí v odstavci „Získávání studijního materiálu“.

Významné sbírky pro studium nosatců jsou rozmístěny v zásadních velkých muzeích především Evropy. Patří mezi ně především British muzeum v Londýně, kde je uložen sbírkový materiál Guy Marshalla. Tento britský entomolog prožil mládí v Jihoafrické republice a po přesídlení do Anglie díky svým kontaktům s jihoafrickými institucemi dostával ke zpracování pravidelně nové materiály nosatců, sbírané především na rozhraní původních biotopů a nově zřizovaných zemědělských plochách. Typový materiál této sbírky je základním materiálem pro studium nosatců jižní Afriky. Muzeum v současné době nakupuje sběry současných expedic do subsaharské Afriky, a tyto sběry obsahují velmi zajímavý nový, dosud nezpracovaný materiál. Ve stejné sbírce je ale deponován materiál také dalších významných entomologů, z recentní doby především veliká sbírka především palearktických nosatců tribu Otiiorhynchini nedávno zesnulého Luigi Magnana.

Další významnou sbírkou je Naturhistoriska Riksmuseet ve Stockolmu, kde je deponována sbírka Schoenherra, Bohemana a Fähræuse, tedy autorů, kteří publikovali zásadní počet nově popsáných taxonů druhové, ale i rodové úrovně. Tato sbírka vytváří naprostý základ pro vyšší taxonomii nosatců Afrotropické oblasti, ale i Palearktu, neboť zmínění autoři se věnovali celé čeledi ve světovém rozsahu. Ve stejném muzeu je uložena i sbírka Chevrolata, a částečně i Gyllenhal.

Třetím zásadním evropským muzeem je Muséum National d'Histoire Naturelle v Paříži. Typový materiál druhů a částečně i rodů popsáných postupně autory: Fairmaire, Desbrochers des Loges, Pic, Hustache, Hoffmann, Péricart, ale i mnoha dalších, obsahuje veliké množství typového materiálu především Paleartické oblasti, ale v případě Hustache také subtropické a tropické Afriky.

Obrovské množství Afrotropického materiálu je deponováno v Royal Museum of Central Africa v Tervurenu, na předměstí Bruselu, především díky několika několikaletým exkurzím Narcisse Leleupa, specialisty na čeleď Scydmaenidae Leach, 1815, především do východní Afriky, který sbíral převážně prosevem v lesní hrabance, ale také díky materiálu, který postupně zpracovával z Afrotropické oblasti Voss. Pro některé rody je tato sbírka naprosto nepostradatelná.

Mezi další velké sbírky patří také Museum of Zoology v Lundu, kde je uložen rozsáhlý materiál z expedic muzea do jižní Afriky zpracovaný později Vossem. Podstatná je sbírka Természettudományi Múzeum v Budapešti, která obsahuje především obrovskou sbírku Edmunda Reittera, entomologa, který popsal největší množství taxonů z Palearktu, kde

je významně zastoupená také východní část Palearktu. Ale současně obsahuje i zajímavý Afrotropický materiál pocházející především ze sběrů Sebastyena Endrödy. Pro východní část palearktu je podstatná sbírka Fausta, uložená v Staatliches Museum für Tierkunde v Drážďanech, kde je uložena i sbírka Hartmanna, Peneckeho a dalších autorů. Obrovská sbírka nosatců z Maroka především ze sběrů Manuela de la Escalery je uložena v Museo Nacional de Ciencias Naturales Madrid, kde současně leží i privátní sbírka Alonso-Zarazagy, sbírka Gonzáleze, a dalších. Tato sbírka představuje největší materiál nosatců Iberijského poloostrova. Také sbírka Národního muzea v Praze je významným zdrojem typového materiálu především Palearktu, díky začleněné sbírce Romualda Formánka, obsahující řadu typů, ale i dalších autorů, z poslední doby především sbírka Jaromíra Strejčka. Ve sbírce Nickerleho je uložena i část materiálu, kterou na svých cestách do Afriky sbíral Emil Holub.

Jihoafriický materiál je v Jižní Africe uložen především ve třech zásadních muzeích: National Collection of Insects v Pretorii obsahuje velkou srovnávací sbírku včetně materiálu sbíraného Rolfem Oberpielerem. Ditsong National Museum of Natural History zahrnuje především obrovský materiál sbíraný do Jižní Afriky přestěhované maďarského entomologa s v Africe používaným tvarem příjmení Sebastian Endrödy-Younga, ale i sběry Kocha, Müllerové a dalších entomologů. Historický materiál především ze střední části Jižní Afriky je uložen v National Museum Bloemfontein, kde je krom jiného uložen také materiál nedávno zesnulého Schalk Louwa, z četných faunistických průzkumů této oblasti.

Ze severoamerických muzeí je potřeba zmínit především Canadian Museum of Nature Collection v Ottawě, kde je uložen především materiál z četných exkurzí manželů Howdenových, anebo z expedic Pecka.

Soukromý materiál je z Palearktu uložen v nesčetných sbírkách českých, ale i mnoha dalších entomologů. A zvláště materiál z poslední doby, kdy se významně rozšířila mobilita sběratelů a kdy se sběratelé začínají přiklánět ke specifickým metodám sběru, jsou velmi přínosné a v mnoha skupinách zásadně doplňují dosavadní znalosti. Z Afrotropické oblasti jde především o sběry italských kolegů, jako je Giuseppe Osella (Verona), Enzo Colonnelli (Řím), Massimo Meregalli (Torino), které jsou deponovány v jejich soukromých sbírkách.

3.5 Aktuální zpracování fauny terrikolních nosatců Palearktu a Jihoafrické republiky

Palearktickou zoogeografickou oblast můžeme pokládat za nejlépe zpracovanou oblast, z pohledu brouků a tím pádem i nosatců. Po období popisů nových taxonů, začíná již

před sto lety dlouhá historie souborných prací i katalogů, významně doplňovaná revizemi jednotlivých skupin.

Mezi lety 1908 a 1917 vydává Edmund Reitter 5dílnou monografii *Fauna Germanica*, ilustrované určovací klíče pro celý řád Coleoptera, které se staly základem pro determinaci na několik následujících desetiletí. Současně v časopise *Wiener Entomologischen Zeitung*, společně se současníky jako byl český specialista na tuponosé nosatce Romuald Formánek, vydává dlouhou edici revizí jednotlivých rodů, nebo rodových skupin, které v některých skupinách jsou jako základ určovacích klíčů používány dodnes. V r. 1913 navíc vydává klíč k určení všech do té doby známých rodů nosatců Palearktu. Sám Reitter mezi lety 1872 a 1924 vydává 191 především taxonomických prací, které posunuli znalosti jednotlivých skupin významně dopředu (počet a seznam jím publikovaných článků podle seznamu literatury v Alonso-Zarazaga et al., 2017).

V Čechách první český specialista na nosatce Romuald Formánek vydává mezi lety 1898 a 1927 36 taxonomických prací (Alonso-Zarazaga et al., 2017), které v mnoha skupinách tvořili základní znalosti k determinaci až do téměř sklonku minulého století. Antonín Fleischer (1937–1941) pak vydal *Přehled brouků fauny Československé republiky*, na Slovensku Jan Roubal (1930, 1933, 1937–1941) třídílný *Katalog Koleopter Slovenska a Podkarpatské Rusi*. Pro Českou republiku a Slovensko vyšel vyčerpávajícím způsobem zpracovaný 1. díl komentovaného check-listu (Benedikt et al. 2010), druhý díl je aktuálně v tisku.

Po druhé světové válce začínají v Evropě vycházet národní fauny, které sumarizují znalosti faunistické i bionomické a jednotlivá území doplňují i klíči. Významnými pracemi je například bohužel nedokončená Dieckmannova *Fauna NDR* (bývalá východní část dnešního Německa), s významným přesahem na prakticky celou střední Evropu, vycházející v 7 dílech mezi lety 1972 až 1988, *Smreczyńského fauna Polska* (6 dílů mezi lety 1965 a 1976). Pro jižní Evropu byl významný počín *Fauna de France*, kterou publikoval Hoffmann (1945–1958). Pro faunu Balkánu je důležitá 5dílná Angelovova *Fauna Bulgarica* (1976–1981).

Pro taxonomické zpracování Palearktu mají velký význam revize velkých rodů anebo tribů zpracované především Lotharem Dieckmannem (34 prací mezi lety 1958 až 1991) (Alonso-Zarazaga et al., 2017), italskými specialisty, jako je Enzo Colonnelli (56 prací především týkající se podčeledi Ceutorhynchinae, od r. 1973) (Alonso-Zarazaga et al., 2017), Roberto Caldara (32 prací o rodech *Bagous*, *Tychius*, *Sibinia*, *Pachytychius* a tribu Mecinini, od r. 1973) (Alonso-Zarazaga et al., 2017), Massimo Meregalli (36 prací především o podčeledi Molytinae, od r. 1983) (Alonso-Zarazaga et al., 2017), Giuseppe Osella (61 prací

napříč celou čeledí, ale především Cossoninae, od r. 1068) (Alonso-Zarazaga et al., 2017), Cesare Bellò a Helio Pierotti (38 prací o tribu Peritelini, od r. 1994) (Alonso-Zarazaga et al., 2017). Dalšími specialisty jsou Miguel Alonso-Zarazaga (46 prací především o Apioninae a Nanophyinae, od r. 1983) (Alonso-Zarazaga et al., 2017), Jean Pelletier (40 prací o Brachyderinae, od r. 1991) (Alonso-Zarazaga et al., 2017), Carlo Pesarini (25 prací o Entiminech, mezi lety 1968 až 2006) (Alonso-Zarazaga et al., 2017), Roman Borovec (56 prací o podčeledi Entiminae, od r. 1986) (Alonso-Zarazaga et al., 2017). Všechna tato data jsou podle seznamu literatury v Alonso-Zarazaga et al. (2017). Kromě těchto zásadních sérií studií vyšlo obrovské množství menšího počtu článků dalších autorů. Seznam jen taxonomických prací tvoří 200 stránek textu v katalogu Palearktické oblasti (Alonso-Zarazaga et al., 2017), výčet, byť jen autorů, přesahuje možnosti rozsahu disertační práce.

Slabinou je znalost bionomie nosatců, i v Palearktu. Jednotlivé taxonomické práce stručně shrnují znalosti o živných anebo hostitelských rostlinách a shrnují také bionomická data spíše z lokalitních lístků, než z aktivního pozorování anebo chovů. Až teprve v posledních několika letech začíná vycházet série prací o larvách nosatců, která je soustředěna především na některé vybrané arborikolní rody, jako jsou rody *Sibinia* (Skuhrovec et al. 2014), anebo *Tychius* (Skuhrovec et al. 2015), kde jsou známé hostitelské rostliny a sběr larev je relativně jednodušší. Stále ale i v Palearktu platí, že larvální stádia většiny taxonů nejsou známa, popsána a nejsou ani předmětem sbírkového materiálu.

V rámci cyklu Catalogue of Palaearctic Coleoptera vychází v letech 2011 a 2013 v autorském kolektivu 27 předních evropských taxonomů pod edičním vedením Alonso-Zarazaga kompletní katalog všech dosud popsaných taxonů nosatců (Löbl & Smetana 2011, 2013), s jejich kompletní synonymizací, citací všech popisů a rozšířením jednotlivých validních druhů. Stejný autorský kolektiv pak publikoval doplněné vydání (Alonso-Zarazaga et al. 2017), které je průběžně doplňováno v nových pracovních verzích (<http://weevil.info/palaearctic-catalogue>).

Situace v Afrotropické oblasti je významně složitější. Zatímco první omezené skupiny létavých „dlouhonohých“ nosatců byly moderně zpracovány (např. Caldara 1989a, 1989b, 2003, 2005), a známe u nich u některých rodů i nezpochybnitelné rozšíření v obou zoogeografických regionech, původ takto velkých areálů není dosud vysvětlen. U létavých, mobilních druhů se předpokládá šíření např. nížinou podél toku řeky Nil, ale jestli je původním areálem Afrotropická, anebo Palearktická část jejich rozšíření, to dosud spolehlivě prokázáno nebylo (Caldara et al. 2008).

Naše aktuální znalosti Afrotropické oblasti jsou u podčeledi Entiminae dosud jen útržkovité. U terikolních druhů se v podstatě dosud jen vytváří seznam taxonů, který zde žije. Jakékoli následné studie, jako bionomické údaje, znalosti larev apod., dosud byly publikovány jen zcela výjimečně a v omezeném rozsahu.

První materiál z území dnešní Jihoafrické republiky byl dovezen švédskými a německými botaniky Drège, Ecklon a Zeyher z dřívější Cape Colony (dnešní provincie Západní, Východní a Severní Kapsko a západní část Severozápadní provincie), většina z nich byla ale sbírána na území Východního Kapska (Gunn & Codd 1981, R. Oberprieler, pers. comm.) Tento materiál byl zařazen do monumentální monografie Schoenherra (1833–1845), kde většina rodů byla popsána samotným Schoenherrem a nové druhy byly popsány Bohemanem. Další zajímavý materiál ze stejné oblasti dovezl z bývalých oblastí Natal (dnešní provincie KwaZulu-Natal) a Transvaal (dnešní provincie Limpopo, Mpumalanga a Gauteng a východní část Severozápadní provincie) dánský botanik Wahlberg mezi lety 1838 a 1845, tento materiál zpracoval a popsal Fåhraeus (1871). Stejně jako Boheman, řadu druhů popsal pod jmény palearktických rodů, část materiálu popsal pod Schoenherrem nově popsanými rody.

Lacordaire (1863) ve své monumentální monografii nosatců Entiminae rozdělil na skupiny, které dnes používáme jako jména na úrovni tribů. Tyto triby definoval a napsal na ně klíče. V některých skupinách jsou to dodnes jediné klíče, ačkoliv množství rodů je mnohanásobně větší.

Seidlitz (1868) pojal monografii o podčeledi Otiorhynchinae velmi široce, takže do klíčů Palearktických rodů a druhů zařadil i nemnoho druhů a rodů popsaných Bohemanem a Schoenherrem. U mnoha těchto afrotropických druhů provedl redeskripci, v několika ojedinělých případech udělal i několik nomenklatorických a taxonomických oprav.

V průběhu první poloviny 20 století vykonal významný pokrok ve znalosti jihoafrické fauny britský entomolog jihoafrického původu Guy Marshall (1907, 1908, 1914, 1920, 1921, 1923, 1926, 1931, 1935a, 1937, 1938, 1940, 1941, 1944, 1945, 1946, 1947, 1955, 1957), který jednak těžil ze svého mnohaletého pobytu v Jihoafrické republice a vlastního nasbíraného materiálu, ale vycházel i z dalšího materiálu který z různých institucí Jihoafrické republiky dostával na určení. Šlo především o materiál druhů sbíraných na zemědělských plochách, které mu posílali výzkumné instituce a muzea zabávající se škůdci, kde se ale i částečně objevily i druhy sbírané na lesních plochách. Šlo ale především o druhy na tehdy nově vysazovaných introdukovaných lesních porostech především borovic, na kterých byly nalézány původní jihoafrické polyfágní druhy.

Marshall významně posunul znalosti nosatců popisem velkého množství nových rodů, ale i popisy několika set nových druhů nosatců. Významnou část tady zabírali především nosatci s vyvinutými křídly, kteří obývají stromové patro anebo keřové patro, z terikolních nosatců popsal jen několik zcela výjimečných taxonů. Významným počinem Marshalla bylo rodové zpracování několika ucelených nadrodových celků a popis nového tribu Embrithini. Marshall tak publikoval rodové klíče pro tribus Embrithini (Marshall 1942, 1943), které jsou dodnes jediné použitelné publikované klíče. V celkovém vyznění je Marshallovo dílo nejvýznamnějším milníkem ve studiu jihoafrických nosatců, spolu s prací Schoenherra tvoří základ systému a vytváří významně většinový podíl dosud popsáných rodů.

Marshall se zabýval i materiály nasbíranými v subtropické části Afriky (1933a, 1933b, 1934a, 1935b, 1949, 1950, 1951, 1952, 1953, 1954, 1958, 1962). Např. na žádost belgického entomologa Leleupa zpracoval materiál terikolních nosatců, které Leleup prosíval z lesních porostů na několika mnohaměsíčních expedicích především do oblasti jezera Kivu na území dnešních států Rwanda a Burundi. Tady jde ale o výjimečné zpracování terikolních nosatců, většina materiálu terikolních nosatců, které měl Marshall ve své době k dispozici, zůstala v jeho sbírce nezpracována.

Lona (1937), jako autor podčeledi Entiminae v Schenklingově katalogu palearktických brouků, uvedl i krátký katalog „exotických“ skupin, kde je i krátký katalog druhů známých z Afrotropické oblasti s výpisem lokalit, odkud byli popsáni. Z dnešního pohledu jde ale o fragment dnes známého počtu taxonů této oblasti.

Německý entomolog Voss (1959, 1962), který se věnoval nosatcům v celosvětovém měřítku, popsal z Jihoafrické republiky dva nové rody se šesti novými druhy a z území dnešní Demokratické republiky Kongo jeden nový rod a druh. Podobně jako Marshall, ani Voss nekladal velký důraz na zpracování terikolních druhů a tak jeho přínos v této oblasti je zanedbatelný proti celkovému počtu jím popsáných druhů a rodů.

Francouzský entomolog Hoffmann (1963, 1965, 1968) v rámci několika různých článků věnovaných Afrotropickým nosatcům popsal jeden nový druh z Konga a další z Tanzanie z oblasti Kilimandžára, oba popsal pod jmény palearktických rodů. Z pralesů Guiney popsal jeden autochtonní nový rod a druh. Guinejský materiál pocházel z francouzské expedice do pohoří Mt. Nimba a Hoffmann v něm současně také sumarizoval materiál ostatních druhů, předtím popsáných Marshalllem.

Oberprieler (1988) provedl kompletní revizi Afrotropického tribu Tanyrhynchini, s redefinicí tribu a kontinentálních rodů a podrobnou diskuzí k morfologii a vztahu k dalším podobným tribům. V revizi je popsán také nový rod a celkem 13 nových druhů. Ostatní rody

tribu nejsou revidovány. V r. 1995 Oberprieler detailně revidoval dosud problematický tribus Myorhinini, provedl přesun mnoha rodů do 6 dalších tribů, provedl redefinici Myorhininů a zdůvodnil přesun souběžným vývojem tvaru nosce ovlivněným specifickou bionomií rodů u kterých vývoj probíhá v květenství trav. V práci provedl hodnocení základních morfologických znaků pro rodové definice Entiminů. Tato práce je významným pokrokem v nadrodovém hodnocení celé čeledi v jižní Africe, protože jako první provedla kritické zhodnocení znaků a opravila původní řazení druhů do paleartkických rodů. Významná je diskuze k provedeným přesunům, ale také stručná sumarizace stavu znalostí jednotlivých nadrodových skupin vázaných ke tribům Myorhinini a Tanyrhynchini.

Borovec, Colonnelli a Osella (2009, 2014) revidovali dva rody jihoafrických terikolních nosatců, které přesunuli do jiného tribu. A současně popsali 14 nových druhů rodu, všechny ze Západního a Východního Kapska.

Borovec a Oberprieler (2013) pro dva nové druhy popsanych Bohemanem vytvořili nový rod, který zařadili do tribu Embrithini. Ve stejné práci provedli detailní redefinici tribu Embrithini a do tohoto tribu přesunuli 13 rodů z původních tribů Oosomini a Myorhinini.

Borovec a Meregalli (2013) z nově naprosívaného materiálu ze Severního Kapska popsali nový rod do kterého zařadili 4 nové druhy ze stejného regionu. Jedná se o publikaci prvních známých terikolních nosatců z oblasti polopouští Severního Kapska.

3.6 Morfologie dospělců, larev, bionomie, vazba na biotopy

Pro brouky celé nadčeledi Curculionoidea je typická především hlava protažená v různě dlouhý noseček, na jehož apikální části jsou umístěna kusadla. Tato morfologická adaptace v průběhu fylogeneze umožnila modernějším čeledím nosatců jako jsou Brentidae a Curculionidae kladení vajíček dovnitř rostlinných pletiv, ať už kořenů, stonků, listů, květů anebo plodů. Samice noscem vytvoří úzký, různě dlouhý otvor pro kladení, pak se otočí o 180° a do otvoru zasune ovipositor, kladélko, a dovnitř pletiv naklade vajíčka. Tento způsob kladení, který dokonale chrání snůšku i nově vylíhlé larvy, umožnil nosatcům bezkonkurenčně obsadit velké množství nových nik, umožnil jim také specificky si rozdělit různé části rostliny, takže na jedné jediné rostlině se může vyvíjet hned několik různých druhů nosatců na různých částech rostliny, aniž by si navzájem konkurovali. Bionomie s vývojem uvnitř rostlinných pletiv souběžně s adaptivní radiací a kolonizací krytosemenných rostlin umožnila obrovskou druhovou diversitu právě nosatcovitým broukům. Velkým kvalitativním skokem při fylogenezi byl také přechod na lomená tykadla, kterým se Curculionidae

významně liší od Brentidae a který znamenal tak velký druhový nárůst právě této čeledi. Lomená tykadla umožňují samicím při kladení vložit tykadlový násadec podél nosce do tykadlových rýh a tak zanořit noseček v celé délce až po oči do rostlinného pletiva, zatímco bičík s paličkou, která při kladení hraje při ohledávání místa velký význam, zůstává vně a aktivní (Oberprieler et al. 2007). Druhým významným krokem v adaptivní radiaci bylo sekundární zkrácení nosce u podčeledí Entiminae, Platypodinae a Scolytinae, které těmto třem podčeledím umožnilo kolonizovat dosud neobsazené niky na kořenech rostlin (Entiminae), anebo ve dřevě a pod kůrou (Platypodinae a Scolytinae).

Morfologicky u druhů které kladou jen pod povrch rostlinných pletiv je rozdíl v délce nosce samce a samice nepatrný, anebo jsou nosce obou pohlaví téměř identické (Entiminae). U druhů kde samice klade do hloubky pletiv především plodů, liší se délka nosce významně a tvoří spolehlivý znak sexuálního dimorfismu. Např. u druhů, kde samice kladou pod tvrdé slupky plodů jako jsou ořechy anebo žaludy. U primitivní podčeledi Antliarhininae (Brentidae), kde samice kladou do velkých šišek cykasů, může být noseček samic až více než dvojnásobně delší než je délka celého těla bez nosce, zatímco samci mají noseček násobně kratší proti délce těla. Anatomicky délka ovipositoru odpovídá délce nosce. Např. u různých druhů severoamerického rodu *Curculio*, který klade do žaludů různých dubů jsou délky nosců úměrné velikosti žaludu, resp. tloušťce slupky konkrétního druhu žaludu, a délky ovipositorů s délkou nosce přesně korelují (Howden 1995). U rodu *Antliarhinus*, kde samice některých druhů mají noseček delší než tělo, je ovipositor uvnitř zadečku teleskopický (Howden 1995). Jen u některých druhů terikolních nosatců je ovipositor silněji sklerotizovaný a má v apikální části různě složité struktury, zatímco styli jsou ze špičky posunuty do středu vnitřní části (Borovec & Bahr 2006), takže homoplasticky připomínají ovipositor některých druhů rodu *Trigonorhinus* Wollaston, 1861 čeledi Anthribidae, kde tyto struktury slouží k vytváření míst pro kladení vajec, např. rozchylováním povrchových tkání kořenových pletiv, nebo basí stébel trav (Howden 1995).

Změna bionomie u krátkonosých nosatců (Entiminae), ze života na bylinném, keřovém anebo stromovém patře na život na kořenech rostlin, buď v substrátu nelesních biotopů, anebo v substrátu lesní opadanky, významně změnila také morfologii dospělců. Tyto změny byly popsány Borovcem (2019) a jejich sledováním lze podle morfologie dospělců s neznámou bionomií odhadnout jejich způsob života. Mezi zásadní změny morfologie patří především:

- Redukce blanitých křídel. Blanitá křídla jsou u létavých nosatců uložena přeložená pod krovkami a dospělci korvky buď pootevřou, anebo výrazně otevřou, napumpují vzduchové žilky v křídlech a mohou volně létat. U terikolních druhů brouků dochází

často ke zkrácení křídel, jejichž rudimenty lze pod krovkami nalézt, ačkoli v mnoha případech při významném zkrácení již nebývají funkční. U řady druhů terrikolních nosatců již křídla byla zcela redukována, což znamená, že změna života má již delší fylogenetické stáří.

- Srůst krovek a změna jejich tvaru. Úzce souvisí s redukcí křídel. Krovky létavých druhů jsou nespojené a volně pohyblivé, v mnoha případech jsou také tenčí a méně sklerotizované. U terrikolních nosatců podčeledi Entiminae došlo ke srůstu krovek, které již nelze od sebe rozchýlit, krovky jsou silnější, více sklerotizované a došlo i k jejich zkrácení, v mnoha případech i ke změně tvaru na krátce oválné až okrouhlé, v extrémních případech může být jejich délka rovna jejich šířce. Také v laterálním pohledu apikální třetina krovek není postupně skosená ke špici, ale podtočená pod apikální skosení, takže špice krovek není v dorsálním pohledu vidět.
- Zkracování terminálních částí těla. Pro pohyb těla v substrátu lesní hrabanky anebo půdního substrátu okolo kořenů dochází u terrikolních druhů nosatců ke zkrácení terminálií. U tykadlových dochází k výraznému zkrácení násadce, který je velmi často široký, robustní, často v basální části specificky tvarovaný a ke zkrácení a rozšíření článků bičíku. Podobně jsou významně zkrácené robustní tibie všech párů nohou. Poměry šířek a délek terminálií florikolního rodu *Lalagetes* Schoenherr, 1842 a terrikolního rodu *Afrophloeus* Borovec & Oberprieler, 2013 uvedl Borovec (2019), který kvantifikoval stupeň zkrácení tykadlového násadce a předních holení u zástupců terrikolního rodu.
- Tvarové přizpůsobení apexu holení. Apex holení, především předních, je tvarově uzpůsoben k hrabání. Apikální část tibií, obzvláště protibií, kde je rozšíření robustnější, je významně rozšířena na vnějšek a místo řádky set anebo štětín je opatřena trny různých tvarů, buď v celé šíři anebo ve skupinách. V extrémních případech bývá apex protibií laločnatý s výkroji mezi jednotlivými laloky se skupinami trnů. Střední a zadní holeně jsou u terrikolních nosatců obdobně rozšířené a místo řádky jemných set obroubeny řádkou řídkých trnů, nejsou nikdy laločnaté.
- Zmenšení očí. Oči florikolních a arborikolních nosatců jsou středně velké, v laterálním pohledu zaujímají průměrem cca třetinu až skoro polovinu výšky hlavy a jsou umístěny v dorsální části hlavy. U terrikolních nosatců dochází k jejich zmenšování, takže jejich průměr je v bočním pohledu čtvrtina výšky hlavy i méně a jsou posunuty ke středu výšky hlavy, v extrémních případech dokonce do ventrální poloviny.

- Oddálení zadních kyčlí. U terikolních druhů, kde jediný způsob pohybu obstarává lezení nikoli běh dochází k posunu zadních kyčlí od střední osy těla směrem k okrajům krovek, současně se rozšiřuje metaventrální výběžek, který je v mnoha případech zásadně širší než příčný průměr zadní kyčle a vždy tupě uťatý, zatímco u létajících nosatců je v mnoha případech zaokrouhlený nebo trojúhelníkovitě protažený.
- Struktura dorsálního povrchu těla. U terikolních druhů bývá dorsální povrch těla velmi často pokryt drobnými částmi hrabanky anebo substrátu. Některé rody umí tento substrát přilepit na dorsál krovek látkami bílkovinné povahy, které povrch inkrustují substrátem a ve sbírkovém materiálu známe pouze materiál inkrustovaný, pokud se výjimečně nepodaří nalézt čerstvě vylíhnuté exempláře. V ostatních případech se části substrátu zachycují na speciálních strukturách dorsálního povrchu, což jsou hrubé hluboké jamky štítu a krovek, podélné anebo příčné lišty, hrbolky různých tvarů, ale také husté řady anebo skupiny odstávajících set anebo šupin.

Omezené možnosti pohybu terikolních druhů má dvojí dopad:

1. Druhy s omezenými možnostmi pohybu bývají velmi často stenotopní, tvoří omezené populace na malých omezených územích. Ve svém důsledku to znamená, že druhová, ale i rodová diversita terikolních nosatců je významně větší, než jak ji známe podle současně popsaných taxonů. Např. Anderson (2010) popsal 93 nových druhů rodu *Theognete* Champion (Molytinae, Střední Amerika), zatímco do doby jeho revize byl z tohoto rodu znám pouze druh jediný, Riedel et al. (2010) předpokládá existenci zhruba 1000 druhů rodu *Trigonopterus* Fauvel (Molytinae, Nová Guinea), zatímco dosud popsaných druhů je pouze 40. K podobným číslům dospěl i autor této práce, který má v současné době v ruce zhruba 90 druhů rodu *Glyptosomus* (Embrithini, Jižní Afrika), zatímco popsaných druhů je známých 12. Velmi podobný poměr má i u rodu *Phaylomerinthus* (Embrithini, Jižní Afrika), anebo u rodu *Porophorus* (Tanyrhynchini, Jižní Afrika), kde autor ze svých vlastních sběrů a částečně také z muzejních materiálů shromáždil 32 nových, dosud nepopsaných druhů zatímco popsaný byl dosud jen jediný druh.

Stenotopní vazba druhů na biotop se týká i rodových rozdělení. Rody terikolních nosatců mívají v mnoha případech nižší druhovou početnost, mnoho rodů má jen velmi nízký počet druhů, je známo také hodně rodů monotypických. Počet rodů s nízkým počtem druhů je u terikolních nosatců vyšší. Rodová diversita terikolních nosatců je tedy vyšší, než tomu je u létajících, florikolních a arborikolních nosatců.

2. Druhým faktorem který vyplývá z omezeného pohybu terikolních druhů je, že velmi přesně drží biotopy původního vzniku a rozšíření druhu. Zatímco létající druhy dokáží velmi často rozšiřovat areál svého rozšíření díky průniku na nové biotopy, mnohdy i antropogenního charakteru, druhy bezkřídlé a nelétavé, s velmi pomalým způsobem lokomace způsobeným krátkými, robustními, kráčovými, nikoli běhavými nohami, jim zabraňují v rozšiřování areálu. U lesních biotopů to konkrétně znamená, že pro výskyt příslušného druhu je potřebná i kontinuita lesního porostu. Pokud byl les vykácen a po několika letech znovu obnoven, druh vázaný na lesní biotop vymře, protože mu chybí optimální podmínky pro jeho výskyt a vývoj a vzhledem k omezeným možnostem pohybu se na obnovený biotop již nedokáže vrátit zpátky. Výskyt těchto druhů v příslušném typu biotopů má tedy významný bioindikační potenciál, protože vzhledem k omezeným možnostem zpětného šíření příslušný druh musí na původním biotopu přežít, ale nedokáže ho osídlit znovu a zpětně (J. Strejček, osobní sdělení, založené na 70letém průzkumu lesních a nelesních biotopů).

U terikolních druhů nosatců se ve všech případech jedná o vazbu na mikroklimatické podmínky, nikoli o vazbu na hostitelské rostliny, protože tyto druhy jsou polyfágní. V lesních porostech preferují typy lesního porostu – vlhký substrát listnatých lesů vs. sušší jehličnatý substrát, substrát subtropických zapojených lesů (canopy forest), apod. Všechny druhy rodu *Epistomus* Borovec & Skuhrovec byly v Jihoafrické republice sbírány prosevem z hrabanky původních stálezelených lesů (indigenous forest) anebo z hrabanky lesů deštných (Borovec & Skuhrovec, 2017b); druh *Afromuelleria awelanii* Borovec & Skuhrovec, 2018 byl na hranicích mezi Jihoafrickou republikou a Zimbabwe prosíván v mopanovitém typu lesa z hrabanky pod velkým stromem rodu *Ekenbergia* (Borovec & Skuhrovec 2018b), některé druhy rodu *Ascopus* Marshall, 1951, od kterých jsou známé podmínky sběru, byli prosíváni v Guinei z hrabanky stálezelených lesů (Borovec & Perrin 2019); *Janakius sylvaticus* Borovec & Skuhrovec byl prosíván z hrabanky v přirozeném lese na bázi vysokých stromů (Borovec & Skuhrovec 2019b), *Tapinomorphus latipennis* Borovec & Nakládal a *T. verunkae* Borovec & Nakládal byli prosíváni z hrabanky původního lesa anebo sbírány pod kůrou (Borovec & Nakládal 2020). V podmínkách nelesních habitatů jde např. o vazbu na vytrvalé rostliny, které vytváří několika letý porost trvalých trsů rostlin, neboť nepreferují řídký kořenový systém efemerních bylin (vlastní nepublikované pozorování autora, založené na prosevech selektivně dělaných pod určitými typy rostlin). V podmínkách Palearktu se v podmínkách stepí a mediteránních macchií jedná především o trvalé trsy trav, anebo rostlin typu *Thymus*, *Potentilla*, *Fragaria* apod. (Borovec 2009). V podmínkách Jižní Afriky se jedná o trsy trvalých rostlin např. čeledi Asteraceae s bohatými rozetami přízemních růžic, anebo trsy

rostlin čeledi Restionaceae, které v podmínkách fynbosu nahrazují pravé trávy čeledi Poaceae. V podmínkách sukulentních biotopů jde především o substrát pod velkými vytrvalými keři, které těmto druhům umožňují využít vlhčí substrát i v podmínkách jinak velmi suchých a slunečných biotopů. Všechny 4 nově popsány druhy rodu *Nama* Borovec & Meregalli, 2013 byly sbírány prosem pod velkými keři *Euphorbia* a keři čeledi Chenopodiaceae, všechny druhy pod nově popsáných rodů *Cederbergia* Borovec & Meregalli, 2020, *Cervellaea* Borovec & Meregalli, 2020, *Namaquania* Borovec & Meregalli, 2020, *Pentamerica* Borovec & Meregalli, 2020, *Springbokia* Borovec & Meregalli, 2020 a *Yamalaka* Borovec & Meregalli, 2020, byly sbírány prosem odumřelých lístků a stonků velkých keřovitých pryšců rodu *Euphorbia* (Meregalli et al. 2020); druhy *Philetaeribus nidicola* Marshall, 1923 a *P. endroedyi* Borovec, Meregalli & Oberprieler, 2018 byly prosívány z hrabanky pod velkými keřovitými *Euphorbia dregeana* (Borovec et al. 2018a); druh *Porpacus chenopodiae* Borovec, Colonnelli & Osella, 2014 byl prosíván z vrstvy odumřelých lístků a stonků pod keříky čeledi Chenopodiaceae (Borovec et al. 2014).

Bioindikační status, ekologická valence daného druhu, je statisticky obtížně vyhodnotitelná, protože v literatuře není dosud podrobně zpracovaná metodika. Benedikt et al. (2010) podle ekologické valence dělí nosatce České a Slovenské republiky na 3 kategorie:

- Reliktní taxony s nejužší ekologickou valencí vázané na převážně přirozená stanoviště, vzácné a ohrožené taxony málo změněných ekosystémů.
- Adaptabilní taxony osidlující více nebo méně přirozená stanoviště se schopností adaptovat se i na druhotné dobře regenerované biotopy, zvláště v blízkosti původních ploch.
- Expanzivní taxony, eurytopní druhy s nízkými nároky na přirozenost a stabilitu stanovišť.

Tato klasifikace odpovídá návrhu, který pro vyhodnocení střevlíkovitých brouků použili Hůrka et al. (1995), a pro nosatce Strejček (2001). Strejček pouze druhou kategorii pojmenoval jako „druhy typické pro určitý charakteristický biotop, nicméně schopný adaptace“. Druhy do těchto kategorií byly zařazovány subjektivně, podle všech dostupných údajů o biotopech sběru a podle počtu a charakteru lokalit, na kterých byly sbírány (Benedikt a Strejček, osobní sdělení). V obou uvedených publikacích o nosatcích byly všechny druhy lesní hrabanky střední Evropy shodně zařazené do kategorie reliktních taxonů. Pro příklad se jedná o malé prosevové druhy rodů *Acalles* Schoenherr, 1825, *Acallocrates* Reitter, 1913, *Echinodera* Wollaston, 1863, *Kyklioacalles* Stüben, 1999, *Onyxacalles* Stüben, 1999 a *Ruteria* Roudier, 1954 (Cryptorhynchini), *Adexius* Schoenherr, 1834 (Molytini), a další.

Z nosatců podčeledi Entiminae, kterých v lesní hrabance střední Evropy nežije tolik druhů jako v jižní Africe, do kategorie reliktních taxonů byly zařazeny všechny druhy rodů *Bryodaemon* Podlussány, 1998 a *Brachysomus* Schoenherr, 1823. Pouze druhy rodů *Exomias* Bedel, 1883 a *Rhinomias* Reitter, 1894 jsou řazeny do skupiny adaptabilních taxonů, vzhledem k většímu počtu lokalit, odkud jsou druhy známy, ale ve všech případech jde pouze o lesní biotopy.

U nelesních druhů použita klasifikace ekologické valence pro nosatce střední Evropy přinesla velmi podobná hodnocení. V podčeledi Entiminae terrikolní druhy rodů *Centricnemus* Germar, 1827, *Peritelus* Germar, 1824, *Stomodes* Schoenherr, 1826 (Peritelini), *Psallidium* Herbst, 1795 (Psallidiini), *Archeophloeus* Iablokoff-Khnozarian, 1958 (Sciaphilini) a *Tropiphorus* Schoenherr, 1842 (Tropiphorini) jsou vyhodnoceny jako druhy reliktní. U rodů, které zahrnují i běžnější druhy, jako jsou rody *Omius* Germar, 1817 (Omiini), ale především rody tribu Trachyphloeini jako jsou *Cathormiocerus* Schoenherr, 1843, *Romualdius* Borovec, 2009 a *Trachyphloeus* Germar, 1817 jsou vzácné, lokální druhy hodnoceny jako reliktní, ale běžnější druhy známé z více lokalit jsou hodnoceny jako adaptabilní. U střeoevropských druhů je širší ekologická valence pravděpodobně podmíněna i partenogenetickým způsobem rozmnožování, který ale není z Jihoafrické republiky znám.

4. Metodika

4.1 Popis studované oblasti

Palearktická zoogeografická oblast zahrnuje celou Evropu včetně Islandu, Asie bez indomalajské oblasti a severní Afriku včetně Sahary a Kanárských ostrovů, a patří k ní i větší část Arabského poloostrova (Buchar 1983). Celá oblast se rozprostírá převážně v zóně mírného klimatu se subtropickým jihem a arktickou periferií na severu. Ve východní části (část Číny a Japonsko) se vyskytují druhově bohaté listnaté lesy. Vnitřní část Asie tvoří suchá, bezlesá území, která vytváří široký pruh jdoucí přes jihozápadní Asii do severní Afriky. Severní okraj tohoto území tvoří step. Většinu Evropy pak tvoří listnaté lesy, s menší druhovou diversitou než jsou lesy na východě Palearktu. Sever Asie i Evropy tvoří široká zóna tajgy, a ještě severněji tundra (Buchar 1983).

Podle tohoto členění je Palearkt také dělen na Evrosibiřskou podoblast (která zahrnuje tundru, tajgu, listnaté lesy a stepi), mediteránní podoblast (zahrnuje samotnou mediterránní část a část saharo-sindhskou), středoasijskou podoblast (zahrnuje íránsko-turanskou část, centrální asijskou část a východoskytskou stepní část) a východopalearktickou podoblast (zahrnuje stenopejskou severní část s listnatými lesy a úzký pruh podél jižního okraje oblasti zvaný ortrijská část) (Buchar 1983).

Jihoafrická republika patří zoogeograficky do Afrotropické oblasti, která je pouštními ekosystémy v prostoru obratníku Raka oddělena od oblasti palearktické. Patří sem většina afrického kontinentu, jižní cíp Arabského poloostrova, Madagaskar a také další menší ostrovy obklopující africké pobřeží (Buchar 1983). Další vnitřní členění oblasti má (kromě madagaskarské podoblasti) velmi neostré hranice a tak dělení na jižní, západní, anebo východní část je jen geograficky zaměřené. Jižní část kontinentu bývá obvykle definována jako území na jih od toku řeky Zambezi a zahrnuje státy Jihoafrická republika, Svazijsko, Lesotho, Namibia, Botswana, Zimbabwe a Mosambik jižně od řeky Zambezi (Borovec et al. 2009).

Z pohledu fyto geografického Jihoafrická republika patří do samostatné Kapské oblasti. To je nejmenší fyto geografická oblast světa, s velice bohatou květenou s vysokým stupněm endemismu, která je definována jako samostatná oblast, rozdílná od zbytku kontinentu, který patří do oblasti Paleotropické (Hendrych 1984). Vývojově je tato odlišnost dána původním stavem flory ještě před rozpadem Gondwany, takže výčetem mnoha čeledí je Kapská oblast podobnější květeně Austrálie, Nového Zélandu, anebo Jižní Ameriky, než květeně zbytku kontinentu (Hendrych 1984).

Jihozápadní pás pobřeží patří navíc do pásma takzvané etésiové vegetace, tedy do pásu, který lze charakterizovat středoziemským podnebím. Je charakterizované nízkými srážkami, vysokými letními teplotami a mírnými zimami téměř s absencí marzivých dnů (Hendrych 1984). Společným rysem je bohaté zastoupení dřevin keřového vzrůstu a vysokého podílu květoucích suchomilných bylin. Mikroklimaticky je tato část velmi podobná oblasti okolo Středoziemního moře, od západu Portugalska anebo Maroka po západní část Malé Asie. Terrikolní fauna čeledi nosatcovitých zde vykazuje velkou podobnost s terrikolní faunou oblasti okolo Středoziemního moře, tvarová konvergence tady vytváří velmi podobné morfologické struktury zemních nosatců obou oblastí, a teprve podrobné studium morfoanatomických znaků, ale i molekulárních znaků obě tyto fauny na rodové úrovni odlišuje (Borovec, nepublikovaná data).

Kapská květenná oblast patří mezi nejvýznamnější světová centra rostlinné biodiverzity. Tento fakt je významný právě pro čeleď téměř výlučně fytofágních brouků, jako jsou nosatcovití. V Jihoafrické republice dnes je evidováno cca 18 500 druhů květoucích rostlin, zatímco z celého afrického kontinentu je známo „jen“ asi 47 000 rostlinných druhů. Tedy na ploše cca 0,5 % afrického kontinentu roste 20 % všech afrických rostlin, přičemž významně nadpoloviční množství je udáváno jako endemických. Počet rostlinných druhů nejlépe vynikne při srovnání s počtem druhů jiných kontinentů, flóra Severní Ameriky dnes zahrnuje 19 000 druhů, Evropa 14 000 druhů (Suda, Sudová 2007a).

Vegetační společenství Jihoafrické republiky (volně podle Manning 2018, doplněno ze Suda, Sudová 2007b):

Fynbos – (Obr. 1, 2), nízká keřovitá vegetace, typická pro úzký pás jihozápadu Jižní Afriky, Západní Kapsko. Jedná se o živinami chudé mělké půdy, hrubozrnné, většinou písčité a zpravidla kyselé, s horkými a suchými léty a mírně deštivými zimami, je obdobou středomořských macchií, ke kterým je mikroklimaticky i přirovnáván. Typické jsou pravidelné požáry a absence velkých býložravců. Botanicky se jedná o území s obrovskou druhovou diversitou. Typické čeledi rostlin jsou Proteaceae, Restionaceae a Ericaceae.



Obr. 1. Fynbos v okolí Robinsons pass (Západní Kapsko) s kvetoucími mečičky rodu *Watsonia* a ohořelými stromovitými *Protea* (foto autor).



Obr. 2. Vysokohorský fynbos v pohoří Cederberg, Uitkyk pass (Západní Kapsko), s převládajícími nepravými travami z čeledi Restionaceae (foto autor).

Karoo – (Obr. 3, 4), je definováno jako společenstvo sukulentních rostlin a nízkých keřů s nízkou densitou, a s nízkým množstvím dešťových srážek (20–300 mm), většinou jen v zimních měsících. Půda živinami chudá, písčité až kamenitá. Vyskytuje se především v provinciích Západní, Východní a Severní Kapsko. Typické čeledi rostlin jsou Aizoaceae, Crassulaceae, Asteraceae.



Obr. 3. Nízká rozvolněná keřovitá formace karroo se stromovým druhem Aloe, *Aloe dichotoma*, v okolí města Springbok (Severní Kapsko) (foto autor).



Obr. 4. Karroo, keřovité porosty rostliny z čeledi Chenopodiaceae, s množstvím rozkvetlých kosmatců (*Mesembryanthemum*), severně od města Springbok (Severní Kapsko) (foto autor).

Savana – (Obr. 5), travnaté oblasti subtropických a tropických oblastí, s pravidelným střídáním období dešťů a období sucha. Travniny i řídké dřeviny mají odlišné ekologické nároky, navzájem se potlačují a tím vzniká specifický biotop savan, bez možnosti vzniku trvalých lesních porostů. Typický strom pro toto území je *Accacia*, na severní hranici Jihoafrické republiky i baobab.



Obr. 5. Savana s roztroušenými akáciemi (*Accacia*) a cicimkem (*Ziziphus*) na jižním okraji pouště Kalahari, na hranici mezi Severním Kapskem a Botswanou (foto autor).

Veld – (Obr. 6), vysočiny a náhorní plošiny ve střední nadmořské výšce, porostlé převážně travinami s nízkou hustotou různých typů keřů. Srážky střední (250–600 mm), převážně v zimních měsících. Půdy úživné, jemnozrné, často jílovité. Rozkládají se především ve středovýchodní části Jižní Afriky. Typická jsou velmi suchá léta a mírné zimy a také spásání velkými druhy býložravců. Charakteristické skupiny rostlin jsou *Elytropappus*, *Asteraceae* a geofyty.



Obr. 6. Travnatý veld poblíž Pretorie (Gauteng) (foto autor).

Namaqualand (Namakvalend) – (Obr. 7, 8, 9), aridní oblast podél západního pobřeží Jihoafrické republiky, s velmi nízkými srážkami do 150–200 mm ročně. Na rozdíl od polopouští jiných oblastí jsou srážky každoroční a víceméně ve stejnou dobu. Jedná se o pouštní habitat s mírným klimatem. V zimě, v období vegetačního růstu, se teploty pohybují okolo 25–30 °C. Třičtvrtiny roku je krajina vyprahlá, v době zimních srážek se pokrývá kobercem květů. Charakteristické čeledi jsou Asteraceae, Aizoaceae, Iridaceae.



Obr. 7. Namakvalend, krajina okolo města Springbok (Západní Kapsko) po období zimních dešťů zcela na krátkou dobu rozkvetе množstvím hvězdčicovitých rostlin (Asteraceae) (foto autor).



Obr. 8. Namakvalend, vyprahlá krajina Národního parku Richtersveld se sukulentními keři, v popředí *Pachypodium namaquanum*. Národní park se rozkládá částečně v Severním Kapsku, částečně v jižní Namibii (foto autor).



Obr. 9. Vyprahlý namakvalend, suché kamenité kopce poblíž Aggeneys, na hranici mezi severním Kapskem a Namibií (foto autor).

Vždyzelené lesy – (Obr. 10, 11), na severu země i subtropické křoviny – území s vysokými srážkami, nad 700 mm, rovnoměrně v průběhu celého roku. Půdy úživné, jílovité. V malých zbytcích se nacházejí na jižním pobřeží, většinou ale na východě Jihoafrické republiky. Charakteristické skupiny rostlin jsou *Podocarpus* a *Ocotea*.



Obr. 10. Stálezelené lesy s bohatou druhovou skladbou stromového patra. Les poblíž města Louis Trichardt v pohoří Soutpansberg, v Limpopu (foto autor).



Obr. 11. Ukázka častého přesazování původních vždyzelených lesů introdukovanými druhy borovic. Pohoří Soutpansberg, Limpopo (foto autor).

4.2 Získávání studijního materiálu

Studijní materiál byl získáván buď přímým sběrem v terénu, anebo studiem materiálu již nasbíraného, v muzeích anebo soukromých sbírkách.

Muzejní materiál byl z neurčeného materiálu získán v průběhu osobních návštěv, kdy byl vysortován přímou determinací materiálu v depozitářích muzeí. Menší část materiálu byla získána výpůjčkami. Jednalo se především o typový materiál, anebo materiál již dříve zařazený alespoň do tribů, anebo rodů buď autorem při předcházejících osobních návštěvách, anebo jinými specialisty.

Celkově bylo osobně navštíveno 19 muzeí, 14 evropských, 1 muzeum severoafrické a 4 muzea jihoafrická. Z dalších 7 muzeí byl materiál vypůjčen bez osobní návštěvy. Ze 6 soukromých sbírek byl vypůjčen další jihoafrický materiál.

Osobně navštívená evropská muzea: British Museum of Natural History, Londýn (Obr. 12); Muséum National d'Histoire Naturelle, Paříž; Naturhistoriska Riksmuseet, Stockholm (Obr. 14); Senckenberg Deutches Entomologisches Institut, Müncheberg; Museo Nacional de Ciencias Naturales, Madrid; Staatliches Museum für Tierkunde, Drážďany; Museum für Naturkunde, Berlín; Természettudományi Múzeum, Budapest; Museum of Natural History, Wrocław; Národní museum, Praha; Museo Civico di Storia Naturale di Milano, Miláno; Naturhistorisches Museum, Vídeň; Department of Life Sciences and Systems Biology, University of Turin, Torino; Zentralmagazin Naturwissenschaftlicher Sammlungen der Martin-Luther-Universität, Halle.

Osobně navštívená africká muzea: Ditsong National Museum of Natural History, Pretoria (Obr. 13); National Collection of Insects, Pretoria; National Museum, Bloemfontein; Natural History Museum of Zimbabwe, Bulawayo; Muséum National d'Histoire Naturelle, Institut Scientifique, Rabat.

Muzea, ze kterých byl materiál vypůjčen bez osobní návštěvy: Canadian Museum of Nature Collection, Ottawa; Key Laboratory of Zoological Systematics and Evolution, Institute of Zoology, Chinese Academy of Sciences, Peking; Museum of Zoology, Lund; Royal Museum of Central Africa, Tervuren; Zoological Institute of the USSR Academy of Sciences, Sankt Petersburg; Staatliches Museum Für Naturkunde, Stuttgart; Naturhistorisches Museum Basel, Basilej.

Soukromé sbírky, odkud byl vypůjčen materiál ke studiu: Giuseppe Osella, Verona; Enzo Colonnelli, Řím; Carlo Giusto, Recco; Jiří Janák, Rtyně nad Bílinou; Petr Bulirsch, Praha; Peter Hlaváč, Praha.

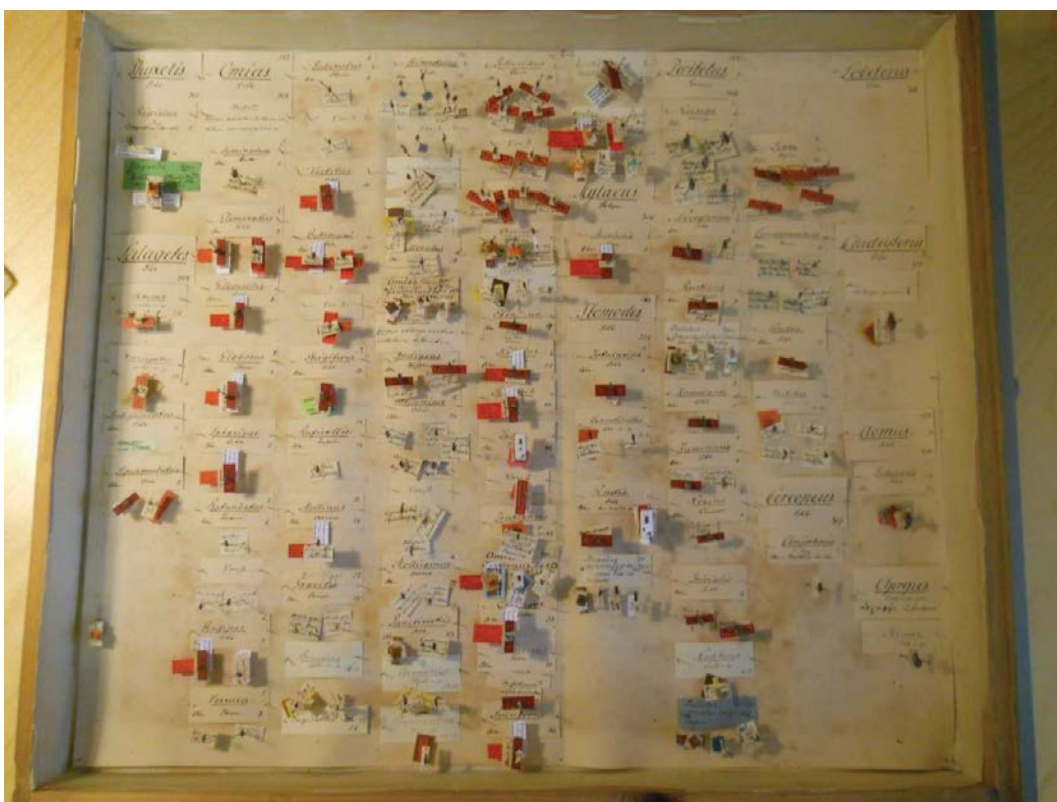
Celkově bylo ke studio vypůjčeno 11 750 kusů terrikolních nosatců. Počet osobně pod mikroskopem prohlédnutých kusů nosatců při osobních návštěvách nejde kvantifikovat, několikanásobně ale převyší počet vypůjčeného materiálu.



Obr. 12. Depozitáře jedné z největších evropských sbírek hmyzu v Evropě, Britského muzea v Londýně (foto autor).



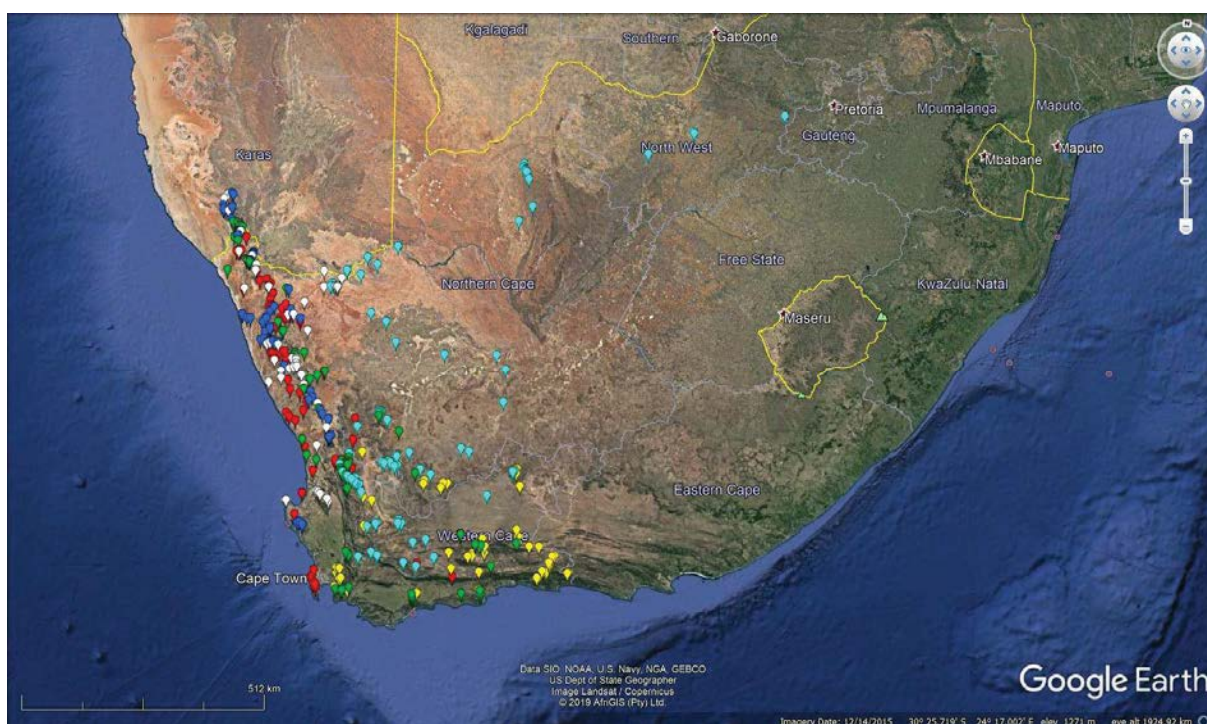
Obr. 13. Depozitáře bývalého Transválského muzea, dnes Ditsong muzea v Pretorii (foto autor).



Obr. 14. Schönherrova sbírka obsahující velké množství typového materiálu. Naturhistoriska Riksmuseet, Stockholm (foto autor).

Vlastní sběry v Jihoafrické republice byly realizovány v průběhu šesti třítydenních exkurzí v letech 2011, 2013, 2016, 2017, 2018 a 2019 (Mapa 1). V průběhu těchto exkurzí bylo prosíváno na 358 lokalitách, a na dalších 113 lokalitách byly vzhledem k podmínkám biotopu použity jiné metody sběru (smýkání, sklepávání, noční sběr, anebo individuální sběr pod kameny, přízemními růžicemi rostlin anebo pod keřky rostlin).

Celkově bylo ze šesti exkurzí do Jihoafrické republiky dovezeno 7 200 exemplářů nosatců, většina z nich byla vypreparována jako suchý sbírkový materiál, jen menší část je uložena nevypreparována, v epruvetách, vybrané vzorky jsou uloženy v 98% etanolu pro molekulární zpracování.



Mapa 1. Lokality ve kterých bylo sbíráno v letech 2011 (bílá), 2013 (modrá), 2016 (červená), 2017 (zelená), 2018 (tyrkysová) a 2019 (žlutá).

Sběry byly zaměřeny jednak na lesní hrabanku ve zbytcích lesů Západního Kapska, ale také na lokality nelesních biotopů. Prosevy v lesní hrabance (Obr. 15) byly realizovány v různých terénních depresích v místech, kde podél padlých stromů a jiných přirozených překážek dochází k akumulaci listů a mrtvých větviček, kde humiditu mikrobiotopu indikuje např. mycelium hub a plísní. Druhým významným mikrobiotopem jsou kořeny různých drobných bylin, které rostou v podrostu lesa, např. kořeny různých druhů *Oxalis* spp. (Oxalidaceae). Nosatci podčeledi Entiminae jsou na kořeny těchto rostlin zpravidla vázáni a v místech porostů zelených bylin je jejich koncentrace vyšší. Jako indikátor míst pro prosevy

pod rostlinami byly použity charakteristické požerky nosatců. Jedná se o malé, drobné boční výkusy na listech. Materiál byl individuálně vybírán rozložením naprosívané hrabanky v tenké vrstvě pod přímým slunečním svitem.



Obr. 15. Lesní hrabanka včetně starých odumřelých větví a větviček jako prosevový substrát v lesních porostech. Rezervace Lajuma, Limpopo (foto autor).

Pro prosev v těchto suchých biotopech byla využita místa pod většími keři. To byla místa, která skýtají alespoň trochu hrabanky z opadaných částí rostlin a skýtají také trochu vlhka. Jedná se o trouch pod velkými keřovitými sukulentními pryšci, především druhu *Euphorbia dregeana* (Euphorbiaceae) (Obr. 16, 17). Prosev byl v těchto místech obtížný, protože bylo potřeba vytvořit tunel dovnitř rostliny, která se brání latexem. Dalším podobným biotopem byly velké keře rostliny *Galenia africana* (Aizoaceae) (Obr. 18). 95 % takto získaného materiálu představuje nové, dosud nepopsané rody a druhy. Získaný materiál byl vybírán pod přímým sluncem (Obr. 19, 21), anebo byl držen v plátěných pytlících (Obr. 20) v průběhu exkurze a pravidelně vybírán každé ráno a večer, protože nosatci v tomto období vylézají na povrch a tento biorytmus vázaný na změny teploty i vlhkosti si drží i v plátěných pytlících. Při pravidelných kontrolách materiálu v pytlících se nosatci dají nalézt na povrchu

nasbíraného materiálu, anebo na vnitřní straně pytlíků. Eklektory nebyly pro separaci materiálu využity, protože ve snaze navštívit co největší množství lokalit byly prosevy prováděny každý den na jiném místě a nešlo tedy držet eklektory v klidném místě více dnů.



Obr. 16. Velké keře *Euphorbia dregeana* ve formaci karroo vytváří mělkou vrstvu mírně vlhčího substrátu odumřelých větviček a lístků, ve kterých jsou přes den ukryti drobní terrikolní nosatci. Okolí Vanrhynsdorp, Západní Kapsko (foto autor).



Obr. 17. Prosev pod keři pryšců znamená nejprve vytvoření prostoru mezi poměrně mohutnými větvemi keřů a až pak následný prosev substrátu (foto Massimo Meregalli).



Obr. 18. Velké keře *Galenia africana* ve formaci karroo vytváří slabou vrstvu odumřelého materiálu především lístků a květů keře, ve kterém se přes den často ukrývají terrikolní nosatci. Clanwilliam, Západní Kapsko (foto autor).



Obr. 19. Terrikolní nosatec kráčící po povrchu prosévaného substrátu. Zatím nepopsaný nový druh patří do nově popsaného rodu *Cederbergia*, délka těla 1,5 mm. Cape Columbine, Západní Kapsko (foto Andrea Battisti).

Účinnou metodou byl také večerní anebo noční sběr z rostlin, neboť některé skupiny terrikolních nosatců v noci vylézají nahoru na rostlinu za úživným žírem, využívají tak tmu jako krytí před predátory, ale také nižší teplotu a vyšší vzdušnou vlhkost. Takto v noci nasklepávaný anebo nasmýkaný materiál byl uložen do plátěných pytlíků a přebírán až druhý den na přímém slunci, protože při nižších nočních teplotách je hmyz málo pohyblivý a těžko rozeznatelný v množství zbytků rostlin a jiného materiálu.



Obr. 20. Pytlíky s hrabankou a půdou z prosevů, které byly každé ráno a večer prohlíženy a materiál byl vybírán do sběrných epruvet (foto autor).



Obr. 21. Přímý výběr materiálů z prosevu pod slunečním svitem (foto Andrea Battisti).

4.3 Zpracování materiálu

Nasbíraný materiál byl smrcen v pilinách octanem etylnatým. V laboratorních podmínkách byl pak rozvlhčen na filtračním papíru navlhčeným roztokem kyseliny octové v Petriho misce a vypreparován jako suchý sbírkový materiál. Část materiálu byla preparována dorsální částí dolů, pro studium ventrálních částí těla. Pro jejich studium byly odděleny celé abdominální ventrity až k zadním kyčlím a celé vitrity včetně obsahu zadečku a zadohrudi louhovány 7–10 dnů v 10% KOH. Poté byly v kapce destilované vody očištěny, příslušné orgány vypitvány, ventrity nalepeny na štítek a terminálie odvodněny v 80% etanolu, poté promyty v toluenu a buď uloženy do mikroskopavek do glycerolu, anebo zality na štítku v Solakrylu.

V těchto médiích byly posléze studovány, měřeny, kresleny anebo foceny.

4.4 Popisy nových taxonů

Pro popisy druhů i rodů byl využit celý sortiment znaků jak morfologických, tak anatomických. Pro podporu validity nově popsanych druhů byly využity i anatomické znaky. Pro tvorbu klíčů byly ale především použity znaky morfologické, aby pro uživatele klíčů

nevznikala automatická nutnost celý materiál pitvat. Znaky anatomické jsou v klíčích použity jen v nezbytných případech, jako možnost ověření správnosti determinace.

Popisy jsou soustředěny na zásadní znaky především na pokryvu těla (sety, šupinky), strukturní znaky nosce, hlavy, štítu, krovek a holení, a také na strukturu článků tykadel a chodidel. Pro tyto účely byly poměry délek a šířek měřeny optickou mřížkou, pro každý taxon na 5 exemplářích, u druhů s výrazným sexuálním dimorfismem na 5 kusech každého pohlaví. Fotodokumentace byla u kratších prací využita jen pro celkový habitus v dorsálním pohledu, u rozsáhlejších revizí i pro detailní strukturální pohledy na nosec, tykadla, holeně a genitálie obou pohlaví. Fotografie dospělců byly pořízeny s pomocí fotoaparátu Canon EOS 700D s objektivem MP-E 65 mm, s použitím software Zerene Stacker a GIMP2. Detailní záběry jednotlivých struktur (nosec, holeně, abdominální ventrity a terminálie) byly foceny s pomocí binokulárního mikroskopu HIROX RH 2000.

Kresby detailů byly dělány přes optickou mřížku v okuláru mikroskopu na milimetrový papír, následně byly překresleny na pauzovací papír tuší, naskenovány a sestaveny do tabulí. Část nakreslených detailů byla do finální podoby převedena v programu Corel Draw® 2018 (verze 20.1.0.707). Mapky byly vytvořeny v programu MapCreator 2.0 a upraveny v programu Corel Draw® 2018 (verze 20.1.0.707), a v programu Google Earth.

Pro definici rodů bylo u morfo-anatomické analýzy použito 85 znaků, které hodnotily všechny charakteristiky, které lze pro rozlišení druhů využít. Znaky byly vybrány podle použitelnosti v popisech a následných klíčích, přičemž nebyl učiněn pokus o selekci těchto znaků podle subjektivního hodnocení jejich váhy, anebo významu.

4.5 Molekulární analýza

Molekulární analýza byla provedena na podjednotce I mitochondriální cytochrom oxidázy (mt-Cox1). Materiál byl již z místa sběru konzervován v 98% etanolu. Extrakce proteinu byla provedena z vnitřních struktur komplexu hlava a předohrud, který na rozdíl od dosud používaných končetin trpí významně nižším procentem znečištění cizí DNA. Po vyjmutí proteinu bylo přidáno 400 µl 4M sodium perchloratu a chloroformu. DNA bylo vysráženo s použitím isopropyl alkoholu a resuspendováno s pomocí TE tlumení. Fragment mitochondriální cytochrom oxidázy podjednotky I (mt-Cox1) byl získán podle metodiky Folmer et al. (1994), modifikované podle Astrin & Stüben (2008). Sekvenování bylo provedeno externě firmou Genechron (Řím). Obě vlákna šroubovice byla sekvenována, oba

chromatogramy byly kontrolovány s pomocí programu Chromas (<http://technelysium.com.au/wp/chromas/>). Všechny sekvence použité pro fylogenetickou analýzu byly uloženy do GenBank.

Analýza parsimonie byla provedena programem TNT 1.5 (Goloboff et al. 2008) pracujícím se všemi čtyřmi metodami (Sectorial Search, Drift, Ratchet a Tree Fusing) a generujícím konsenzuální kladogram. Statistika kladogramu byla kalkulována v TNT skriptu. Synapomorfie byly definovány v konsenzuálním kladogramu. Bayesovská inference byla posuzována v programu MrBayes 3.2. Statistické vyhodnocení modelovalo 1 milion generací zpětně, s kontrolou každé 500. generace. Testování časových hodin, průměrného času štěpení populací, bylo provedeno v Bayesově faktoru B10. Pro fylogenetickou analýzu v programu MrBayes 3.2 využívající kombinaci obou zdrojů dat, morfologická data a data mt-Cox1, byla provedena úprava zdrojové data matrix pro duplikaci morfologických dat, pokud byla sekvence Cox-1 získána ze dvou různých exemplářů, chybějící zdrojová molekulární data byla generována v programu Mega6 a doplněna jako konstantní data ze sekvenování, ve variabilních pozicích pak označena kódem „N“.

Pro testování monofyletických skupin byla každá jednotlivá skupina (clade) testována v rozdílu mezi pozitivním a negativním omezením. „Stepping-stone” algoritmus (Xie et al. 2011) v programu MrBayes byl implementován pro 100 kroků a 500 000 generací. Skupina (clade) byla považována za potvrzenou, pokud byla pozitivní omezení lepší než negativní o minimálně 5 kroků pravděpodobnostních jednotek.

4.6 Hodnocení ekologické valence

Druhy zpracované v rámci této disertační práce, resp. v rámci prací, které byly publikovány v rámci této disertační práce, byly vyhodnoceny metodikou použitou v pracích Benedikt et al. (2010) a Hůrka et al. (1995). Na základě znalostí o biotopech sbíraných druhů, získaných buď vlastním sběrem, anebo podle přesných dat současných sběratelů anebo podle bionomických poznámek na lokalitních štítcích zpracovaného materiálu, byly jednotlivé druhy zařazené podle biotopů, které obývají. Pomocným kritériem byl i počet lokalit indikujících velikost areálu rozšíření jednotlivých druhů, ale také subjektivní posouzení specifčnosti biotopu, kde se druh nachází, kde bylo možno použít publikované údaje, tak i data z těchto publikací. Níže uvedený seznam druhů rozdělený podle jednotlivých biotopů je tedy označen jako druhy reliktní – „R“, anebo druhy adaptabilní – „A“, žádný z druhů nebyl vyhodnocen jako expanzivní.

Důvody zařazení do kategorie „A“, adaptabilní druh, jsou uvedeny konkrétně pro jednotlivé druhy v kapitole 3.4, seznam druhů podle jejich bionomických nároků.

5. Výsledky

Předkládaná disertační práce je založena na 24 člancích, zabývajících se uvedenou problematikou, které vznikly v průběhu 4letého doktorandského studia. V těchto člancích byly, kromě klíčů a check-listů, popsány nové objevené taxony – 1 nový tribus, 12 nových rodů a 104 nových druhů.

5.1 Tribální klasifikace jihoafrických Entiminů

Jak již bylo uvedeno v úvodních kapitolách, tribální rozdělení Entiminů je největším současným oříškem v taxonomii nosatců. Tato nedořešená problematika se týká nosatců celosvětově, Afrotropická klasifikace je ještě o to komplikovanější, že mnoho druhových taxonů bylo popsáno nejen pod jmény palearktických rodů ale i pod jmény Palearktických tribů.

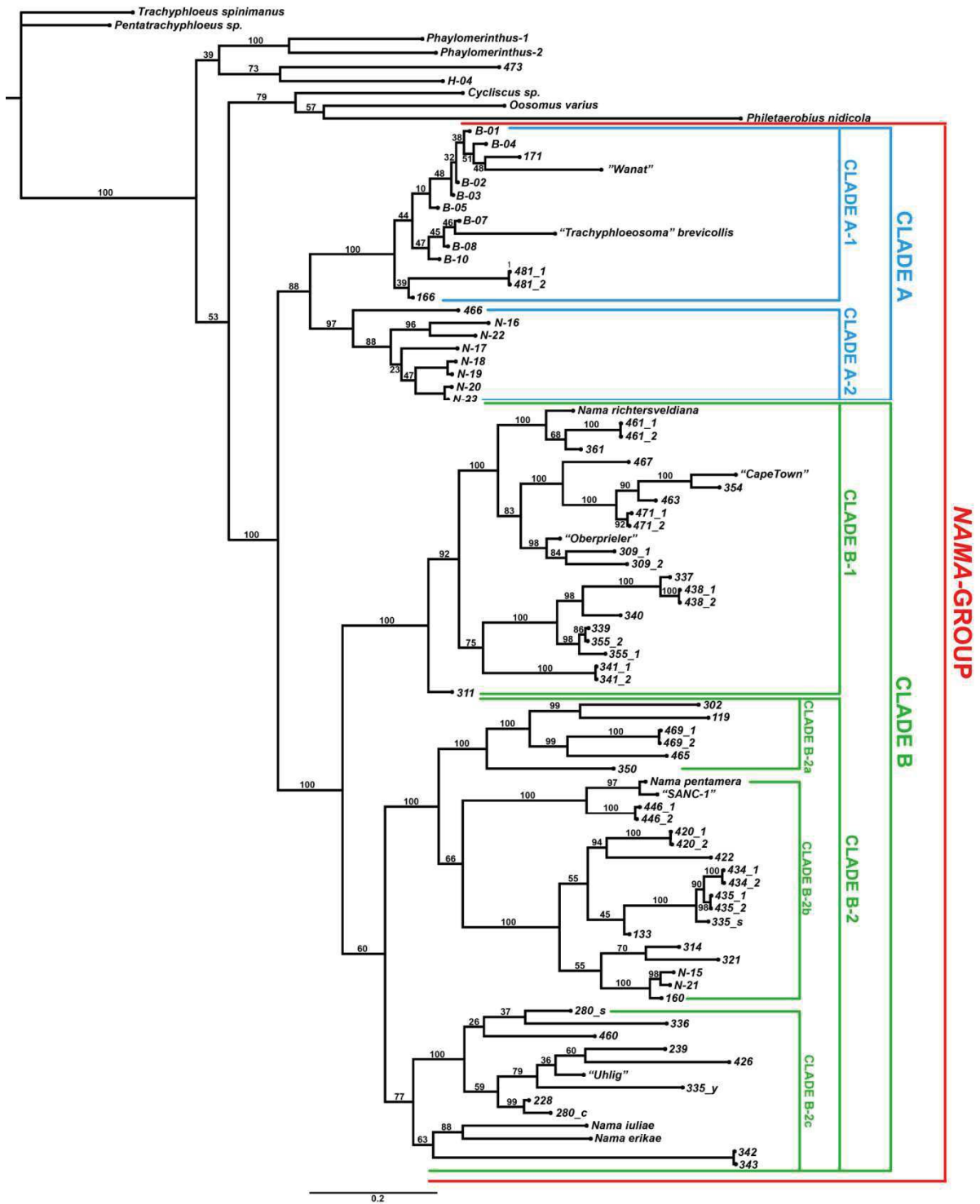
Terrikolních nosatců se týkají jen některé z těchto tribů. Současný status historicky popsaných afrotropických taxonů s jejich přesuny byl publikován v základní studii k této problematice, Borovec & Skuhrovec (2017), viz kap. 9.1.3. V této práci jsou jednotlivé triby redefinovány a je provedeno množství tribálních a rodových přesunů. Podobně je aktuální status terrikolních nosatců západní Afriky a jejich nové tribální zařazení publikováno v Borovec & Perrin (2019), viz kap. 9.1.4. Redefinice tribu Embrithini je následně doplněna nově popsanými rody v pracích Borovec 2018a, 2018b, 2019a, viz kap. 9.1.9, 9.1.10 a 9.1.8, Borovec & Meregalli 2020, viz kap. 9.1.7, Borovec & Skuhrovec 2017b, 2018b, 2019b, viz kap. 9.1.5, 9.1.6 a 9.1.2, Meregalli et al. 2020, viz kap. 9.1.1. Tribus Oosomini je redefinován v pracích Borovec 2018b a Borovec & Meregalli 2020, viz kap. 9.1.10 a 9.1.7, tribus Trachyphloeini je definován v tribální revizi Borovec (2009), pro Afrotropickou oblast pak v pracích Borovec & Skuhrovec 2017a, 2017b, 2018b, 2019a, 2019b, viz kap. 9.1.3, 9.1.5, 9.1.13 a 9.1.2. Sumární práce k tomuto tématu, Borovec & Skuhrovec 2019b, viz kap. 9.1.2, podává jednoduchý přehled terrikolních rodů tribů Embrithini a Trachyphloeini, s přehledem počtu popsaných druhů, rozšíření a základních diagnostických znacích. Pro nově popsané rody z dosud neznámé polopouštní části Jihoafrické republiky byl popsán a definován nový

tribus (Meregalli et al. 2020, viz kap. 9.1.1), Namaini, na základě morfologických i molekulárních znaků. Tribus byl definován na základě morfologických i molekulárních dat, bylo provedeno jeho diagnostické porovnání s ostatními triby, byl uveden klíč ke všem zařazeným a ve většině případů i nově popsaným rodům.

5.2 Porovnání morfo-anatomické kladistické analýzy a analýzy postavené na molekulárních datech

V zásadní práci (Meregalli et al. 2020, viz kap. 9.1.1) je pro definici nových taxonů. V práci byl popsán nový tribus Namaini Borovec & Merregalli, 2020, který je v podčeledi Entiminae nejbližší podobný tribu Oosomini. Tribus je popsán pro 7 rodů, již dříve popsaný rod *Nama* Borovec & Merregalli, 2013 a nově v práci popsané rody *Cervellaea* Borovec & Merregalli, 2020, *Namaquania* Borovec & Merregalli, 2020, *Springbokia* Borovec & Merregalli, 2020, *Cederbergia* Borovec & Merregalli, 2020, *Pentamerica* Borovec & Merregalli, 2020 a *Yamalaka* Borovec & Merregalli, 2020. Pro první 4 rody byly v práci popsány nové typové druhy, aby bylo možné rody popsat, poslední dva rody byly povýšeny pro již dříve popsané druhy, dříve zařazené do rodu *Nama*. Současně je pro jednotlivé rody uveden výčet všech do rodů zařazených, ale dosud nepopsaných druhů, pod neformálním číselným označením. Těch je v práci vyjmenováno 7 pro rod *Cervellaea*, 7 pro rod *Nama*, 14 pro rod *Namaquania*, 5 pro rod *Yamalaka*, 1 pro rod *Pentamerica*, 9 pro rod *Springbokia* a 12 pro rod *Cederbergia*. Z těchto 55 indikovaných nových druhů jich 46 pochází ze sběrů autora v rámci výše uvedených 6 exkurzí do Jihoafrické republiky a 9 druhů pochází z výpůjček muzejního materiálu. Rozdělení tohoto množství nových druhů na samostatné druhy, ale také do samostatných cladů rodové úrovně byla použita kombinovaná metoda analýzy morfo-anatomických a molekulárních dat (Obr. 22).

Vyhodnocení morfo-anatomických znaků (viz data matrix, tab. 1) v následném statistickém zpracování vedlo k vytvoření stejného počtu cladů, které měly dostatečně silnou statistickou podporu a bylo je možno vyhodnotit jako clady s rodovou validitou, pouze se dvěma výjimkami, popsanými níže. Lze tedy hodnocení morfo-anatomických znaků pokládat za dostatečně objektivní k analýzám rodové problematiky, ačkoli nejde do úplně identického detailu, jako molekulární data.



Obr. 22. Kladogram rodů a druhů nově popsaného tribu Namaini, založený na morfoanatomických znacích.

Rozdílné bylo rozdělení cladu označeného ve výsledném konsenzuálním kladogramu jako clade B-1. Příslušníci tohoto cladu jsou si morfologicky natolik podobní, že jejich rozdělení na dva samostatné rody bylo na základě jen morfologických znaků diskutabilní, ačkoli měly podporu 100 %, resp. 72 %. Molekulární analýza tyto dva clady rozdělila s ještě větším odlišením, takže byly popsány jako dva samostatné rody. I geografické vymapování druhů obou rodů ukázalo, že jde o dva rody s odlišnými areály rozšíření (viz Meregalli et al. 2020, viz kap. 9.1.1).

Druhým rozdílným výsledkem bylo celkové vymezení tribu, které v morfologické analýze zahrnuje i clade A (rozdělený na clade A-1 a A-2), jehož zařazení do monofyletické skupiny označené jako tribus nebylo v molekulární analýze dostatečně průkazné a tyto taxony zůstaly do doby sběru dalšího materiálu a dalších dat zatím nepopsány, neboť byly v mnoha případech založeny jen na starším muzejním materiálu bez možnosti získat molekulární data.

5.3 Vytvoření určovacích klíčů a check-listu taxonů

Tento krok ve své podstatě přináší nejvýznamnější praktický výstup pro použití v praxi, pro využití pro další výzkum sledované skupiny rodů a druhů. Pro terrikolní faunu jihoafrických nosatců podobné klíče, ani check-listy, dosud vytvořeny nebyly. Určovací klíče na druhy pak byly poprvé publikovány pro všechny zpracované, již známé rody: *Ascopus* (Borovec & Perrin 2019, viz kap. 9.1.4), *Ephimerostylus* (Borovec 2018c, viz kap. 9.1.19), *Eudraces* (Borovec & Nakládal 2018, viz kap. 9.1.20), *Haptomerus* (Borovec & Nakládal 2019b, viz kap. 9.1.16), *Lalagetes* (Borovec & Skuhrovec 2018a, viz kap. 9.1.14), *Pentatrachyphloeus* (Borovec & Skuhrovec 2019a, viz kap. 9.1.13) a *Philetaerobius* (Borovec et al. 2018a, viz kap. 9.1.11 a 9.1.12), a samozřejmě také pro všechny druhy rodů nově popsaných: *Afromuelleria* (Borovec & Skuhrovec 2018b, viz kap. 9.1.6), *Barclayanthus* (Borovec & Skuhrovec 2019b, viz kap. 9.1.2), *Coniophloeus* (Borovec 2019a, viz kap. 9.1.8), *Epistomius* (Borovec & Skuhrovec 2017b, viz kap. 9.1.5), *Janakius* (Borovec & Skuhrovec 2019b, viz kap. 9.1.2) a *Oxymorus* (Borovec & Meregalli 2020, viz kap. 9.1.7). Zásadním přínosem jsou klíče na rody, nejen u nově popsaného tribu Namaini (Meregalli et al. 2020, viz kap. 9.1.1), ale i u obou zásadních tribů terrikolních Entiminů, Embrithini a Trachyphloeini (Borovec & Skuhrovec 2019b, viz kap. 9.1.2). Všechny tyto zpracované rody jsou současně doplněny check-listy druhů již známých, anebo nově popsaných, včetně jejich známého rozšíření.

5.4 Seznam druhů včetně jejich bionomických nároků

Terrikolní druhy jsou pro níže uvedené biotopy úzce specifické a neobývají jiná, než níže uvedená rostlinná společenstva. Poměrové zastoupení jednotlivých druhů zhruba respektuje i zastoupení velikostí ploch těchto typů biotopů, neboť jižní Afrika má převážně nelesní rostlinná společenstva, kdy většina území je pokryta rostlinným společenstvem typu travních porostů (veldu), fynbosu, karroo, polopouští, anebo horských nadlesních pásem. Lesní společenstva jsou pouze v nížinách a v horách jižní a východní části země.

Z vyhodnocení ekologické valence vyplývají následující výsledky:

Lesní porosty Afrotropické oblasti – z celkového počtu 26 zkoumaných druhů bylo 21 druhů vyhodnocených jako druhy reliktní, což tvoří 80,8 % zkoumaného vzorku. To je číslo velmi vysoké, které dostatečně charakterizuje autentičnost a původnost lesních porostů. Zbylých 19,2 %, 5 druhů, vyhodnocených jako druhy adaptabilní, tvoří 3 druhy rodu *Ascopus* ze západní Afriky, které obývají dosud rozsáhle lesní porosty především v okolí pohoří Mont Nimba a jejichž větší rozšíření je umožněno právě dostupností lesních porostů rozsáhlejšího areálu, a také 2 druhy rodu *Epistomius*, které v Jihoafrické republice, Východním Kapsku, obývají sice v menší míře kontinuální lesní porosty, ale přeci jen porosty s určitou návazností a dostupností.

U nelesních porostů Afrotropické oblasti je z celkového vzorku 75 zkoumaných druhů 92 % (69 druhů) zařazeno mezi druhy reliktní a 8 % (6 druhů) mezi druhy adaptabilní. Mezi adaptabilní druhy jsou zařazeny všechny druhy rodu *Philetaerobius*, které byly díky rozsáhlým prosevům autora této práce, ale také faunistickým průzkumům Schalka Louwa zjištěny na relativně velkých areálech semidesertních biotopů, a také 2 druhy rodů řazených do kontroverzního tribu Myorhinini. Tyto stenotopní druhy s pozoruhodnou adaptací nosce pro bionomii v klasech trav obývají malé areály, ale podle přítomnosti příslušných druhů travních porostů jsou schopny obývat i disjunktivní malé areály v rámci větších území rozšíření. Sporná validita tohoto tribu je postavena právě na homoplastickém znaku specializace nosce na jejich specifickou bionomii, ale tato specifická úprava tvaru nosce vznikla s velkou pravděpodobností nezávisle na sobě u rodů několika různých tribů, jak tomu napovídají další morfologické i anatomické znaky (Borovec, nepublikovaný údaj).

U palearktických lesních porostů bylo hodnoceno 9 druhů, z nichž 7 (77,8 %) bylo zařazeno do kategorie reliktních druhů a 2 (22,2 %) jako druhy adaptabilní. Oba druhy patří do rodu *Pseudocneorhinus* a jsou známy z rozsáhlých lesních komplexů hor čínských provincií Chongqing a Zheijiang. Tady je nutné podotknout, že lesní porosty Číny patří

k jednom z nejméně známých a prozkoumaných území velkých států nejen Palearktu, ale i ve světovém měřítku. Dosud známý materiál sbíraný evropskými sběrateli je velmi fragmentární a poměrně velké sbírky Zoologického institutu v Pekingu obsahují z velké většiny materiál sbíraný z bylinného anebo stromového patra, prosevový materiál téměř chybí (Li Ren, pers. comm.).

Druhy žijící pouze v lesní hrabance původních listnatých lesů

<i>Afromuelleria baobab</i> Borovec & Skuhrovec, 2018	R
<i>Afromuelleria awelani</i> Borovec & Skuhrovec, 2018	R
<i>Afromuelleria limpopo</i> Borovec & Skuhrovec, 2018	R
<i>Afromuelleria venda</i> Borovec & Skuhrovec, 2018	R
<i>Ascopus curvipes</i> Hustache, 1931	A
<i>Ascopus echinatus</i> (Marshall, 1951)	A
<i>Ascopus girardi</i> Borovec & Perrin, 2019	R
<i>Ascopus lamottei</i> (Hoffmann, 1963)	R
<i>Ascopus pyriformis</i> Marshall, 1951	A
<i>Janakius sylvaticus</i> Borovec & Skuhrovec, 2019	R
<i>Tapinomorphus alticola</i> (Hustache, 1939)	R
<i>Tapinomorphus angolanus</i> Borovec & Nakládal, 2020	R
<i>Tapinomorphus carinirostris</i> Marshall, 1953	R
<i>Tapinomorphus franzi</i> Borovec & Skuhrovec, 2017	R
<i>Tapinomorphus kudrnai</i> Borovec & Nakládal, 2020	R
<i>Tapinomorphus latipennis</i> Borovec & Nakládal, 2020	R
<i>Tapinomorphus orientalis</i> (Hustache, 1931)	R
<i>Tapinomorphus porculus</i> (Marshall, 1950)	R
<i>Tapinomorphus verunkae</i> Borovec & Nakládal, 2020	R
<i>Epistomius bulirschi</i> Borovec & Skuhrovec, 2017	R
<i>Epistomius colonnellii</i> Borovec & Skuhrovec, 2017	A
<i>Epistomius janaki</i> Borovec & Skuhrovec, 2017	A
<i>Epistomius natalensis</i> Borovec & Skuhrovec, 2017	R
<i>Epistomius ngomiensis</i> Borovec & Skuhrovec, 2017	R
<i>Epistomius niger</i> Borovec & Skuhrovec, 2017	R
<i>Epistomius wanati</i> Borovec & Skuhrovec, 2017	R

Druhy žijící na travních porostech savan

<i>Lyalinus bimaculatus</i> Borovec, 2018	R
<i>Ephimerostylus loebli</i> Borovec, 2018	R

Druhy žijící v kořenech keřů sukulentního buše

<i>Cervellaea coheni</i> Borovec & Meregalli, 2020	R
<i>Namaquania andreae</i> Borovec & Meregalli, 2020	R
<i>Philetaerobius endroedyi</i> Borovec, Oberprieler & Meregalli, 2018	A
<i>Philetaerobius garibebi</i> Borovec, Oberprieler & Meregalli, 2018	A
<i>Philetaerobius louwi</i> Borovec, Oberprieler & Meregalli, 2018	A
<i>Philetaerobius nidicola</i> Marshall, 1923	A
<i>Springbokia sacculus</i> Borovec & Meregalli, 2020	R

Druhy žijící na kořenech rostlin ve fynbosu

<i>Barclayanthus micros</i> Borovec & Skuhrovec, 2019	R
<i>Barclayanthus cooteri</i> Borovec & Skuhrovec, 2019	R
<i>Cederbergia indecora</i> Borovec & Meregalli, 2020	R
<i>Eudraces barclayi</i> Borovec & Nakládal, 2018	A
<i>Oxymorus antennalis</i> Borovec & Meregalli, 2020	R
<i>Oxymorus johnprinei</i> Borovec & Meregalli, 2020	R
<i>Oxymorus minor</i> Borovec & Meregalli, 2020	R
<i>Oxymorus obesus</i> Borovec & Meregalli, 2020	R
<i>Oxymorus oculatus</i> Borovec & Meregalli, 2020	R
<i>Oxymorus rikae</i> Borovec & Meregalli, 2020	R
<i>Oxymorus strictifrons</i> Borovec & Meregalli, 2020	R
<i>Oxymorus sulcaticollis</i> Borovec & Meregalli, 2020	R
<i>Oxymorus uitkyk</i> Borovec & Meregalli, 2020	R

Druhy žijících na kořenech na travnatých pláních, ve veldu

<i>Basothorhynchus endroedyi</i> Borovec, 2018	R
<i>Coniophloeus robustus</i> Borovec, 2019	R
<i>Coniophloeus obrieni</i> Borovec, 2019	R
<i>Coniophloeus oberprieleri</i> Borovec, 2019	R
<i>Coniophloeus alternans</i> Borovec, 2019	R

<i>Ellimenistes janaki</i> Borovec & Nakládál, 2019	R
<i>Ellimenistes marshalli</i> Borovec & Nakládál, 2019	R
<i>Ellimenistes raucus</i> Borovec & Nakládál, 2019	R
<i>Haptomerus maculosus</i> Borovec & Nakládál, 2019	A
<i>Heisonyx oberprieleri</i> Borovec, 2019	R
<i>Heisonyx griseoviridis</i> Borovec, 2019	R
<i>Lalagetes andersoni</i> Borovec & Skuhrovec, 2018	R
<i>Lalagetes howdenorum</i> Borovec & Skuhrovec, 2018	R
<i>Lalagetes sarkae</i> Borovec & Skuhrovec, 2018	R
<i>Lalagetes zitae</i> Borovec & Skuhrovec, 2018	R
<i>Pentatrachyphloeus andersoni</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus baumi</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus brevithorax</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus bufo</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus endroedyi</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus exiguus</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus frici</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus grobbelaarae</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus hanzelkai</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus holubi</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus howdenae</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus hystrix</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus insignicornis</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus kalalovae</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus kuscheli</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus laevis</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus lajumensis</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus leleupi</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus lesothoensis</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus machulkai</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus marshalli</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus muelleriae</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus musili</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus ntinini</i> Borovec & Skuhrovec, 2019	R

<i>Pentatrachyphloeus oberprieleri</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus pavlicai</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus rudyardi</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus schoemani</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus soutpansbergensis</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus spinimanus</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus stingli</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus tenuicollis</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus tuberculatus</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus vavrai</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus vossi</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus vrazi</i> Borovec & Skuhrovec, 2019	R
<i>Pentatrachyphloeus zikmundi</i> Borovec & Skuhrovec, 2019	R
<i>Porpacus wanati</i> Borovec, 2019	R

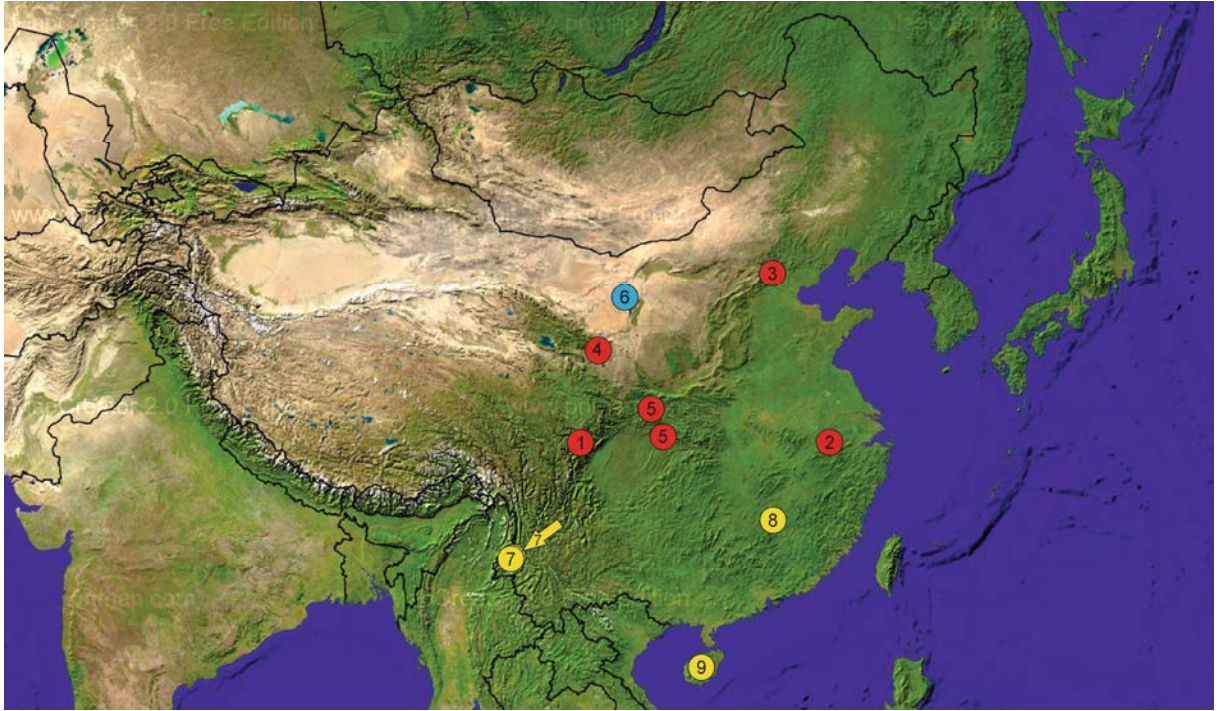


Mapa 2. Nově popsané druhy Afrotropické oblasti: *Afromuelleria* (zeleně): 1. *A. awelani*, 2. *A. baobab*, 3. *A. limpopo*, 4. *A. venda*; *Barclayanthus* (tyrkysově): 5. *B. micros*, 6. *B. Cooteri*; *Basothorhynchus* (bíle): 7. *B. endroedyi*; *Cederbergia* (fialově): 8. *C. indecora*; *Cervellaea* (žlutě): 9. *C. coheni*; *Coniophloeus* (hořčičně): 10. *C. alternans*, 11. *C. oberprieleri*, 12. *C. obrieni*, 13. *C. robustus*; *Eudraces* (růžově): 14. *E. barclayi*; *Ellimenistes* (světle okrová): 15. *E. janaki*, 16. *E. marshalli*, 17. *E. raucus*; *Epistomius* (tmavě modře): 18. *E. bulirschi*, 19. *E. colonnellii*, 20. *E. janaki*, 21. *E. natalensis*, 22. *E. ngomiensis*, 23. *E. niger*, 24. *E. wanati*; *Heisonyx* (světle zeleně): 25. *H. griseoviridis*, 26. *H. oberprieleri*; *Janakius* (tmavě fialově): 27. *J. sylvaticus*; *Lalagetes* (světle růžová): 28. *L. andersoni*, 29. *L. howdenorum*, 30. *L. sarkae*, 31. *L. zitae*; *Namaquania* (světle hnědá): 32. *L. andreaei*, *Oxymorus* (šedě): 33. *O.*

uitkyk, 34. *O. antennalis*, 35. *O. johnprinnei*, 36. *O. minor*, 37. *O. obesus*, 38. *O. oculatus*, 39. *O. rikae*, 40. *O. strictifrons*, 41. *O. sulcaticollis*; *Pentatrachyphloeus* (červeně): 42. *P. andersoni*, 43. *P. brevithorax*, 44. *P. bufo*, 45. *P. endroedyi*, 46. *P. exiguus*, 47. *P. frici*, 48. *P. globbelaarae*, 49. *P. hanzelkai*, 50. *P. holubi*, 51. *P. howdenae*, 52. *P. hystrix*, 53. *P. insignicornis*, 54. *P. kalalovae*, 55. *P. kuscheli*, 56. *P. laevis*, 57. *P. lajumensis*, 58. *P. leleupi*, 59. *P. lesothensis*, 60. *P. machulkai*, 61. *P. marshalli*, 62. *P. muelleriae*, 63. *P. musili*, 64. *P. ntinini*, 65. *P. oberprieleri*, 66. *P. patruelis*, 67. *P. pavlicai*, 68. *P. rudyardi*, 69. *P. schoemani*, 70. *P. soutpansbergi*, 71. *P. spinimanus*, 72. *P. stingli*, 73. *P. tenuicollis*, 74. *P. tuberculatus*, 75. *P. vavrai*, 76. *P. vossi*, 77. *P. vrazi*, 78. *P. zikmundi*; *Philetaerobius* (tmavě šedě): 79. *P. louwi*, 80. *P. endroedyi*, 81. *P. garibebi*; *Porpacus* (tmavě modře): 82. *P. wanati*; *Springbokia* (šedo modrá): 83. *S. sacculus*; *Ascopus* (zeleně): 84. *A. girardi*; *Ephimerostylus* (modrobíle): 85. *E. loebli*; *Haptomerus* (červenobíle): 86. *H. maculatus*; *Lyalinus* (světle šedě): 87. *L. bimaculatus*; *Tapinomorphus* (modře): 88. *T. franzi*, 89. *T. angolanus*, 90. *T. kudrnai*, 91. *T. latipennis*, 92. *T. verunkae*.

Palearkt – druhy žijící v lesní hrabance

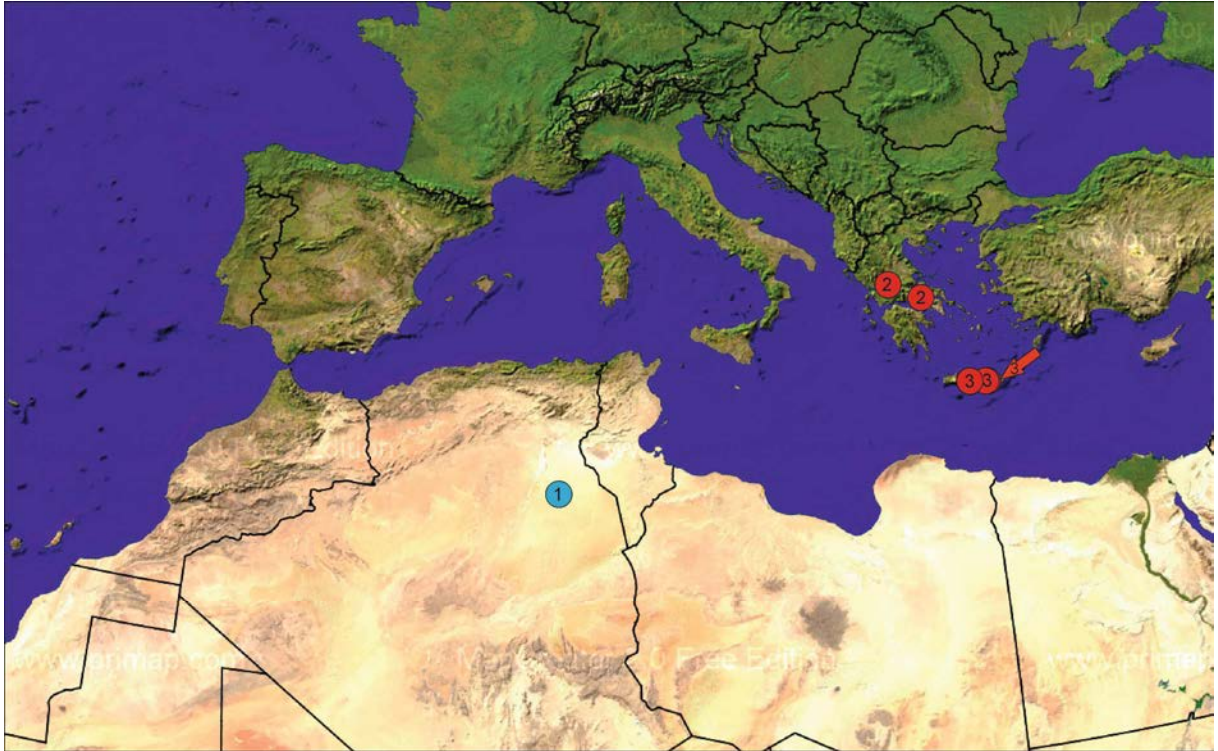
<i>Pseudocneorhinus angustus</i> Ren, Borovec & Zhang, 2019	R
<i>Pseudocneorhinus glaber</i> Ren, Borovec & Zhang, 2019	A
<i>Pseudocneorhinus hlavaci</i> Ren, Borovec & Zhang, 2019	R
<i>Pseudocneorhinus obliquehumeralis</i> Ren, Borovec & Zhang, 2019	R
<i>Pseudocneorhinus setosicallus</i> Ren, Borovec & Zhang, 2019	A
<i>Rhinodontodes alashanensis</i> Ren, Borovec & Zhang, 2020	R
<i>Trachyphloeosoma honza</i> Ren, Borovec & Zhang, 2020	R
<i>Trachyphloeosoma jirka</i> Ren, Borovec & Zhang, 2020	R
<i>Trachyphloeosoma martin</i> Ren, Borovec & Zhang, 2020	R



Mapa 3. Druhy lesní hrabanky nově popsané z východní části Palearktu: *Pseudocneorhinus* (červeně): 1. *P. angustus*, 2. *P. glaber*, 3. *P. hlavaci*, 4. *P. obliquehumeralis*, 5. *P. setosicallus*; *Rhinodontodes* (modře): 6. *P. alashanensis*; *Trachyphloeosoma* (žlutě): 7. *T. honza*, 8. *T. jirka*, 9. *T. martin*.

Palearkt – druhy žijící v kořenech různých rostlin v mediterrání macchii

<i>Holcophloeus caldarai</i> Borovec & Košťál, 2018	R
<i>Stomodes benedikti</i> Borovec & Hlaváč, 2018	R
<i>Stomodes dodocunevi</i> Borovec & Hlaváč, 2018	R



Mapa 4. Nově popsané druhy z mediterrání macchie: *Holcophloeus* (modře): 1. *H. caldarai*; *Stomodes* (červeně): 2. *S. benedikti*, 3. *S. dodocunevi*.

6. Diskuze

Hodnocení původních přirozených biotopů je možné nejefektivněji dělat rozborem jejich flóry, anebo fauny. Zatímco rozšíření velkých obratlovců, nejviditelnějších a nejznámějších zástupců živočišné říše, již dnes nelze použít, protože velké obratlovce držíme jen ve velkých národních parcích a na mnoho místech jsou mnohdy reintrodukováni, tak také jejich druhové spektrum je pro mnoho případů nedostačující (např. fauna savců Krkonoš a fauna savců Prahy se v rámci savčích druhů bude lišit jen ve velmi malých procentech), fauna hmyzu se jeví pro takováto využití jako ideální, vzhledem k jejich širokému druhovému spektru a také k možnosti definovat jejich ekologické nároky.

Ani v rámci tak velké skupiny jako je hmyz nejde universálně použít všechny skupiny, protože především létavé druhy hmyzu obývají větší areály a jejich možnosti šíření jsou významně větší. Tím pádem i jejich vazba na původní areály je v mnoha případech těžko vyhodnotitelná. Nelétavé druhy hmyzu, které jsou vázány na přesně určené mikroklimatické

podmínky biotopu, pro toto vyhodnocení skýtají mnohem větší možnosti. Fytofágní nelétavé druhy hmyzu jsou v této oblasti ještě lépe využitelné, protože vyžadují přesnou druhovou skladbu rostlin anebo přesnou kvalitu rozkládajícího se materiálu vázanou na druhovou skladbu rostlinného porostu. Pro toto vyhodnocení skupiny nelétavých, terrikolních nosatců, kteří mají nejen zakrnělá blanitá křídla ale i srostlé krovky a jejichž pohyb je zásadně limitován i morfologií zkrácených robustních končetin, jsou proto ideální modelová skupina.

Na druhou stranu právě tato skupina patří k nejméně a nejhůře zpracovaným nosatcům z pohledu taxonomie. To je zřejmé jak z mizivého množství literárních údajů, tak také z toho, že dosud nasbíraný materiál v muzeích je uložen z více než 90 % mezi zatím neurčenými a v mnoha případech také nepopsanými taxony. Materiál ze sukulentního buše a polopouští Severního Kapska ve všech sbírkách muzeí chybí, protože prosev v těchto extrémních suchých podmínkách je velmi náročný, a málo úspěšný. Nosatci podčeledi Entiminae a Cyclominae jsou téměř výlučně jediní nosatci, kteří v této oblasti žijí, protože pro nepolyfágní nosatce žijící na nadzemních částech rostlin v této oblasti chybí živné rostliny.

Množství materiálu, který je z daného území unikátní, byl sbírán metodou nočního smyku, anebo nočního sklepávání keřů. Jedná se o metodu propracovanou teprve v nedávných desetiletích, která nebyla dříve, na rozdíl např. od nočních sběrů do světelných pastí, používána (Jaromír strejček, pers. comm.) Tato metoda nebyla dříve v podmínkách sběrů v Jihoafrické republice používána (Ruth Müller, pers. comm.) Tuto metodu lze uplatnit pouze v místech s dostatečným porostem možných hostitelských rostlin, v době mimo obvyklý silný večerní vítr a jen v krátkém období, než teplota klesne o desítky stupňů k hodnotám tak nízkým, že hmyz ztrácí aktivitu.

U sledované skupiny nosatců podčeledi Entiminae, ve které lze množství terrikolních druhů nalézt (dosud popsané triby Embrithini, Oosomini a Trachyphloeini), bylo dosud známo a popsáno jen 15 druhů v 6 rodech, z toho 4 rody byly palearktické. Autor této disertační práce před vznikem této studie přidal ještě 5 druhů ve 2 nových rodech (Borovec & Oberprieler 2013, Borovec & Meregalli 2013), v článcích zahrnutých do této práce bylo popsáno dalších 104 nových druhů, 12 nových rodů a 1 nový tribus.

Autoři předchozích popsaných taxonů vycházeli z příliš malého množství materiálu na druhové úrovni, aby měli důvod nové rody pro těch několik málo nových druhů popsat. Taxonomie té doby vycházela také z omezeného počtu sledovaných znaků, neopírala se o anatomické znaky, a v době XIX. století byla také všeobecně rozšířená tendence popisovat mimopalearktické druhy pod jmény palearktických rodů.

Boheman (1842) tak jím nově popsané jihoafrické druhy zařadil do Palearktického rodu *Trachyphloeus*, vzhledem ke znakům typickým pro terrikolní způsob života. Do rodu *Trachyphloeus* tak byly v té době zařazovány všichni drobní, terrikolní nosatci vzhledem k robustním termináliím, specifické stavbě nosce, apod. Na základě analýzy znaků na nosci, zadních holeních, zadečkových člancích a genitálií především samic byly Bohemanem popsané druhy přeřazeny do 5 již popsaných rodů v tribu Embrithini, jeden druh do rodu dosud nepopsaného (Borovec & Skuhrovec 2017a, Borovec 2019a, viz kap. 9.1.3 a 9.1.8). Do stejné kategorie patří i přeřazení druhů, popsaných Fähräusem (1871), viz (Borovec & Skuhrovec 2017a, viz kap. 9.1.3).

Marshall (1923) použil stejné znaky konvergence terrikolního nosatce pro popis nového druhu z Mozambiku, který se ale detailním hodnocením znaků od palearktického rodu *Trachyphloeus* odlišuje, a byl tak přeřazen do rodu *Glyptosomus*, tribus Embrithini (Borovec & Skuhrovec 2017a, viz kap. 9.1.3).

Hoffmann (1963) popsal nový druh a rod ze západní Afriky, který zařadil do tribu Cneorhinini, ve kterém je hodnocen i dnes. Vzhledem k četnosti popsaných taxonů přehlédl kongenerické znaky s rodem *Ascopus* Marshall, se kterým byl tento rod synonymizován (Borovec & Perrin 2019, viz kap. 9.1.4). V r. 1965 Hoffmann z oblasti Kilimandžára popsal i nový druh rodu *Tapinomorphus*, který zařadil do palearktického rodu *Cathormiocerus*, neboť rod *Tapinomorphus* byl v té době téměř neznámý rod s několika druhy. V zařazení Hoffmanna bylo využito charakteristických znaků terrikolních nosatců k rodovému zařazení, bez studia dalších detailních znaků jako jsou tykadlové rýhy, apod.

Voss (1959) v rodě *Trachyphloeus* popsal nový druh, vzhledem k jeho výjimečné adaptaci a zvláštním strukturám povrchu těla. Detailní znaky ale charakterizují tento druh jako příslušníka rodu *Platycopes*, kam byl přeřazen Borovcem a Skuhrovcem (2017a, viz kap. 9.1.3). *Platycopes* patří do v době popisu jiné podčeledi (Brachyderinae), než kam patří rod *Trachyphloeus*.

Voss (1962) popsal z Demokratické republiky Kongo nový druh a rod tribu Trachyphloeini, který tvoří druh již dříve popsaného rodu *Phaylomerinthus* Schoenherr, známý do té doby jen z Jižní Afriky. Do tohoto rodu byl společně s dalšími druhy přeřazen Borovcem a Skuhrovcem (2017a, viz kap. 9.1.3), a s tímto rodem byl i Vossův rod *Atrachyphloeus* synonymizován (Borovec & Skuhrovec 2017a, viz kap. 9.1.3).

Hoffmann (1968) z republiky Kongo popsal zcela výjimečný druh v rodě *Trachyphloeus*, zařazený do tohoto rodu opět podle vnějších znaků charakteristických pro terrikolní způsob života. Tento druh se naprosto odlišuje od rodu *Trachyphloeus*, ale i tribu

Trachyphloeini, a tvoří nový rod společně s pěti dalšími, nepopsanými druhy, patřící do tribu Peritelini (Borovec & Skuhrovec, 2017a, viz kap. 9.1.3).

Voss (1974) popsal z lesů Kapského poloostrova nový druh tribu Trachyphloeini, zařazený podle několika podobných znaků do rodu *Trachyphloeosoma* Wollaston. Tento druhově nepočetný rod ovšem obývá jen orientální oblast a jižní část východního Palearktu (Ren et al. 2020, viz kap. 9.2.2), a patří k dosud nepopsanému rodu známého jen ze Západního Kapska, kam patří ještě více než 10 nepopsaných druhů (Borovec & Skuhrovec 2017a, viz kap. 9.1.3).

Zbytek velmi početné skupiny terrikolních nosatců nebyl před vznikem článků zařazených do této disertační práce popsán. Jejich zařazení do tribů a rodů bylo tedy provedeno až v recentní době, v rámci publikací zařazených do této disertační práce, a o jejich taxonomickém postavení tak nejde diskutovat jako o již publikovaných datech. Další část nově nasbíraného materiálu i materiálu zpracovaného z muzejních sbírek a nezařazených do autorem již publikovaných článků bude teprve taxonomicky zpracována, popsána a pojmenována, a také charakterizována podle bionomických nároků.

Pro studium nosatců jsou důležité kopulační orgány samců i samic, které v případě druhů s větší variabilitou morfologických znaků pomáhají druh jednoznačně vymezit, anebo v případě skupin druhů velmi podobných vytváří další podpůrný argument pro stanovení validity. Vnitřní struktury použité pro hodnocení zařazení do rodů mají pro rekonstrukci fylogeneze velký význam. Vnější znaky jsou pod silným evolučním tlakem podmínek prostředí a je mezi nimi velká řada homoplasíí. Zvláště u terrikolních druhů, kde podmínky prostředí jsou celoročně více méně konstantní, a také mikroklimatické podmínky lesní hrabanky jsou v různých částech světa velmi podobné. Vnitřní struktury, a částečně i znaky na ventrální části těla, které tomuto tlaku nepodléhají, zachovávají mnohem více plesiomorfnní znaky a dají se velmi dobře využít k fylogenetickým analýzám.

Z tohoto pohledu jsou znaky na samičích genitáliích ještě významnější, než znaky na samčích genitáliích, které jsou jinak v literatuře hojně používány. Velký význam samčích genitálií je především pro druhové rozlišení, zatímco samičí genitálie nesou znaky, které lze využít i pro naddruhovou problematiku. Důležitý je v tomto směru ovipositor, kladélko, které využil pro naddruhovou problematiku podčeledi Cyclominae využil např. Oberprieler (2010), ale také samičí 8. sternit, který tvoří funkční výztuhu kladélka. Tyto orgány a znaky nebyly dosud pro hodnocení Entiminů využívány, jejich popis a ilustrace jsou v tomto směru u studovaných tribů originální.

Na základě použití obou metod analýzy, molekulárních dat i morfo-anatomických dat, je možné diskutovat k výhodám i nevýhodám použití obou metod:

Výhody využití morfo-anatomických dat:

Do celkové analýzy lze zahrnout veškerý materiál, včetně historických kusů a typového materiálu. Morfo-anatomické znaky lze vyhodnotit a do data matrix zahrnout na základě jednoduché manipulace s materiálem. Celkově zahrnutý soubor základních taxonů, druhů, je tedy větší a obsahuje i eventuální materiál malých cladů, který je znám jen ze sbírkového suchého materiálu.

Materiál nemusí být přímo na lokalitě uložen do absolutního alkoholu, pokud možno do druhově oddělených malých zkumavek a držen za velmi nízkých teplot. Tyto požadavky na materiál pro molekulární analýzu nebyl bohužel dodržen u poměrně velkého množství vzorků od jiných sběratelů, kteří ukládali materiál ve směsi různých druhů do cca 50% alkoholu, což se v následném zpracování ukázalo jako nepoužitelné.

Nevýhody využití morfo-anatomických dat:

Vyhodnocení jednotlivých znaků může při pozorování pod mikroskopem podlehnout určité subjektivitě, pokud nejde o měřitelné znaky. Využití pouze vybraných znaků podléhá subjektivnímu hodnocení při výběru těchto znaků, stejně tak pokud jsou pro vyhodnocení využity rozdílné váhy znaků. Využití velkého souboru znaků, jak bylo využito v analýze tohoto souboru (85 znaků) vede k zařazení obrovského množství homoplasí, tedy znaků, které vznikají opakovaně, v různých skupinách znovu nezávisle na sebe, anebo naopak dochází k jejich reversnímu výskytu. Tady se jedná především o různé vnější struktury, jako jsou sety a šupiny na dorsální i ventrální části těla, tedy o znaky, které podléhají nejsnáze přizpůsobování vnějším podmínkám prostředí.

7. Závěr

Ačkoli je situace kolem definice tribů v podčeledi Entiminae velmi chaotická, podařilo se vyhodnotit současný známý materiál terrikolních zástupců této podčeledi, definovat jejich znaky, redefinovat triby (Borovec & Skuhrovec 2019b, 2019a, Borovec & Meregalli 2020, Borovec et al. 2018a, viz kap. 9.1.2, 9.1.13, 9.1.1 a 9.1.11) kam patří zástupci terrikolních Entiminů, byl popsán a definován i nový tribus (Meregalli et al. 2020, viz kap. 9.1.1), na základě morfologických znaků i analýzy molekulárních dat.

Pro současně známé triby byly vytvořeny klíče rodů, které dosud nebyly publikovány (Borovec & Skuhrovec 2019b, 2019a, Meregalli et al. 2020, viz kap. 9.1.2, 9.1.13 a 9.1.1). Klíče byly bohatě ilustrovány, aby bylo umožněno jejich využití pro praxi. Pro každý rod byl publikován samostatný klíč dosud známých druhů včetně jejich dosud známé bionomie a známého rozšíření (Borovec 2019a, viz kap. 9.1.8, Borovec & Nakládal 2018, 2019a, 2019b, viz kap. 9.1.20, 9.1.17 a 9.1.16, Borovec & Perrin 2019, viz kap. 9.1.4, Borovec & Skuhrovec 2017b, 2018a, 2018b, 2019a, 2019b, viz kap. 9.1.5, 9.1.14, 9.1.6, 9.1.13 a 9.1.2 a Borovec et al. 2018a, viz kap. 9.1.11).

Byla diskutována metoda vyhodnocení morfo-anatomických znaků s analýzou molekulárních dat. Obě metody vedou ke stejným výsledkům, metoda založená na molekulárních datech byla určena jako objektivnější a přesnější, jdoucí do většího detailu, na druhou stranu náročnější na získání vstupních dat, protože lze použít jen z nově nasbíraného materiálu specificky pro toto vyhodnocení konzervovaného a neumožňuje tak zařazení taxonů známých jen ze staršího sbírkového materiálu (Meregalli et al. 2020, viz kap. 9.1.1). Vzhledem k rozsahu práce nebyla analýza morfologických dat v práci Meregalli et al. (2020) blíže komentována. Ze stejného důvodu nebyly nové druhy v práci popsány a jejich formální popisy vyjdou až v samostatných revizích jednotlivých rodů.

Všechny druhy zařazené do práce byly rozděleny do skupin, podle preferovaných mikroklimatických podmínek, tedy podle typů biotopů, které obývají. Toto rozřídění umožňuje následné využití těchto druhů pro charakteristiku lesní a nelesních biotopů, pro jejich využití jako významných bioindikátorů pro původní lesní porosty.

Propracováním sběratelských metod, návštěvou mnoha nových a dosud neprosbíraných lokalit, ale také vysortováním dosud neurčeného materiálu v muzeích bylo objeveno velké množství dalšího materiálu, který bude tvořit podklad pro další, následné studie. Soubor 24 článků, které pro účely této studie byly publikovány, tvoří tedy základ pro jakékoli další zpracování terrikolních Entiminů a tvoří základní strukturu vyšších taxonů, ze které lze vycházet a na kterou jde navazovat. Samotný počet zpracovaných, a také popsáných a pojmenovaných druhů, tvoří základ check-listu terrikolní fauny sledované oblasti.

Kompletní katalog popsáných taxonů nosatců včetně rozšíření inicioval autor této disertační práce, bude publikován v kolektivu všech současných specialistů na taxonomii této nadčeledi, ale vzhledem k tomu, jak pracný úkol to představuje, plánovaný termín a odevzdání první verze rukopisů je až rok 2025.

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9. Publikované výsledky

9.1 Afrotropická oblast

The Namaini, a new weevil tribe with six new genera from South Africa (Coleoptera: Curculionidae: Entiminae)

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Based on a phylogenetic analysis of a large number of mainly undescribed edaphic Entiminae from South Africa, a new tribe of entimine weevils is described, which includes six new genera. Taxa included in **Namaini trib. nov.** are clustered into seven clades that are used to delimit the following genera: *Nama*, type genus of the tribe, plus the new genera *Cederbergia gen. nov.*, *Cervellaea gen. nov.*, *Namaquania gen. nov.*, *Pentamerica gen. nov.*, *Springbokia gen. nov.* and *Yamalaka gen. nov.* A key to the genera is given and four new species are described.

ADDITIONAL KEYWORDS: Bayesian Inference – edaphic weevils – new taxa – phylogenetic analysis – South Africa.

INTRODUCTION

Recent research on weevils in previously poorly explored regions has resulted in an increase of the species number for that region by a factor of about five (Oberprieler *et al.*, 2007; Meregalli, 2013, 2020). When a single genus has been studied, particularly of edaphic, or of any non-vagile, apterous weevils, the species number has increased by a factor of 100 or more [e.g. Anderson (2010) for *Theognete* Champion, 1902; Riedel *et al.* (2013); Riedel & Narakusumu (2019) for *Trigonopterus* Fauvel, 1863]. Research specifically designed to sample weevils highly adapted to peculiar, scarcely investigated habitats in regions presenting a high level of biodiversity and endemism generally results in the discovery of large numbers of undescribed taxa, not only at the species- and genus-rank, but occasionally even at higher ranks (Zherikhin,

1987; Oberprieler *et al.*, 2007) and their taxonomic treatment can be challenging (see for example Tänzler *et al.*, 2012). A simple nomenclatural description of the new taxa increases knowledge on biodiversity of these regions and helps characterize the local ecosystems; however, in view of the still uncertain classification of the Curculionoidea (Oberprieler *et al.*, 2007), it may result in a somewhat subjective, opinion-based taxonomy, that lacks a rigorous ranking of the new taxa (Jordal *et al.*, 2014). Preliminary phylogenetic assessment of the new taxa, inferring their relationships and suggesting their placement within a framework of the present day classification, is therefore desirable, so that the new taxa can be described based on sound relationships (Pons *et al.*, 2006; Tänzler *et al.*, 2012).

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THE NAMA-GROUP PLAN OF THE PROJECT

TACKLING THE TAXA OF THE NAMA-GROUP

The genus *Nama* Borovec & Meregalli, 2013 was described for four species of small edaphic

Entiminae, collected in Richtersveld National Park, Northern Cape Province, Republic of South Africa (Borovec & Meregalli, 2013). Further collecting trips in the Republic of South Africa and southern Namibia, as well as the examination of extensive material deposited in private collections and in some European, North American and South African museums yielded specimens from over 60 more populations, whose morphology suggested possible affinities with the species already described in the genus *Nama*. All these specimens are defined here as belonging to the “*Nama*-group”.

Several questions arose when we tried to infer a proper classification of these taxa. First of all, are all these apparently related taxa truly belonging to a monophyletic unit? And, if any clade is delimited, in which tribe should these be placed? Is it possible to recognize within the clade, single units separated by discontinuities to be regarded as distinct genera and how many different species can be recognized among these specimens?

We had to address several biases and difficulties: (1) only two taxa sharing morphological similarities with the *Nama*-group were previously known: *Trachyphloeosoma brevicolle* Voss, 1974 and *Trachyphloeus brevis* Boheman, 1842 (which do not belong to the genera to which they were first assigned), all the others being undescribed; (2) no other apparently related taxa from the western part of South Africa (actually, from the entire sub-Saharan region) are known; and (3) there is no phylogenetic reconstruction for any of the South African members of the subfamily. When the four species of *Nama* were described, it was already doubtful that they could be referred to as a single genus, because of the great morphological variation among them (Borovec & Meregalli, 2013). The large number of new taxa that were subsequently sampled reinforced this opinion and underlined the great diversity and complexity of the *Nama*-group. Trying to identify monophyletic units, we have performed a phylogenetic analysis of these edaphic Entiminae, based on the sequences of the mitochondrial cytochrome c oxidase subunit I (*mt-Cox1* hereafter). The set of species that were analysed included sequences of a few other edaphic South African Entiminae found during our expeditions, not always identified at the species level and possibly undescribed, but whose morphology allowed their identification at genus rank: *Cycliscus* sp., *Phaylomerinthus* sp. n. 1 and *Ph.* sp. n. 2 (Embrithini) and *Oosomus* sp. (Oosomini). *Philetaerobius nidicola* Marshall, 1923 [Entiminae *incertae sedis* (Borovec et al., 2018)], an Entiminae strongly differentiated morphologically, was used as one of the outgroups.

RELATIONSHIPS OF THE NAMA-GROUP WITHIN THE SUBFAMILY ENTIMINAE

The relationships of the *Nama*-group at the tribal rank in the subfamily Entiminae were assessed using the data resulting from the molecular analysis. Adaptive morphological characters in these highly specialized edaphic weevils are often subject to too high a level of homoplasy to be truly informative when applied to higher rank taxa. Terricolous entimines, regardless of their phylogenetic affinities, are in fact generally wingless, often with more globular elytra, with, in dorsal view, a declivity covering the apex of the elytra, often broad, erect or suberect setae, eyes with a reduced number of ommatidia, short and robust antennae, legs and tarsi, with the apex of protibiae often armed with distinct stout spines and sometimes also lobed, metacoxae shifted from the longitudinal axis of body to the elytral borders and a wide and obtuse metaventral process. We retrieved *mt-Cox1* sequences, obtained with the same primers that we used, of taxa belonging to several tribes of the Entiminae from GenBank. We choose a species of the type-genus of the tribe, when available, or one of another genus of the same tribe, if this genus was included in a clade together with the type genus of the tribe in Gillett et al. (2018), or if the two genera are closely related morphologically. As the outgroup, *Bagous exilis* du Val, 1854, belonging to the subfamily Bagoiinae and not related to the Entiminae, was chosen. Four species among those belonging to the *Nama*-group were added to the Entiminae-tribe analysis, to understand if they clustered in an independent clade or were associated with another tribe.

PHYLOGENETIC STRUCTURE OF THE NAMA-GROUP

In our study we tried to circumscribe monophyletic units to be considered as genera, according to the results of the molecular phylogeny based on *mt-Cox1*. The sequence data of this gene have been extensively used for recognizing relationships, and also for tackling hyperdiverse and mostly undescribed faunas (Tänzler et al., 2012). The molecular region chosen generally proved to be a powerful tool in phylogenetic studies, particularly to recognize low-rank affinities, even though in some individual lineages high error rates have been detected (Hendrich et al., 2010) and some criticism was raised. However, in the Entiminae, the mitochondrial genome proved to offer sound information on reciprocal affinities (Gillett et al., 2018).

As a further outgroup we used the Palaearctic *Trachyphloeus spinimanus* Germar 1824, because the genus *Nama* shares several morphological traits with the Trachyphloeini: a rostral epifrons with well-defined

and visible borders along the entire length, at base as wide as the space between anterior borders of eyes, dorsally placed antennal sockets, a rostrum that is wider than long, posteriorly continuous with the head, not separated from it by a transverse sulcus, trisetose mandibles, elytra without laterally protruding humeral calli in dorsal view, the entire dorsal and ventral part of body densely squamose, all femora unarmed, tibiae with short mucro, lacking spurs, metatibiae lacking corbels and short and robust legs and antennae, all the species are wingless.

P-DISTANCE ANALYSIS

The p-distance among the clades and among taxa was evaluated for both base- and amino acid sequences to evaluate the intergeneric and interspecific variation. There is no clear-cut threshold to discriminate between inter- and intraspecific variation, even though differences below 3–4% (= p-distance 0.03–0.04) in the sequence of *mt-Cox1* for allopatric populations can usually be applied to metapopulations of the same species, and differences of more than 6% are considered as good indicators of distinct species (Hebert *et al.*, 2003). These data were confirmed by other studies carried out on apterous, specialized and scarcely moving weevils [i.e. Meregalli *et al.* (2018) for *Dichotrachelus*]. However, Riedel *et al.* (2010) found that intraspecific variation could even reach 8.8% in *Trigonopterus*, and interspecific variation in that genus was also high, around 20%.

The procedures implemented to the study allowed us to identify the taxa belonging to the *Nama*-group, to assess its monophyly and to infer its phylogenetic structure, recognizing the monophyletic groups that were used to delimitate taxa at genus-rank.

MATERIAL AND METHODS

SAMPLE COLLECTION

Field work was conducted in October 2011 (Western Cape, Northern Cape), September 2012 (Western Cape, Northern Cape, southern Namibia), September 2013 (Western Cape, Northern Cape, southern Namibia), November 2016 (Western Cape, Northern Cape), November 2018 (Northern Cape, Western Cape) and October 2019 (Western Cape). The main collecting method used was sifting below large shrubs of the Euphorbiaceae, mainly *Euphorbia dregeana* E.Mey. ex Boiss. and *Euphorbia mauritanica* L., under Aizoaceae, mainly *Aizoon africanum* (L.) Klak, and occasionally below large shrubs of other flowering plant families. In a few instances some specimens were found by late evening and night sweeping of grasses. Sample locations were selected based on the

presence and number of large shrubs, offering good shelter to arthropods, and on the presence of good litter accumulation. About 5–10 L of soil were collected at each locality (quantity depending on the number of shrubs and characteristics of the litter below them) and placed in a thin layer in the sun for half an hour, to directly collect specimens that started moving. Soil was then stored in cotton bags, that were carefully opened twice a day to look for specimens, for at least 1 week, or until no additional specimens appeared, and then safely disposed of. Weevils climbed up towards the top of the bag, and were collected in tubes with ethyl acetate or with absolute ethanol. A three-digit field number was assigned to each morphospecies of edaphic weevil: first digit, the expedition (1 = 2011, 2 = 2012, 3 = 2013, 4 = 2016, 5 = 2018, 6 = 2019); second and third digit, the sequential number of the collecting site. When more than one morphospecies was found at a site, a letter was added to differentiate them (i.e. 335_a and 335_b).

Collected specimens were prepared dry on mounting cards. Dissected female genitalia were embedded in Solakryl BMX, and dried male genitalia were glued to the same mounting card as the insect, or conserved in glycerol in mini vials pinned together with the respective specimen.

PHYLOGENETIC ANALYSIS

Specimens used for molecular analysis were usually preserved in small vials in ethanol, but in some cases they were mounted dry on cards. Such specimens used for the study were first rehydrated in 2 mL of a solution composed of 10 mM Tris-HCl pH 8.5, 30 mM NaCl, 5 mM EDTA for 24 h. Total DNA was extracted by placing the whole animal body in 400 µL of 5 M guanidine-isothiocyanate. The head + pronotum was separated from the rest of the body to maximize DNA extraction. Specimens were later preserved in a vial with 95% ethanol, or remounted and glued onto a card. Removal of proteins was accomplished by adding 400 µL of 4 M sodium perchlorate followed by chloroform extraction. Total DNA was precipitated from the upper phase by isopropyl alcohol precipitation and resuspended in TE buffer. A fragment of mitochondrial cytochrome oxidase subunit I (*mt-Cox1*) was amplified with primers based on Folmer *et al.* (1994) modified as in Astrin & Stüben (2008): fw: LCO1490-JJ (sequence 5'→3': CHACWAAYCATAAAGATATYGG); rev: HCO2198-JJ (sequence 5'→3'AWACTTTCVGG RTGVCCAAARAATCA). All PCRs were performed in a volume of 20 µL with HotStarTaq Master Mix (Qiagen). Amplification of DNA was done as follows: 15 min of initial denaturation (95 °C) followed by ten cycles of 30 s at 94 °C, 45 s at 60 to 50 °C (lowering the annealing temperature in each cycle by 1°C), 2 min at

72 °C followed by 30 cycles of 30 s at 94 °C, 45 s at 50 °C, 2 min at 72 °C and a final extension cycle of 15 min at 72 °C. The reaction products were purified by agarose gel electrophoresis and successive purification from the gel. Sequencing was performed by an external service (Genechron, Roma). Both strands were sequenced. Forward and reverse chromatograms were checked with Chromas (<http://technelysium.com.au/wp/chromas/>) using default parameters and ambiguities were corrected manually. The *mt-Cox1* sequences had no indels after alignment, and no stop codons were detected, so the presence of NUMT pseudogenes was excluded. Multiple sequence alignment of both strands was performed with MEGA-X (Tamura *et al.*, 2013), after reversing and complementing the reverse strand, with the Muscle alignment option. The sequences were trimmed at the extremes and the final sequences that were used for the analysis were 658 bp long. The correspondence with the codons was obtained by deleting the first nucleotide, thus the analyses were conducted on a segment of 657 bp. All the sequences used for the phylogenetic analysis were deposited in GenBank. Since it was not possible to examine the chromatograms of the sequences retrieved from GenBank, their quality was checked by comparing for congruity, when possible, with the sequences of different accessions of the same species, or of related species of the same genus. Only sequences differing from the others in only few sites were used.

Pairwise distance was calculated with MEGA-X, implementing the p-distance model. Bayesian inference (BI hereafter) was estimated using MrBayes v.3.2. Two runs with four chains were run for 2 000 000 generations, sampling every 500 generations. The chains were left free to sample all the models of the GTR family using reversible jump Monte Carlo Markov chain (MCMC) (Huelsenbeck *et al.*, 2004). Heterogeneity of substitution rates among different sites was modelled with a four categories discretized Γ distribution, with a proportion of invariables. The matrix was partitioned so that substitution rates could vary according to the nucleotide position in the codon. The first 25% of generations were discarded (burn-in) and convergence was evaluated with the average standard deviation of split frequencies. Goodness of mixing was assessed looking at the acceptance rate of swaps between adjacent chains, following Ronquist *et al.* (2012). After a first analysis, the temperature was lowered to 0.05 in order to improve swaps between chains. The resulting consensus tree was examined with Figtree (Rambaut, 2014).

There has been considerable debate about the validity of the supports obtained in phylogenetic analyses (Hillis & Bull, 1993; Wheeler & Pickett, 2008). To better evaluate the credibility of the monophyletic groups, we tested each clade on MrBayes by respectively

constraining the clade to be always present (positive constraint) or absent (negative constraint) in the sampled trees, and estimating the difference of the marginal likelihoods of the two analyses [Bayes Factor (BF)]. For some clades whose affinity was scarcely supported, the alternative topologies were also tested. The stepping-stone algorithm (Xie *et al.*, 2011), provided in the Mr Bayes program, was implemented with 50 steps and a total length of 255 000 generations, with the first step discarded as burn-in. A topology was considered as supported when the marginal likelihood of the positive constraint was better than the negative constraint by at least 5 log units, as indicated by Kass & Raftery (1995).

MORPHOLOGICAL SYNAPOMORPHIES

Based on the results of the phylogenetic analysis, all species that were included in the phylogenetic tree were visually examined based on external characters and genitalia to recognize synapomorphies; this to obtain a morphological characterization of the genera. Based on these synapomorphies, all taxa that could not be sequenced were referred to one of the genera.

RESULTS

PHYLOGENETIC ANALYSIS

Most edaphic taxa of the Entiminae that were sequenced, including those previously described in the genus *Nama*, cluster in a maximally supported clade (which is described below as the new tribe Namaini) (Fig. 1). This clade is composed of two major subclades. Subclade A is strongly supported (97% post probability in BI) and is composed of two maximally supported groups (Group 1 and Group 2). Each of these groups includes two clades that we consider here as genera (the new genera *Cervellaea* and *Namaquania* in Group 1, and *Nama* and the new genus *Yamalaka* in Group 2). *Nama* includes *Nama richtersveldiana* Borovec & Meregalli, 2013, the type species, and two of the other three species originally described as *Nama* are placed in the new genus *Yamalaka*. All these clades were strongly supported also by the BF, with values always higher than 10 and even up to 40.

Subclade B is not statistically supported (30% pp), probably due to the uncertain placement of the new genus *Pentamerica* (described below). However, each of the three clades within subclade B is strongly supported, two having maximal support and the third one with 75% pp, and all have high values of the BF. These monophyletic groups represent three more new genera (*Cederbergia*, *Pentamerica* and *Springbokia*).

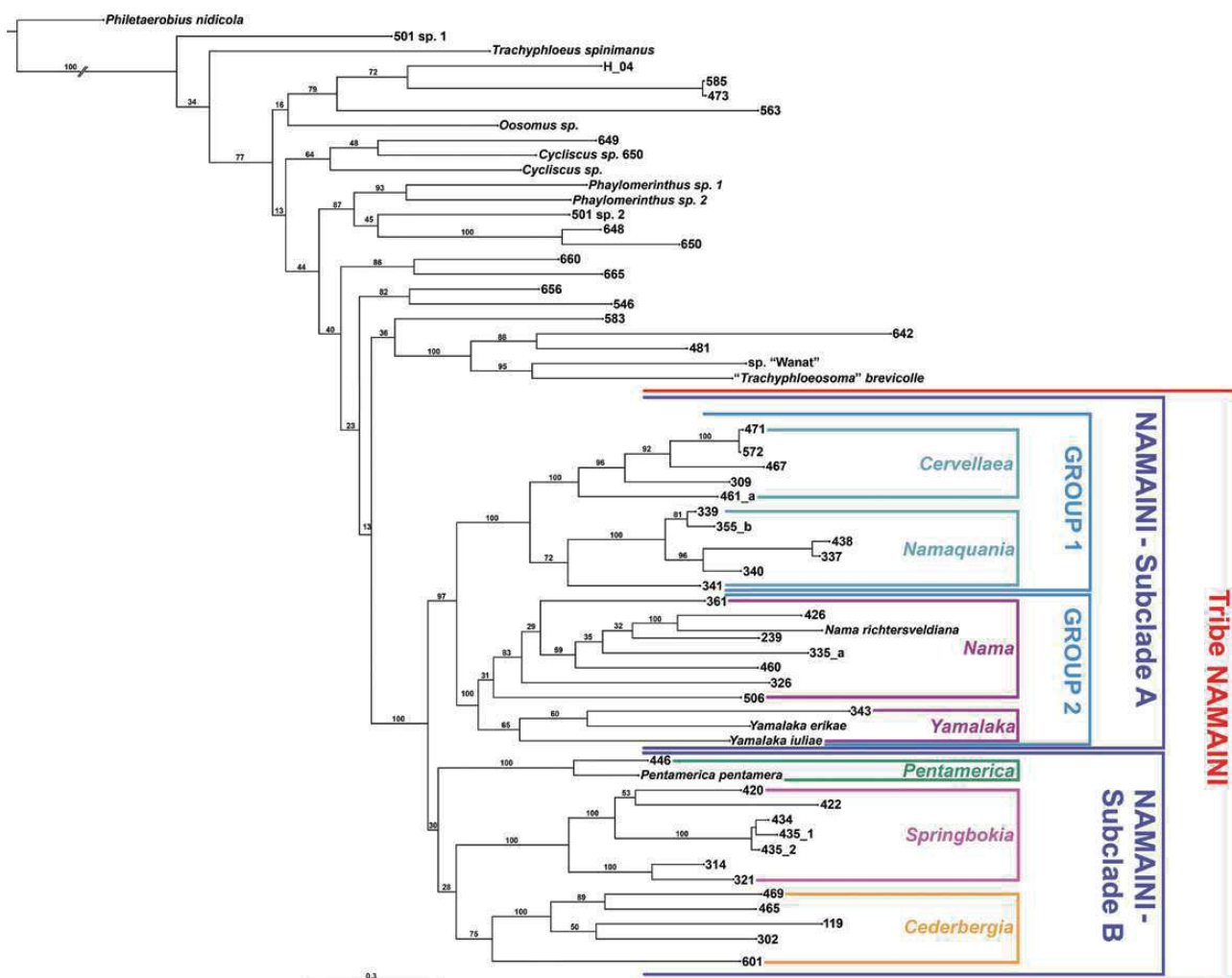


Figure 1. The *Nama*-group phylogeny, Bayesian Inference consensus tree, all branches are shown. Branch post probability support is indicated on the branches, in percentage. Scale bar unit: expected substitutions per site.

The position of *Pentamerica*, that includes the fourth of the species originally described as *Nama*, *Nama pentamera* Borovec & Meregalli, 2013, is tested with the application of the BF, alternatively constraining it to be monophyletic with the genera of Subclade A or with those of Subclade B. The BF vaguely associated it with Subclade A rather than with Subclade B, where it is placed by the BI, but only by two units of marginal likelihood (ML = -14367 vs. -14369), a value not significant according to Kass & Raftery (1995). The affinities between the three genera in Subclade B were also tested, and in this case the BF strongly indicates closer relationships of *Pentamerica* with *Springbokia* rather than with *Cederbergia* (BF = 12, ML = -14372 vs. -14374). A group of species, including “*Trachyphloeosoma brevicolle*”, clusters as sister to the Namaini clade. The other edaphic species that were analysed cluster in various groups, in part corresponding to different

tribes. These species are not discussed in the present paper.

RELATIONSHIPS OF THE NAMAINI WITH OTHER TRIBES OF THE ENTIMINAE

The species of Namaini, as defined by the previous analysis, cluster in a maximally supported clade also in this analysis, with no indication of any relationship with other tribes of the Entiminae (Fig. 2).

P-DISTANCE

The p-distance evaluated between species of the Namaini and the two outgroups, *Philetaerobius nidicola* and *Trachyphloeus spinimanus*, varies between 0.17 and 0.22 with a mean distance of 0.195 and a median distance of 0.191. The p-distance between the two subclades of the *Namaini* is generally

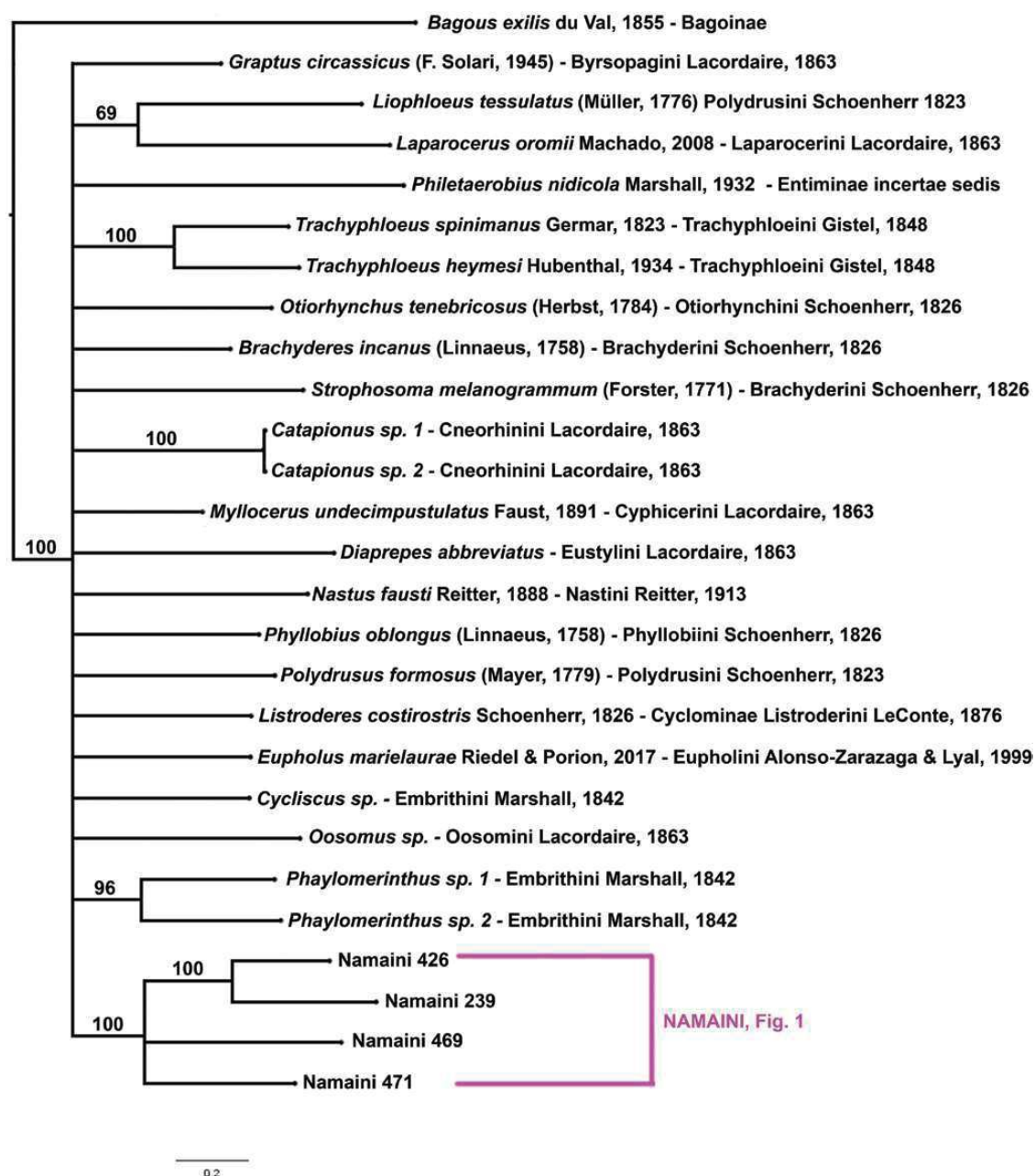


Figure 2. The Namaini tribe in the Entiminae, Bayesian Inference consensus tree (50% majority rule). Branch post probability support is indicated on the branches, in percentage. Scale bar unit: expected substitutions per site.

a little lower, approximately between 0.15 and 0.18. The taxa included in *Cervellaea* differ from those in *Namaquania* approximately by 0.12 to 0.15, whereas the reciprocal difference among taxa of the other genera is generally higher, comprised between 0.15 and 0.18. The interspecific distances among the taxa within each genus varies depending on the taxa, from 0.04 for what appear to be isolated metapopulations of the same taxon, to more than 0.18. Intraspecific distance is only

available for a few taxa, and it is always limited, lower than 0.01. Also, intrapopulation distance is scarce in the few cases that were tested (Table S1).

MT-COX1 SEQUENCES

The aligned sequences of the taxa included in the Namaini were examined with MEGA-X. The sites conserved among all the taxa were 382/657 (53.6%),

and the amino acids (aa) conserved were 173/219 (79%). This confirmed that in the majority of cases the substitution regarded the third nucleotide of the codon, not resulting in a variation of the aa. The rate of variation differed among the genera. *Cervellaea*: sites conserved 511/657 (77.8%), aa 210/219 (95.9%); *Namaquania*: sites conserved 524/657 (79.8%), aa 213/219 (97.6%); *Nama*: sites conserved 427/657 (65%), aa 194/219 (88.6%); *Yamalaka*: sites conserved 492/657 (74.9%), aa 205/219 (93.6%); *Pentamerica*: sites conserved 587/657 (89.3%), aa 229/229 (100%); *Springbokia*: sites 479/657 (72.9%), aa 208/219 (95%); *Cederbergia*: sites conserved 460/657 (70%), aa 207/219 (94.5%). The species of *Cervellaea* shared some molecular synapomorphies, in particular they had a thymine in site 295 of the 657 chain (vs. an adenine in all other taxa of the Namaini), a cytosine in site 296 vs. a guanine in all other taxa, an adenine in site 484 (vs. a cytosine or a thymine) and a thymine replacing a cytosine in site 485. Regarding the aa chain, *Cervellaea* differed from all other taxa of Namaini for a methionine replacing a proline or a leucine in position 162 of the 219 aa long chain and again a methionine replacing a valine or an isoleucine in position 199. The species of *Namaquania*, that, together with *Cervellaea*, formed Group 1 of Subclade A, differed in their sequence from those of the later for an adenine in sites 24 (a thymine in *Cervellaea*) and 471 (a thymine or a cytosine in *Cervellaea*), and a cytosine in sites 484 and 485 (vs. respectively an adenine and a thymine, in *Cervellaea*, respectively). All species of *Nama* and *Yamalaka* (Subclade A, Group 2) shared an adenine in site 241, instead of a cytosine or a thymine, and a thymine instead of a guanine in site 511. In the aa chain, the species of *Nama* had an isoleucine replacing a methionine in position 19, a synapomorphy shared with the species of *Springbokia*, and a methionine replacing a leucine in position 81, in this case the synapomorphy was shared with the species of *Yamalaka*, as is also the case of a serine replacing an alanine in position 171. A few molecular synapomorphies were also found in *Pentamerica*, a thymine replacing a guanine or an adenine in site 472, another thymine replacing a cytosine or an adenine in site 484 and an adenine replacing a cytosine in site 485; the last two substitutions resulting in the replacement of a proline with an isoleucine. In site 496, the two species of *Pentamerica* shared a thymine with all the other taxa of Subclade B (usually a guanine for the species of Subclade A). This was the only molecular synapomorphy shared by all the species of Subclade B and it determined the substitution of an alanine with a serine in position 166 of the aa chain for all these species. All species in *Springbokia* have a thymine replacing an adenine in site 291 (character shared with species 460 of *Nama*). An adenine in site 379

was shared by all the taxa of the genus, and almost all the taxa of *Cederbergia*, whereas in all the other taxa of the Namaini there was a guanine in this site. This determined the substitution of a valine with an isoleucine in the aa chain in position 127. The species in *Cederbergia* shared an adenine in site 352 and a guanine (vs. a cytosine) in site 353, that determined the constant presence of a serine in position 118 of the aa chain (fasta file with the sequences supplied in Table S2).

DISCUSSION

THE NAMA-GROUP RELATIONSHIPS IN THE ENTIMINAE
The species of the *Nama*-group cluster in a clade distinct from all other Entiminae and no relationships with taxa of other tribes of Entiminae were found. The tribal classification of the subfamily Entiminae is still debated, and even its monophyly seems questionable (McKenna *et al.*, 2009; Gillett *et al.*, 2014, 2018). The tribes, as presently defined (Alonso-Zarazaga & Lyal, 1999), can be used only in a historical, traditional sense, and do not represent the evolutionary structure of the subfamily. Relationships among the tribes is contrasting in papers dealing with the Curculionoidea (McKenna *et al.*, 2009; Haran *et al.*, 2013; Gillett *et al.*, 2014). In particular, Gillett *et al.* (2018) demonstrated that most of the tribes, in their present composition, are para- or polyphyletic. Most of the South African genera were referred to tribes native to the Palaearctic region without a critical analysis of the characters. One of the most important attempts at a reclassification of the Afrotropical entimines was by Marshall (1942). Based on chaetotaxy of the mandibles, he split entimines with “otiorhynchine”-type antennal scrobes (scrobes entirely visible in dorsal view, in profile not forming narrow furrow mostly directed downwards) into two main groups: a group with the mandible bearing only three setae and a group where the mandible bears more or less numerous setae. This mandible chaetotaxy seems to reflect relationships and is still used today, for example, for the redefinition of the tribe Embrithini (Borovec & Oberprieler, 2013). Using this character, the Afrotropical entimines with “otiorhynchine”-type scrobes, lacking laterally prominent humeral calli and having trisetose mandibles, were included in the tribes Embrithini, Oosomini, “Peritelini” and “Trachyphloeini”, even though the attribution of the Afrotropical genera to the latter two tribes is questionable. A detailed discussion and a differential diagnosis of the Namaini vs. the other Afrotropical entimine tribes is given in the *Remarks* section of the treatment of the tribe.

Since the *mt-Cox1* analysis shows that no close relationships exist between the *Nama*-group and any of

the other tribes of Entiminae—as defined by their type-genus—of which *mt-Cox1* sequences were available, the *Nama*-group is here assigned to a new tribe, the Namaini.

PHYLOGENETIC LINEAGES IN THE TRIBE NAMAINI

Our study reveals that the tribe Namaini includes seven monophyletic units, each used to define genus-rank taxa.

The two main subclades, Subclade A and Subclade B, that compose the Namaini clade, might suggest that the tribe is composed of two distinct subtribes. However, the second subclade has no statistical support, and indeed the affinities of *Pentamerica* could not be determined. Therefore, a subdivision of the tribe into subtribes is not justified. The two genera composing the first group of Subclade A have maximal support and are clearly well delimited by molecular sequences, with some molecular and morphological synapomorphies. The taxa included in each of the two genera are morphologically uniform, with a p-distance usually around 0.09–0.10. Therefore, the attribution of the taxa whose sequences were not available to *Cervellaea* or *Namaquania* was relatively easy. The relationships of *Nama* with *Yamalaka*, the two genera composing the second groups of Subclade A, are sound. Both genera are composed of relatively well-differentiated taxa, both in their morphology and *mt-Cox1* sequences, with a p-distance of about 0.15. The remaining genera appear to be isolated and their reciprocal relationships could not be clearly disclosed.

The placement of *Pentamerica* is uncertain, since no sound evidence correlating it to either of the two subclades was obtained, neither by the Bayesian inference (associating it to Subclade B, but only with 30% pp) nor by the Bayes factor (associating it to Subclade A, but with BF = 2). The molecular sequences confirm this uncertainty, with the nucleotides of some sites shared with taxa of *Nama* (Subclade A) and those of other sites shared with taxa of *Springbokia* (Subclade B). *Springbokia* is clearly defined by morphology and *mt-Cox1* sequences; the p-distances among the taxa vary between 0.10 and 0.15. Finally, four of the taxa that cluster in *Cedebergia* appear to be reciprocally closely related, also based on their morphology, while the other species, 601, is more isolated, also geographically.

In the present paper the new tribe and the new genera corresponding to these monophyletic units are described. Due to the complexity of the Namaini and the large number of new species, only the type species of each new genus are described here. The other taxa of the various genera are listed with their locality code and their formal descriptions will be the subject of further papers.

In the taxonomic part of the paper only the main diagnosis of all the new taxa have been reported. The

detailed morphological descriptions of each taxon, the discussions on the reciprocal relationships and the differential diagnoses are added in [Supporting Information, File S1](#).

TAXONOMY

Namaini BOROVEC & MEREGALLI, **trib. nov.**

Type genus: *Nama* Borovec & Meregalli, 2013, here designated.

Zoobank registration: urn:lsid:zoobank.org:act:944D0242-515B-4A1E-9C2C-62A14267062E

Diagnostic description. Subfamily Entiminae. Small size, 1.4–4.9 mm; body densely squamose, flightless; rostrum short and wide, posteriorly continuous with head; epifrons at base reaching inner margins of eyes, mostly with U- or V-shaped stria on dorsum; frons with a few exceptions densely squamose; antennal sockets in dorsal view hardly visible, furrow-shaped to narrowly reniform, laterally slightly to distinctly enlarged posteriad, directed towards eye or above eye; eyes small to middle sized; antennal scapes mostly robust; anterior margin of pronotum laterally without ocular lobes or vibrissae; elytral humeral calli not developed; metaventral process wide, distinctly wider than transverse diameter of metacoxa; femora unarmed; metatibiae lacking corbels; claws free, distinctly divaricate; *Ventrites* densely squamose, only exceptionally glabrous; female sternite VIII with long and slender apodeme terminating at base or inside of plate; gonocoxites with apical styli.

Distribution: South Africa (Western and Northern Cape), Namibia (Karas).

Remarks: The Namaini is a small tribe of entimines, comprising seven genera, six of which are described here. They are native to the south-western part of South Africa and adjacent Namibia. This tribe is clearly delimited by *mt-Cox1* sequences, and it can also be characterized by morphological traits. The new tribe underlines the limits of the traditional practice of referring Afrotropical genera to Palaearctic tribes, a procedure that often leads to polyphyletic taxa, particularly in the case of these wingless, highly adapted and scarcely vagile edaphic species.

Because of the free claws and absence of metatibial corbels, the Namaini could be associated with the Oosomini Lacordaire, 1863, a tribe mainly restricted to South Africa, comprising genera of small- to middle-sized weevils. However, at present it is not clearly delimited and in its present composition it seems to be polyphyletic. Therefore, only species belonging to the

type genus *Oosomus* Schoenherr, 1834, collected in the course of our expeditions, were used for the molecular analysis, and no relationship of this genus with the Namaini was indicated. According to its morphological characters, the Namaini differ from the Oosomini by the following characters: rostrum conspicuously wider than long (either wider than long, or in some genera elongate to a different degree in the Oosomini), frons densely squamose (glabrous in the Oosomini), eyes small, often placed in the lower part of head (moderately large, positioned dorsally in the Oosomini), scapes short, robust (long, slender in the Oosomini), mesepimera moderately large, subtriangular (small, narrow in the Oosomini), metacoxae separated by 1.5–2.0 × their width (as wide as width of coxa in the Oosomini), suture between ventrite 1 and 2 straight, slightly sinuate or deeply arched (straight in the Oosomini), appressed scales greyish to brownish, always lacking a metallic sheen (with a greenish or bluish sheen in some taxa in the Oosomini).

The Namaini is easily differentiated from the Embrithini, another Afrotropical entimine tribe with trisetose mandibles. The Namaini has free claws (all genera of the Embrithini have species with connate claws), absence of metatibial corbels (wide or narrow, densely setose or squamose corbels in the Embrithini) and the rostrum continuous with the head (rostrum separated by a broad depression or a transverse stria in the Embrithini).

There is a group of genera in the eastern part of South Africa that are provisionally maintained in the tribe Trachyploeini (see Borovec & Skuhrovec, 2017), because in the absence of molecular data, it is difficult to determine if they really belong to this primarily Palaearctic tribe, showing a disjunct distribution (no species or genus of true Trachyploeini is known from subtropical and tropical parts of Africa), or if the morphological similarity is due to homoplastic sharing of adaptive characters in edaphic species. However, the Namaini can be distinguished from these genera by the same traits indicated for the Embrithini, except the metatibial corbels, also lacking in the species of these genera.

Alonso-Zarazaga & Lyal (1999) also reported the tribe Otorhynchini for the Afrotropical region, represented by the genus *Sciobius* Schoenherr, 1823, and four other small genera known from South Africa and Madagascar. These five genera differ from the Palaearctic genera referred to the Otorhynchini and their placement is yet unclear. However, the Namaini differs from these Afrotropical Otorhynchini by the rostrum not expanded laterally to form pterygia (forming pterygia in the Otorhynchini), the squamose frons (glabrous in the Otorhynchini), the antennal scapes short and robust (slender and long in the Otorhynchini) and the tibiae lacking spur (with spur in all tibiae in the Otorhynchini).

The tribe Peritelini includes almost 30 genera and a large number of species in the Palaearctic region, mainly in its south-western part, and these differ from the almost 40 Afrotropical genera referred to the Peritelini known mainly from East Africa. Both groups of this tribe, the Palaearctic as well as the Afrotropical Peritelini, differ from the Namaini by having connate claws, and the Afrotropical genera also by a slender stria separating the rostrum from the head.

SUBCLADE A - GROUP 1

CERVELLAEA BOROVEC & MEREGALLI, **gen. nov.**

Zoobank registration: urn:lsid:zoobank.org:act:E0FDE5CC-1C9D-4B01-B419-9A85A96F45A5

Type species: *Cervellaea coheni* Borovec & Meregalli, here designated.

Diagnostic description: Middle-sized Namaini 2.9–4.4 mm long; rostrum with U-shaped stria on epifrons; ventral border of rostrum in profile short, conspicuously shorter than rostral thickness; frons densely squamose; gena and subgena densely squamose; antennal sockets in dorsal view narrowly reniform, in profile not reaching eyes, slender, directed above eyes; antennal scapes conspicuously enlarged apicad, at apex distinctly wider than club; tibiae long and slender; tarsi long and slender, onychium distinctly longer than segment 3; ventrites squamose; suture between ventrite 1 and 2 straight; tegmen with weakly sclerotized short parameres; female sternite VIII with long and slender apodeme terminating at base of plate and forming short basal margins, its plate small, rhombus-shaped to oval.

Etymology: We name this genus after our colleague and friend Piero Cervella (1959–2019), researcher at the Department of Life Sciences of the University of Turin, who set up the sequencing protocol and discussed the preliminary results of the study with much interest. The gender is feminine.

Included taxa and distribution: In addition to the type species, seven additional taxa are included in *Cervellaea*, based on the *mt-Cox1* analysis and/or their morphology. They are distributed in South Africa, in the western and south-western part of the Northern Cape (Fig. 12).

CERVELLAEA COHENI BOROVEC & MEREGALLI, **sp. nov.** (FIGS 3, 10B, I, P, 11B, I, P)

Zoobank registration: urn:lsid:zoobank.org:act:B0DDDC9E-453F-4ED4-B2E5-1CF3DAB4B059

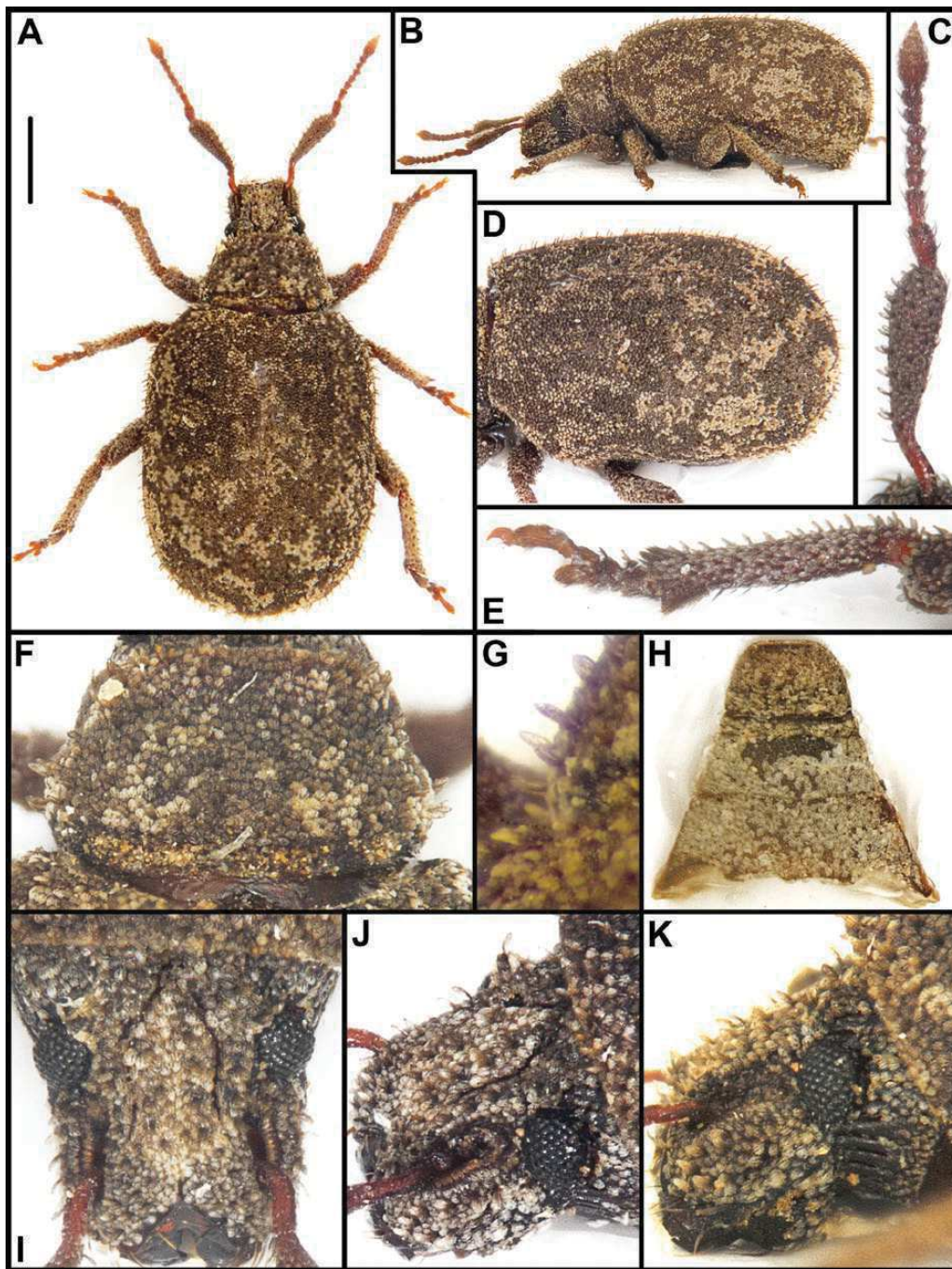


Figure 3. *Cervellaea coheni* sp. nov., paratype. A, body, dorsal view. B, body, lateral view. C, antenna. D, elytra, dorso-lateral view. E, protibia. F, pronotum. G, pronotum, detail of scales at side. H, ventrites, male. I, J, K, rostrum respectively dorsal, dorso-lateral and lateral view. Bar: 1 mm.

Diagnostic description: Body length 2.88–3.44 mm, holotype 3.37 mm. Erect setae on elytra short, lanceolate, apically pointed, forming one regular row on each interval, about as long as a third to a quarter the width of one interstria; rostrum subparallel-sided with straight sides; epifrons with concave sides, dorsally

slightly shallowed with distinct V-shaped stria; scapes at base distinctly S-shaped; elytra long oval; onychium almost twice as long as previous segment; penis short, widest at base and evenly tapered apicad with rounded tip; endophallus with complex, many times distorted sclerite; spermatheca with ramus long, straight,

almost twice as long as wide and collum small, about isodiametric, distant from ramus.

Etymology: During our 2016 expedition, the extraordinary artist Leonard Cohen (1934–2016) passed away, and we wish to name this species after him. Because Piero Cervella had an excellent knowledge of music, it is appropriate to associate this specific epithet with a genus named after him.

Ecology: The specimens were sifted from litter of dead leaves and branches under large shrubby *Euphorbia*.

Type material: Holotype: ♂, species 471: RSA, Western Cape, Cederberg Mts., Between Cederberg and Ceres, 32°37.576'S, 19°23.405'E, 639 m, 24.xi.2016, R. Borovec & M. Meregalli lgg., sifting of detritus, dead leaves and branches below shrubby *Euphorbia* (TMSA). Paratypes: same data as the holotype, 22 ex (MMTI, RBSC); species 572: RSA, Western Cape, Cederberg Mts., entrance Nuwerust Rest Camp, 32°33.722'S, 19°22.607'E, 560 m, 13.xi.2018, R. Borovec & M. Meregalli lgg., sifting of litter under *Euphorbia mauritanica*, 179 ex. (BMNH, MMTI, NMPC, RBSC, SANC, TMSA).

NAMAQUANIA BOROVEC & MEREGALLI, gen. nov.

Zoobank registration: urn:lsid:zoobank.org:act:FBD76D02-3A0B-4BD0-BF03-35A0E599D73F

Type species: *Namaquania andreae* Borovec & Meregalli, here designated.

Diagnostic description: Middle-sized Namaini 2.4–4.1 mm long; rostrum continuous with head, with U-shaped stria on epifrons; ventral border of rostrum in profile short, conspicuously shorter than rostral thickness; frons densely squamose; gena and subgena densely squamose; antennal sockets in dorsal view narrowly reniform, in profile not reaching eyes, enlarged posteriorly, directed towards eyes; antennal scapes slender, at apex as wide as clubs; metaventral process 1.5 × wider than transverse diameter of metacoxa; tibiae long and slender; tarsi long and slender, onychium distinctly longer than segment 3; ventrites squamose; suture between ventrite 1 and 2 slightly sinuose; tegmen with weakly sclerotized short parameres; female sternite VIII with long and slender apodeme terminating at base of plate and forming short basal margins, its plate small, rhombus-shaped to oval.

Etymology: The genus name refers to the Namaqualand, an arid region of South Africa (Northern Cape Province) and southern Namibia, originally inhabited

by Nama and Khoisan tribes, from where the majority of the species were collected. The gender is feminine.

Included taxa and distribution: In addition to the type species, seven additional taxa are included in *Namaquania*, based on the *mt-Cox1* analysis and/or their morphology. They are distributed in South Africa: Northern Cape, northern part of Southern Cape and in southern Namibia (Fig. 13).

NAMAQUANIA ANDREAE BOROVEC & MEREGALLI, sp. nov.

(FIGS 4, 10D, K, R, 11D, K, R)

Zoobank registration: urn:lsid:zoobank.org:act:74773254-8DB7-4141-BD6F-E9B902826415

Diagnostic description: Body length 2.43–3.32 mm, holotype 3.16 mm. Elytra with erect setae short, narrowly subspatulate, apically truncated, forming a single row on each interstria, slightly shorter than half the width of one interstria; rostrum slightly tapered anteriorly with straight sides; epifrons with slightly concave sides, dorsally broadly shallowly depressed with U-shaped stria; scapes slightly simply curved at basal third; elytra long oval; penis short, widest at base, evenly tapered apically with regularly rounded tip; endophallus with one long curved and two shorter, hook-shaped sclerites; spermatheca with ramus robust, straight, about twice as long as wide and collum less than half as long as wide as ramus, subtriangular.

Etymology: We name this species after our friend Andrea Battisti, a former student of one of the authors (M.M.), who participated in our 2013 expedition and shared the windy days and the freezing nights with us in the field, enthusiastically helping us in the collection of these weevils.

Ecology: The specimens were sifted from litter of dead leaves and branches under large shrubs of *Euphorbia*.

Type material: Holotype: ♂, species 337. RSA, Northern Cape, 20 km S Eksteefontein, above Ratelfontein, 28°28'57.398"S, 17°20'06.2"E, 805 m, 16.ix.2013, R. Borovec, A. Battisti, M. Meregalli lgg., sifting of detritus, dead leaves and branches below shrubby *Euphorbia* (TMSA). Paratypes: same data as the holotype, 14 ex (MMTI, RBSC); species 336_a. RSA, Northern Cape, 20 km S Eksteefontein, E Ratelfontein, 28°57.017"S, 17°21.008"E, 690 m, 16.ix.2013, R. Borovec, A. Battisti, M. Meregalli lgg., sifting of detritus, dead leaves and branches below shrubby *Euphorbia*, 12 ex (BMNH, MMTI, NMPC, RBSC, SANC, TMSA).

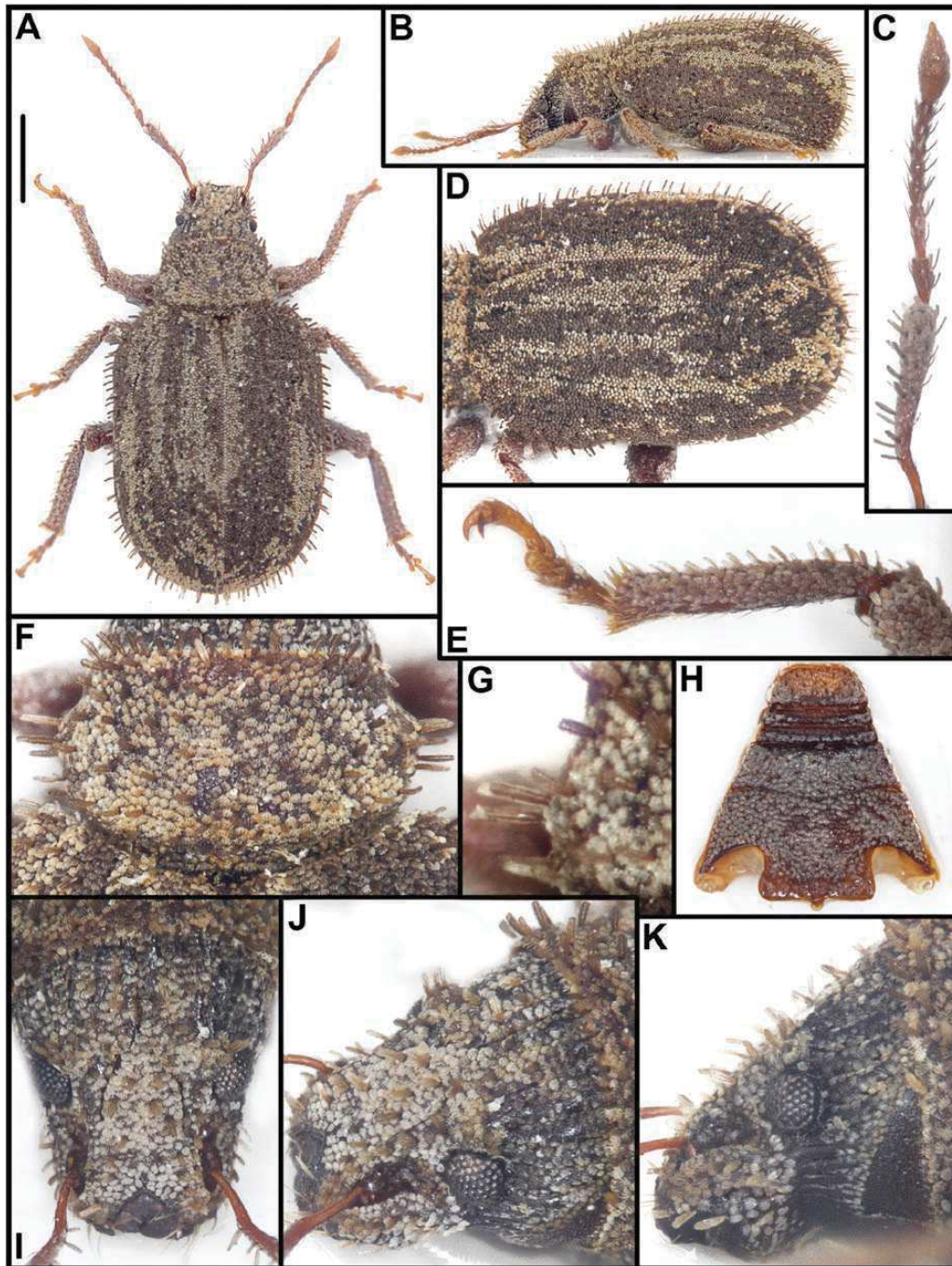


Figure 4. *Namaquania andrei* sp. nov., paratype. A, body, dorsal view. B, body, lateral view. C, antenna. D, elytra, dorso-lateral view. E, protibia. F, pronotum. G, pronotum, detail of scales at side. H, ventrites, male. I, J, K, rostrum respectively dorsal, dorso-lateral and lateral view. Bar: 1 mm.

SUBCLADE A - GROUP 2

NAMA Borovec & Meregalli, 2013

Nama Borovec & Meregalli, 2013: p.502 (original description); Borovec & Skuhrovec [2017: p.523 (note)].

Type species: *Nama richtersveldiana* Borovec & Meregalli, 2013: p.504 (original description) (Figs 5, 10C, J, Q, 11C, J, Q).

Amended diagnosis: Namaini of variable size, 1.7–4.9 mm long; epifrons wide, occupying majority of dorsal

part of rostrum, posteriorly continuous with head; ventral border of rostrum in profile short, conspicuously shorter than rostral thickness; frons squamose; gena and subgena densely squamose; antennal sockets in dorsal view invisible or hardly visible, in profile subtriangular, posteriorly enlarged, with ventral margin

directed to middle of eyes and dorsal margin parallel with dorsal border of rostrum; pronotum in some species conspicuously laterally lengthened to dorsolaterally flattened lobes; all tibiae in apical part distinctly enlarged laterally, apically rounded, armed with sparse, stout spines; tarsi long and slender; ventrites squamose;

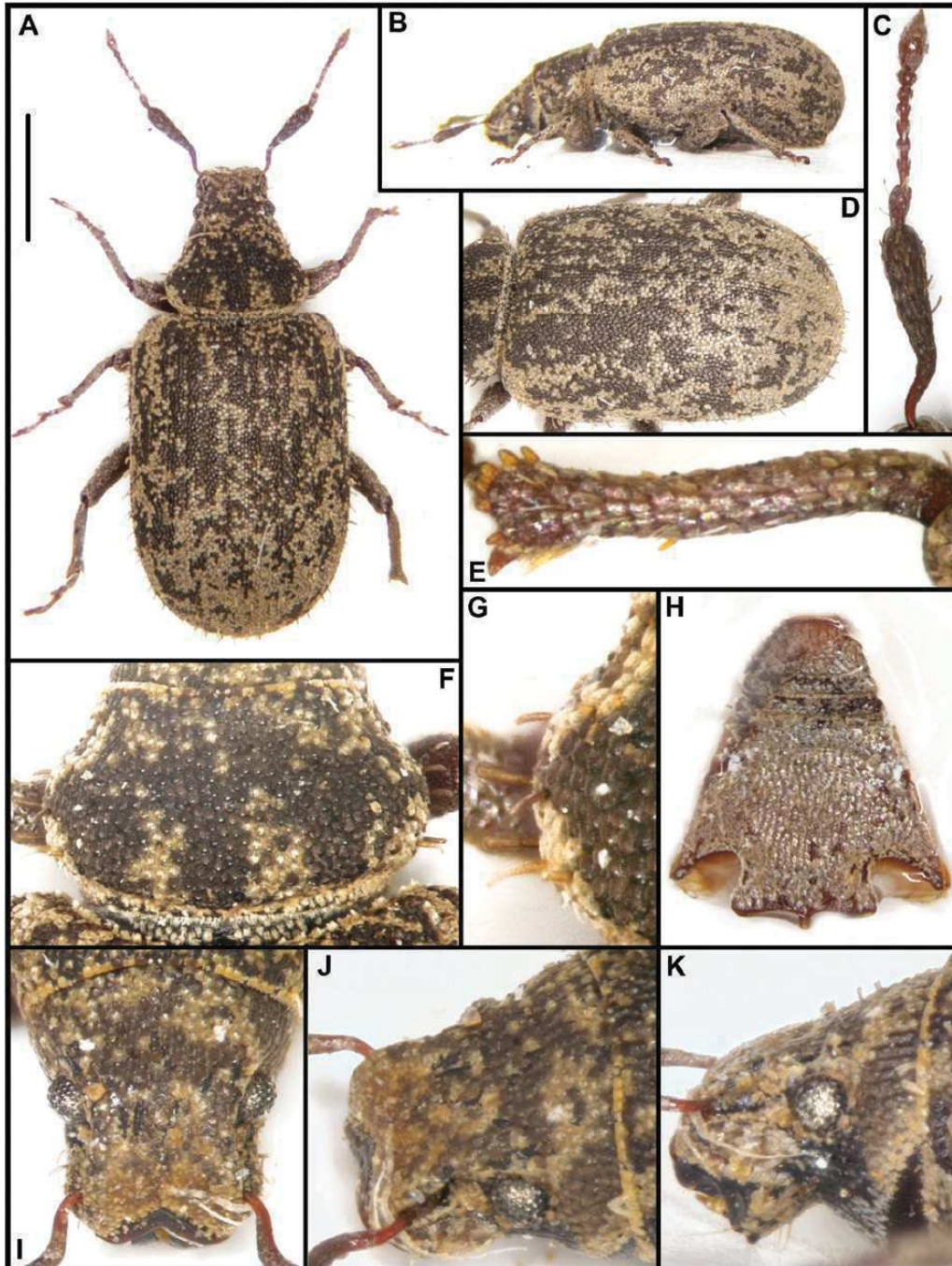


Figure 5. *Nama richtersveldiana* Borovec & Meregalli, 2013, paratype. A, body, dorsal view. B, body, lateral view. C, antenna. D, elytra, dorso-lateral view. E, protibia. F, pronotum. G, pronotum, detail of scales at side. H, ventrites, female. I, J, K, rostrum respectively dorsal, dorso-lateral and lateral view. Bar: 1 mm.

tegmen with weakly sclerotized parameres; female sternite VIII with long and slender apodeme, terminating inside of plate, plate oval, wider than long; gonocoxites with short styli, only slightly longer than wide.

Included taxa and distribution: In addition to the type species, *Nama richtersveldiana*, fourteen taxa are included in *Nama*, based on the *mt-Cox1* analysis and/or their morphology. They are distributed in South Africa: Northern Cape and northern part of Southern Cape (Fig. 14).

YAMALAKA BOROVEC & MEREGALLI, gen. nov.

Zoobank registration: urn:lsid:zoobank.org:act:537D2C1A-33B5-4B55-A8DF-F625C0D3F5B6

Type species: *Nama erikae* Borovec & Meregalli, 2013: p.508, here designated (Figs 6, 10G, N, U, 11G, N, U).

Diagnostic description: Very small to small Namaini 1.7–2.4 mm long; rostrum continuous with head with U-shaped stria on epifrons; ventral border of rostrum in profile short, conspicuously shorter than rostral thickness; frons squamose; gena and subgena densely squamose; antennal sockets in dorsal view narrowly reniform, laterally subtriangular, longer than wide, not reaching eyes; procoxal cavities placed in middle of prosternum; metatibiae with apical surface densely squamose; ventrites squamose; tegmen with parameres; female sternite VIII with long and slender apodeme, terminating just inside of plate, plate oval to widely oval; gonocoxites with long apical styli.

Etymology: During our 2013 trip with our colleague Andrea Battisti, we camped one night in an area with several large burrows of an unknown animal, possibly an aardvark [*Orycteropus afer* (Pallas, 1766)]. We did not know what it was and the fantasy name Yamalaka was coined. Since then we always think of a Yamalaka following and protecting us during our expeditions. We name this genus after our fictional protector.

Included taxa and distribution: In addition to the type species, *Yamalaka erikae* (Borovec & Meregalli, 2013) **comb. nov.**, *Yamalaka iuliae* (Borovec & Meregalli, 2013) **comb. nov.** and five additional taxa are included in *Yamalaka*, based on the *mt-Cox1* analysis and/or their morphology. They are distributed in South Africa: Northern Cape (Fig. 15).

SUBCLADE B

PENTAMERICA BOROVEC & MEREGALLI, gen. nov.

Zoobank registration: urn:lsid:zoobank.org:act:A67A110A-640A-4293-A658-DA4849C7C4D8

Type species: *Nama pentamera* Borovec & Meregalli, 2013: p.506, here designated (Figs 7, 10E, L, S, 11E, L, S).

Diagnostic description: Very small Namaini 1.7–2.1 mm long; rostrum short and wide with epifrons conspicuously tapered apicad with straight sides; frons large, occupying almost apical half of rostrum, glabrous, matt; epistome hardly visible; gena and subgena glabrous, smooth; antennal sockets in dorsal view reniform, well visible, in lateral view short, subtriangular, not reaching eyes, with ventral margin directed to dorsal margin of eyes; scapes in apical two-thirds conspicuously thickened, widest before apex; funicles 5-segmented; procoxal cavities placed closer to anterior margin of prosternum; protibiae widest at basal third and slightly evenly tapered anteriorly, at apex not enlarged outside or inside; apical surface of metatibiae glabrous; ventrites glabrous; suture between ventrites 1 and 2 arched; tegmen with short basally connected parameres; female sternite VIII with apodeme long and terminating inside of plate; plate lengthened apically to well sclerotized process, distinctly constricted before tip; gonocoxites with tip well sclerotized, slightly curved and sharpened, lacking styli.

Etymology: The name is derived from Greek πέντε, five, and μέρος, part. The species belonging to this genus appear to be characterized by the antennal funicle composed of five segments, hence the name. The gender is feminine.

Included taxa and distribution: In addition to the type species, *Pentamerica pentamera* (Borovec & Meregalli, 2013) **comb. nov.**, only one more taxon is included in the genus, based on the *mt-Cox1* analysis and its morphology. The two species are known from South Africa: Northern Cape, Richtersveld National Park (Fig. 13).

SPRINGBOKIA BOROVEC & MEREGALLI, gen. nov.

Zoobank registration: urn:lsid:zoobank.org:act:DDE8F03E-13CB-4EB2-A61D-001AAD8FE1A8

Type species: *Springbokia sacculus* Borovec & Meregalli, here designated.

Diagnostic description: Very small Namaini, 1.4–2.1 mm long; rostrum short and wide with epifrons distinctly tapering anteriorly; frons squamose; gena glabrous and smooth, subgena in narrow middle part glabrous, laterally densely squamose, squamose parts subtriangular; antennal sockets in dorsal view narrowly reniform, in profile subtriangular, reaching eyes, with ventral margin touching ventral margin of eyes and

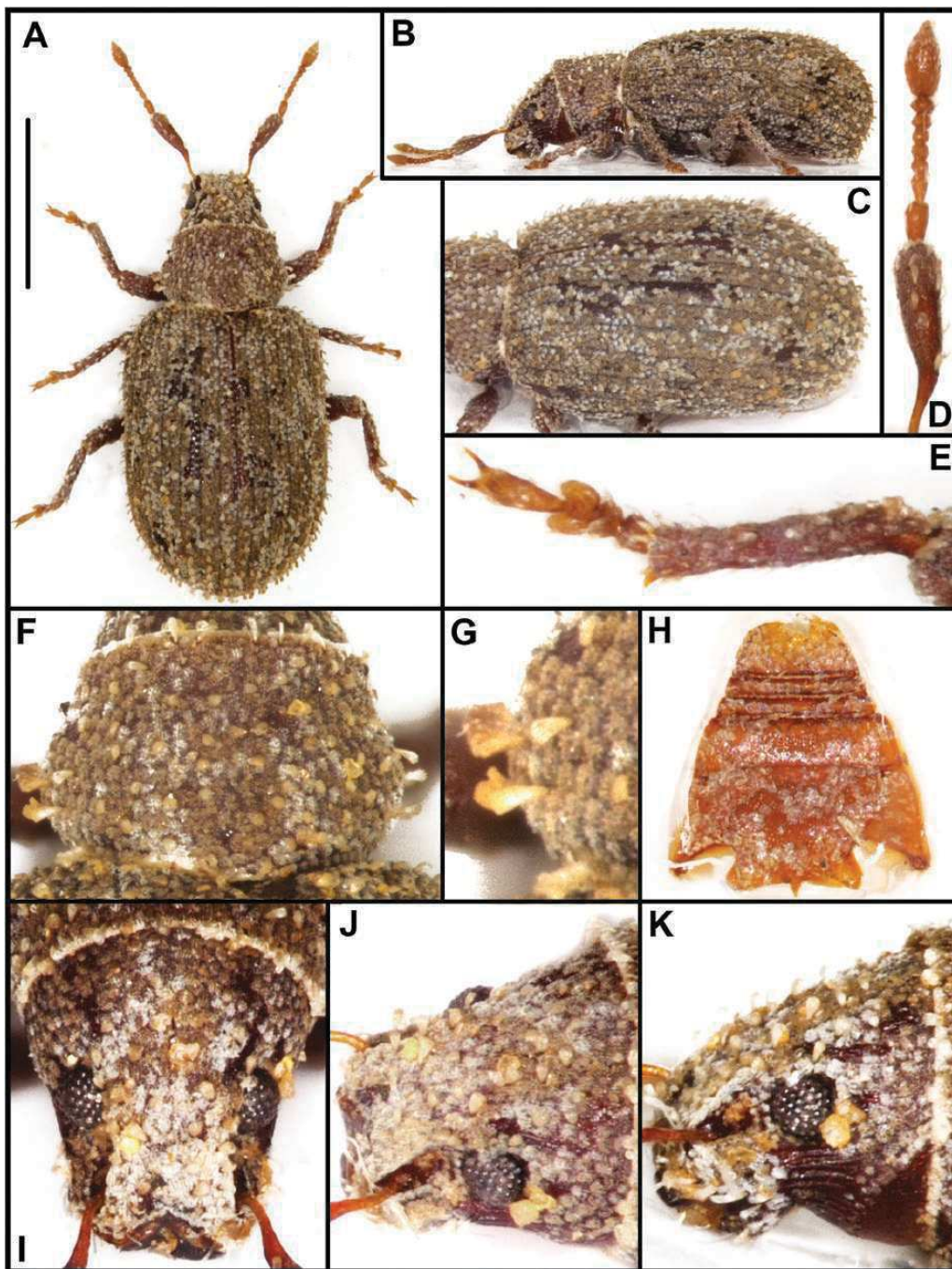


Figure 6. *Yamalaka erikae* (Borovec & Meregalli, 2013), paratype. A, body, dorsal view. B, body, lateral view. C, antenna. D, elytra, dorso-lateral view. E, protibia. F, pronotum. G, pronotum, detail of scales at side. H, ventrites, male. I, J, K, rostrum respectively dorsal, dorso-lateral and lateral view. Bar: 1 mm.

dorsal margin directed above eyes; antennal funicles 6-segmented; procoxal cavities placed closer to anterior margin of pronotum; apical surface of metatibiae glabrous; ventrites squamose; suture between ventrites 1 and 2 arched; tegmen without parameres; female

sternite VIII with long and slender apodeme terminating inside of plate, plate distinctly wider than long.

Etymology: The name of the genus is derived from the town of Springbok, the largest town in the

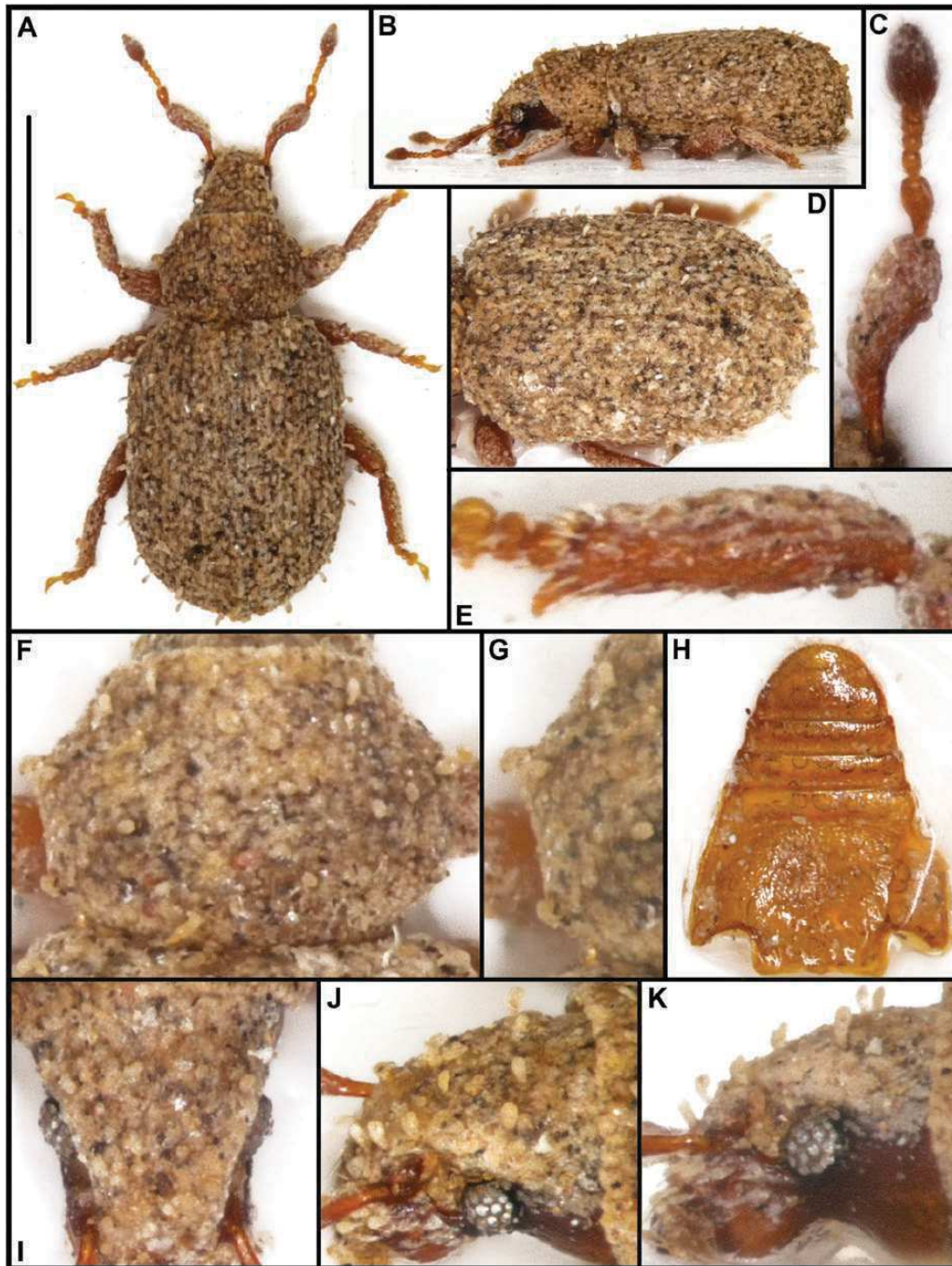


Figure 7. *Pentamerica pentamera* (Borovec & Meregalli, 2013), paratype. A, body, dorsal view. B, body, lateral view. C, elytra, dorso-lateral view. D, pronotum. E, protibia. F, pronotum. G, pronotum, detail of side. H, ventrites, female. I, J, K, rostrum respectively dorsal, dorso-lateral and lateral view. Bar: 1 mm.

Namaqualand area in the Northern Cape Province, in the surroundings of which the first specimens of this genus were collected in the course of the first expedition to South Africa. The gender is feminine.

Included taxa and distribution: In addition to the type species, nine additional taxa are included in *Springbokia*, based on the *mt-Cox1* analysis and/or their morphology. They are distributed in South Africa: Northern Cape Province (Fig. 16).

SPRINGBOKIA SACCOLUS BOROVEC & MEREGALLI, sp. nov.

(FIGS 8, 10F, M, T, 11F, M, T)

Zoobank registration: urn:lsid:zoobank.org:act:E716D353-E73B-4A54-9D65-9F8EBDF982DF

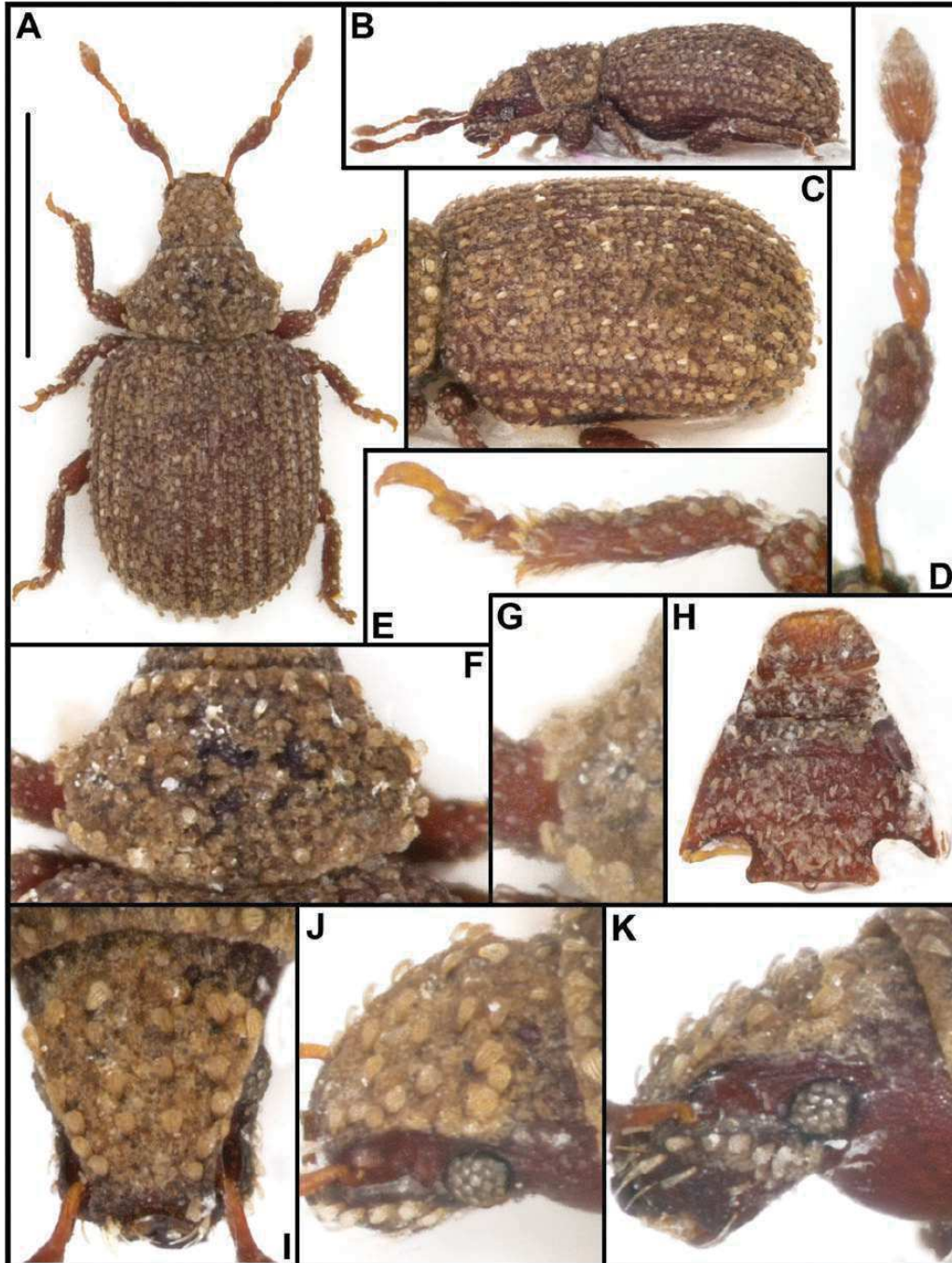
Diagnostic description: Body length 1.44–1.91 mm, holotype 1.63 mm. Elytra with one regular row of short semi-appressed setae on each interstria, at most as long as half the width of interstria, subspatulate, apically rounded; rostrum subparallel-sided with

Figure 8. *Springbokia sacculus* sp. nov., paratype. A, body, dorsal view. B, body, lateral view. C, antenna. D, elytra, dorso-lateral view. E, protibia. F, pronotum. G, pronotum, detail of scales at side. H, ventrites, male. I, J, K, rostrum respectively dorsal, dorso-lateral and lateral view. Bar: 1 mm.

KEY TO THE GENERA OF THE NAMAINI

1. Antennal sockets in lateral view reaching eyes. Epifrons flat, at most with slender median longitudinal stria. Eyes with less than 35 ommatidia. Subgena glabrous at least in middle part..... 2
 - Antennal sockets in lateral view separated from anterior margin of eyes by squamose stripe shorter than eye diameter. Epifrons usually with U- or V-shaped stria open anteriorly, posteriorly reaching vertex. Eyes with more than 35 ommatidia. Subgena densely squamosa 3
2. Frons densely squamose. Epistome posteriorly carinate. Antennal funicle 6-segmented. Antennal sockets in profile reaching eyes with ventral margin touching ventral margin of eyes. Subgena in narrow middle part glabrous, laterally densely squamose. Protibiae of uniform width along the entire length. Ventrites densely squamose. Plate of sternite VIII of females apically rounded. Gonocoxites with apical styli. Size 1.4–2.1 mm *Springbokia*
 - Frons glabrous, matt. Epistome hardly visible, posteriorly not separated from frons. Antennal funicle 5-segmented. Antennal sockets in profile not directly reaching eyes, with ventral margin directed to dorsal margin of eyes. Subgena glabrous, only narrow lateral part sparsely squamose. Protibiae widest at basal third, slightly narrowed apicad. Ventrites glabrous. Sternite VIII of females with plate apically lengthened, forming distinct apical process. Gonocoxites lacking styli. Size 1.7–2.1 mm *Pentamerica*
3. Antennal sockets in dorsal view hardly visible as narrow furrow; in lateral view narrowly furrow-shaped, with ventral margin well edged, reaching ventral margin of eye and dorsal margin barely noticeable, vanishing before eyes. Procoxae touching anterior margin of prosternum. Tegmen lacking parameres. Ventral border of rostrum in profile long, equally long as rostral thickness. Gena glabrous. Size 1.8–2.6 mm *Cederbergia*
 - Antennal sockets in dorsal view visible in anterior half to two-thirds of length as narrowly reniform; in lateral view with dorsal and ventral margin equally developed. Procoxae in middle or before middle of pronotum, not touching anterior margin of prosternum. Tegmen with parameres, these sometimes weakly sclerotized. Ventral border of rostrum in profile short, conspicuously shorter than rostral thickness. Gena in apical half densely squamosa 4
4. Abdominal ventrite 2 long, as long as or longer than ventrites 3 and 4 combined. Suture between ventrites 1 and 2 straight or slightly sinuose. Tibiae long and slender, protibiae 4.6–6.7 × longer than wide, apically fringed by short setae. Apodeme of sternite VIII of females terminating at base of plate and creating short basal margins. Appressed elytral scales small, 6–8 across width of interstria, raised setae create 1–2 dense irregular rows on each interstria..... 5
 - Abdominal ventrite 2 short, as long as ventrite 3 or 4. Suture between ventrites 1 and 2 deeply arched. Tibiae short and robust, protibiae 4.3–5.9 × longer than wide, apically armed with short and sparse spines. Apodeme of sternite VIII of females terminating inside of plate, basal margin of plate membranous. Appressed elytral scales bigger, 3–5 across width of interstria, raised setae create one regular row on each interstria 6
5. Antennal sockets in lateral view narrow, slightly enlarged posteriorly, with ventral border directed against dorsal border of eye and dorsal border directed above eye. Antennal scapes conspicuously enlarged apicad, at apex distinctly wider than club. Suture between ventrite 1 and 2 straight. Size 2.9–4.4 mm *Cervellaea*
 - Antennal sockets in lateral view wide, distinctly enlarged posteriorly, with ventral border directed against ventral border of eyes and dorsal border directed against dorsal border of eyes. Antennal scapes slightly enlarged apicad, at apex at most as wide as club. Suture between ventrite 1 and 2 slightly sinuose. Size 2.4–4.1 mm *Namaquania*
6. Epifrons narrow, at apex 0.5–0.7 × wide as rostrum. Protibiae apically subtruncated, laterally slightly enlarged, armed with sparse, short, fine or stout yellowish spines. Pronotum in all species with sides regularly rounded. Gonocoxites with long styli, distinctly longer than wide. Size 1.7–2.4 mm *Yamalaka*
 - Epifrons wide, at apex 0.7–0.9 × wide as rostrum. Protibiae apically distinctly rounded, laterally distinctly enlarged, armed with conspicuous, sparse, stout yellow or black spines. Some species with conspicuous, laterally prominent lobes in basal half of pronotum. Gonocoxites with short styli, only slightly longer than wide. Size 1.7–4.9 mm *Nama*

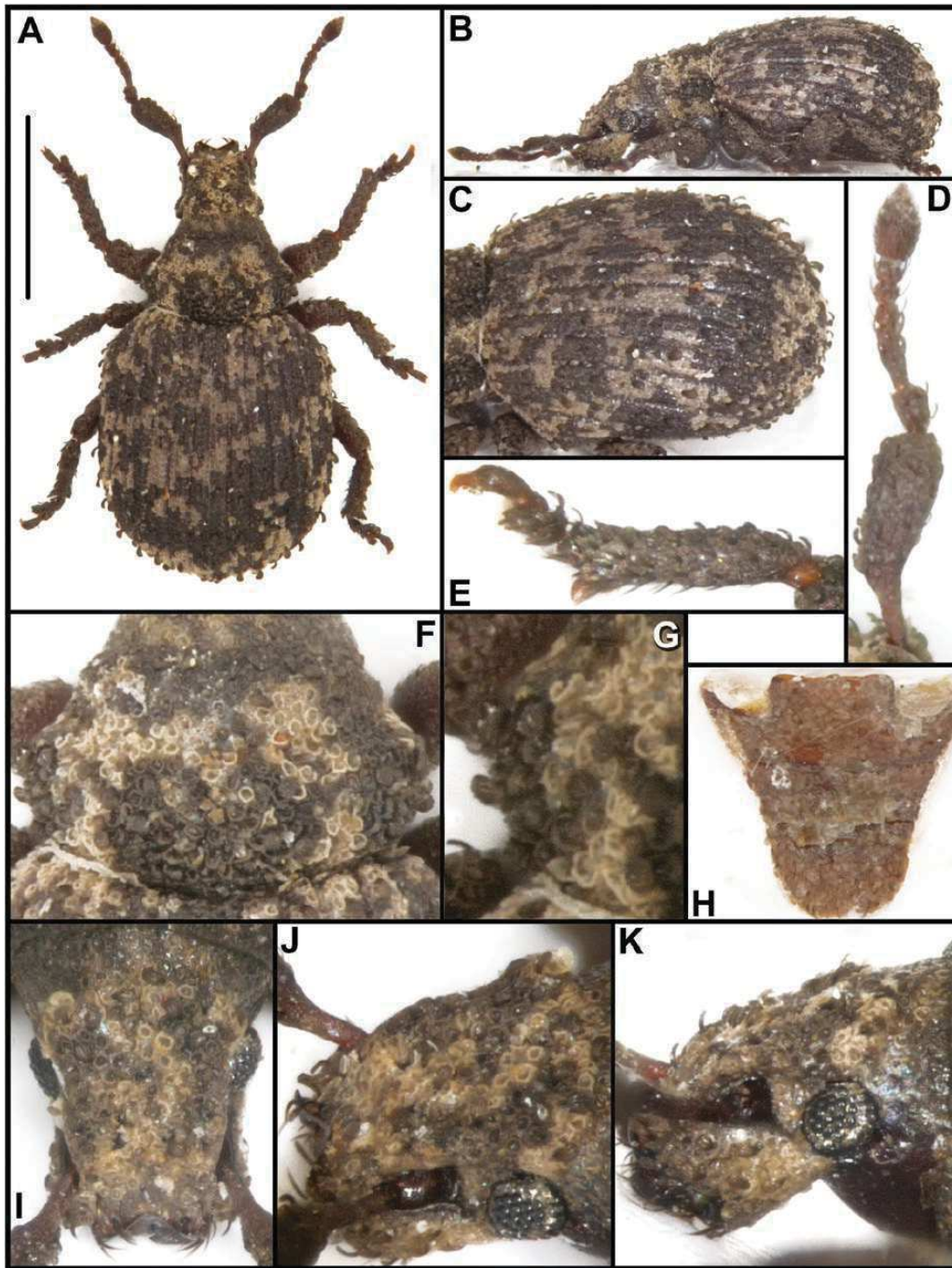


Figure 9. *Cederbergia indecora* sp. nov., paratype. A, body, dorsal view. B, body, lateral view. C, elytra, dorso-lateral view. D, antenna. E, protibia. F, pronotum. G, pronotum, detail of scales at side. H, ventrites, male. I, J, K, rostrum respectively dorsal, dorso-lateral and lateral view. Bar: 1 mm.

straight sides; epifrons wide, regularly flat; antennal sockets in lateral view with ventral border reaching ventral border of eyes and dorsal border directed above eyes and vanishing there; scapes curved at midlength, at apical half robust, widest at middle

of apical half, here as wide as clubs; elytra short oval; protibiae robust, apically subtruncated with a dense fringe of yellowish long setae; penis regularly triangular, from base evenly tapered apicad to sharp tip; endophallus short with elongate sclerite;

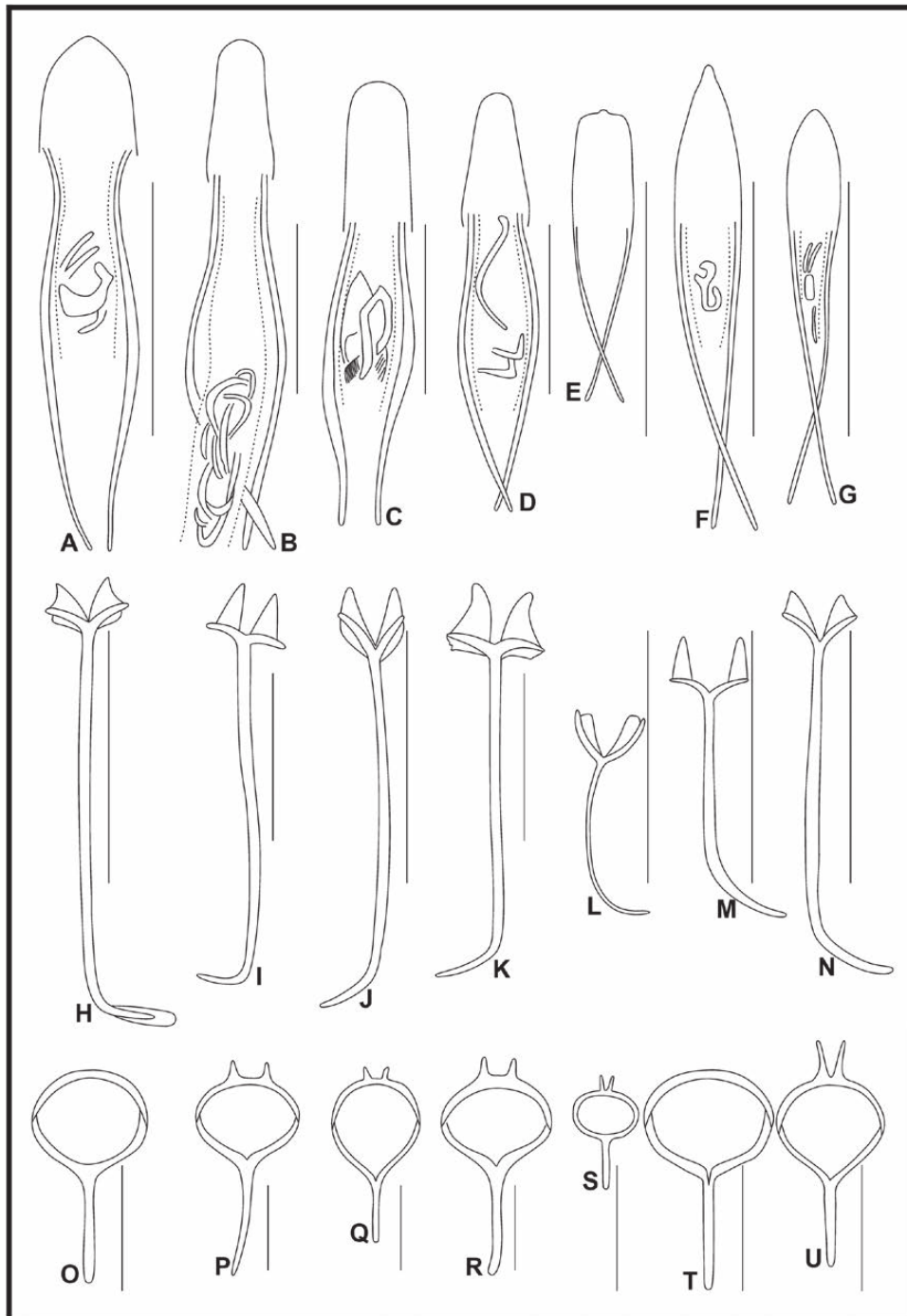


Figure 10. Male terminalia. Penis with temones: (A) *Cederbergia indecora*, paratype, (B) *Cervellaea coheni*, paratype, (C) *Nama richtersveldiana*, paratype, (D) *Namaquania andreaei*, paratype, (E) *Pentamerica pentamera*, paratype, (F) *Springbokia sacculus*, paratype, (G) *Yamalaka erikae*, paratype. Scale bars: 0.50 mm. Sternite IX: (H) *Cederbergia indecora*, paratype, (I) *Cervellaea coheni*, paratype, (J) *Nama richtersveldiana*, paratype, (K) *Namaquania andreaei*, paratype, (L) *Pentamerica pentamera*, paratype, (M) *Springbokia sacculus*, paratype, (N) *Yamalaka erikae*, paratype. Scale bars: 0.50 mm. Tegmen: (O) *Cederbergia indecora*, paratype, (P) *Cervellaea coheni*, paratype, (Q) *Nama richtersveldiana*, paratype, (R) *Namaquania andreaei*, paratype, (S) *Pentamerica pentamera*, paratype, (T) *Springbokia sacculus*, paratype, (U) *Yamalaka erikae*, paratype. Scale bars: 0.25 mm.

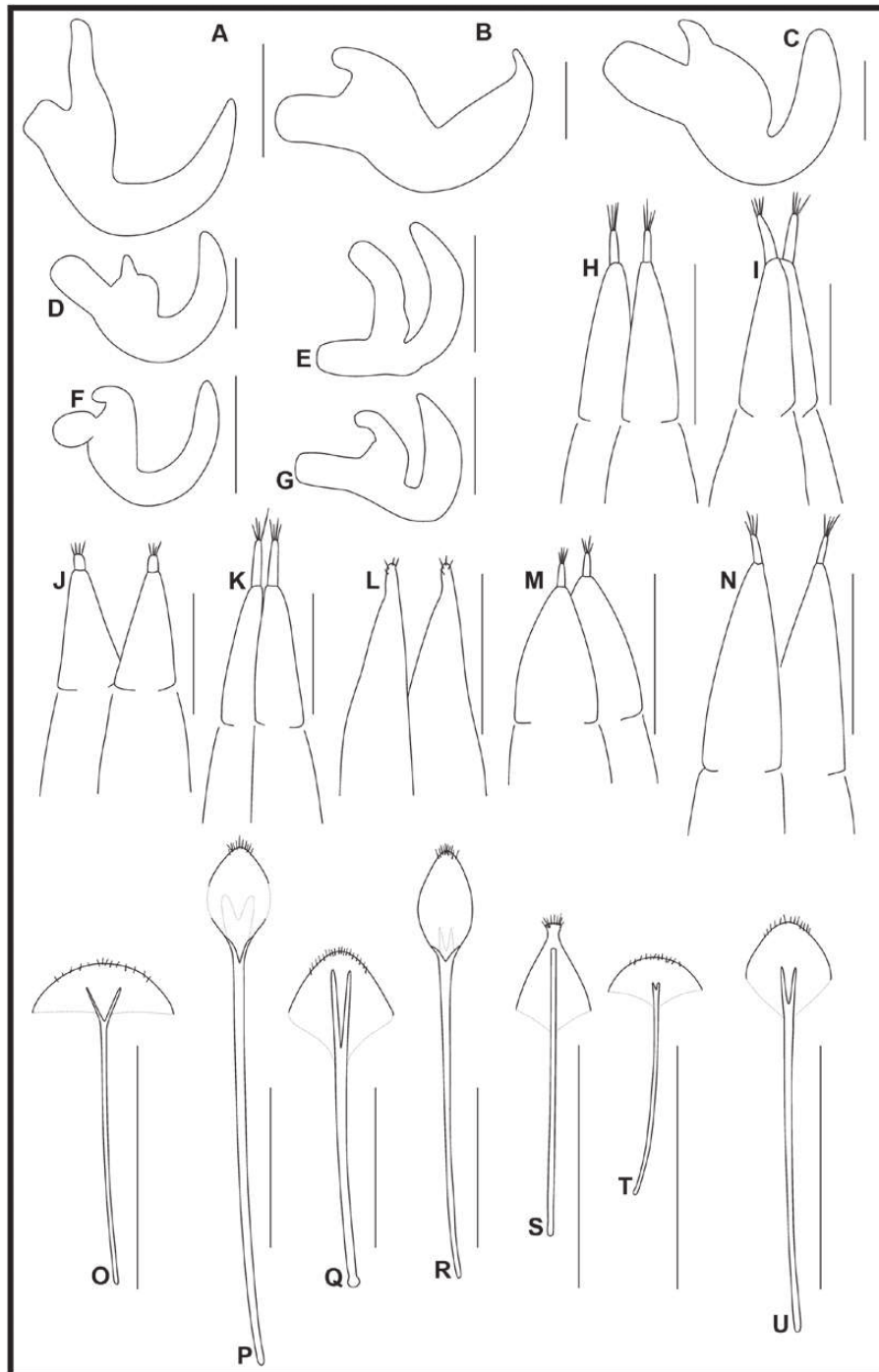


Figure 11. Female terminalia. Spermatheca: (A) *Cederbergia indecora*, paratype, (B) *Cervellaea coheni*, paratype, (C) *Nama richtersveldiana*, paratype, (D) *Namaquania andreaei*, paratype, (E) *Pentamerica pentamera*, paratype, (F) *Springbokia sacculus*, paratype, (G) *Yamalaka erikae*, paratype. Scale bars: 0.10 mm. Gonocoxites: (H) *Cederbergia indecora*, paratype, (I) *Cervellaea coheni*, paratype, (J) *Nama richtersveldiana*, paratype, (K) *Namaquania andreaei*, paratype, (L) *Pentamerica pentamera*, paratype, (M) *Springbokia sacculus*, paratype, (N) *Yamalaka erikae*, paratype. Scale bars: 0.25 mm. Sternite VIII: (O) *Cederbergia indecora*, paratype, (P) *Cervellaea coheni*, paratype, (Q) *Nama richtersveldiana*, paratype, (R) *Namaquania andreaei*, paratype, (S) *Pentamerica pentamera*, paratype, (T) *Springbokia sacculus*, paratype, (U) *Yamalaka erikae*, paratype. Scale bars: 0.50 mm.

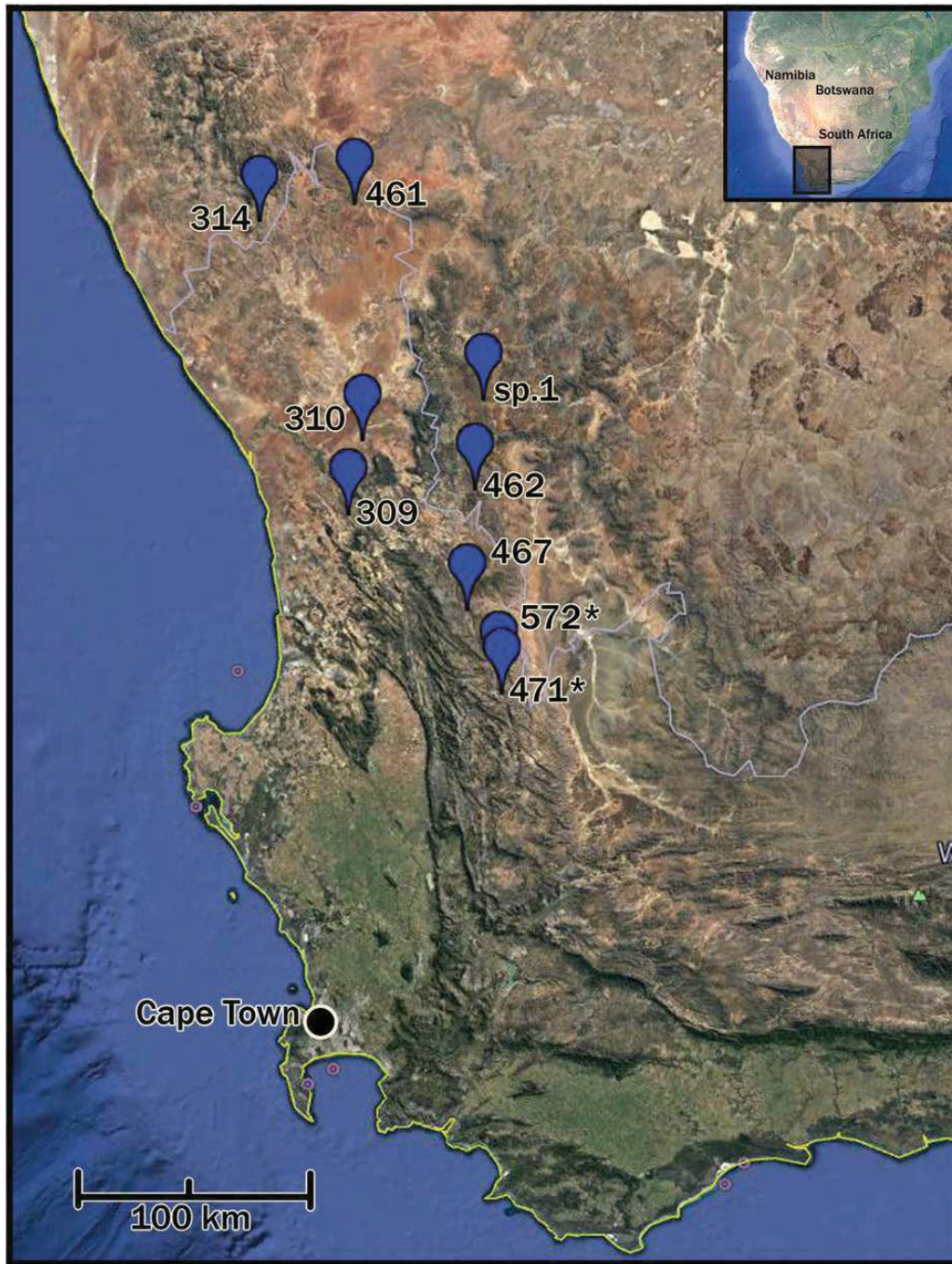


Figure 12. Distribution map of the genus *Cervellaea*. * = type species. Map data: Google Earth, Maxar Technologies, used according to Google Earth Terms of Service.

spermatheca with ramus distinctly bigger than collum, almost as long as wide; collum short, elongate, slender, curved at tip.

Etymology. From the Latin *sacculus*, a small bag, in reference to the method of collecting these weevils. Noun in apposition. All specimens were collected

over the course of several days from inside a small bag containing soil sifted from under *Euphorbia* shrubs.

Ecology: The specimens were sifted from soil below large shrubs of *Euphorbia dregeana*, in karroo-type vegetation.

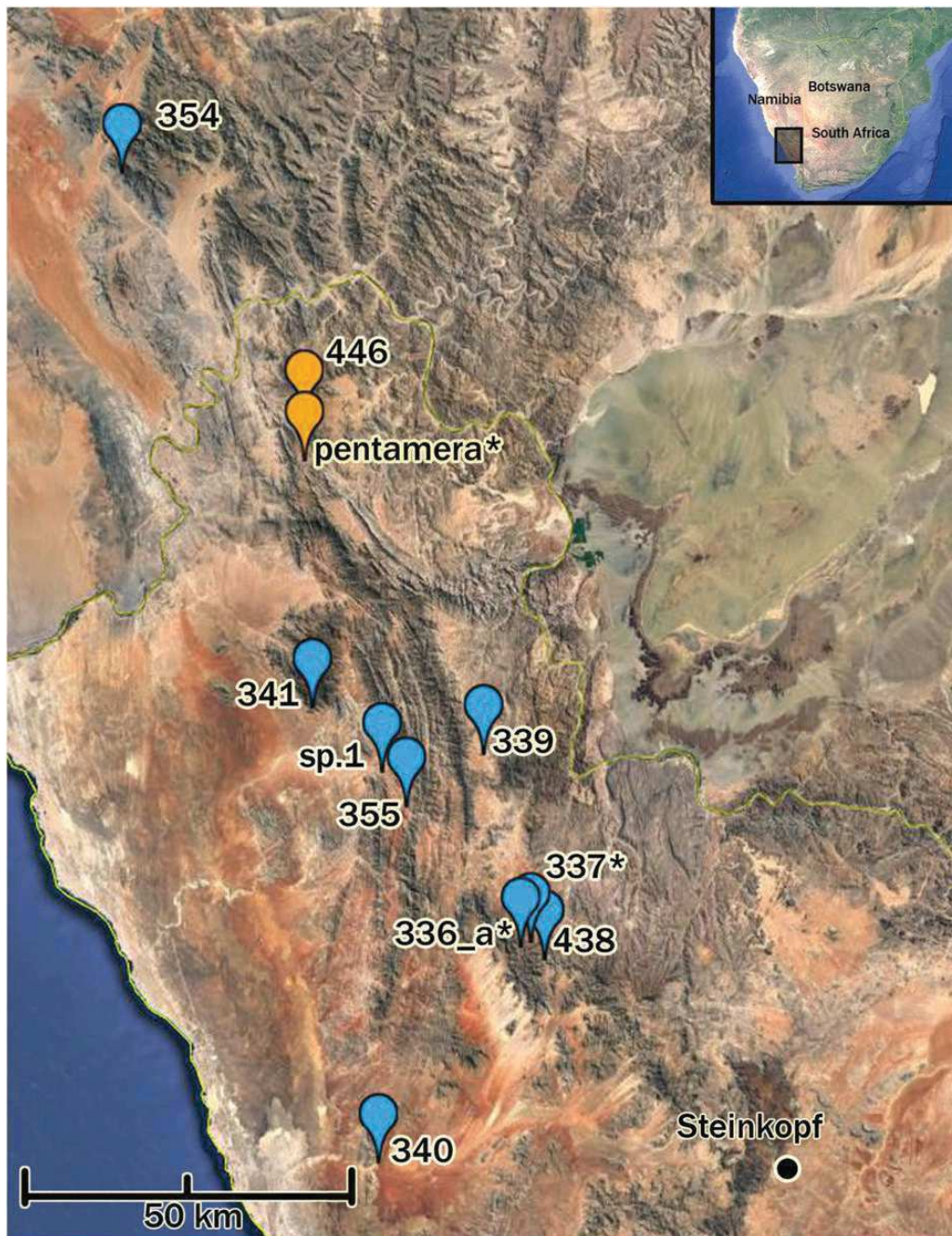


Figure 13. Distribution map of the genera *Namaquania* (blue markers) and *Pentamerica* (yellow markers). * = type species. Map data: Google Earth, Maxar Technologies, used according to Google Earth Terms of Service.

Type material: Holotype: species 422, ♂, RSA (South Africa), Northern Cape, Namaqua NP, E Wildeperdehoek Pass, 29°56.837'S, 17°38.276'E, 496 m, 13.xi.2016, sifting of detritus, dead leaves and branches below shrubby *Euphorbia*, R. Borovec, M. Meregalli lgg. (TMSA). Paratypes: same data as the holotype, 47 ex (RBSC, MMTI, TMSA, SANC, BMNH, NMPC).

***CEDERBERGIA* BOROVEC & MEREGALLI, gen. nov.**

Zoobank registration: Zoobank.org/urn:lsid:zoobank.org:act:A35B84F3-F62B-4D54-965F-88BA8863A4C4

Type species: *Cederbergia indecora* Borovec & Meregalli, here designated.



Figure 14. Distribution map of the genus *Nama*. * = type species. Map data: Google Earth, Maxar Technologies, used according to Google Earth Terms of Service.

Diagnostic description: Small Namaini 1.8–2.6 mm; rostrum continuous with head with U-shaped stria on epifrons; frons squamose; gena glabrous and smooth, subgena densely squamose; antennal sockets in dorsal view hardly visible as narrow furrows, laterally with ventral margin directed to ventral margin of eyes and dorsal margin poorly noticeable, vanishing before eyes; procoxal cavities touching anterior margin of pronotum; apical surface of metatibiae squamose; abdominal ventrites densely squamose; suture between ventrites 1 and 2 conspicuously arched; tegmen lacking parameres; female sternite VIII with long and slender apodeme terminating inside of plate, plate wider than long.

Etymology: *Cederbergia* is derived from the Cederberg Mountains, rock formations located approximately 300 km north of Cape Town, where the majority of the taxa attributed to this genus were found. The gender is feminine.

Included taxa and distribution: In addition to the type species, 12 additional taxa are included in *Cederbergia*, based on the *mt-Cox1* analysis and/or

their morphology. They are distributed in South Africa: Western Cape (Fig. 17).

***CEDERBERGIA INDECORA* BOROVEC & MEREGALLI, sp. nov.**

(FIGS 9, 10A, H, O, 11A, H, O)

Zoobank registration: urn:lsid:zoobank.org:act:5FBAB9E6-3508-48DF-92A3-F2D7ED1F6DDE

Diagnostic description: Body length 2.06–2.39 mm, holotype 2.08 mm. Semi-erect setae on elytra short, sparse, subspatulate, forming a regular row on each interstria, about as long as half the width of interstria; rostrum indistinctly tapered anteriorly with straight sides; epifrons wide, evenly tapered anteriorly with straight sides, broadly shallowly depressed on entire surface; epistome elongated anteriorly, forming two teeth, longer Pakhuis Pass, 32 in males; scapes robust, curved at basal third, at apical two-thirds evenly enlarged, at apex conspicuously wider than clubs; elytra short oval; protibiae robust with outer and inner



Figure 15. Distribution map of the genus *Yamalaka*. * = type species. Map data: Google Earth, Maxar Technologies, used according to Google Earth Terms of Service.

side almost straight, apically rounded with a fringe of dense, black bristles; penis short, subparallel-sided, apically subtriangular with rounded tip; endophallus with two short, moderately wide sclerites; spermatheca with ramus short, slightly shorter than wide and conspicuously shorter than the slender and straight, tube-shaped nodulus.

Etymology: The specimens were collected by sifting dead leaves and decomposing humus at the margin of the parking area of the Pakhuis Pass, below a broad and high shrub, with branches reaching the ground and offering good shelter. The entire undershrub was filled with every type of trash, hence the name of the species, *indecora*, from the Latin *indecorus*, indecent.

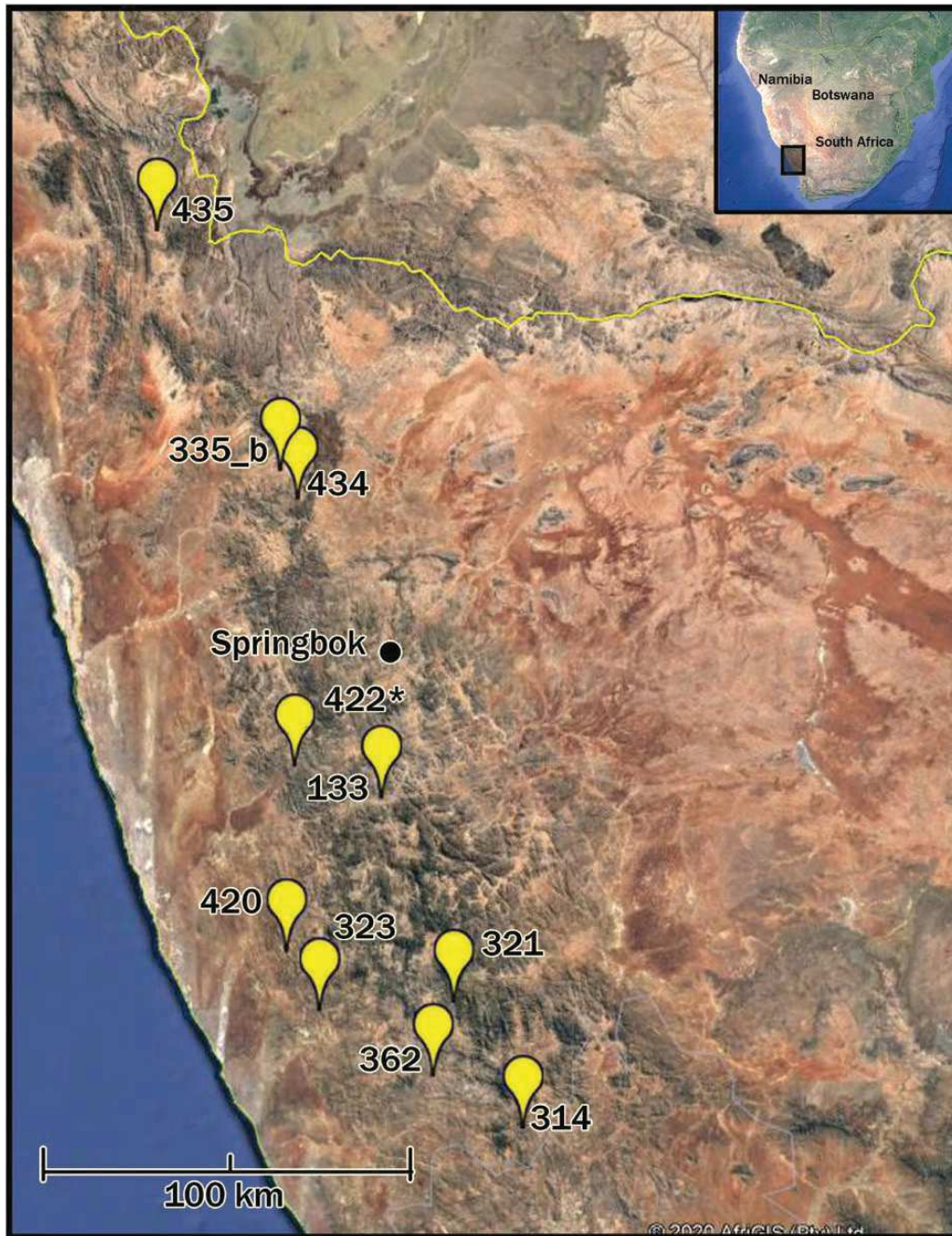


Figure 16. Distribution map of the genus *Springbokia*. * = type locality. Map data: Google Earth, Maxar Technologies, used according to Google Earth Terms of Service.

Ecology: The specimens were sifted from litter of dead leaves and branches under shrubby small trees in fynbos vegetation.

Type material: Holotype: species 465, ♂, RSA, Western Cape, Cederberg Mts., Pakhuis Pass, 32°08.979'S,

19°01.750'E, 1002 m, 22.xi.2016, R. Borovec lgg., sifting of detritus and dead leaves and branches below trees and shrubs (TMSA). Paratypes: same data as the holotype, 21 ex. (BMNH, MMTI, NMPC, RBSC, SANC, TMSA); same data as the holotype, 10.xi.2018, 4 ex. R. Borovec et M. Meregalli lgg. (MMTI, RBSC).



Figure 17. Distribution map of the genus *Cederbergia*. * = type locality. Map data: Google Earth, Maxar Technologies, used according to Google Earth Terms of Service.

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02.1.01/0.0/0.0/16_019/0000803 financed by OP RDE. The study was carried out under the following research permits. 2012: SANParks. Permit released September 7, 2012, unnumbered; Northern Cape Province: ODB 1977 & 1987/2012; Cape Nature: AAA041-00157-0056. 2013: SANParks. Permit released September 7, 2012, unnumbered, renewed; Northern Cape Province: ODB 1764 & 1794/2013; Cape Nature: AAA007-00085-0056.

2016: SANParks: Permit number CRC/2016/035–2012/V1; Northern Cape: ODB 2399/2016; Cape Nature: AAA041-00158-0056. 2018: SANParks: Permit number MERM/AGR/035–2012/2017–2022/V1; Northern Cape: ODB 2399/2016 renewed; Cape Nature: AAA041-00158-0056. 2019: SANParks: Permit number MERM/AGR/035–2012/2017–2022/V1; Cape Nature: CN44-28-11324. The authors declare that they have no conflict of interest.

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Contributions to the paper: M.M. and R.B.: general general structuring of the study and field sampling; M.M.: phylogenetic analysis and discussion of the results; R.B.: morphological descriptions, discussion on classification of the Entiminae; P.C., A.S., S.O., I.T.: DNA extraction, sequencing and contribution to the analysis of the results; O.N.: general management of the study.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

File S1. Detailed descriptions of the taxa, comparative remarks and various notes.

Table S1. Estimates of Evolutionary Divergence between Sequences. The number of base differences per site from between sequences are shown. This analysis involved 38 nucleotide sequences. Codon positions included were 1st + 2nd + 3rd. All ambiguous positions were removed for each sequence pair (pairwise deletion option). There were a total of 688 positions in the final dataset. Evolutionary analyses were conducted in MEGA X.

Table S2. *Mt-Cox1* sequences of the specimens examined.



Two new genera of Trachyphloeini with a key to the genera of small terricolous South African Trachyphloeini and Embrithini (Coleoptera: Curculionidae: Entiminae)

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Abstract

Two new genera, *Barclayanthus* Borovec & Skuhrovec, **gen. nov.** and *Janakius* Borovec & Skuhrovec, **gen. nov.**, assigned to the tribe Trachyphloeini Lacordaire, 1863, are described for three South African species of weevil: *Barclayanthus micros* Borovec & Skuhrovec, **sp. nov.**, *B. cooteri* Borovec & Skuhrovec, **sp. nov.** and *Janakius sylvaticus* Borovec & Skuhrovec, **sp. nov.** All species are illustrated and keyed. The taxonomic status of each of the new genera is discussed, and compared with similar genera of Trachyphloeini and Embrithini Marshall, 1942. A key to known small terricolous South African genera of both Trachyphloeini and Embrithini is included.

Key words: Weevils, taxonomy, new genus, new species, South Africa, species discovery

Introduction

This paper, our sixth, completes the survey of South African Trachyphloeini Lacordaire, 1863 with fused tarsal claws, known primarily from the eastern half of South Africa, but especially also from the Western Cape. Our study summarised older material deposited in European and South African museums, but also newly collected material deposited in these museums and private collections. The real number of genera and species will be most likely higher than the lists of genera and species presented by us in our previous five articles (Borovec & Skuhrovec 2017a, 2017b, 2018a, 2018b, 2019).

The aim of this paper is the description of two new genera, and to give a complete overview with analysis of this complex group. A key to all small terricolous South African Trachyphloeini genera with fused claws and the Embrithini Marshall, 1942 gives the foundation for future studies of these previously overlooked terricolous weevils which have significance as potential bioindicators.

Material and methods

Body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of the elytra, excluding the rostrum. Width/length ratio of the rostrum was calculated using the maximum width at the base and maximum length to the base of the mandibles. Width/length ratios of pronotum, elytra, antennal segments and tarsomeres were based on the maximum width and length of the respective parts in dorsal view; length of onychium refers to the part protruding beyond the outline of tarsal segment 3. Dissected male and female genitalia were studied in glycerine. Female genitalia were afterwards embedded in Solakryl BMX (Medika, Prague); male genitalia were mounted dry on the same card as the respective specimen, with tegmen and sternite IX embedded in Solakryl BMX. Photographs of adults were taken with a Canon EOS 700D camera with an MP-E 65 mm macro lens and

combined using Zerene Stacker and GIMP2 software. Details of adults (rostrum—dorsal and lateral view, protibia, ventrites) and genitalia were taken and enhanced using a HIROX RH-2000 digital microscope. The terminology used to describe the details of the rostrum, antenna and genitalia follows Oberprieler *et al.* (2014).

Exact label data of type specimens are cited: separate labels are indicated by a slash (/). Authors' remarks and comments are in square brackets.

Specimens are deposited in the following museums and private collections:

- BMNH Natural History Museum, London, United Kingdom (formerly British Museum of Natural History), Maxwell Barclay;
- ECRI Enzo Colonnelli collection, Rome, Italy;
- JJRC Jiří Janák collection, Rtně nad Bílinou, Czech Republic;
- JSPC Jiří Skuhrovec collection, Praha, Czech Republic;
- NMPC Národní museum Praha, Czech Republic, Jiří Hájek;
- RBSC Roman Borovec collection, Sloupno, Czech Republic;
- TMSA Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa, Ruth Müller.

Taxonomy

Barclayanthus Borovec & Skuhrovec, gen. nov.

(Figs 1A–F, 2A–E, 3A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:87B3690D-3D5B-4EC1-9302-65C68632CC44>

Type species: *Barclayanthus micros* Borovec & Skuhrovec, sp. nov., by present designation.

Diagnosis. Very small Trachyploeini, less than 2 mm, with very short and wide rostrum and epifrons; frons densely squamose; rostrum and head not separated by any stria; gena and subgena mostly glabrous; glabrous antennal scrobes reaching as furrow above and below eyes just behind them; antennal scape and legs robust and very short; anterior border of pronotum laterally toothlike, tapered posteriad; protibiae armed with laterally prominent spines, reaching midlength; meso- and metatibiae with sparse spines reaching apical third of their length; metatibiae with apical surface squamose and without corbels; claws connate at base.

Description (Figs 1A–F, 2A–E, 3A–E). Body length 1.2–1.7 mm. Body (Figs 1A, 2A, 3A) brownish to darker brownish, only spines on tibiae blackish. Vestiture on body created by very dense, moderately large, appressed scales, regularly covering dorsal and ventral part of body except ventral part of head, antennal funicles with clubs and tarsi; clubs finely moderately densely setose. Head laterally in dorsal half densely squamose (Figs 2B, 3B), in ventral half glabrous with sharp borderline between; ventrally gena glabrous and subgena densely squamose only in lateral parts (Fig. 1D), scaled area subtriangular. Scale-like setae on body including antennae and legs inconspicuous to hardly visible, semiappressed, on elytra shorter than on pronotum and head with rostrum, equally long or slightly longer than diameter of one appressed scale. Colour pattern of scales greyish light brown with small irregularly scattered darker brown spots on pronotum and elytra.

Rostrum very robust and short in dorsal view (Figs 2B, 3B), 1.9–2.0 × as wide as long, in dorsal view ventral borders of rostrum visible, below eyes abruptly enlarged, then regularly distinctly tapered anteriad, with straight sides, at base 1.2–1.3 × as wide as at apex; in lateral view (Figs 2C, 3C) weakly vaulted, almost flat, not separated from distinctly vaulted, large vertex. Epifrons very wide and short, at base equally wide as distance between eyes, occupied majority of dorsal rostral space, subparallel-sided with weakly convex sides, flat, with very slender median longitudinal stria along the whole length, reaching anterior border of pronotum. When scraped without any transverse stria or sulcus, finely and densely punctate, matt, with median longitudinal stria and two short, shallow and narrow, longitudinal striae along lateral borders (Figs 1B, C). Frons densely squamose, without any apical setae. Epistome very small and slender, U-shaped, hardly visible, indistinctly posteriorly carinate, asquamose. Antennal scrobes not visible dorsally; laterally furrow-shaped, glabrous and well edged along the whole length, in anterior half slender, subparallel-sided, in posterior half distinctly enlarged and goes round the eyes, with sinuate edges, reaching above and below eyes just behind them. Dorsal border above eyes turned up and goes transversally inside,

forming short transverse keel behind eyes. Head large and wide, distinctly vaulted. Eyes very small, subcircular, weakly vaulted, dorsally hardly visible, laterally placed in the middle of head. Mandibles trisetose, small, squamose. Submentum without visible setae, which might have been broken off.

Antennae short and robust (Figs 2A, 3A). Scapes short, $1.1 \times$ as long as funicles, $2.5 \times$ as long as wide, distinctly dorso-ventrally flattened, basal half distinctly enlarged apicad, than subparallel-sided, at apex $1.5 \times$ wider than clubs. Funicles 6-segmented, with segment 1 enlarged, longer than segments 2 and 3 combined; segments progressively wider towards club. Club with segment 1 conspicuously largest.

Pronotum short and transverse (Figs 2A, 3A), $1.3\text{--}1.8 \times$ as wide as long, sides roundly inflated, distinctly tapered anteriorly with anterior border distinctly narrower than posterior one, anteriorly significantly constricted. Disc distinctly vaulted, with shallow longitudinal median furrow connected behind anterior border with transverse constriction and divided disc to two low, wide bumps. Base V-shaped, arched. Anterior border laterally straight, in middle distinctly toothlike tapered posteriorly, forming large indentation for eyes and dorsal border of antennal scrobes. Procoxal cavities contiguous, touching anterior border of pronotum; procoxae subglobular. Scutellum not visible.

Elytra (Figs 2A, 3A) subquadrate, $1.1\text{--}1.2 \times$ as long as wide, with slightly rounded sides, apically broadly rounded, with regularly rounded shoulders; base V-shaped arched; posthumeral calli developed, not visible dorsally; 10-striae, striae narrow, intervals slightly vaulted; in lateral view posterior declivity distinctly overhanging apex. Mesocoxae (Fig. 1A) semiglobular, widely separate, mesosternal process about as wide as half of diameter of mesocoxa, not reaching posterior margin of metacoxae. Metacoxae (Fig. 1A) shortly transverse, separated by about $1.5 \times$ their width. Tergite VII in males short and wide, translucent, with sclerotised very narrow margins, apically subtruncate; tergite VIII bowl-shaped, with sclerotised narrow margins, apically truncate or concave.

Femora unarmed, medially inflated, distinctly flattened. Tibiae very short and robust. Protibiae $3.6\text{--}4.2$ longer than wide at widest part (Figs 2E, 3E), widest at midlength or apical third, at apex narrow, armed by 5 blackish spines of unequal size and mesally curved, yellowish mucro. Inner portion and anterior border with the smallest spines, lateral edge with three long, distinct, laterally prominent spines, anterior and subanterior spine largest, conspicuous, the last one smaller, placed about at midlength. Lateral edge between three spines with two shallow indentations. Mesotibiae apically with 2 long, slender and 2 short blackish spines and yellowish slender mucro. Metatibiae with 3 moderately big, short and wide brownish spines and 2 small, slender, blackish ones and one mucro. Spines in meso- and metatibiae reaching to about third of their length; apical surface of meso- and metatibiae densely squamose; metatibiae without corbels. Tarsi long and slender; segment 1 long and slender; segment 2 isodiametric to slightly wider than long; segment 3 indistinctly wider than segment 2 and bilobed; onychium distinctly longer than segment 3, cylinder form, parallel-sided. Claws short, at base connate, only slightly divaricate.

Abdominal ventrites (Fig. 1E) about $1.1 \times$ as long as wide; ventrite 1 in middle about as long as ventrites 2–4 combined, behind metacoxa slightly longer than ventrite 2; ventrite 2 in middle slightly longer than ventrite 3 or 4, ventrite 5 large, subtrapezoidal, longer than ventrites 3 and 4 combined. Suture between ventrites 1 and 2 distinctly arched; other sutures straight; all sutures narrow and fine. Ventrites densely squamose with irregularly scattered, semiappressed, very short, slender and hardly visible setae. Metaventral process obtuse, $1.5 \times$ as wide as transverse diameter of metacoxa.

Sexual dimorphism. Sexes externally indistinguishable.

Male genitalia. Penis moderately long (Figs 2D, 3D), well sclerotised, temones $1.2 \times$ as long as body of penis and distinctly longer than tegminal manubrium; endophallus short, inside only very finely spiculate. Tegmen with very slender ring without parameres. Sternite IX moderately long and slender, anteriorly curved and tapered, posteriorly with fused basal arms; apical plate absent.

Female genitalia. Gonocoxites not examined. Sternite VIII with moderately long, slender apodeme, Y-shaped terminating just at the base of plate, plate short and wide, crescent-shaped, with basal and apical margin slender, apically armed with fringe of short, fine setae. Spermatheca (Fig. 1F) large, crescent shaped, with slender cornu and corpus and developed ramus and nodulus.

Derivation of name. The newly described genus is dedicated to our friend and colleague Maxwell V. L. Barclay (British Museum, London), for his kind assistance and co-operation in our study, for his hospitality during visits of first author to the British Museum of Natural History, London and also for the loans of the very important material for ongoing study of South African Entiminae. The name is a combination of his surname and Greek word *anthos*, which means glory, splendour.

Biology. Unknown. Reproduction amphigonic.

Distribution. Known only from South Africa, Western Cape.

Species included. The genus includes two newly described species.

Remarks. *Barclayanthus* Borovec & Skuhrovec, gen. nov. is similar only to several species of *Pentatrachyphloeus* with the antennal scrobes not visible dorsally, but is easily distinguishable mainly by the following set of characters: rostrum and head not separated by any stria (*Pentatrachyphloeus* has rostrum separated by slender transverse V-shaped stria); gena and partly subgena glabrous (*Pentatrachyphloeus* has gena and subgena densely squamose); head laterally at dorsal half squamose, at ventral half glabrous with sharp borderline between (*Pentatrachyphloeus* has head laterally densely squamose); glabrous antennal scrobes reaching above and below eyes behind posterior border of eyes (*Pentatrachyphloeus* has antennal scrobes not reaching eyes or dorsal border of scrobes reaching eyes, then scrobes squamose); anterior border of pronotum laterally toothlike, tapered posteriad (*Pentatrachyphloeus* has anterior border of pronotum straight); profemora at anterior border with furrow for keeping of tibiae (*Pentatrachyphloeus* has only short furrow on profemora); protibiae armed with laterally prominent spines, reaching midlength, with shallow indentations between them (*Pentatrachyphloeus* has apex of protibiae rounded, armed with very short and fine spines, lateral edge without spines and indentations); meso- and metatibiae with sparse spines reaching third of their length (*Pentatrachyphloeus* has apical surface armed with short fringe of fine, short spines, reaching one sixth of their length).

Barclayanthus Borovec & Skuhrovec, gen. nov. in general habitus, shape of densely squamose rostrum, pronotum and elytra and also short and robust antennae and protibiae is similar to Palearctic *Trachyphloeus* Germar, 1817 species, but it differs from *Trachyphloeus* by gena and subgena mostly glabrous (*Trachyphloeus* has gena and subgena densely squamose); head laterally in dorsal half squamose, in ventral half glabrous with sharp borderline between (*Trachyphloeus* has head laterally densely squamose); antennal scrobes in lateral view subtriangular, reaching posterior margin above and below the eyes (*Trachyphloeus* has antennal scrobes not reaching eyes); anterior border of pronotum laterally toothlike tapered posteriad (*Trachyphloeus* has anterior border of pronotum straight); profemora at anterior border with furrow to receive tibia (*Trachyphloeus* has only short furrow on profemora); protibiae armed with laterally prominent spines, reaching its midlength, with shallow indentations between them (*Trachyphloeus* has apex of protibiae lobed, armed with spines and indentations, but lateral edge without spines); meso- and metatibiae with sparse spines, last lateral spine situated at about a third of length of tibiae from apex (*Trachyphloeus* has apical surface armed with short fringe of short spines, last lateral spine situated at most at sixth of length of tibiae from apex); claws at base fused (*Trachyphloeus* has claws free); suture between ventrite 1 and 2 arched (*Trachyphloeus* has suture between ventrite 1 and 2 sinuose); metaventral process 1.5 × as wide as transverse diameter of metacoxa (*Trachyphloeus* has metaventral process as wide as transverse diameter of metacoxa).

***Barclayanthus micros* Borovec & Skuhrovec, sp. nov.**

(Figs 1A–F, 2A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:5EB19AB0-34DD-4F67-9215-93BCBB42CF34>

Type locality. Mossel Bay (South Africa, Western Cape).

Type material. Holotype. 1 spec., '[South Africa, Western Cape] CAPE PROVINCE: Mossel Bay, 11.XII.1938, R. E. Turner [lgt.], B.M. 1939-56.' (BMNH). Paratypes. 16 spec., the same data as holotype; 3 ♂♀, ditto, but '16.XII.1938'; 4 ♂♀ ditto, but '7.XII.1938'; 1 spec. ditto, but '14.XII.1938'; 1 spec. ditto, but '13.XII.1938'; 1 spec. ditto, but 'x.1933' (BMNH, RBSC, TMSA).

Description (Figs 1A–F, 2A–E). Body length 1.22–1.59 mm, holotype 1.38 mm. Appressed scales on elytra rounded with 8–10 fine and short fringes on circumference, 3–4 across one elytral interstria, leaving only very short spaces between them. Appressed scales on pronotum, head, scapes and legs except tarsi identical as elytral ones, rostrum with similar, but irregularly angular appressed scales. Semiappressed setae on elytra oval, shorter than diameter of one appressed scale, hardly visible in lateral view, forming one regular, dense row on each interval, distance between two setae about triple of its length. Semiappressed setae on pronotum and head with rostrum distinctly longer than elytral ones, slightly longer than diameter of one appressed scale, moderately densely irregularly scattered. Semiappressed setae on scapes, femora and tibiae about as long as elytral ones but slenderer, sparsely scattered, hardly visible, not protruding beyond the outline. Funicles with hardly visible, short, semiappressed pili-form setae.

Rostrum (Fig. 2B) $1.86\text{--}2.00 \times$ as wide as long, at base $1.18\text{--}1.19 \times$ as wide as at apex.

Scapes (Fig. 2A) $2.52\text{--}2.59 \times$ as long as wide, $1.11\text{--}1.15 \times$ as long as funicles, basal half abruptly dilated, then subparallel-sided, at apex $1.48\text{--}1.56 \times$ as wide as clubs. Funicle segment 1 enlarged, $1.5 \times$ as long as wide and twice as long as segment 2, which is $1.5 \times$ as long as wide; segment 3 isodiametric; segment 4 $1.1 \times$ as wide as long; segment 5 $1.2 \times$ as wide as long; segment 6 $1.4\text{--}1.5 \times$ as wide as long; clubs $1.6\text{--}1.7 \times$ as long as wide.

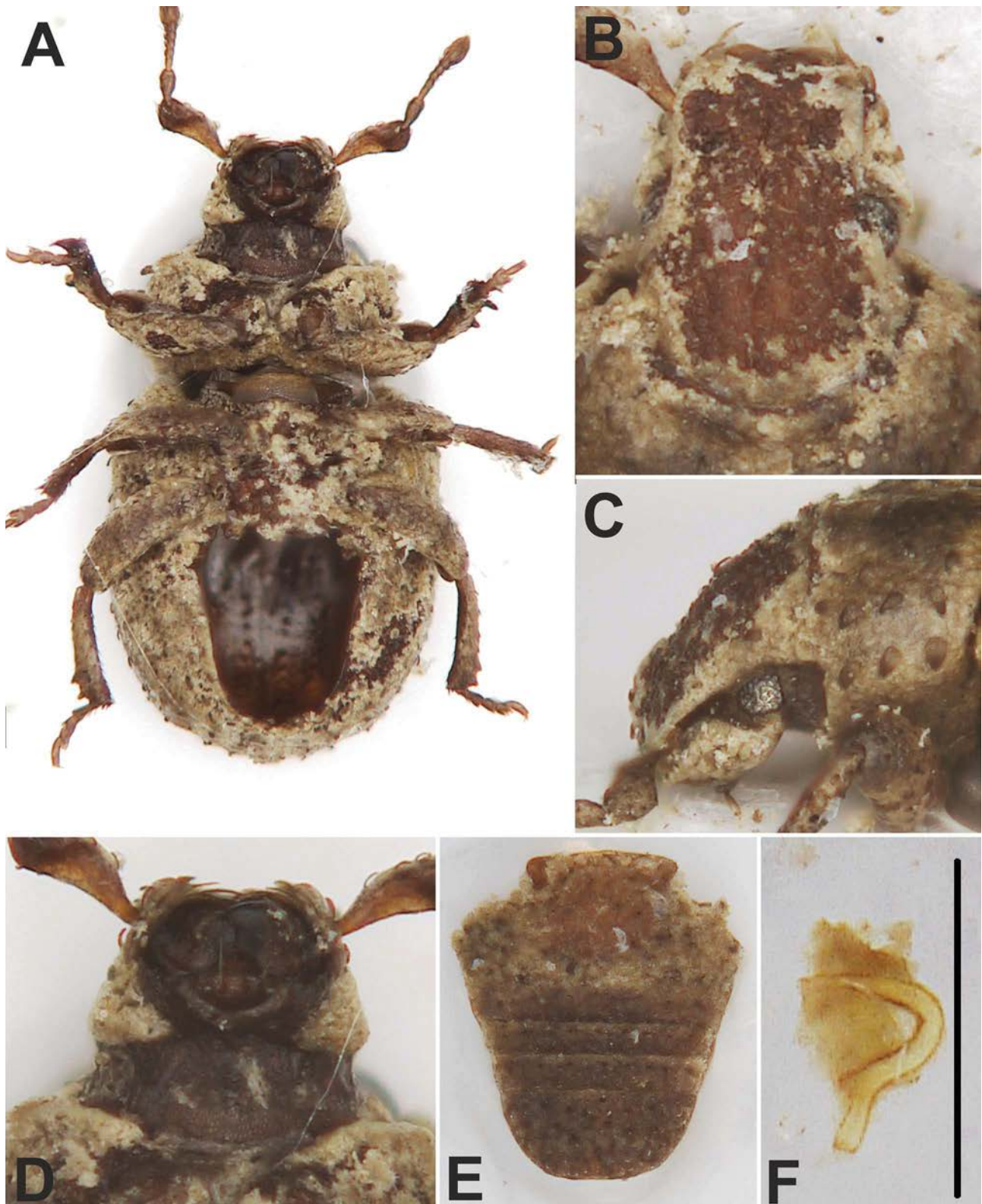


FIGURE 1. *Barclayanthus micros* sp. nov. **A**—habitus, ventral view, male; **B**—rostrum without scales, dorsal view, male; **C**—rostrum without scales, lateral view, male; **D**—head, ventral view, male; **E**—ventrites, male; **F**—spermatheca. Scale bar: 0.25 mm (**F**).

Pronotum $1.63\text{--}1.79 \times$ as wide as long (Fig. 2A), with distinctly rounded sides; in lateral view weakly vaulted, behind anterior border distinctly flattened. When scraped, disc finely and densely punctured, matt.

Elytra $1.10\text{--}1.14 \times$ as long as wide (Fig. 2A), only slightly wider than pronotum, disc in lateral view vaulted. When scraped, disc finely and densely punctured, matt. Tergite VIII in males apically truncate.

Protibiae (Fig. 2E) robust, $3.67\text{--}3.93 \times$ as long as wide, on inner side weakly sinuate, from midlength distinctly tapered anteriorly. Tarsal segment 2 isodiametric; segment 3 $1.1 \times$ as wide as long and $1.1\text{--}1.2 \times$ as wide as segment 2; onychium $1.3\text{--}1.4 \times$ as long as segment 3.

Male genitalia. Penis (Fig. 2D) subparallel-sided or with slightly rounded sides, then widest at midlength, apical part distinctly tapered and elongated, with long, slender, parallel-sided tip; in lateral view irregularly curved, widest at midlength, tapered apicad and basad, tip very slender and sharp, curved inside.

Female genitalia. Gonocoxites were not examined. Spermatheca (Fig. 1F) with long and slender, regularly curved cornu, long and slender corpus, long and slender, subrectangle ramus and small, bump-shaped nodulus.

Derivation of name. The very small body size suggested its name, meaning „small, delicate, minute“ in Latin, in reference to being the smallest known South African species of Trachyploeini.

Biology. Unknown.

Distribution. South Africa, Western Cape.

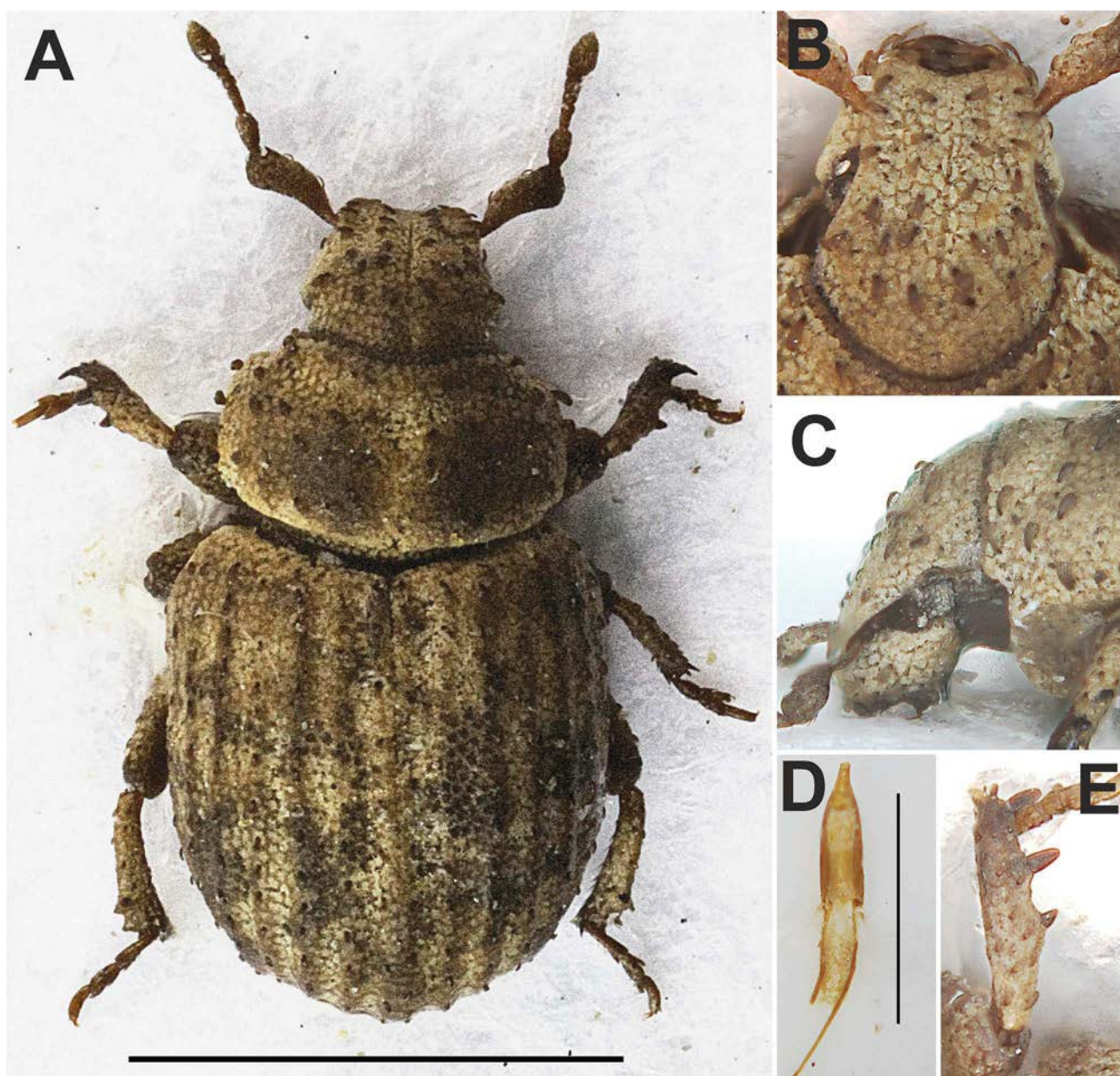


FIGURE 2. *Barclayanthus micros* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, dorsal view, male; **C**—rostrum, lateral view, male; **D**—aedeagus; **E**—protibia, male. Scale bars: 1 mm (**A**), 0.5 mm (**D**).

Differential diagnosis. *Barclayanthus micros* Borovec & Skuhrovec, **sp. nov.** is easily separated from *B. cooteri* Borovec & Skuhrovec, **sp. nov.** by elytra with all intervals equally flat, pronotum wide, only slightly narrower than elytra and penis with apical part distinctly elongated to long, slender tip.

***Barclayanthus cooteri* Borovec & Skuhrovec, sp. nov.**

(Figs 3A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:922271DA-520C-43D2-BB4B-22E687D04EFB>

Type locality. Verlorelevlei farm (South Africa, Western Cape).

Type material. Holotype. ♂, ‘S.Afr., SW Cape [South Africa, Western Cape], Verlorelevlei farm, 32.19 S–18.22 E, 28.8.1981; E–Y: 1856, ground traps, 60 days, leg. Endröedy-Younga, ground trap with banana bait’ (TMSA). Paratype. 1 ♀, the same data as holotype (TMSA).

Description (Figs 3A–E). Body length holotype 1.51 mm, paratype 1.66 mm. Vestiture on dorsal part of body hardly visible (Fig. 3A) through incrustation of the body, but appressed scales are composed of rounded sparse scales, leaving space between. Semiappressed setae very short, hardly visible, slender, distinctly shorter than diameter of one appressed scale.

Rostrum (Fig. 3B) 1.94–2.03 × as wide as long, at base 1.31–1.33 × as wide as at apex.

Scapes (Fig. 3A) 1.88–2.06 × as long as wide, 1.13 × as long as funicles, basal half abruptly dilated, than subparallel-sided, at apex 1.52 × as wide as clubs. Funicle segment 1 the largest, 1.5 × as long as wide and 2.5 × as long as segment 2, which is 1.1 × as long as wide; segment 3 and 4 1.1 × longer than wide; segment 5 1.1 × as wide as long; segment 6 1.3 × as wide as long; club twice as long as wide.

Pronotum 1.34–1.43 × as wide as long (Fig. 3A), widest at anterior third with slightly rounded sides, weakly tapered posteriorly; in lateral view distinctly vaulted, behind anterior border flattened.

Elytra 1.09–1.16 × as long as wide (Fig. 3A), distinctly wider than pronotum, disc in lateral view vaulted, odd intervals more elevated than even ones along the entire their length. Tergite VIII in males apically concave.

Protibiae (Fig. 3E) robust, 3.63–4.17 × as long as wide, inner side straight, widest between anterior third and quarter. Tarsal segment 2 1.1 × wider than long; segment 3 1.2 × as wide as long and 1.2 × as wide as segment 2; onychium 1.3 × as long as segment 3.

Male genitalia. Penis (Fig. 3D) long and slender, subparallel-sided with concave sides, apical part short, subtriangular, tip narrowly rounded; in lateral view regularly curved, equally wide along the entire length, apical part regularly tapered apicad.

Female genitalia were not examined.

Derivation of name. This newly described species is dedicated to our friend, Jon Cooter (Oxford, UK) specialist of Leiodinae, for his patient help with English in our last several articles.

Biology. Unknown.

Distribution. South Africa, Western Cape.

Differential diagnosis. *Barclayanthus cooteri* Borovec & Skuhrovec, **sp. nov.** can be easily separated from *B. micros* Borovec & Skuhrovec, **sp. nov.** mainly by elytra with odd intervals more elevated than even ones, pronotum narrow, distinctly narrower than elytra and penis with apical part short, subtriangular, with tip narrowly rounded.

Key to the *Barclayanthus* species

1. Elytra with all intervals equally flat (Fig. 2A). Pronotum wide, 1.63–1.79 × as wide as long, slightly narrower than elytra (Fig. 2A). Penis with apical part distinctly tapered and elongated, with long, slender, parallel-sided tip; in lateral view widest at mid-length (Fig. 2E). Tergite VIII in males apically truncate. *B. micros* Borovec & Skuhrovec, **sp. nov.**
- Elytra with odd intervals more elevated than even ones (Fig. 3A). Pronotum narrow, 1.34–1.43 × as wide as long, distinctly narrower than elytra (Fig. 3A). Penis with apical part short, subtriangular, with tip narrowly rounded; in lateral view equally wide along the entire length (Fig. 3E). Tergite VIII in males apically concave. *B. cooteri* Borovec & Skuhrovec, **sp. nov.**

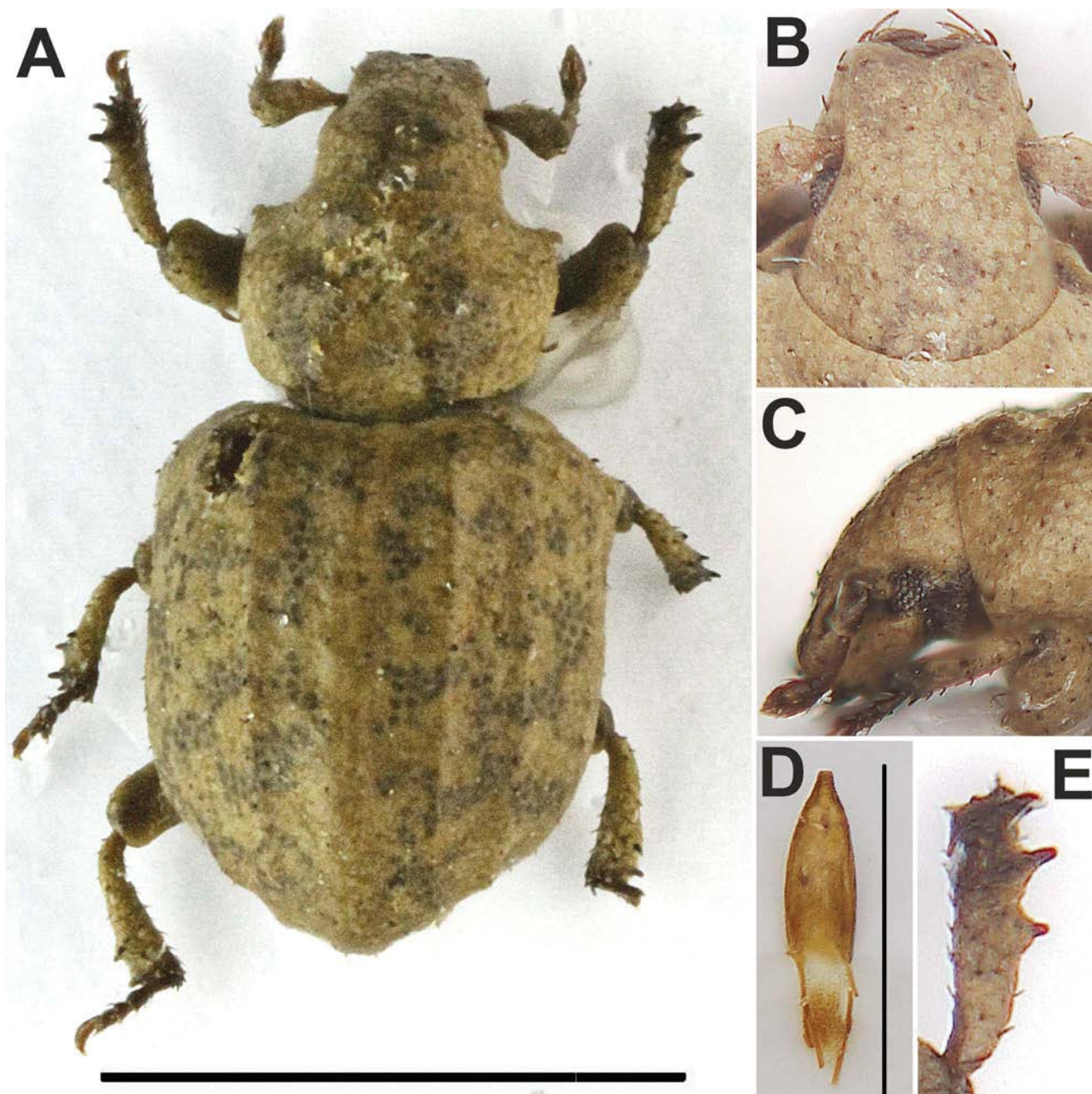


FIGURE 3. *Barclayanthus cooteri* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, dorsal view, male; **C**—rostrum, lateral view, male; **D**—aedeagus; **E**—protibia, male. Scale bars: 1 mm (**A**), 0.5 mm (**D**).

***Janakius* Borovec & Skuhrovec, gen. nov.**

(Figs 4A–I, 5A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:B716D642-397A-408F-84F9-7040941F6C3F>

Type species: *Janakius sylvaticus* Borovec & Skuhrovec, sp. nov., by present designation.

Diagnosis. Small Trachyphloeini, less than 2.4 mm, epifrons separated from head by wide and deep furrow, furrow dorsally ellipse-shaped, at middle about as wide as diameter of eyes; epistome large, V-shaped, slenderer than apical part of epifrons; protibiae short and robust with mucro and two slightly shorter premucros directed inside; meso- and metatibiae with apical surface glabrous, shiny, with two equally long distinct mucros; metatibiae without corbels; abdominal ventrite 2 in middle longer than very short ventrites 3 and 4 combined; suture between ventrites 1 and 2 sinuose; tegmen with two short and weakly sclerotised parameres far from each other; sternite VIII in females with moderately long, slender apodeme, terminating just inside of plate; plate umbrella-shaped, weakly sclerotised.

Description (Figs 4A–I, 5A–E). Length 1.9–2.4 mm. Body dark brownish (Fig. 5A), basal part of scapes, funicles with clubs and anterior part of tibiae reddish brown, tarsi reddish. Body densely covered by dense, appressed scales, completely covering integument, regularly covering dorsal and except ventral part of head also ventral part of body, scapes, femora and tibiae; gena glabrous; subgena with conspicuous dense slender transverse squamose stripe at base and lateral parts, forming U-shaped pattern. Clubs densely finely setose. Scale-like setae on body well visible, moderately long, subspatulate, semiappressed, forming on elytra one regular dense row; antennae and legs with short semiappressed to semierect slender setae, weakly prominent beyond the outline. Colour pattern of body dark brownish, elytra irregularly sparsely scattered by short transverse spots from yellowish brown scales, pronotum with two lateral longitudinal yellowish-brown stripes, rostrum dorsally yellowish brown.

Rostrum short and wide (Figs 5B), robust, $1.4\text{--}1.5 \times$ as wide as long, with distinctly and regularly rounded sides, at base about as wide as at apex; in lateral view vaulted, when covered by scales in the same flat level as head (Fig. 5C). Epifrons moderately wide, widest at base, weakly tapered anteriorly with slightly convex sides, at base slightly narrower than distance between anterior margins of eyes, weakly longitudinally depressed, separated indistinctly from head by narrow transverse sulcus. When scraped, epifrons separated from head by strange, wide and extremely deep furrow, dorsally in shape of pointed ellipse, at middle about as wide as diameter of eyes (Fig. 4B), laterally reaching quarter of rostrum height, touching anterior border of eyes (Fig. 4C); anterior and posterior border of furrow distinctly arched, laterally pointed to moderately sharp tips, directed against themselves. Dorsal surface of epifrons flat with moderately wide longitudinal median stria, faintly matt, rough, with very small, fine punctures and short longitudinal striae, borders at posterior half weakly swollen. Frons glabrous with only several very small, rounded scales, faintly matt, with 3–4 pairs of long stout setae. Epistome large, distinct, V-shaped, posteriorly carinate, asquamose, weakly slenderer than apical part of epifrons, posteriorly reaching anterior border of scrobes. Antennal scrobes dorsally well visible, crescent-shaped in anterior two thirds; laterally furrow-shaped, glabrous, well-edged, weakly curved and visible enlarged posteriorly, with dorsal border parallel with dorsal border of epifrons and ventral border directed to middle of eyes, separated from eyes by slender squamose stripe. Head wide and flat, without tubercles above eyes; when scraped rough, moderately matt, densely finely longitudinally striate; laterally behind eyes glabrous, below eyes with sparse, very small rounded scales; ventrally gena glabrous (Fig. 4D), with weak micro-sculpture, shallowly finely and densely punctured; subgena posteriorly with slender and very dense stripe of small scales, with anterior two thirds glabrous, shiny, finely and sparsely punctate. Eyes moderately large, weakly vaulted and weakly prominent beyond the outline of head, laterally subcircular, placed in dorsal part of head. Mandibles trisetose, small, asquamose. Submentum with pair of long slender setae and group of very small, short and fine setae at anterior border.

Antennae (Fig. 5A) moderately short and robust. Scapes short and robust, $3.9\text{--}4.1 \times$ as long as wide, $1.2 \times$ as long as funicle, weakly curved at midlength, apical half regularly and gradually enlarged apically, at apex equally wide as clubs. Funicles 7-segmented, with segment 1 enlarged and longer than segments 2 and 3 combined; segments 3–7 short, transverse; clubs with segment 1 largest.

Pronotum (Fig. 5A) $1.4\text{--}1.5 \times$ as wide as long with regularly rounded sides, weakly more tapered anteriorly than posteriorly, behind anterior border weakly constricted. Disc regularly vaulted, without furrow or depressions; base regularly arched. Anterior border laterally straight, weakly obliquely directed posteriorly. Procoxal cavities contiguous, placed in the middle of pronotum; procoxae subglobular. Scutellum not visible.

Elytra (Fig. 5A) oval, $1.2\text{--}1.3 \times$ as long as wide, with regularly rounded sides, apically broadly rounded, with regularly rounded shoulders; base arched; posthumeral calli weakly developed, visible only in dorsolateral view; 10-striae, striae moderately wide, punctured; intervals equally wide and almost flat; in lateral view posterior declivity distinctly overhanging apex. Mesocoxae semiglobular, narrowly separate, mesosternal process narrower than fifth of diameter of mesocoxa, not reaching posterior margin of metacoxae. Metacoxae shortly transverse, separated by almost twice their width.

Femora unarmed, medially weakly inflated and flattened. Tibiae short and robust; protibiae (Fig. 5E) $4\text{--}4.4 \times$ as long as wide, with lateral edge straight and inner edge double sinuose, apex obliquely subtruncated, at inner portion elongated anteriorly and enlarged inside, apically armed with 5–6 sparse, slender yellowish spines of unequal length with the longest spine at the middle, not reaching just inner angle and with mucro and two slightly shorter premucros at inner part, curved and directed inside. Meso- and metatibiae with apical surface suboval, asquamose and shiny, laterally armed with fringe of fine, bristle-shaped yellowish long spines and inside with two equally long distinct mucros; metatibiae without corbels. Tarsi long and moderately slender; segment 1 long and slender; segment 2

wider than long; segment 3 bilobed and distinctly wider than previous segments; onychium equally long as segment 3. Claws fused at basal half, then divorced.

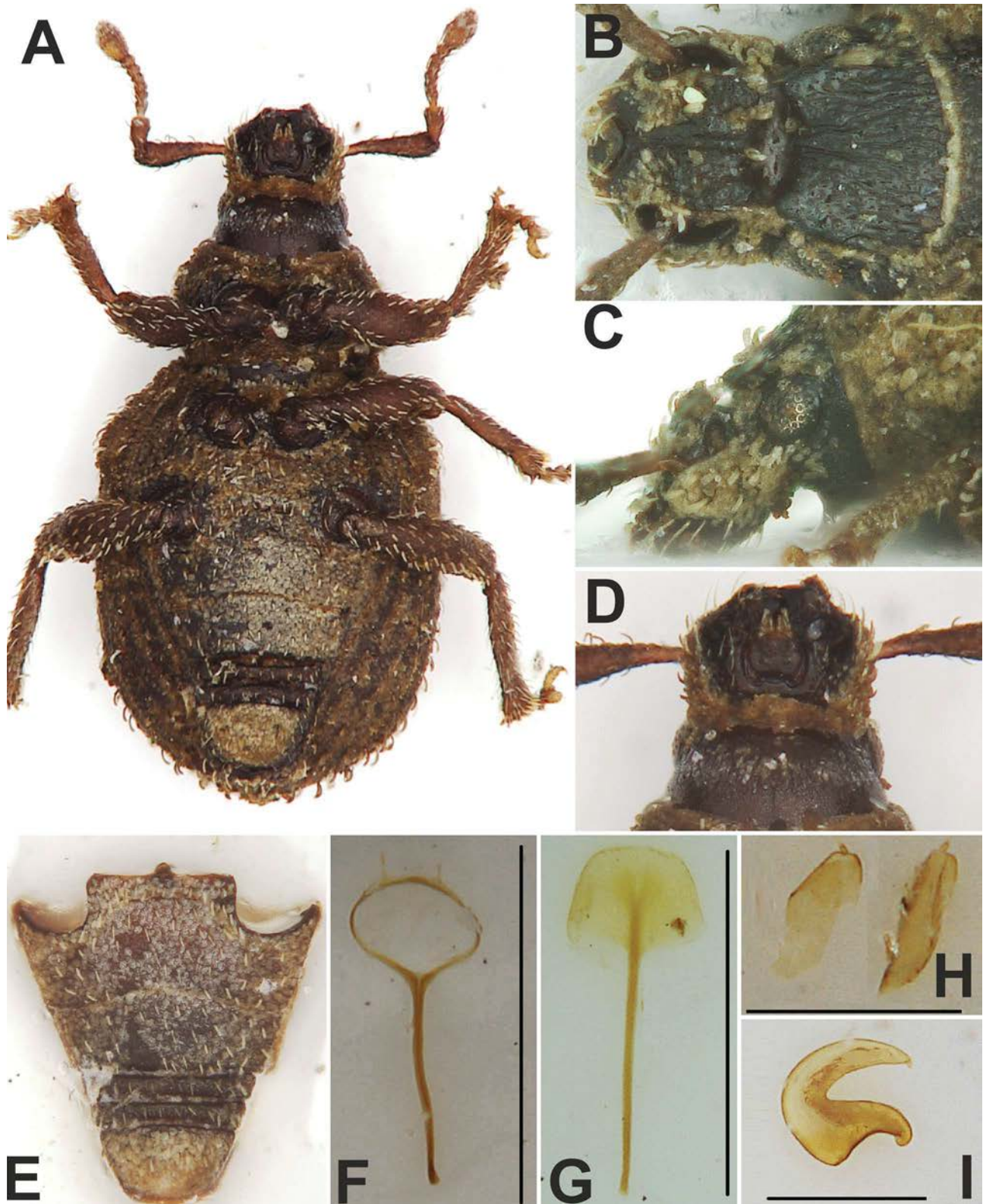


FIGURE 4. *Janakius sylvaticus* sp. nov. **A**—habitus, ventral view, male; **B**—rostrum without scales, dorsal view, male; **C**—rostrum without scales, lateral view, male; **D**—head, ventral view, male; **E**—ventrites, female; **F**—tegmen, male; **G**—sternite VIII, female; **H**—gonocoxites; **I**—spermatheca. Scale bars: 0.5 mm (F, G), 0.25 mm (H, I).

Abdominal ventrites (Figs 4A, E) subtriangular, as long as wide to $1.1 \times$ as long as wide; ventrite 1 in middle slightly shorter than ventrites 2–4 combined, distinctly longer than ventrite 2, behind metacoxa about as long as

ventrite 2, in males slightly shallowly depressed, in females slightly vaulted; ventrite 2 in middle longer than very short ventrites 3 and 4 combined; ventrite 5 large, in males obtuse apically, in females subtriangular apically. Suture between ventrites 1 and 2 sinuose, narrow and fine; other sutures straight, wide and deep. Ventrites (Fig. 4E) densely squamose, appressed scales completely covering integument and with short, semiappressed, densely irregularly scattered slender setae.

Sexual dimorphism. Externally not apparent except for slight differences in shape of ventrites 1 and 5.

Male genitalia. Penis (Fig. 5D) short and well sclerotised, tementes well sclerotised, 1.9–2.1 × as long as body of penis and 2.2–2.4 × as long as tegminal manubrium; endophallus short, inside with fine elongated sclerites. Tegmen (Fig. 4F) with slender ring with two very short and weakly sclerotised parameres far from each other, distance between them longer than length of one paramere. Tegminal manubrium 1.4 × as long as diameter of ring. Sternite IX moderately long and slender, anteriorly curved and tapered, posteriorly with fused basal arms, apical plate absent.

Female genitalia. Gonocoxites (Fig. 4H) short and wide, evenly tapered apically, at apex shortly obtuse, with very short, hardly visible styli with tuft of 3–4 fine setae. Sternite VIII (Fig. 4G) with moderately long, slender apodeme, 3.0–3.2 × as long as plate and terminating just inside of plate; plate weakly sclerotised, 1.5 × as wide as long, umbrella-shaped, with very slender apical margin with short setae and ill-defined basal margin. Spermatheca (Fig. 4I) large, crescentic, with slender cornu and large, elongated corpus, ramus and nodulus developed, small.

Derivation of name. The genus is named after collector of the majority of type material, friend and colleague Jiří Janák (Rtyně nad Bílinou, Czech Republic), an eminent specialist on Staphylinidae and Carabidae, who collected incredible numbers of soil associated Entiminae in South Africa and Madagascar and who tried to persuade the first author to change his interest from Carabidae to any other beetle family, in our common trip to Slovakia in 1977.

Biology. All known specimens were sifted from forest litter. Reproduction amphigonic.

Distribution. South Africa, Eastern Cape.

Included species. The genus is described as monotypic.

Remarks. The set of characters, distinguishing *Janakius* Borovec & Skuhrovec, gen. nov. from all other Trachyploeini is as follows: rostrum when scraped separated from head by wide and extremely deep transverse sulcus, reaching laterally anterior border of eyes, dorsally with arched borders, pointed to moderately sharp tips at lateral borders; head and rostrum ventrally glabrous with only slender stripe of densely placed scales at posterior border of subgena; protibiae at apex mesally distinctly enlarged with mucro and two slightly shorter premucros, slender and curved inside; meso- and metatibiae with two equally long mucros; abdominal ventrites squamose with metaventral process distinctly wider than transverse diameter of metacoxa; ventrite 2 in middle distinctly longer than short ventrites 3 and 4 combined; suture between ventrites 1 and 2 sinuose; tegminal ring with two short and weakly sclerotised parameres, far from each other. Wide and deep transverse sulcus between rostrum and head, elongated to sharp tips, is exceptional in all South African Entiminae known to us.

Janakius Borovec & Skuhrovec, gen. nov. is different from all other South African Trachyploeini with connate claws by wide, oval elytra, rostrum with regularly rounded sides, robust antennae and tibiae. By these characters, but mainly by protibiae with mucro and two premucros prominent mesally, the newly described genus is similar only to *Heisonyx* Marshall, 1947 (Embrithini). It is easily distinguished from this genus mainly by two equally long connate claws, while *Heisonyx* has onychium with only one claw, but also by metatibiae lacking corbels (*Heisonyx* has slender squamose metatibial corbels), head and rostrum separated by extremely deep and wide transverse sulcus (*Heisonyx* has head and rostrum separated by very narrow and shallow sulcus), frons glabrous (*Heisonyx* has frons squamose), epistome distinct, large, reaching anterior border of antennal scrobes (*Heisonyx* has epistome small, sometimes hardly visible, not reaching anterior border of antennal scrobes).

***Janakius sylvaticus* Borovec & Skuhrovec, sp. nov.**

(Figs 4A–I, 5A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:F06E27D3-3009-4188-BA2F-22DE5B867AA2>

Type locality. Woody Cape in Addo Elephant National Park (South Africa, Eastern Cape).

Type material. Holotype. ♂, 'RSA [South Africa], Eastern Cape, Woody Cape, in Addo Eleph.[ant] NP [National Park], 33°42' S 26°24' E, 4.ii.2012, Langebos, indig.[enous] forest, forest litter at the base of high trees, sift-

ing, J. Janák lgt.' (TMSA). Paratypes. 67 ♂♀, the same data as holotype (JJRC, JSPC, NMPC, RBSC, TMSA); 13 ♂♀, 'South Africa, Eastern Cape, „La Repos“ forest 8 km S of Alexandria, 33°45' S, 26°25' E, 4.xii.2006, sifting, J. Janák lgt.' (JJRC); 2 ♀♀, 'S. Afr.; SE. Cape, Prov. Alexandria, For. St., 33.43 S–26.23 E, 5.12.1987; E-Y: 2553, ground traps, 2 days, groundtrap with faeces bait, leg. Endrödy-Younga' (TMSA); 1 spec., 'ZA [South Africa], E [Eastern] Cape, road N2, 10 km SW Grahamstown, 33°12'18" S, 26°28'58" E, 14.XI.2006, 350 m, E. Colonnelli [lgt.]' (ECRI).

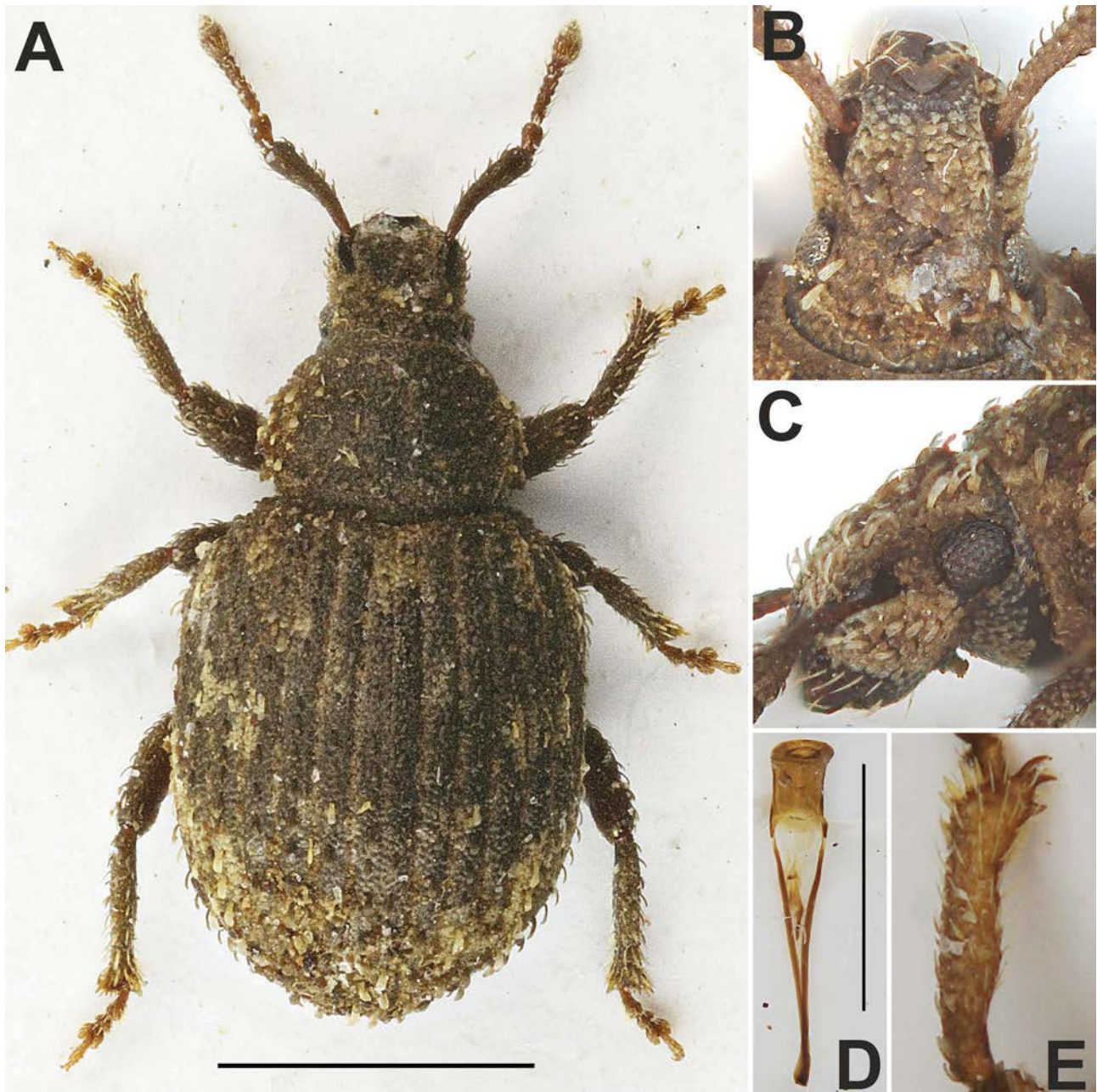


FIGURE 5. *Janakius sylvaticus* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, dorsal view, male; **C**—rostrum, lateral view, male; **D**—aedeagus; **E**—protibia, male. Scale bars: 1 mm (**A**), 0.5 mm (**D**).

Description (Figs 4A–I, 5A–E). Body length 1.88–2.44 mm, holotype 2.25 mm. Appressed scales on elytra rounded, distinctly longitudinally finely striate, 4 across one elytral interstria, slightly imbricated. Appressed scales on pronotal disc with indistinct structure, lateral paler stripes with scales irregularly angular, distinctly depressed in the middle; base of pronotum with slender transverse stripe of about three irregular rows of small, rounded, densely placed yellowish-brown scales. Head with rostrum, scapes, femora and tibiae with identical scales as elytra, on antennae and legs slightly smaller. Elytral raised setae create one dense regular row on each interval, distance between two setae slightly longer than length of one seta, on disc with semiappressed shorter, slender setae, about as

long as half width of one interval, visible mainly in lateral view, at posterior declivity setae semierect, subspatulate, distinctly longer than half width of one interval, conspicuous. Disc of pronotum and rostrum with short, slender, semiappressed setae as on elytral disc, lateral stripes of pronotum and interocular space with long, semierect, subspatulate setae as on elytral declivity. Femora with semiappressed, scapes and tibiae with semierect short, slender setae; funicles with semierect moderately long dark brownish piliform setae; tarsi with semierect short yellowish setae.

Rostrum 1.40–1.47 × as wide as long (Fig. 5B).

Scapes (Fig. 5A) 3.97–4.12 × as long as wide, 1.21–1.24 × as long as funicles. Funicle segment 1 1.5–1.6 × as long as wide, 1.8–2.0 × as long as segment 2, which is 1.1–1.3 × as long as wide; segments 3–6 1.7–1.8 × as wide as long; segment 7 1.5–1.6 × as wide as long; clubs 1.5–1.6 × as long as wide.

Pronotum (Fig. 5A) 1.37–1.47 × as wide as long, with distinctly rounded sides; in lateral view weakly vaulted. When scraped disc finely and densely punctured, matt, only narrow stripe just behind anterior margin unpunctured, smooth, shiny, paler, reddish.

Elytra (Fig. 5A) 1.18–1.26 × as long as wide, moderately wider than pronotum, disc in lateral view vaulted. When scraped intervals smooth, shiny, slightly vaulted; striae moderately wide, distinctly densely punctured.

Protibiae (Fig. 5A) robust, 4.05–4.43 × as long as wide. Tarsal segment 2 1.5–1.6 × as wide as long; segment 3 1.4 × as wide as long and 1.3–1.4 × as wide as segment 2; onychium equally long as segment 3.

Male genitalia. Penis (Fig. 5D) widest at apical third, regularly tapered basad with slightly concave sides, apex regularly broadly rounded; in lateral view curved, apical half about evenly tapered apicad.

Female genitalia. Spermatheca (Fig. 4I) with very slender and moderately short cornu; corpus large, elongate, subtriangular, with ramus very short and wide and nodulus slender, short and turned.

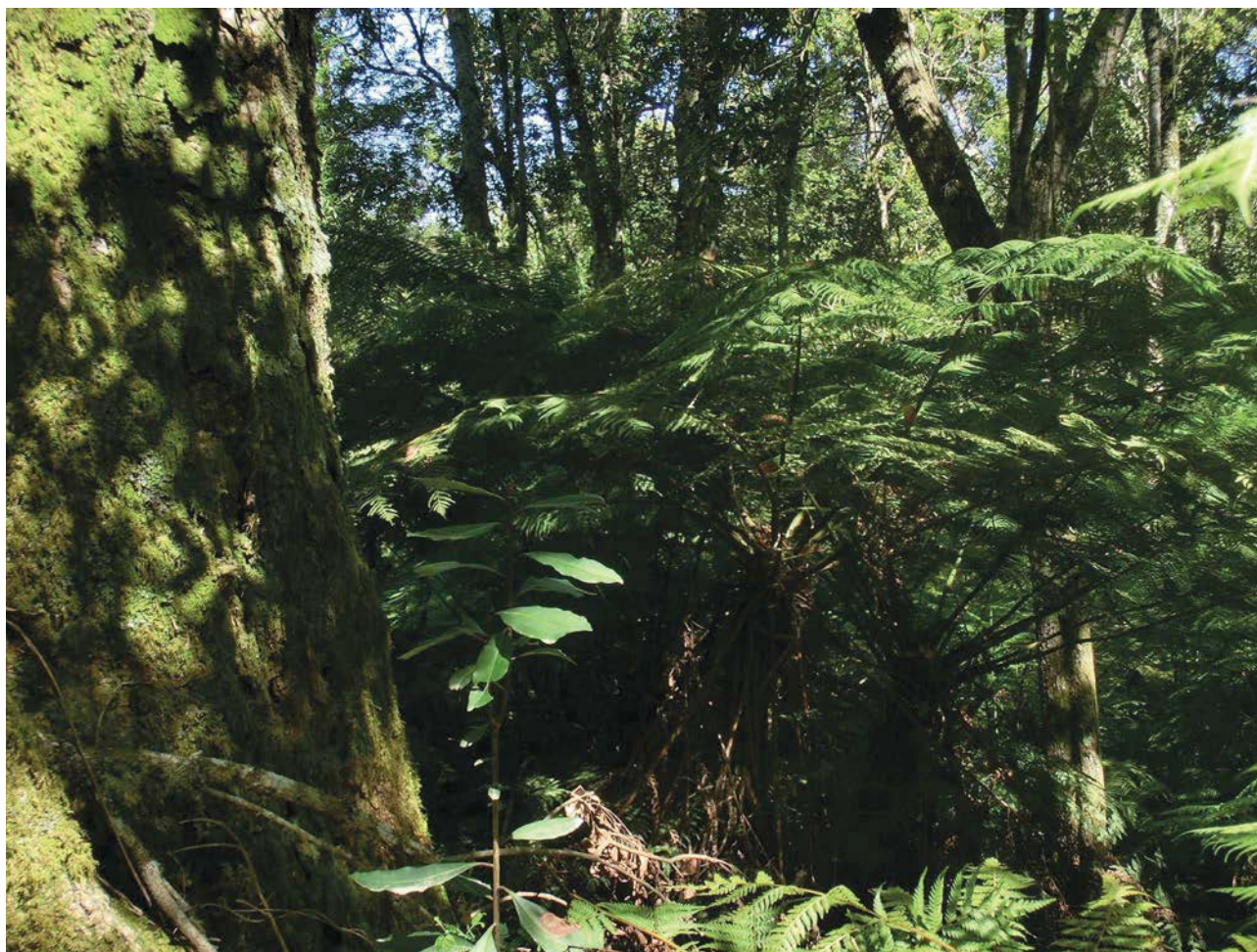


FIGURE 6. Habitat of *Janakius sylvaticus* sp. nov. Adults were sifted in indigenous forest from litter at base of high trees, photo J. Janák.

Derivation of name. Named from the Latin *sylvaticus*, meaning occurring in the forest, in reference to the circumstances of collection.

Biology. The type specimens were sifted from litter of native forest at the base of high trees (Fig. 6).

Distribution. South Africa, Eastern Cape.

Key to the genera of small terricolous species of Trachyploeini with connate claws and Embrithini

This key includes all Trachyploeini genera with connate claws and for completeness also genera of the Embrithini, containing species with a terricolous life style and smaller than 4.0 mm. In the key, only the genus *Cosmorhinus* Schoenherr, 1826 is missing, due to its unclear systematic position, which should be solved in some future paper, but three known *Cosmorhinus* species will clearly key to the *Ellimenistes* in the table below.

The reason for including genera of both tribes in one key is purely practical. The tribes are distinguishable only by the presence (Embrithini) or absence (Trachyploeini) of the metatibial corbels. This character is easily observed in moderately larger specimens as in *Afrophloeus* or *Ellimenistes* species, but it is sometimes difficult to see in smaller specimens, especially if the corbel is slender and specimens are encrusted by soil.

1. Rostrum continuous with head, completely flat, without any transverse sulcus (Figs 2B, 3B, 7B, 8B)..... 2
- Rostrum and head separated by narrow sulcus or deep transverse furrow (Figs 5B, 9–15B)..... 4
2. Rostrum 1.1–1.3 × wider than long (Figs 7B, C). Frons glabrous and deepened (Fig. 7B). Epistome projecting anteriorly and laterally forming sharp teeth directed dorsally (Fig. 7B). Epifrons with distinctly concave sides (Fig. 7B). Antennal scrobes in lateral view reaching about the half distance from antennal insertion to eyes (Fig. 7A). Elytra behind base constricted (Fig. 7A). Protibiae 5.5–6.4 × as long as wide at widest point (Fig. 7D). Apex of plate of female sternite VIII with the Y-shaped process (Fig. 7F). Spermatheca without differentiated nodulus and ramus. Size 1.6–2.6 mm. *Epistomius* Borovec & Skuhrovec
- Rostrum 1.5–1.9 × wider than long (Figs 2B, C, 8B, C). Frons densely squamose, flat (Figs 2B, 3B, 8B). Epistome not projecting anteriorly (Figs 2B, 3B, 8B). Epifrons with straight sides (Figs 2B, 3B, 8B). Antennal scrobes in lateral view reaching eyes (Figs 2A, 3A, 8A). Elytra not constricted behind base (Figs 2A, 3A, 8A). Protibiae 3.2–4.2 × as long as wide at widest point (Figs 2E, 3E, 8D). Plate of female sternite VIII without apical process (Fig. 8F). Spermatheca with differentiated nodulus and ramus (Fig. 1F). 3
3. Protibiae with distinct, sparse, laterally prominent spines reaching midlength of lateral edge (Figs 2E, 3E). Anterior border of pronotum in lateral part dentiform (Figs 2A, 3A). All tibiae mucronated. Suture between abdominal ventrites 1 and 2 arched (Fig. 1E). Ventrite 1 in middle about as long as ventrites 2–4 combined (Fig. 1E). All ventrites densely squamose (Fig. 1E). Tegmen with slender ring lacking parameres. Size 1.2–1.7 mm. *Barclayanthus* Borovec & Skuhrovec, **gen. nov.**
- Protibiae with fringe of dense slender bristles only at apical portion (Fig. 8D). Anterior border of pronotum straight (Fig. 8A). All tibiae amucronated. Suture between abdominal ventrites 1 and 2 sinuate (Fig. 8G). Ventrite 1 in middle slightly shorter than ventrite 2 (Fig. 8G). All ventrites glabrous, sparsely covered with semiappressed spatulate scales (Fig. 8G). Tegmen with ring expanded to the tegminal plate (Fig. 8E). Size 1.5–2.1 mm. *Afromuelleria* Borovec & Skuhrovec
4. Tarsi with a single claw, or exceptionally with one claw elongate and with trace of second rudimentary claw (Fig. 9A). Size 1.6–2.8 mm. *Heisonyx* Marshall
- Tarsi with two, equally long claws. 5
5. Epifrons between antennal insertion very slender, 0.2–0.3× as wide as rostrum in the same place (Fig. 10B). Scapes very long and slender, reaching clearly behind midlength of pronotum when folded, 11–12× as long as at apex wide (Fig. 10A). Funicle segment 2 long and slender, 3.5–6.5× longer than wide and usually twice or more longer than segment 1 (Fig. 10A). Metatibiae with wide squamose metatibial corbels. Female sternite VIII with long and slender apodeme, 3.5–4× as long as small, subtriangular plate, with slender but developed anterior as well as posterior margins (Fig. 10F). Size 2.4–7.8 mm. *Ellimenistes* Boheman
- Epifrons between antennal insertion wide, at least 0.5× as wide as rostrum in the same place (Figs 5B, 11–15B). Scapes moderately long or short and robust, at most 8× as long as at apex wide (Figs 5A, 11–15A). Funicle segment 2 short to moderately long, at most 3.0× longer than wide and usually equally long as segment 1 or shorter (Figs 5A, 11–15A). Metatibiae with or without corbels. Female sternite VIII with short apodeme, at most twice as long as umbrella-shaped plate, with posterior margin membranous (with exception of *Lalagetes*, having similar sternite VIII as *Ellimenistes*) (Figs 4G, 11–15F) 6
6. Rostrum separated from head by a wide transverse sulcus with ill-defined borders (Fig. 11B). Eyes small and flat, hardly visible in dorsal view (Fig. 11C). Scapes short, wide and robust, at most 4.0× longer than wide at widest place (Fig. 11A). Funicles robust, all segments distinctly wider than long (Fig. 11A). Clubs barely wider than last funicle segment and approximated to it (Fig. 11A). Protibiae armed with 7 sparse spines of different length and shape (Fig. 11D). Size 2.3–3.3 mm. *Afrophloeus* Borovec & Oberprieler
- Rostrum separated from head by narrow, sharply edged transverse sulcus (Figs 5B, 12–15B). Eyes small or large, convex, clearly visible in dorsal view (Figs 5C, 12–15C). Scapes long and slender, at least 3.9× longer than wide at widest place, only in some *Pentatrachyploeus* species short and robust (Figs 5A, 12–15A). Funicles slender, at least first five segments longer than wide, only in some *Pentatrachyploeus* all segments wider than long (Figs 5A, 12–15A). Clubs distinctly wider than and distinctly separated from last funicle segment (Figs 5A, 12–15A). Protibiae fringed by fine setae or short, dense, inconspicuous spines (Figs 5E, 12–15D). 7

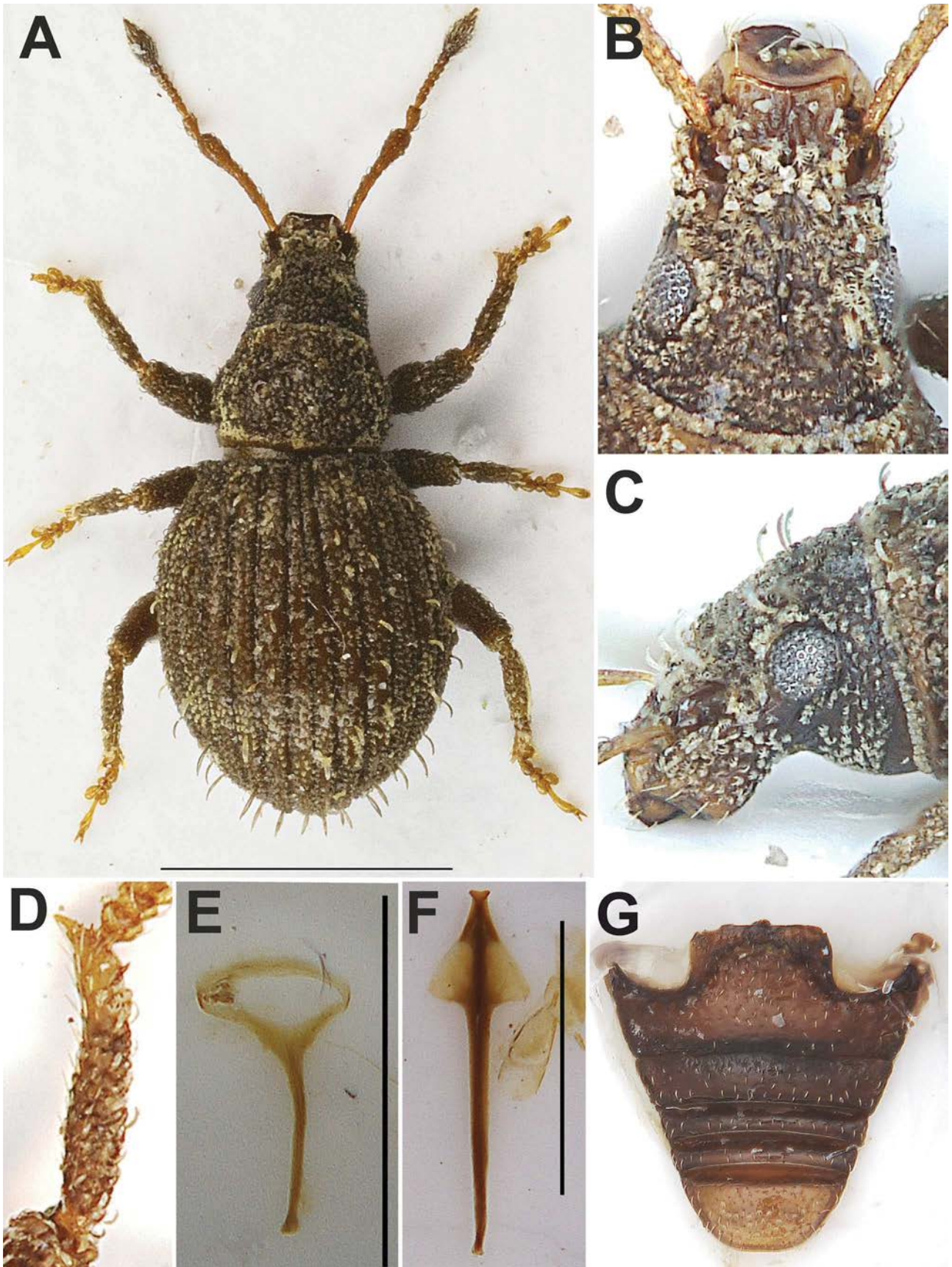


FIGURE 7. *Epistomius colonnellii* Borovec & Skuhrovec, 2017. **A**—habitus, dorsal view, male; **B**—rostrum, dorsal view, male; **C**—rostrum, lateral view, male; **D**—protibia, male; **E**—tegmen, male; **F**—sternite VIII, female; **G**—ventrites, male. Scale bars: 1 mm (**A**), 0.5 mm (**E**, **F**).

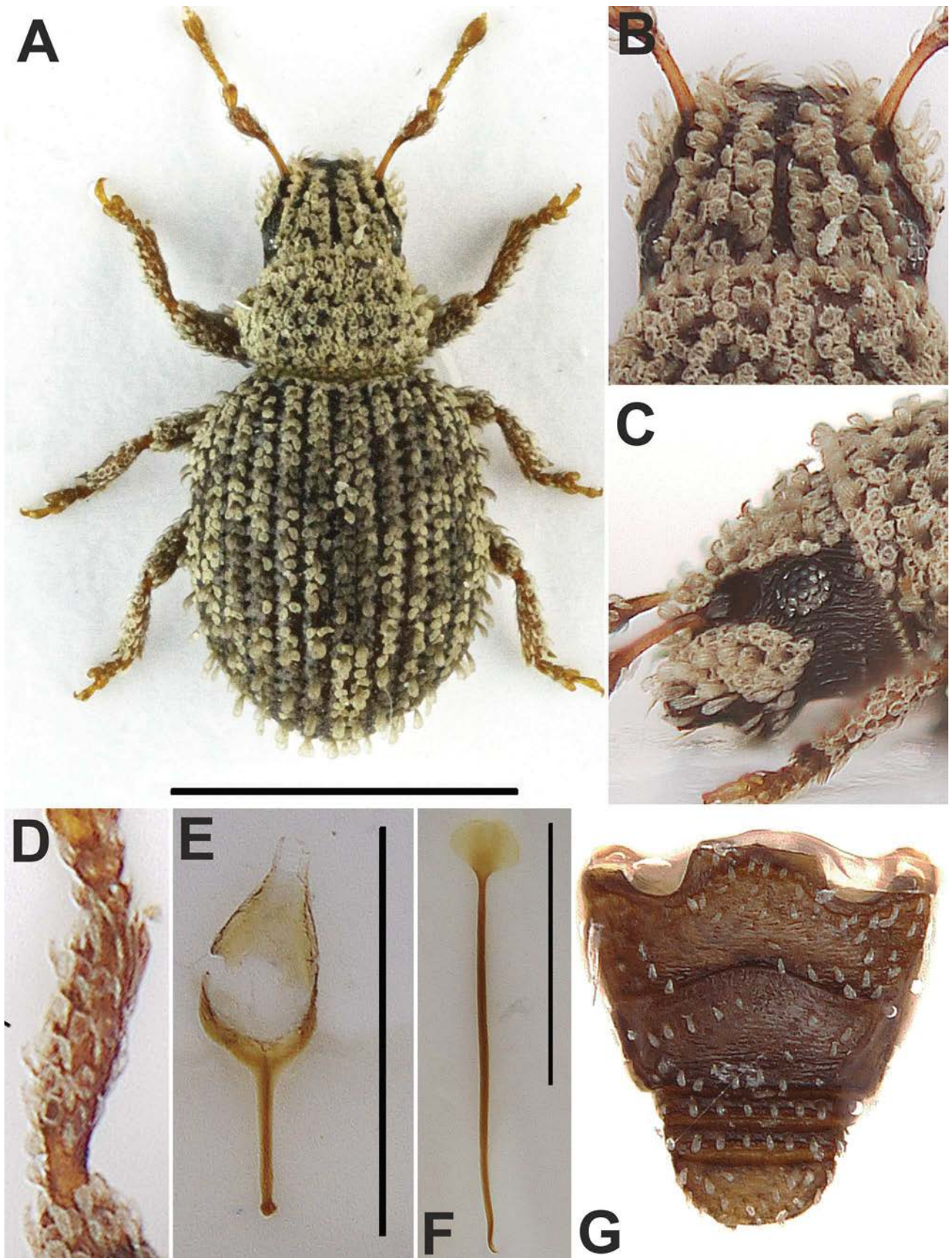


FIGURE 8. *Afromuelleria awelani* Borovec & Skuhrovec, 2018. **A**—habitus, dorsal view, male; **B**—rostrum, dorsal view, male; **C**—rostrum, lateral view, male; **D**—protibia, male; **E**—tegmen, male; **F**—sternite VIII, female; **G**—ventrites, male. Scale bars: 1 mm (A), 0.5 mm (E, F).

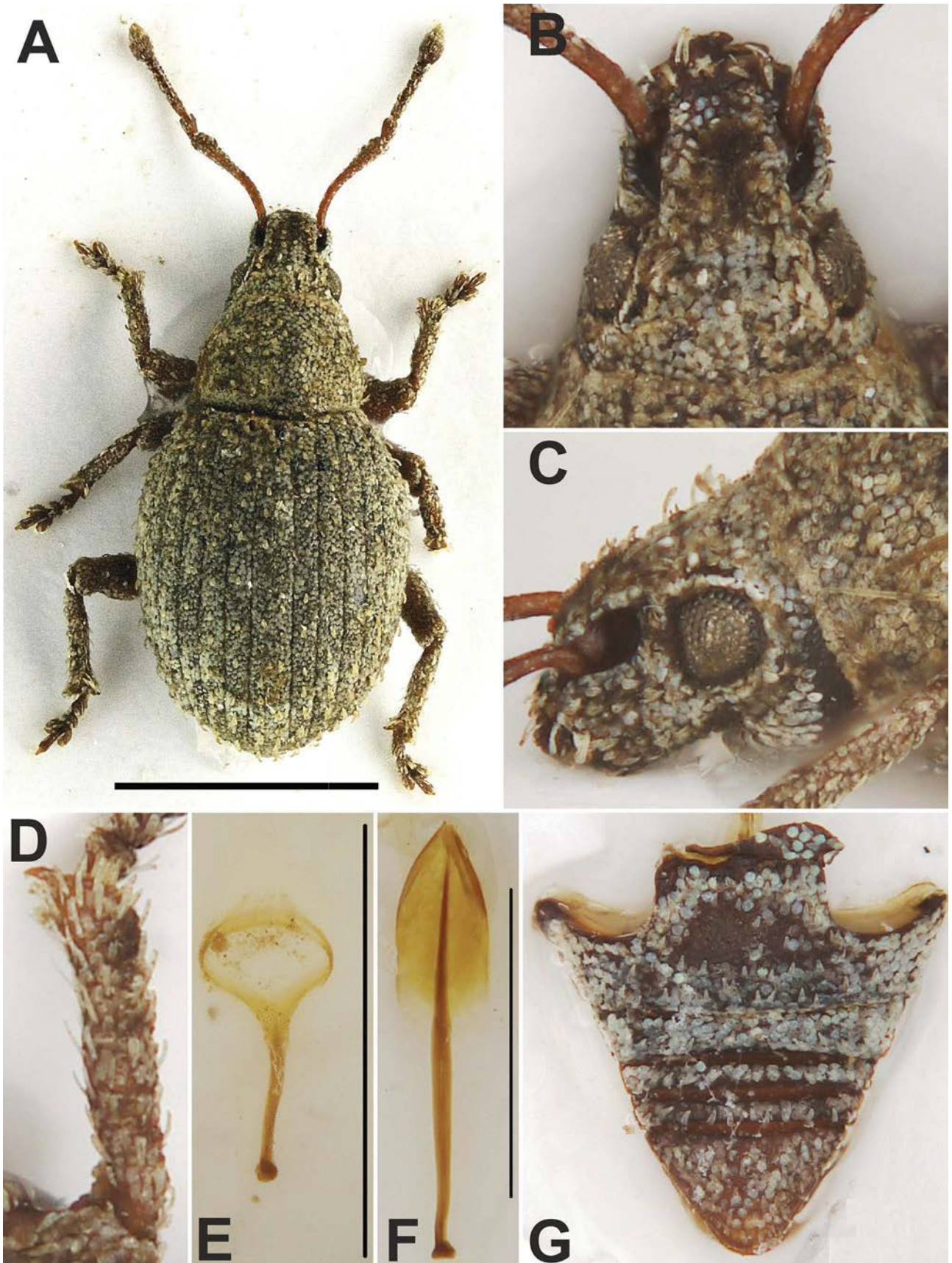


FIGURE 9. *Heisonyx* sp. (undescribed species). **A**—habitus, dorsal view, female; **B**—rostrum, dorsal view, female; **C**—rostrum, lateral view, female; **D**—protibia, female; **E**—tegmen, male; **F**—sternite VIII, female; **G**—ventrites, female. Scale bars: 1 mm (**A**), 0.5 mm (**E**, **F**).

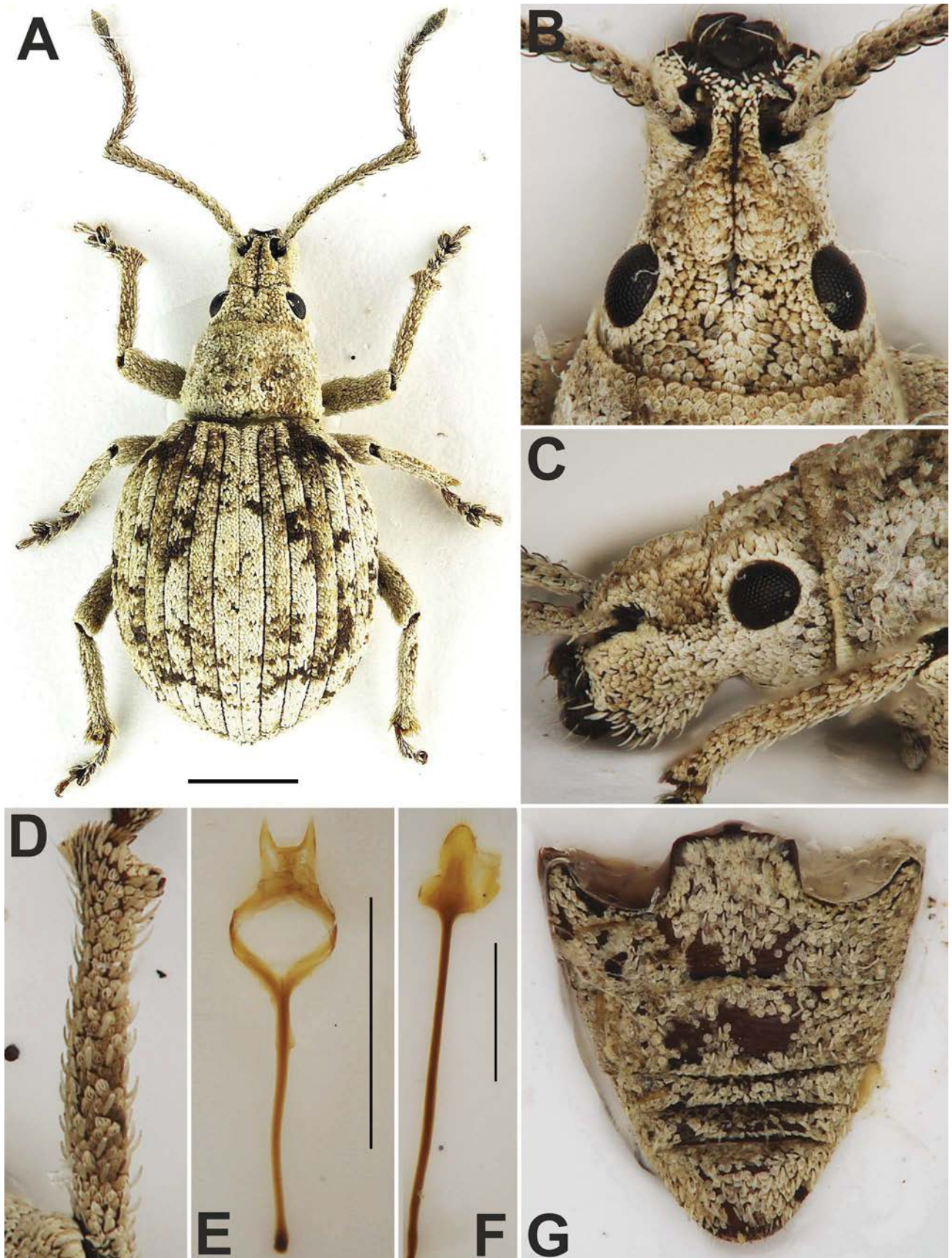


FIGURE 10. *Ellimenistes albidus* Fåhreaus, 1871. **A**—habitus, dorsal view, female; **B**—rostrum, dorsal view, female; **C**—rostrum, lateral view, female; **D**—protibia, female; **E**—tegmen, male; **F**—sternite VIII, female; **G**—ventrites, female. Scale bars: 1 mm (**A**), 0.5 mm (**E**, **F**).

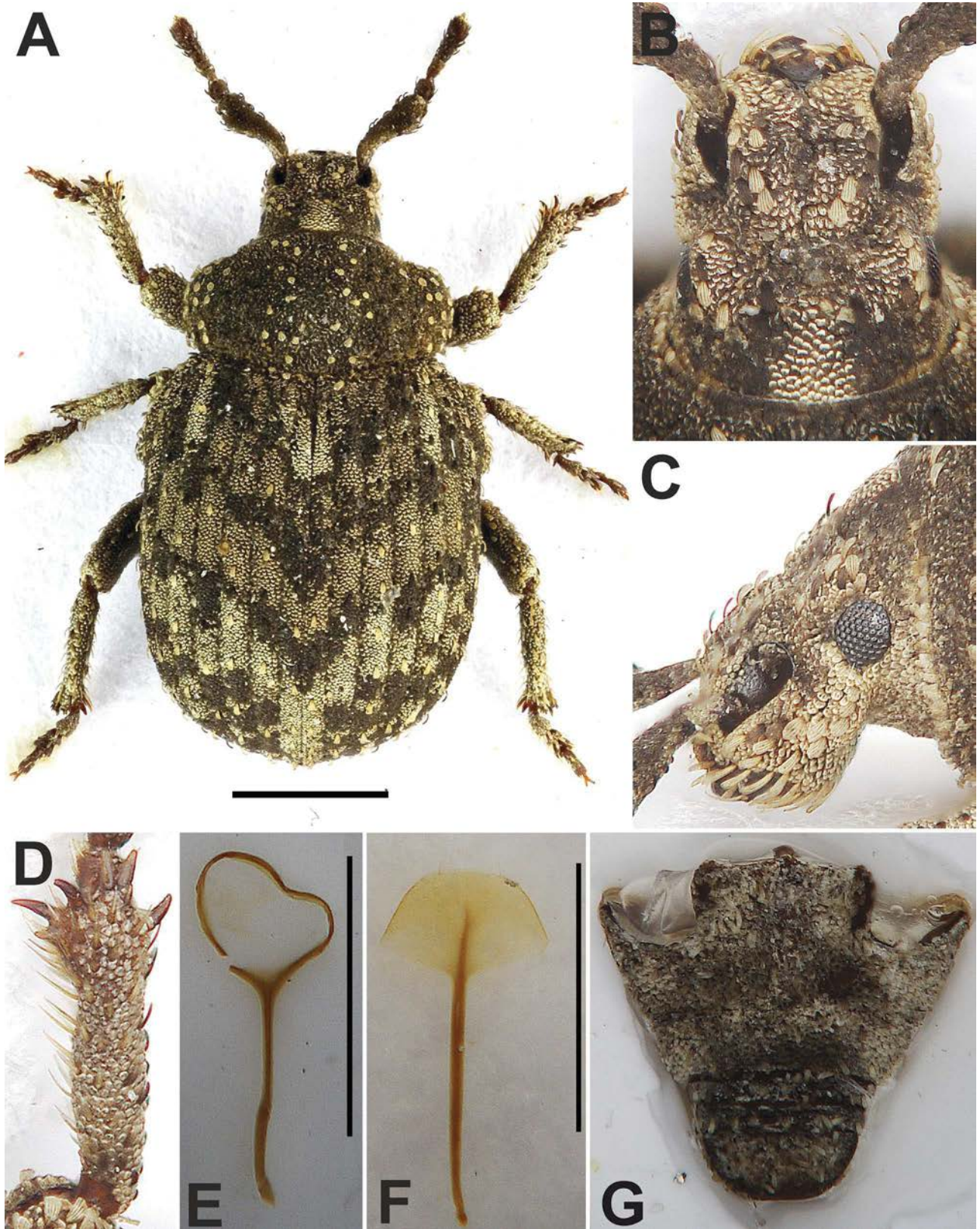


FIGURE 11. *Afrophloeus spathulatus* (Boheman, 1842) (A–D, F), *A. squamifer* (Boheman, 1842) (E, G). A—habitus, dorsal view, male; B—rostrum, dorsal view, male; C—rostrum, lateral view, male; D—protibia, male; E—tegmen, male; F—sternite VIII, female; G—ventrites, male. Scale bars: 1 mm (A), 0.5 mm (E, F).

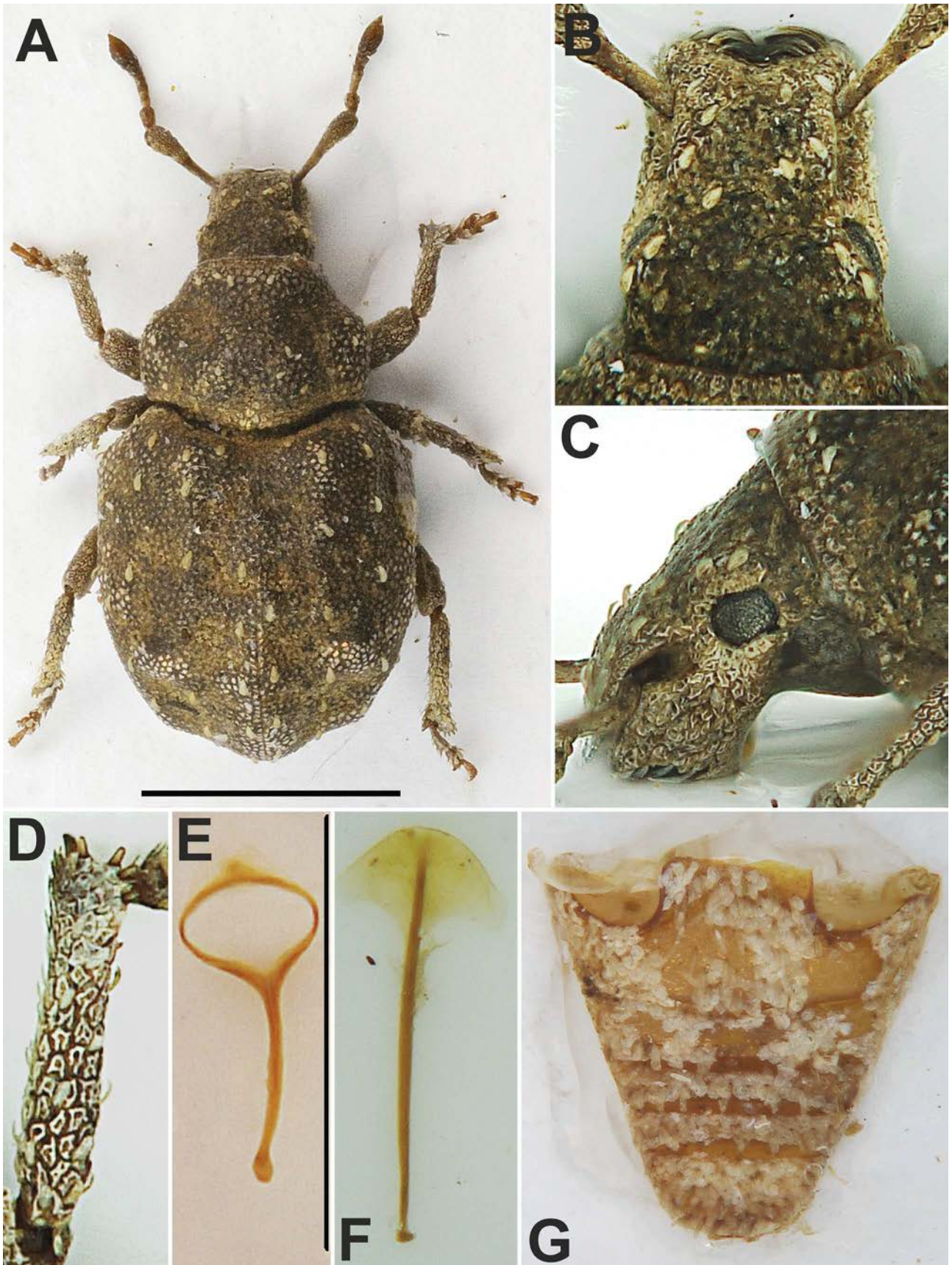


FIGURE 12. *Pentatrachyphleous andersoni* Borovec & Skuhrovec, 2019 (**A–D, F**), *P. patruelis* Voss, 1974 (**G**). **A**—habitus, dorsal view, male; **B**—rostrum, dorsal view, male; **C**—rostrum, lateral view, male; **D**—protibia, male; **E**—tegmen, male; **F**—sternite VIII, female; **G**—ventrites, male. Scale bars: 1 mm (**A**), 0.5 mm (**E, F**).

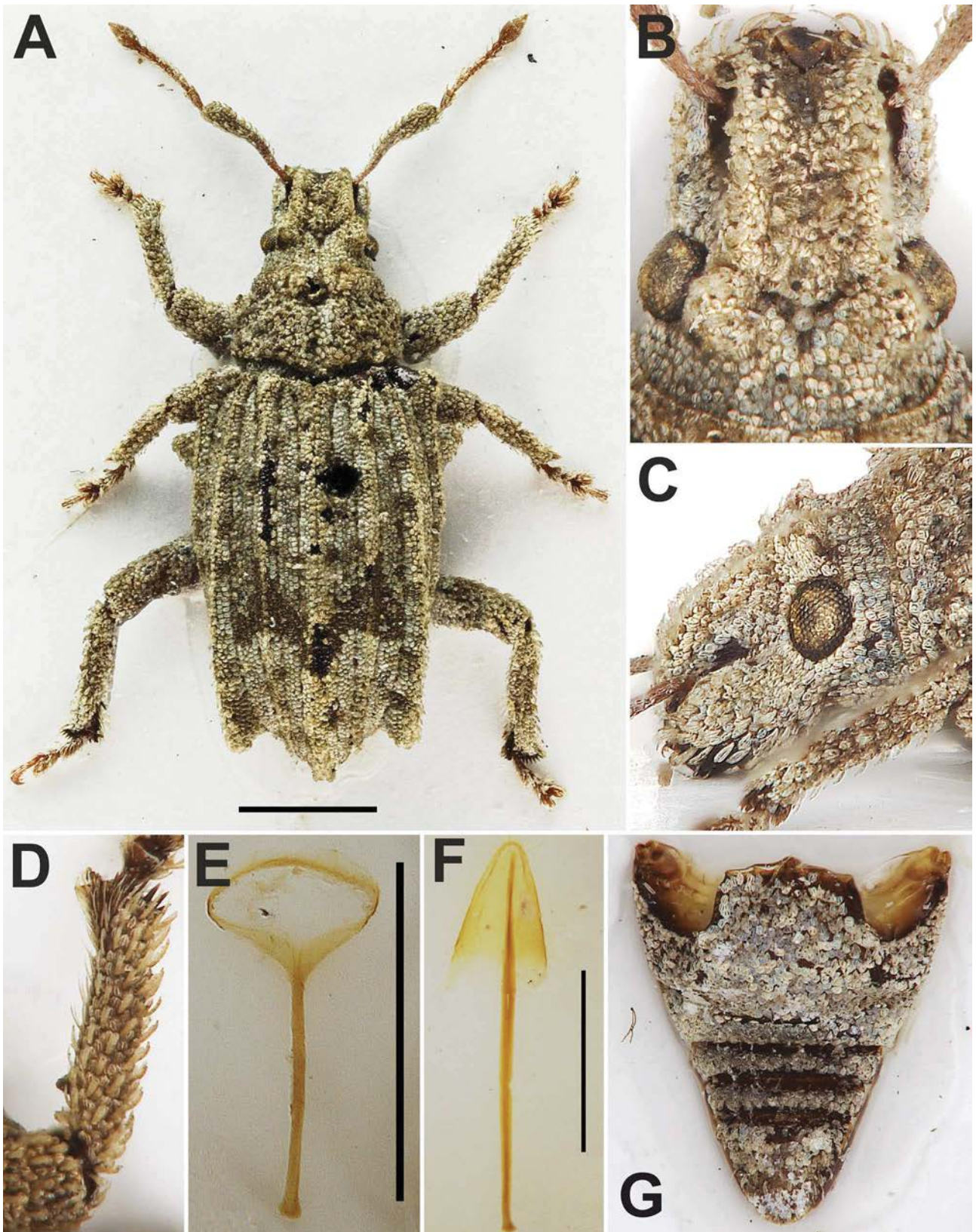


FIGURE 13. *Glyptosomus costipennis* Schoenherr, 1847. **A**—habitus, dorsal view, male; **B**—rostrum, dorsal view, male; **C**—rostrum, lateral view, male; **D**—protibia, male; **E**—tegmen, male; **F**—sternite VIII, female; **G**—ventrites, male. Scale bars: 1 mm (**A**), 0.5 mm (**E**, **F**).

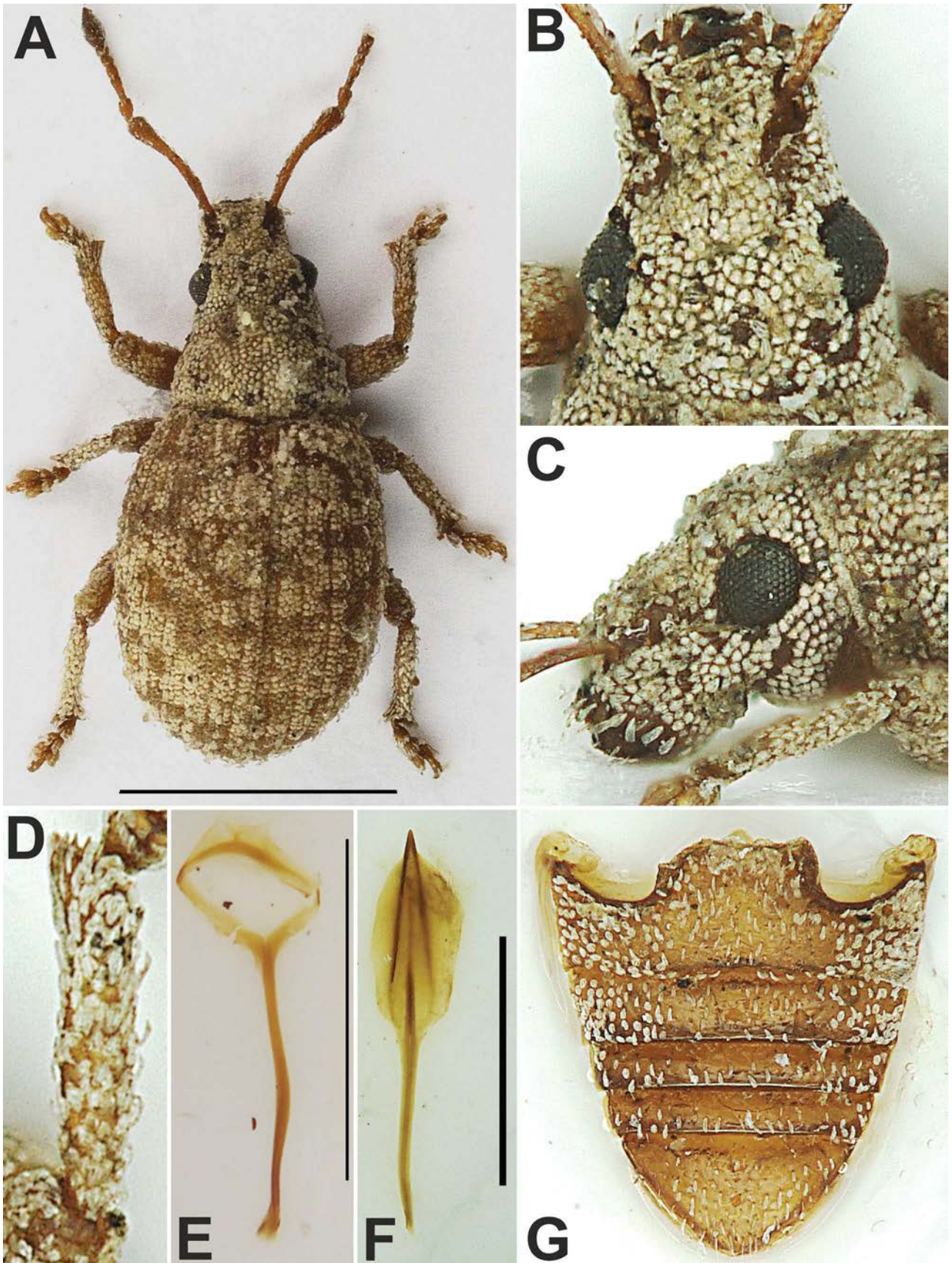


FIGURE 14. *Phylomerinthus cinereus* Boheman, 1842 (A–D, F), *P. convergens* (Voss, 1962) (G). A—habitus, dorsal view, male; B—rostrum, dorsal view, male; C—rostrum, lateral view, male; D—protibia, male; E—tegmen, male; F—sternite VIII, female; G—ventrites, male. Scale bars: 1 mm (A), 0.5 mm (E, F).

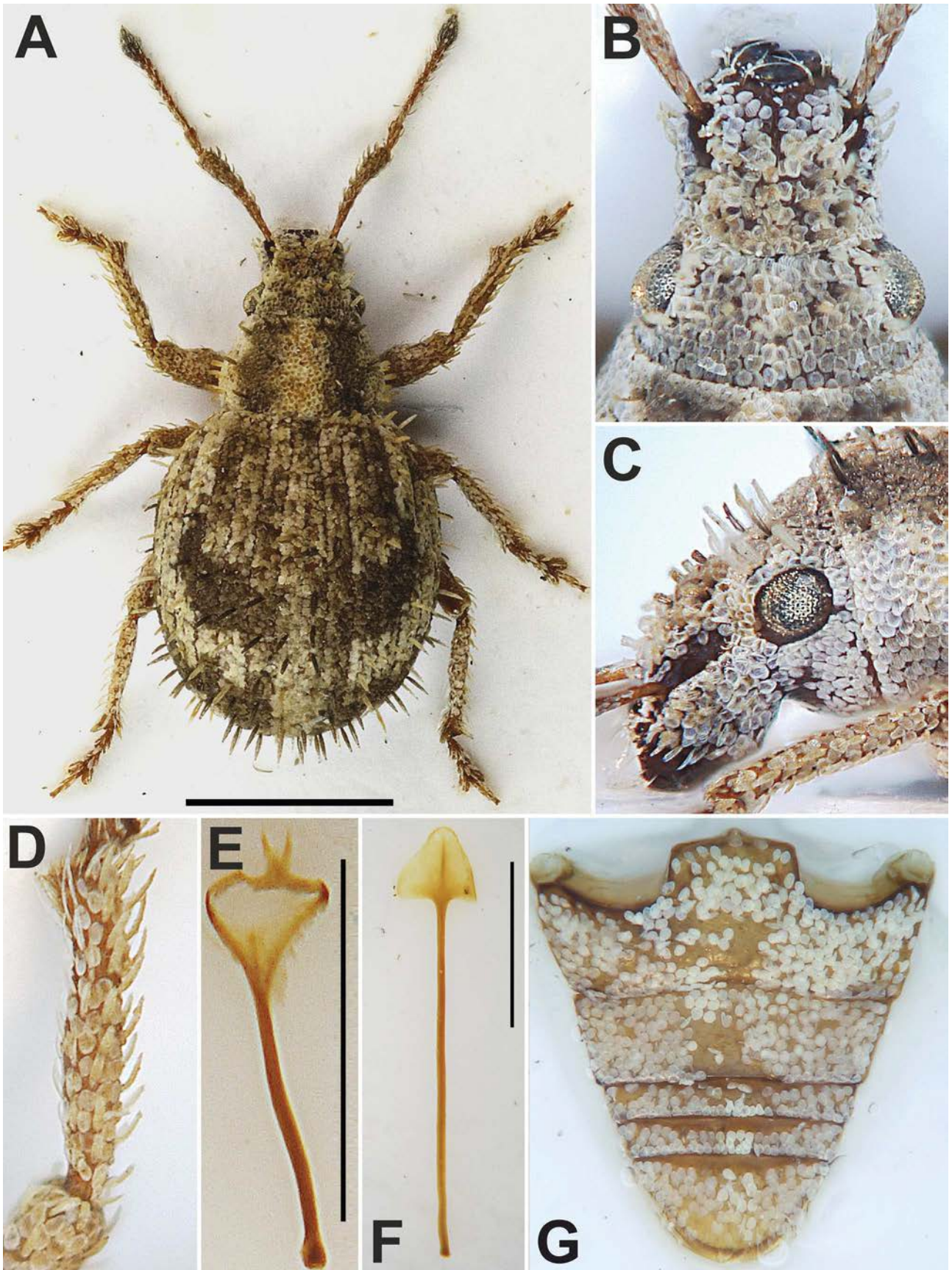


FIGURE 15. *Lalagetes subfasciatus* (Boheman, 1842) (A–D, F, G), *L. zitae* Borovec & Skuhrovec, 2018 (E). A—habitus, dorsal view, male; B—rostrum, dorsal view, male; C—rostrum, lateral view, male; D—protibia, male; E—tegmen, male; F—sternite VIII, female; G—ventrites, male. Scale bars: 1 mm (A), 0.5 mm (E, F).

7. Rostrum and head separated by wide and deep transverse furrow (Fig. 5B). Protibiae with mucro and 2 mesally curved premucros at apex (Fig. 5E), meso- and metatibiae with 2 mesally curved equally long spines. Metaventral process distinctly wider than transverse diameter of metacoxa. Gena glabrous (Figs 5B, C). Size 1.9–2.4 mm. *Janakius* Borovec & Skuhrovec, **gen. nov.**
- Rostrum and head separated by slender and shallow, V-shaped sulcus (Figs 12–15B). Pro-, meso- and metatibiae with 1 mesally curved mucro (Figs 12–15D). Metaventral process narrower than transverse diameter of metacoxa. Gena densely squamose (Figs 12–15B, C). 8
8. Epifrons at base as wide as space between eyes (Figs 12B, 13B). Frons very short, densely squamose (Figs 12B, 13B). Epistome small, dorsally hardly visible (Figs 12B, 13B). Protibiae short and robust, 3.6–5.2 × as long as wide (Figs 12D, 13D). Apical surface of metatibiae at least partly squamose. Female sternite VIII with umbrella-shaped plate lacking pointed tip or arms, with ill-defined posterior border (Figs 12F, 13F). 9
- Epifrons at base narrower than space between eyes (Figs 14B, 15B). Frons short, glabrous (Figs 14B, 15B). Epistome large and distinct, well visible dorsally (Figs 14B, 15B). Protibiae long and slender, 5.5–6.7 × as long as wide (Figs 14D, 15D). Apical surface of metatibiae glabrous. Female sternite VIII with narrow plate either with clearly developed posterior border or lacking it, then with sharply pointed tip and longitudinal arms (Figs 14F, 15F). 10
9. Metatibiae lacking corbels. Ventricle 2 longer than ventricle 3 or 4 (Fig. 12G). Suture between ventricle 1 and 2 straight (Fig. 12G). Elytra lacking laterally prominent subhumeral calli (Fig. 12A). Rostrum in males identical to those in females. Size 1.4–2.6 mm. *Pentatrachyphloeus* Voss
- Metatibiae with wide or narrow corbels. Ventricle 2 as long as ventricle 3 or 4 (Fig. 13G). Suture between ventricle 1 and 2 distinctly arched (Fig. 13G). Elytra with subhumeral calli visible either dorsally or in dorsolateral view (Fig. 13A). Rostrum in males in some species in apical part abruptly enlarged. Size 2.7–5.4 mm. *Glyptosomus* Schoenherr
10. Epifrons at base distinctly narrower than space between eyes, between scrobes 0.40–0.55 × as wide as rostral width at the same place (Fig. 14A). Metatibiae with long and slender mucro. Ventrites glabrous to sparsely squamose, integument predominant (Fig. 14G). Ventricle 2 shorter than ventrites 3 and 4 combined, suture between ventricle 1 and 2 straight (Fig. 14G). Sternite VIII in females with large, umbrella-shaped plate, reaching almost half of its length, with longitudinal sclerites and prominent sclerotised tip and with apodeme short and robust (Fig. 14F). Size 2.0–3.3 mm. *Phylomerinthus* Schoenherr
- Epifrons at base slightly narrower than space between eyes, between scrobes 0.70–0.80 × as wide as rostral width at the same place (Fig. 15A). Metatibiae amucronate. Ventrites densely squamose, integument completely covered by scales (Fig. 15G). Ventricle 2 longer than ventrites 3 and 4 combined, suture between ventricle 1 and 2 sinuose (Fig. 15G). Sternite VIII in females with small, subtriangular plate, reaching fifth to sixth of its length, without sclerites and prominent sclerotised tip and with apodeme long and slender (Fig. 15F). Size 1.8–2.5 mm. *Lalagetes* Schoenherr

Check list of genera included in the key

Embrithini

Afrophloeus Borovec & Oberprieler, 2013

Afrophloeus Borovec & Oberprieler, 2013: 367 (original description).

Afrophloeus: Borovec & Skuhrovec 2017a: 524 (note).

Type species: *Trachyphloeus spathulatus* Boheman in Schoenherr, 1843.

Number of species: 3 described species (Borovec & Oberprieler 2013).

Distribution: South Africa (Western Cape, Eastern Cape, Northern Cape, North West, Free State, Gauteng, Mpumalanga, Limpopo); Lesotho; introduced to Australia.

Ellimenistes Boheman, 1843

Ellimenistes Boheman, 1843: 174 (original description).

Ellimenistes: Alonso-Zarazaga & Lyal 1999: 166 (catalogue); Borovec & Oberprieler 2013: 367 (note).

Type species: *Ellimenistes pulvinaticollis* Boheman, 1843.

Number of species: 40 described species (R. Borovec, unpublished data), the authors are aware of 3 undescribed species in museum collections.

Distribution: South Africa (Western Cape, Eastern Cape, KwaZulu-Natal, Limpopo); Swaziland; Namibia; Mozambique.

Glyptosomus Schoenherr, 1847

Glyptosomus Schoenherr, 1847: 62 (original description).

Glyptosomus: Alonso-Zarazaga & Lyal 1999: 166 (catalogue); Borovec & Oberprieler 2013: 367 (note); Borovec & Skuhrovec 2017a: 525 (type examination of type species); Borovec & Skuhrovec 2018a: 72 (type examination of transferred species).

Type species: *Glyptosomus costipennis* Schoenherr, 1847.

Number of species: 11 described species (Borovec & Skuhrovec 2017a, 2018a), the authors are aware of 64 undescribed species in museum collections.

Distribution: South Africa (KwaZulu-Natal, Gauteng, Limpopo); Swaziland; Zimbabwe; Mozambique.

***Heisonyx* Marshall, 1947**

Heisonyx Marshall, 1947: 206 (original description).

Heisonyx: Alonso-Zarazaga & Lyal 1999: 171 (catalogue); Borovec *et al.* 2009: 842 (revision); Borovec & Oberprieler 2013: 367 (note).

Type species: *Heisonyx vitticollis* Marshall, 1947.

Number of species: 7 described species (Borovec *et al.* 2009), the authors are aware of 2 undescribed species in museum collections.

Distribution: South Africa (Western Cape, Eastern Cape).

***Lalagetes* Schoenherr, 1842**

Lalagetes Schoenherr, 1842: 125 (original description).

Lalagetes: Alonso-Zarazaga & Lyal 1999: 172 (catalogue); Borovec & Oberprieler 2013: 367 (note); Borovec & Skuhrovec 2018a: 73 (revision).

Type species: *Lalagetes subfasciatus* Boheman, 1842.

Number of species: 7 described species (Borovec & Skuhrovec 2018a).

Distribution: South Africa (Western Cape, Eastern Cape, KwaZulu-Natal, Mpumalanga, Limpopo).

***Phylomerinthus* Schoenherr, 1842**

Phylomerinthus Schoenherr, 1842: 190 (original description).

Phylomerinthus: Alonso-Zarazaga & Lyal 1999: 153 (catalogue); Borovec & Skuhrovec 2017a: 528 (type examination of type species); Borovec & Skuhrovec 2018a: 72 (type examination of transferred species).

Type species: *Phylomerinthus cinereus* Boheman, 1842

Number of species: 10 described species (Borovec & Skuhrovec 2017a, 2018a), the authors are aware of 68 undescribed species in museum collections.

Distribution: South Africa (Western Cape, Eastern Cape, Gauteng, KwaZulu-Natal, Mpumalanga, Limpopo); Namibia; Zimbabwe; Democratic Republic of Congo; Angola.

Trachyphloeini

***Afromuelleria* Borovec & Skuhrovec, 2018**

Afromuelleria Borovec & Skuhrovec, 2018b: 669 (original description).

Type species: *Afromuelleria awelani* Borovec & Skuhrovec, 2018.

Number of species: 4 described species (Borovec & Skuhrovec 2018b).

Distribution: South Africa (Limpopo).

Barclayanthus* Borovec & Skuhrovec, *gen. nov.

Type species: *Barclayanthus minor* Borovec & Skuhrovec, *spec. nov.*

Number of species: 2 described species.

Distribution: South Africa (Western Cape).

***Epistomius* Borovec & Skuhrovec 2017**

Epistomius Borovec & Skuhrovec, 2017b: 649 (original description).

Type species: *Epistomius colonnellii* Borovec & Skuhrovec, 2017.

Number of species: 7 described species (Borovec & Skuhrovec 2017b).

Distribution: South Africa (Eastern Cape, KwaZulu-Natal, Mpumalanga).

Janakius Borovec & Skuhrovec, **gen. nov.**

Type species: *Janakius sylvaticus* Borovec & Skuhrovec, **spec. nov.**

Number of species: 1 described species.

Distribution: South Africa (Eastern Cape).

***Pentatrachyphloeus* Voss, 1974**

Pentatrachyphloeus Voss, 1974: 417 (original description).

Pentatrachyphloeus: Alonso-Zarazaga & Lyal 1999: 183 (catalogue); Borovec & Meregalli 2013: 504 (note); Borovec & Skuhrovec 2017a: 526 (type examination); Borovec & Skuhrovec 2019: 4 (revision).

Type species: *Pentatrachyphloeus patruelis* Voss, 1974.

Number of species: 39 described species (Borovec & Skuhrovec 2019).

Distribution: South Africa (Eastern Cape, KwaZulu-Natal, Free State, North West, Gauteng, Mpumalanga, Limpopo); Lesotho; Zimbabwe.

Acknowledgements

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Systematic position of the Afrotropical species described in Trachyphloeini (Coleoptera: Curculionidae: Entiminae)

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Abstract

The Afrotropical species described as Trachyphloeini Lacordaire, 1863 were examined and their taxonomic status is revised. *Atrachyphloeus* Voss, 1962 is proposed as a junior synonym of *Phaylomerinthus* Schoenherr, 1842, *Cathormiocerus africanus* Hoffmann, 1965 as a junior synonym of *Tapinomorphus sylvicola* Voss, 1962 and *Trachyphloeus pustulifer* Voss, 1959 as a junior synonym of *Platycopes tuberculatus* Marshall, 1906. *Atrachyphloeus convergens* Voss, 1962 is transferred to the genus *Phaylomerinthus* Schoenherr, 1842, *Trachyphloeus hardenbergi* Marshall, 1923 and *T. notulatus* Boheman, 1842 to *Glyptosomus* Schoenherr, 1847, *Trachyphloeus nanus* Fähræus, 1871 to *Pentatrachyphloeus* Voss, 1974, *Trachyphloeus pustulifer* Voss, 1959 to *Platycopes* Schoenherr, 1823 and *Trachyphloeus setiger* Fähræus, 1871 to *Phaylomerinthus* Schoenherr, 1842. “*Trachyphloeosoma*” *brevicolle* Voss, 1974, “*Trachyphloeus*” *brevis* Boheman, 1842, “*T. nodifrons*” Hoffmann, 1968 and “*T. squalidus*” Boheman, 1842 are provisionally left in their current genera, but new genera for them will be described in future papers. The genus *Phaylomerinthus* Schoenherr, 1842 has been redefined and redescribed. Lectotypes for the following species are designated (current names added in brackets where different): *Cathormiocerus africanus* Hoffmann, 1965 (*Tapinomorphus sylvicola* Voss, 1962), *Trachyphloeus hardenbergi* Marshall, 1923 (*Glyptosomus hardenbergi* (Marshall, 1923)), *Trachyphloeus nanus* Fähræus, 1871 (*Pentatrachyphloeus nanus* (Fähræus, 1871)), *Trachyphloeus notulatus* Boheman, 1842 (*Glyptosomus notulatus* (Boheman, 1842)), *Trachyphloeus pustulifer* Voss, 1959 (*Platycopes tuberculatus* (Marshall, 1906)), *Trachyphloeus setiger* Fähræus, 1871 (*Phaylomerinthus setiger* (Fähræus, 1871)), “*Trachyphloeus*” *brevis* Boheman in Schoenherr, 1842 and “*Trachyphloeus*” *squalidus* Boheman in Schoenherr, 1842. Two paralectotypes of *Cathormiocerus africanus* Hoffmann, 1965 from Tanzania are described as a new species, *Tapinomorphus franzi* sp. n. All type specimens are illustrated.

Key words: Taxonomy, systematics, lectotypes, paralectotypes, new combination, new synonym, new species, Coleoptera, Curculionidae, Entiminae, Trachyphloeini, Embrithini, Sciaphilini, Afrotropical region

Introduction

The first Trachyphloeini from South Africa were described by Boheman (1842), based on material collected by Drège, Ecklon, Zeyher in the former Cape Colony (today’s Western, Eastern and Northern Cape and western part of North-West provinces), but all of them collected largely only in the current Eastern Cape province (Gunn & Codd 1981; R. Oberprieler, pers. comm.). More material was collected in the former provinces of Natal and Transvaal by Wahlberg between 1838 and 1845 and described by Fähræus (1871). During the first half of the 20th century, Marshall (1923) and later Voss (1959) described two more species, collected in the former Cape and Transvaal provinces (the latter encompassing the current Limpopo, Mpumalanga and Gauteng provinces and the eastern part of the North-West province) and the former Portuguese East Africa (now Mozambique). All these small terricolous Afrotropical entimine weevils with ‘otiorhynchine’ type of scrobes were described in the Palaearctic genus *Trachyphloeus* Germar, 1817. Later, in the second half of the 20th century, they were also described in another Palaearctic genus of Trachyphloeini, *Trachyphloeosoma* Wollaston, 1869, and/or new genera

for them were created (Voss 1974). In the equatorial part of Africa, the situation was very similar, with the description of two new monotypic Trachyphloeini genera (Voss 1962, Hoffmann 1963) and other new species placed in Palaearctic genera (Hoffmann 1965, 1968). Although the Trachyphloeini of all other regions were revised (Sleeper 1955, Borovec 2009, 2014), the taxa from the Afrotropical region were neglected except for two recent studies (Borovec & Meregalli 2013, Borovec & Oberprieler 2013), which examined the first two species of *Trachyphloeus* described from South Africa.

Based on a study by the first author of the type material of these early-described taxa, we here revise and correct their taxonomic status, except that for some of them a new genus must be erected in a future study revising the appropriate species group.

Short history of the study of Afrotropical Trachyphloeini

1842—Boheman, in Schoenherr's monumental monograph series, described from "Cap. Bonae Spei" and "Terra Caffrorum" five new species in *Trachyphloeus*: *T. brevis*, *T. notulatus*, *T. spathulatus*, *T. squalidus* and *T. squamifer*.

1871—Fähræus described from "Caffraria" another two new species, *Trachyphloeus nanus* and *T. setiger*.

1923—Marshall, although rarely working on small terricolous Entiminae, described *Trachyphloeus hardenbergi*, a conspicuous, relatively large species from "Portuguese East Africa".

1959—Voss described another large, conspicuous species, *Trachyphloeus pustulifer*, from "Transvaal".

1962—Voss described a new genus and species from the Democratic Republic of Congo, named *Atrachyphloeus convergens*.

1963, 1965 and 1968—Hoffmann described a new genus and species, *Perarogula lamottei*, from Guinea and two new species, *Trachyphloeus nodifrons* from the Congo and *Cathormiocerus africanus* from Tanzania.

1974—Voss, in the results of the Lund University Expedition to South Africa, described a new genus of Trachyphloeini, *Pentatrachyphloeus*, with a single new species, *P. patruelis*, as well as *Trachyphloeosoma brevicolle*, a new species placed into a genus otherwise known only from the eastern Palaearctic and the Oriental regions.

2013—Borovec and Oberprieler transferred two *Trachyphloeus* species described by Boheman to a newly described genus, *Afrophloeus*, belonging to the tribe Embrithini Marshall, 1942.

2013—Borovec and Meregalli described a new genus of Trachyphloeini from the northern Cape province of South Africa, called *Nama*, and included four new species in it.

Material and methods

Body length of all specimens was measured in dorsal view from the anterior margin of the eyes to the apex of the elytra, excluding the rostrum. Photos of adults were taken with a Canon EOS 550D camera with an MP-E 65 mm macro lens and stacked using Zerene Stacker and GIMP2 softwares. The terminology of the rostrum and the genitalia follows Oberprieler *et al.* (2014).

Exact label data of type material are cited: separate labels are indicated by slash (/). Author's remarks and comment are in square brackets. [p]—the preceding data were printed, [hw]—the same were hand-written, [tw]—typewritten.

The material is deposited in the following collections (identified by the abbreviations):

- BMNH Natural History Museum, London, United Kingdom (formerly British Museum of Natural History), Maxwell Barclay;
HNHM Természettudományi Múzeum, Budapest, Hungary, Győző Szél;
MNHN Muséum National d'Histoire Naturelle, Paris, France, Hélène Perrin;
MZLU Museum of Zoology, Lund, Sweden, Christoffer Fägerström;
NHMB Naturhistorisches Museum Basel, Switzerland, Eva Sprecher;
NHMW Naturhistorisches Museum Wien, Austria, Harald Schillhammer;

Systematics

Afrophloeus spathulatus (Boheman, 1842)

(Fig. 1A)

Trachyphloeus spathulatus Boheman in Schoenherr, 1842: 111 (original description).

Trachyphloeus spathulatus: Lacordaire, 1863: 193 (monograph of Entiminae); Seidlitz, 1868: 98 (monograph of Otiiorhynchinae); Lona, 1937: 331 (catalogue); Borovec & Meregalli, 2013: 501 (note).

Afrophloeus spathulatus: Borovec & Oberprieler 2013: 373 (genus description, species redescription).

Type locality. Cap. Bonae Spei [Cape of Good Hope, South Africa; probably the Cape Peninsula].

Type material. Detailed by Borovec & Oberprieler (2013) (Fig. 1A).

Remarks. The species was described originally as *Trachyphloeus*, and Borovec & Oberprieler (2013) transferred it to a new genus, *Afrophloeus* Borovec & Oberprieler, 2013, placed in the tribe Embrithini Marshall, 1942. The lectotype was examined and designated as such by Borovec & Oberprieler (2013).

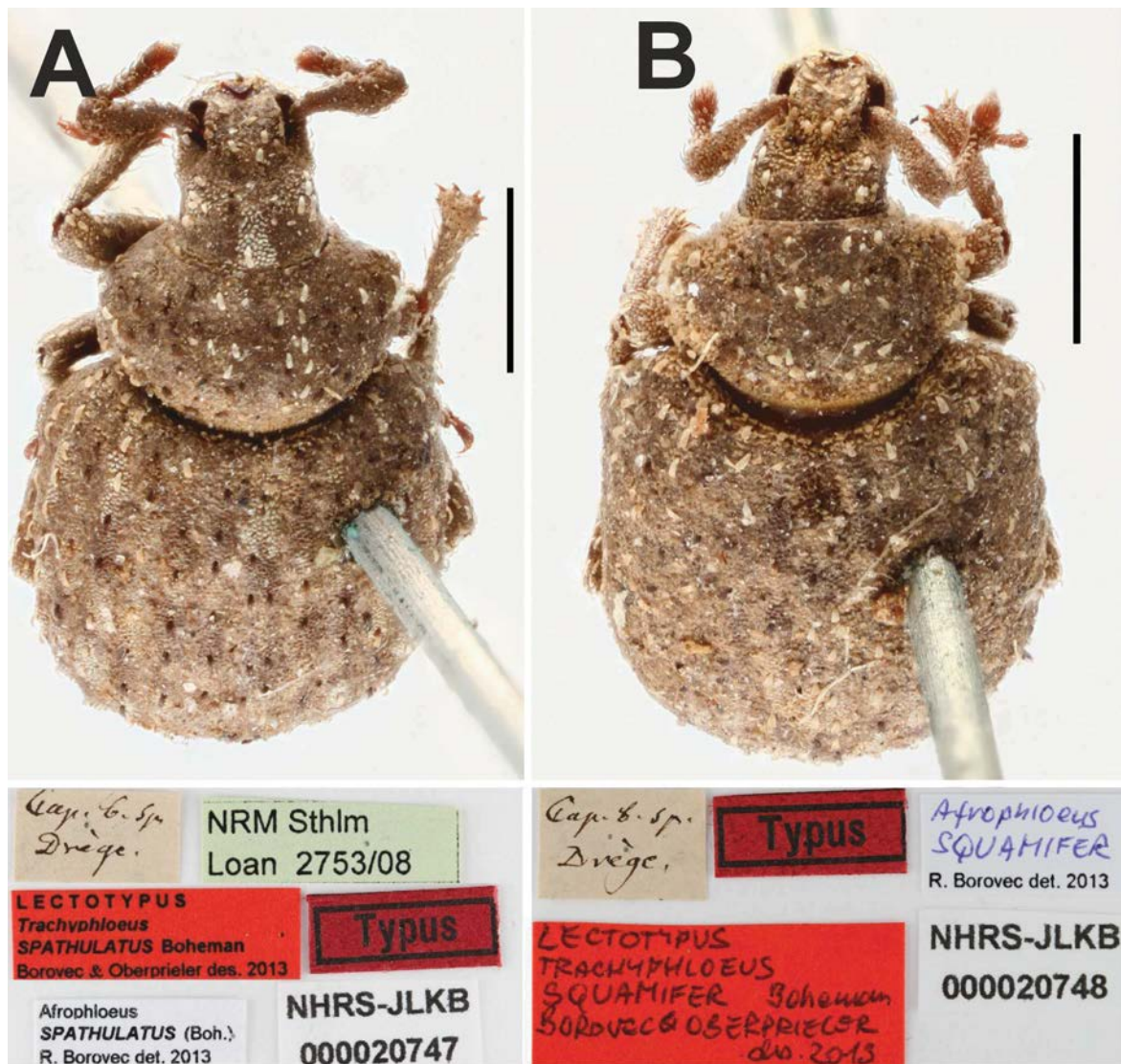


FIGURE 1. A—*Afrophloeus spathulatus* (Boheman, 1842), habitus, male, dorsal view, Lectotype, and its labels. B—*Afrophloeus squamifer* (Boheman, 1842), habitus, male, dorsal view, Lectotype, and its labels. Scale bar: 1 mm.

***Afrophloeus squamifer* (Boheman, 1842)**

(Fig. 1B)

Trachyphloeus squamifer Boheman in Schoenherr, 1842: 112 (original description).

Trachyphloeus squamifer: Lacordaire, 1863: 193 (monograph of Entiminae).

Trachyphloeus spathulatus: Seidlitz, 1868: 98 (monograph of Otiiorhynchinae); Lona, 1937: 331 (catalogue).

Afrophloeus squamifer: Borovec & Oberprieler, 2013: 375 (genus description, species redescription).

Type locality. Cap. Bonae Spei, Caffraria [Cape of Good Hope, South Africa; probably the Cape Peninsula].

Type material. Detailed by Borovec & Oberprieler (2013) (Fig. 1B).

Remarks. The species was described originally in *Trachyphloeus*, and Seidlitz (1868) synonymised its name with *T. spathulatus*, without examination of the type material. He interpreted the differences in the antennae of the two species as sexual dimorphism and considered *T. squamifer* to be the female of *T. spathulatus*. Borovec & Oberprieler (2013) raised it to species level again and transferred it to their newly described genus, *Afrophloeus*. Borovec & Oberprieler, 2013, placed in the tribe Embrithini. The lectotype was examined and designated by Borovec & Oberprieler (2013).

***Glyptosomus hardenbergi* (Marshall, 1923), comb. n.**

(Fig. 2A)

Trachyphloeus hardenbergi Marshall, 1923: 542 (original description).

Trachyphloeus hardenbergi: Lona, 1937: 324 (catalogue); Borovec & Meregalli, 2013: 501 (note).

Type locality. Portuguese East Africa [Mozambique]: Umbelusi.

Material examined. Lectotype (here designated): 1 spec. (BMNH), 'Type [p, circular label with red margins] / Portuguese E. Africa [p] / Pres. by Imp. Bur. Ent. Brit. Mus. 1923-253 [p] / Umbelusi III. 11.21. P. E. A. C. B. Hardenberg [p] / *Trachyphloeus hardenbergi* Mshl. TYPE [hw] / LECTOTYPUS *Trachyphloeus hardenbergi* Marshall R. Borovec des. 2006 / *Glyptosomus hardenbergi* (Marshall, 1923), comb. nov., R. Borovec & J. Skuhrovec det. 2017' [p]. Paralectotypes: 4 spec. (BMNH), same labels as lectotype but the fourth with different date 'III. 24.21.', fifth label missing and last reading 'PARALECTOTYPUS'; 1 spec. (RMCA), 'PARATYPUS [red label, p] / Umbelusi III.11.21. P. E. A. Hardenberg [p] / MUSÉE DU CONGO (don Marshall) [partly p, partly hw] / R. dét. uu 3910 [p] / *Trachyphloeus hardenbergi* Mshl. COTYPE [hw], PARALECTOTYPUS *Trachyphloeus hardenbergi* Marshall R. Borovec & J. Skuhrovec des. 2017 / *Glyptosomus hardenbergi* (Marshall, 1923), comb. n., R. Borovec & J. Skuhrovec det. 2017' [p].

Remarks. Marshall (1923) denoted this species as "distinguished from all the known South African species by the uneven elytral intervals". His description of the species is based on sixteen specimens from Umbelusi in Mozambique. The lectotype is 3.25 mm long. Three paralectotypes were dissected and remounted (with the genitalia mounted on the same label). The types have the rostrum separated from the head by sharp V-shaped sulcus, the metatibiae with slender squamose corbels and the tarsal claws connate in the basal half, and on the base of these characters we place it in the tribe Embrithini. It is transferred to *Glyptosomus* Schoenherr, 1847 based on the following characters: epifrons with well defined and visible borders along the whole length, at base as wide as space between anterior margins of eyes, laterally prominent posthumeral calli and abdominal ventrite 1 in middle somewhat longer than ventrites 2–4 combined.

***Glyptosomus notulatus* (Boheman, 1842), comb. n.**

(Fig. 2B)

Trachyphloeus notulatus Boheman in Schoenherr, 1842: 109 (original description).

Trachyphloeus notulatus: Seidlitz, 1868: 98 (monograph of Otiiorhynchinae); Lona, 1937: 326 (catalogue); Borovec & Meregalli, 2013: 501 (note).

Type locality. Cap. Bonae Spei [Cape of Good Hope, South Africa; probably the Cape Peninsula].

Material examined. Lectotype (here designated): 1 spec. (NHRS, Schoenherr's coll.), 'Typus [red label, p] / *Tr. notulatus* Chevr. C. b. Sp. Chevr. [hw] / LECTOTYPUS *Trachyphloeus notulatus* Boheman, R. Borovec & J. Skuhrovec des. 2017 [red label, p] / *Glyptosomus notulatus* (Boheman, 1842), comb. n., R. Borovec & J. Skuhrovec det. 2017 [p] (Fig. 2B).

Remarks. Boheman (1842) gave the origin of this species as "Cap. Bonae Spei. A Dom. Chevrolat communicatus. Mus. Schh.". The lectotype is 2.88 mm long and well preserved, with only the right antennal funicle with club missing. It has the rostrum separated from the head by a sharp, V-shaped sulcus, the metatibiae with slender squamose corbels and the tarsal claws connate in the basal half. Based on these characters it is also placed in the tribe Embrithini where it is provisionally assigned to *Glyptosomus*, although it differs from the other three *Glyptosomus* species in its epifrons being narrower at the base than the space between the eyes and in lacking posthumeral calli. It is highly probable that it belongs together with some other species currently placed in *Lalagetes*. This will be addressed in a future revision of *Glyptosomus*. *Glyptosomus* now includes four described and 17 undescribed species.



FIGURE 2. A—*Glyptosomus hardenbergi* (Marshall, 1923), habitus, male, dorsal view. B—*Glyptosomus notulatus* (Boheman, 1842), habitus, male, dorsal view, Lectotype, and its labels. Scale bar: 1 mm.

***Pentatrachyphloeus nanus* (Fåhraeus, 1871), comb. n.**
(Fig. 3A)

Trachyphloeus nanus Fåhraeus, 1871: 37 (original description).
Trachyphloeus nanus: Borovec & Meregalli, 2013: 501 (note).

Type locality. Caffraria [South Africa].

Type material. Lectotype (here designated): 1 spec. (NHRS): ‘Caffraria. [p] / I. Vahlb. [p] / Typus [red label, p] / Trachyphloeus nanus Bhn. [hw] / nanus Boheman n.sp. 17-18 [hw] / 6213 E91 + [blue label, p] / nanus Fåhrs. [tw] / LECTOTYPUS Trachyphloeus nanus Fåhraeus, R. Borovec et J. Skuhrovec design. 2017 [red label, p] / Pentatrachyphloeus nanus (Fåhraeus), comb. n., Borovec, Skuhrovec det. 2017’ [p] (Fig. 3A).

Remarks. Fåhraeus (1871) described this species from “Caffraria”, but Wahlberg did not specify a more precise locality nor the number of specimens he had at his disposal. The lectotype is a well preserved specimen (only the right antenna and right middle leg are missing), 1.63 mm long. This species shows several distinct morphological differences from the Palearctic genus *Trachyphloeus*, and the states of these characters are identical to those of type species of *Pentatrachyphloeus* Voss, 1974 (see below). We therefore transfer this species to *Pentatrachyphloeus* as the second species of this South African genus.

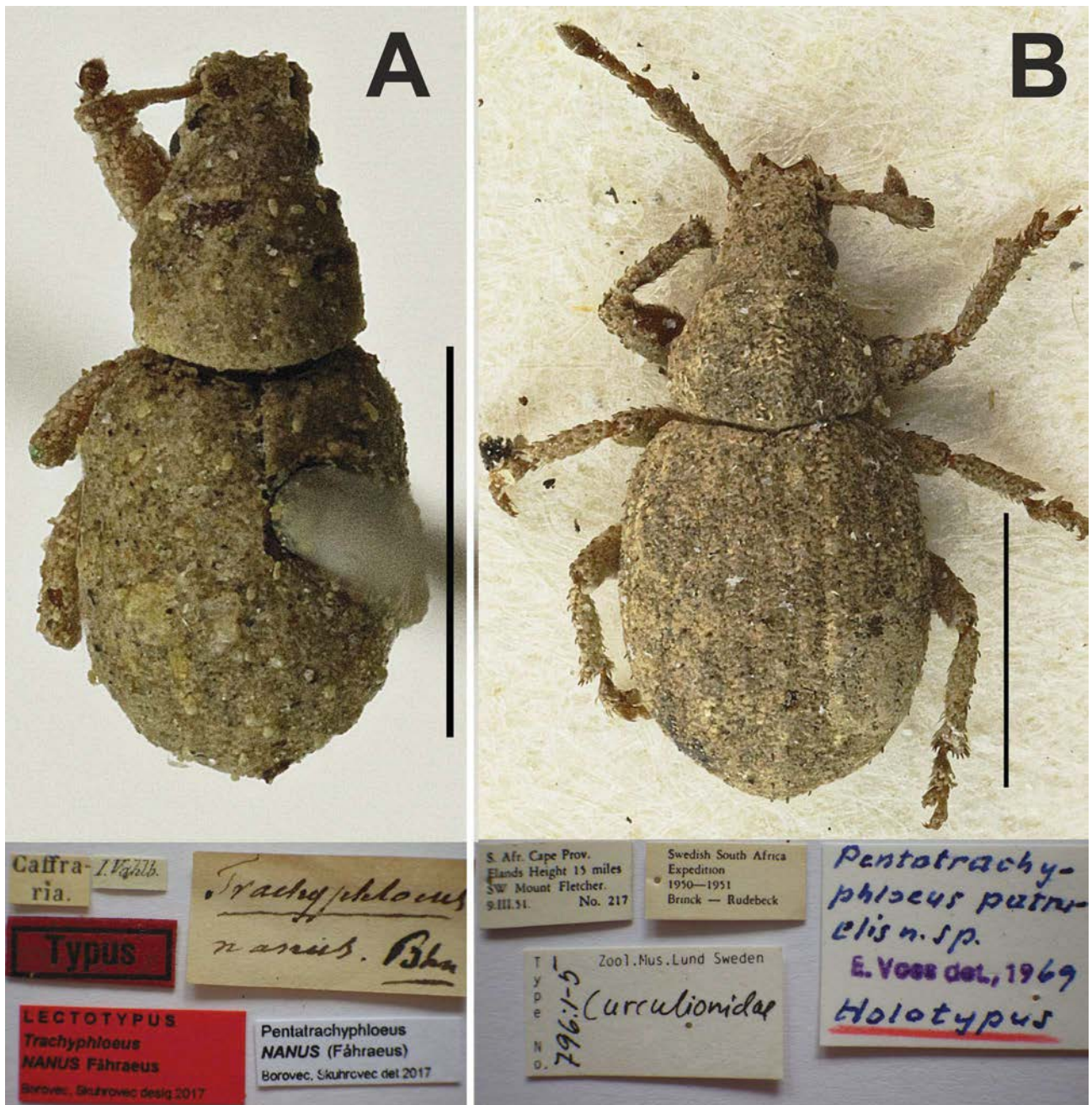


FIGURE 3. A—*Pentatrachyphloeus nanus* (Fåhraeus, 1871), habitus, male, dorsal view, Lectotype, and its labels. B—*Pentatrachyphloeus patruelis* Voss, 1974, habitus, male, dorsal view, Holotype, and its labels. Scale bar: 1 mm.

***Pentatrachyphloeus patruelis* Voss, 1974**

(Fig. 3B)

Pentatrachyphloeus patruelis Voss, 1974: 417 (original description).

Pentatrachyphloeus patruelis: Borovec & Meregalli, 2013: 501 (note).

Type locality. Cape Prov., Elands Height, 15 miles SW Mount Fletcher [South Africa, Eastern Cape].

Material examined. Holotype: 1 spec. (MZLU): ‘S. Afr. Cape Prov. Elands Height 15 miles SW Mount Fletcher 9.III.51 No. 217 [p] / Swedish South Africa Expedition 1950–1951 Brinck—Rudebeck [p] / Pentatrachyphloeus patruelis n. sp. E. Voss det., 1969 Holotypus [hw] / Zool. Mus. Lund Sweden Curculionidae Type No. 796: 1’ [partly p, partly hw] (Fig. 3B). Paratypes: 4 spec. (MZLU), labels as on holotype, except numbers from ‘796: 2’ to ‘796: 5’ (one also bearing handwritten label: ‘Museum Entomologicum, Lund. S. Afr. Cape ca 15 miles SW mt. Fletcher (Elands heights) 6000 ft. Grasmarsch’).

Remarks. Voss (1974) described *Pentatrachyphloeus* as a monotypic genus based on 7 specimens from Mount Fletcher in the Eastern Cape province of South Africa. The holotype is 1.97 mm long, well preserved with only the left protarsus missing. Three paratypes were remounted, two of them (male and female) after dissection. All genitalia are mounted on the labels of the respective specimens.

Pentatrachyphloeus patruelis is the type species of the genus and easily differentiated from the Palaearctic genus *Trachyphloeus* by the following characters: slender sulcus present between rostrum and head, elytral posthumeral calli present, protibiae without distinct spines and indentations, claws connate at base, ventrite 2 short with straight suture and plate of sternite VIII of female with posterior margin membranous and with apodeme terminated inside of plate. This exclusively South African genus now includes also *P. nanus* as well as 21 undescribed species, which will be described in a pending revision of the genus.

***Perarogula lamottei* Hoffmann, 1963**

(Fig. 6A)

Perarogula lamottei Hoffmann, 1963: 313 (original description).

Perarogula lamottei: Alonso-Zarazaga & Lyal, 1999: 183 (catalogue).

Type locality. Nimba, Mont Tô [Guinea].

Material examined. Paratypes, 1 spec. (MNHN): ‘76 Pb [hw] / IFAN, NIMBA (Guinée) Lamotte et Roy VII–XII 51 [p, blue] / Perarogula lamottei m. [hw] A. Hoffmann det. [p] / PARATYPE [p, red] / Muséum Paris [p] Guinée M. Lamotte [hw, blue]’; 2 spec. with same data except ‘Ph’ and ‘Pg’; 1 spec. (MNHN) with same data but two additional labels reading ‘Mt To (1600 m) Camp 1 [p] / Omotrachelus sp. ign. [hw] Det. G. A. K. Marshall [p]’; 1 spec. (MNHN): ‘Mt. Nimba, Guinea VII–XII 1951, Lamotte et Roy [hw] / Perarogula lamottei m. [hw] A. Hoffmann det. [p] / PARATYPE [p, red] / Muséum Paris [p] Guinée M. Lamotte [hw, blue]’ (Fig. 6A).

Remarks. This genus and species were described for 7 specimens of both sexes from Nimba in Guinea. Hoffmann regarded it as being similar to “*Coenopsis* (Otiorrhynchinae)”, i.e. the genus *Caenopsis* Bach, 1854, now placed in Trachyphloeini, based on the state of the longitudinal furrows behind the eyes in lateral view, and to Trachyphloeini based on its unusual elytral striae and the structure of the metacoxae and ventrite 5. However, these three characters are not typical only for Trachyphloeini. According to the state of its antennal scrobes in lateral view, which are of the “brachyderine” type (narrow, invisible dorsally, the dorsal and ventral margins sharp, directed below the eyes and separated from them), the connate claws and the metatibiae lacking corbels, this genus clearly belongs to the tribe Sciaphilini Sharp, 1891, as already surmised by Alonso-Zarazaga & Lyal (1999: 183) wherein they state it is “Probably a Sciaphilini”.

***Phylomerinthus* Schoenherr, 1842**

Phylomerinthus Schoenherr, 1842: 190 (type species, by original designation: *Phylomerinthus cinereus* Boheman, 1842)

Atrachyphloeus Voss, 1962: 186 (type species, by original designation: *Atrachyphloeus convergens* Voss, 1962) **syn. n.**

Phylomerinthus cinereus Boheman, 1842

(Figs 4A–E)

Phylomerinthus cinereus Boheman in Schoenherr, 1842: 192 (original description).

Phylomerinthus cinereus: Alonso-Zarazaga & Lyal, 1999: 153 (catalogue).

Type locality. Original type locality ‘Terra Caffrorum’ [South Africa, Eastern Cape].

Material examined. 1 ♀ (BMNH): ‘[South Africa, KwaZulu-Natal] Estcourt, Natal, A. Haviland [hw] / G. A. K. Marshall Coll. B. M. 1950-255 [p] / Phaulomerinthus cinereus, Boh. [hw] DET. FR. DESCR. [determinate from description] G. A. K. MARSHALL [p] / Phylomerinthus cinereus Boheman, 1842, R. Borovec et J. Skuhrovec det. 2017’ [p] (Fig. 4A).

Redescription. Body length 1.94 mm. Vestiture. Dorsal and ventral parts of body except funicle, club and tarsi densely covered by oval appressed scales, 5 across width of one interstria. Elytra with one moderately dense row of semi-appressed oval setae, at apical declivity about as long as half width of interstriae and wider than one appressed scale. Rostrum with sparsely irregularly scattered, short, oval, semi-appressed setae, hardly visible in lateral view. Antenna except club and legs with very short, very slender, inconspicuous semi-appressed setae; club densely finely setose.

Rostrum (Figs 4A–C) short and moderately slender, $1.33 \times$ wider than long, widest at base and slightly tapered anteriorly, sides straight, at base $1.14 \times$ wider than at apex; in lateral view regularly convex, weakly separated from head by transverse sulcus. Epifrons narrow, slightly longitudinally depressed, widest at apex and distinctly narrowing basad, with weakly concave sides, at base distinctly set off from inner margins of eyes, posteriorly separated from head by slender arched sulcus, partly covered by appressed scales. Frons very short, glabrous, forming a narrow stripe along epistome, posteriorly gradually intergrading into squamose epifrons. Epistome very small, glabrous, V-shaped, finely carinate posteriorly. Scrobe in dorsal view narrowly reniform, well visible in apical half of rostrum; in lateral view narrow, slightly curved and widening posteriorly, directed towards eyes but well separated from them by wide squamose stripe. Eyes large, strongly convex and prominent from outline of head; in lateral view subcircular, placed in dorsal half of head, not reaching dorsal surface. Head wide and short, vertex flat. Mandibles asquamose, trisetose. Submentum with a median pair of setae.

Antennae (Fig. 4A) slender and long, funicle 5-segmented. Scape $1.6 \times$ longer than funicle, exceeding anterior margin of pronotum, regularly curved, moderately slender, equally wide along whole length, in apical third weakly evenly widening apicad, at apex as wide as club. Funicle segments 1 and 2 equally long, segment 1 conical, $1.8 \times$ longer than wide; segment 2 almost parallel-sided, $2.3 \times$ longer than wide; segments 3 and 4 isodiametric; segment 5 $1.2 \times$ wider than long; club spindle-shaped, twice as long as wide.

Pronotum (Fig. 4A) $1.56 \times$ wider than long, widest at basal quarter, with rounded sides, distinctly more tapered anteriorly than posteriorly, weakly constricted behind anterior margin; laterally weakly convex without ocular lobes or setae on anterior border; base weakly arcuate. Disc regularly convex, without any carina or furrow. Procoxal cavities contiguous, round, in middle of prosternum; procoxae subglobular. Scutellum not visible.

Elytra (Fig. 4A) oval, $1.31 \times$ longer than wide, widest at midlength, with regularly rounded sides, apically widely rounded, humeral calli absent; in lateral view convex, slope overhanging apex. Striae narrow, finely punctate; interstriae flat, wide. Mesocoxae semiglobular, narrowly separate. Metacoxae shortly transverse.

Femora of all legs adentate, medially swollen. Protibiae (Fig. 4D) at apex externally straight, internally enlarged, mucronate, rounded with fringe of very short and fine, yellowish setae. Metatibial apical surface glabrous, fringed by short and fine spines with long, hook-like mucro and with extremely slender, glabrous corbel, fringed internally and externally by dense row of fine and short spines. Tarsi short, segment 2 $1.6 \times$ wider than long, segment 3 deeply bilobed, $1.6 \times$ wider than long and $1.3 \times$ wider than segment 2; onychia short, as long as segment 3. Claws equally long, solidly fused at basal half, only slightly divergent distally.

Abdominal ventrite 1 behind metacoxa only slightly longer, but at middle about $2.5 \times$ longer than ventrite 2; ventrite 2 shorter than ventrites 3 and 4 combined. Suture between ventrites 1 and 2 straight and fine, the others straight, wide and deep. Metaventral process obtuse, narrow, slightly narrower than width of metacoxa. Ventrites densely squamose.

Female terminalia. Sternite VIII with apodeme moderately short, as long as plate, ending inside of plate; plate longer than wide, with narrow, sharply pointed, arrow-shaped sclerification, apically projecting beyond plate; plate laterally oval, with weakly rounded sides, forming less sclerotised “wings”, with well defined anterior and

posterior borders. Gonocoxites of ovipositor elongate, tapering anteriorly, with long, slender, setose apical styli, weakly sclerotised. Spermatheca (Fig. 4E) with cornu short and weakly curved; corpus rounded; ramus slightly wider than long, rounded; nodulus very long and moderately wide, twice as long and wider than cornu, parallel-sided, distinctly curved at midlength.

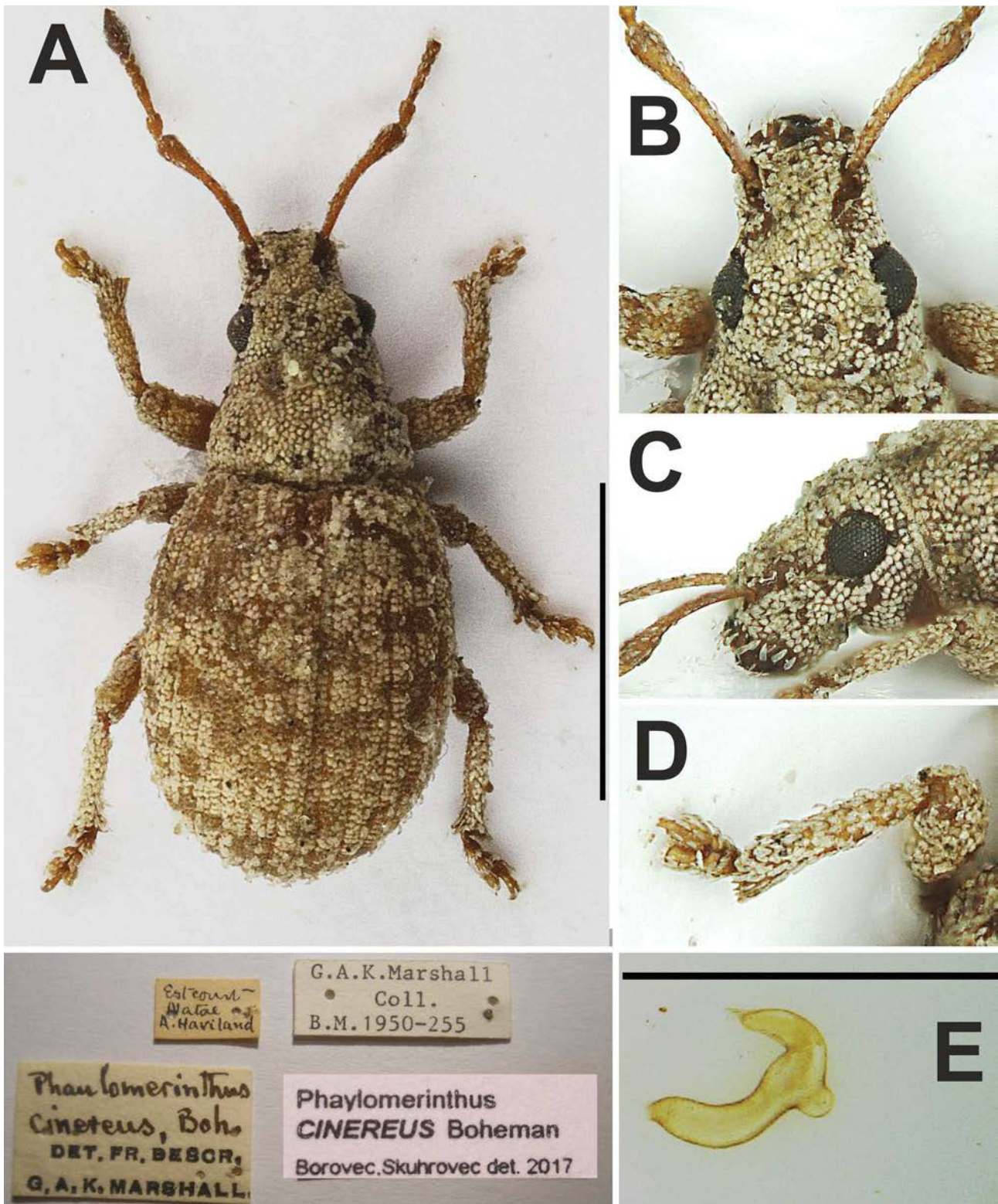


FIGURE 4. *Phylomerinthus cinereus* Boheman, 1842, female. **A**—habitus, dorsal view, scale bar: 1 mm, and its labels, **B**—rostrum, dorsal view, **C**—rostrum, lateral view, **D**—protibia, **E**—spermatheca, scale bar: 0.5 mm.

Remarks. The description of the species and genus was most likely based on a single specimen, as in the majority of other species described by Boheman from South Africa. Boheman (1842) gave its origin as “Patria: Terra Caffrorum. D.D. Ecklon et Zeyher. Mus. Dom. De Winthem”. There is no type specimen with this name in Schoenherr’s collection in the NHRS, as ascertained by the first author during a visit to the NHRS. De Winthem’s collection is in the Zoological Museum Hamburg, but according to Martin Husemann (pers. comm.) there is no indication that the type of *cinereus* has been in that museum, either in the collection or listed in any catalogue, and Husemann suggested that “Most likely it got lost during the world war”. We therefore consider the original type specimen lost. We have a specimen closely fitting the original description, but this specimen was collected approximately 800 km from the type locality. According to Article 75.3.6 of the code (ICZN 1999), we do not designate here a neotype for *Phylomerinthus cinereus*. But we used this specimen, which was interpreted as representing *Phylomerinthus cinereus* already by Marshall, for the redefinition of the genus *Phylomerinthus*, because its taxonomic position was unclear from the description.

With the identity of *Phylomerinthus* thus fixed, a number of described and undescribed species can be assigned to it. The described ones are scattered under the generic name *Lalagetes* Schoenherr, 1842, but because the type species of *Lalagetes*, *L. subfasciatus* Boheman, 1842, is not congeneric with *Phylomerinthus cinereus*, both genera remain valid. The transfer of the species not belonging in *Lalagetes* will be made in a pending revision of *Lalagetes*, and only two species described as Trachyphloeini are here transferred to *Phylomerinthus*.

***Phylomerinthus convergens* (Voss, 1962), comb. n.**

(Fig. 5A)

Atrachyphloeus convergens Voss, 1962: 187 (original description).

Atrachyphloeus convergens: Alonso-Zarazaga & Lyal 1999: 183 (catalogue).

Type locality. riv. Lufwa [Democratic Republic of Congo].

Material examined. Holotype, 1 spec. (RMCA): ‘HOLOTYPUS [red, p] / TYPE [red, p] / Congo belge: P. N. U. R. Lufwa (1.700 m) 16-I-1948 Mis. G. F. de Witte 1246a [p] / E. Voss det., 1958 *Atrachyphloeus convergens* n. sp. [hw] / *Phylomerinthus convergens* (Voss), R. Borovec et J. Skuhrovec det. 2017 [p]’ (Fig. 5A). Non-type specimens: 3 spec.: ‘Congo belge: Mukana-Lusinga (1.810 m) 15-19-I-1948 Mis. G. F. de Witte 1227a’ and ‘Congo belge: P. N. U. Kenia affl. Dr. Lusinga 1.585 m 19-XII-1947 Mis. G. F. de Witte 1200a’ and handwritten label ‘E. Voss det., 1961 *Atrachyphloeus convergens* m. subsp. n. (?)’.

Remarks. The species was described for two specimens, from Lufwa and Kalumengongo. All four specimens from RMCA examined are clearly congeneric with *Phylomerinthus cinereus*. Because *Atrachyphloeus convergens* Voss, 1962 is type species of *Atrachyphloeus* Voss, 1962, the transfer of this species to *Phylomerinthus* means that *Atrachyphloeus* becomes a new junior subjective synonym of *Phylomerinthus* Schoenherr, 1842, **syn. n.**

***Phylomerinthus setiger* (Fåhraeus, 1871), comb. n.**

(Fig. 5B)

Trachyphloeus setiger Fåhraeus, 1871: 36 (original description).

Trachyphloeus setiger: Lona, 1937: 331 (catalogue); Borovec & Meregalli, 2013: 501 (note).

Type locality. Caffraria [South Africa].

Material examined. Lectotype (here designated): 1 spec. (NHRS, Schoenherr’s coll.), ‘Caffraria. [p] / I. Vahlb. [p] / Typus [red label, p] / Trachyphloeus setiger n. sp. (hirsutulus Bhn.) [hw] / 6229 E91 + [blue label, p] / setiger Fåhrs. [tw] / LECTOTYPUS *Trachyphloeus setiger* Fåhraeus, R. Borovec et J. Skuhrovec des. 2017 [red label, p] / *Phylomerinthus setiger* (Fåhraeus) R. Borovec et J. Skuhrovec det. 2017’ [p] (Fig. 5B).

Remarks. As with *Pentatrachyphloeus nanus*, Fåhraeus (1871) described this species from “Caffraria” without a specific locality or the number of specimens he had at his disposal. The lectotype is well preserved, 2.13 mm long. Based on the rostrum and head being separated by a slender V-shaped suclus, the epifrons being

distinctly narrower at its base than the space between the eyes and antennae and protibiae being long and slender, we treat this species as being congeneric with *Phylomerinthus cinereus* and transfer it to this genus.

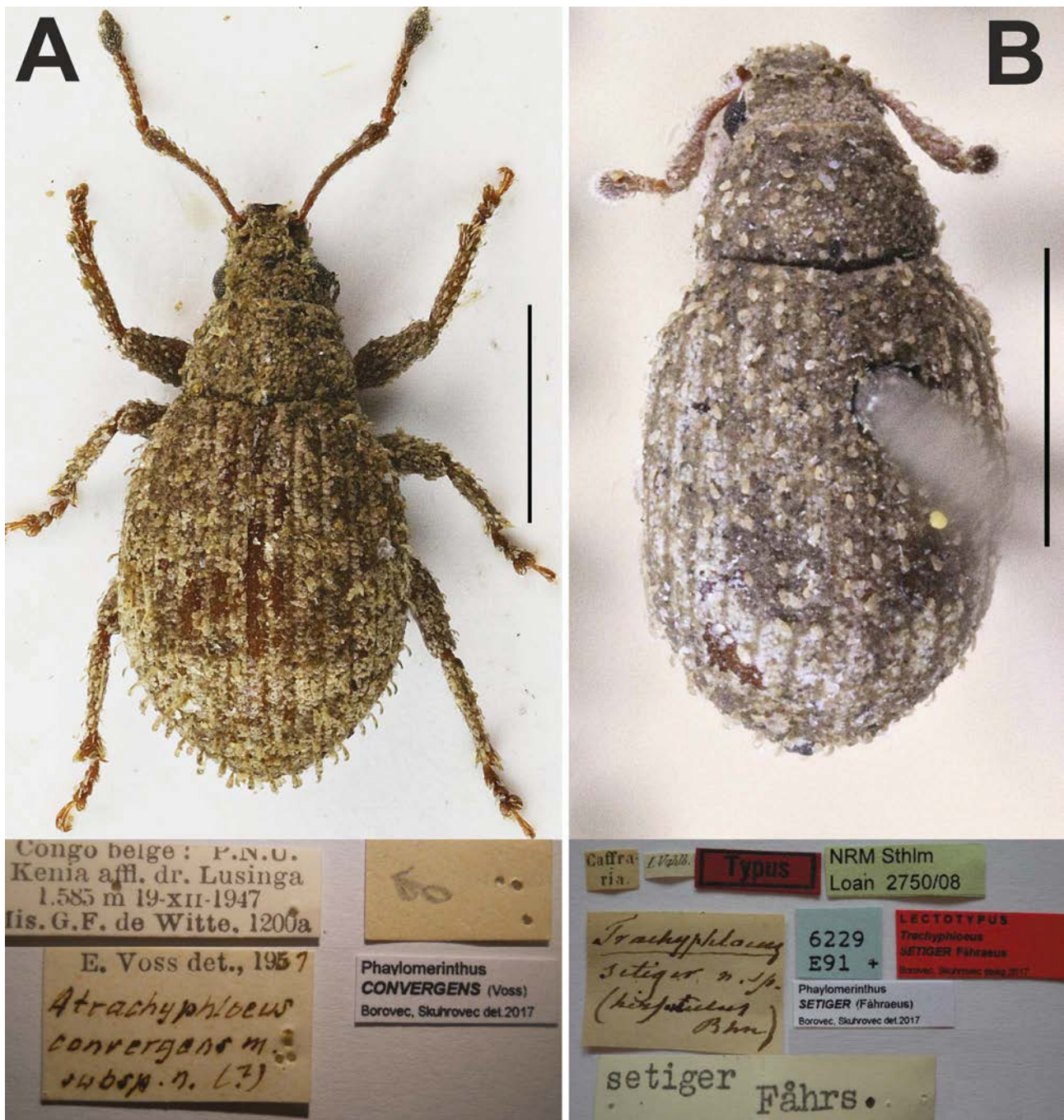


FIGURE 5. **A**—*Phylomerinthus convergens* (Voss, 1962), habitus, male, dorsal view. **B**—*Phylomerinthus setiger* (Fähræus, 1871), Lectotype, and its labels. Scale bar: 1 mm.

***Platycopes tuberculatus* Marshall, 1906**
(Fig. 6B)

Platycopes tuberculatus Marshall, 1906: 917 (original description).
Trachyphloeus pustulifer Voss, 1959: 408 (original description), **syn. n.**
Trachyphloeus pustulifer: Borovec & Meregalli 2013: 501 (note).

Type locality. Transvaal [South Africa, current Limpopo, Mpumalanga and Gauteng provinces and the eastern part of the North-West province].

Material examined. *Platycopes tuberculatus*. 2 spec.: Kaapschehoop, 19.iv.28, *Platycopes tuberculatus* det. Marshall (RMCA). *Trachyphloeus pustulifer*: Lectotype (here designated): 1 spec. (NHMB), ‘Sabie N. O. Trans. S. A. Leg. Frey I.1952 [p] / Museum Frey München [printed] / *Trachyphloeus pustulifer* n. sp. E. Voss det., 1959’ [hw, only on one pin] / LECTOTYPUS, *Trachyphloeus pustulifer* Voss, R. Borovec et J. Skuhrovec des. 2017 [red label, p] / *Platycopes tuberculatus* Marshall, 1906, R. Borovec & J. Skuhrovec det. 2017 [red label, p]. Paralectotypes: 3 spec. (NHMB), same data as lectotype but with a label reading ‘PARALECTOTYPE, *Trachyphloeus pustulifer* Voss, R. Borovec & J. Skuhrovec des. 2017’.

Remarks. Voss (1959) described *Trachyphloeus pustulifer* based on 72 specimens and compared the species with the South African *Trachyphloeus hardenbergi* and the North African and Sicilian *T. nodipennis* Chevrolat, 1860 and *T. godarti* Seidlitz, 1868. We examined four of Voss’ syntypes, on three pins, housed in the NHMB, and here designate one of them as lectotype. The other 71 syntypes are thus paralectotypes. The four type specimens studied are conspecific with *P. tuberculatus* Marshall, 1906, described also from Transvaal, and we therefore synonymise the names *Trachyphloeus pustulifer* Voss, 1959 and *Platycopes tuberculatus* Marshall, 1906. The genus *Platycopes* is currently classified in the tribe Sciaphilini.

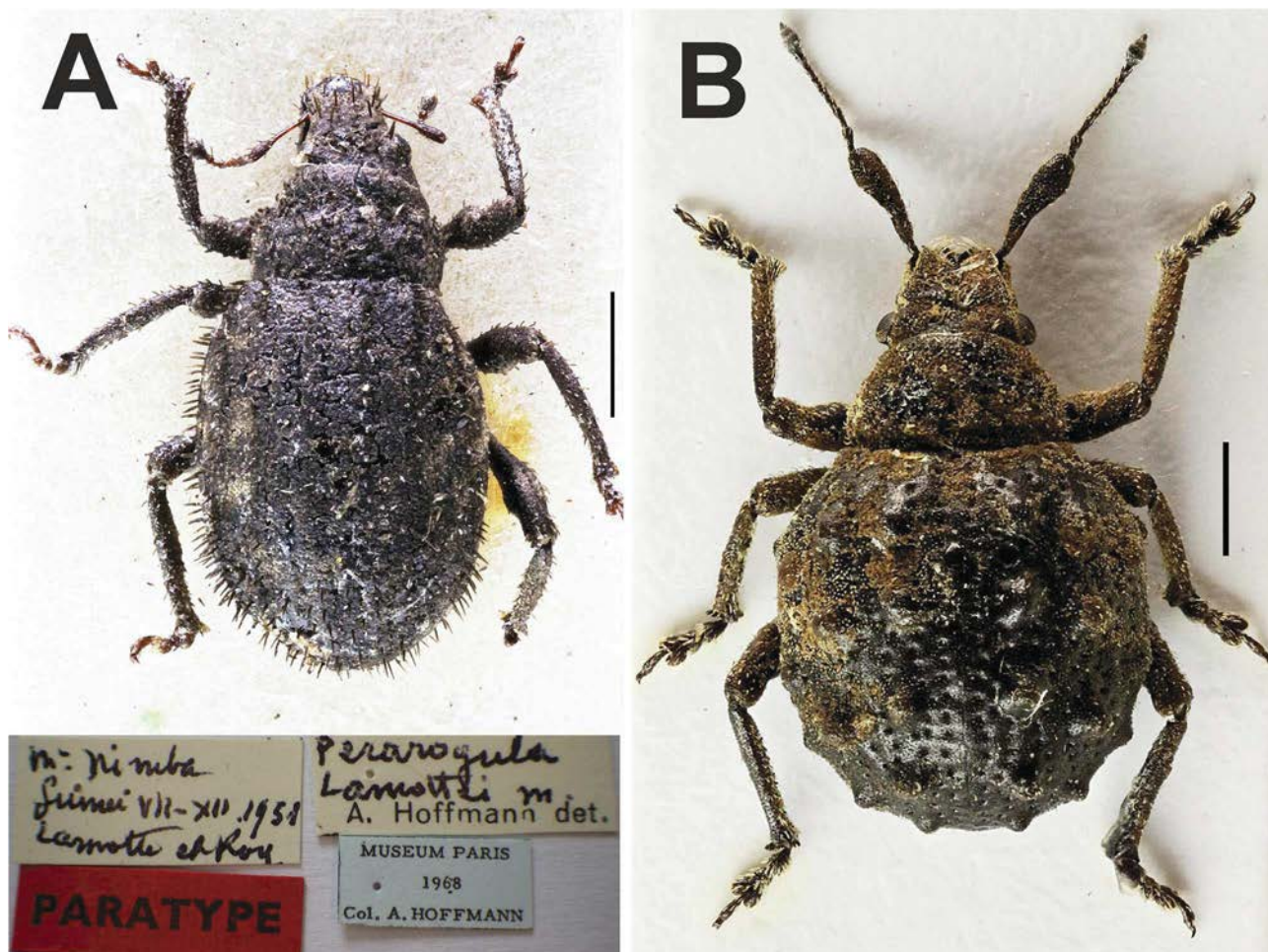


FIGURE 6. **A**—*Perarogula lamottei* Hoffmann, 1963, habitus, male, dorsal view, Paratype, and its labels. **B**—*Platycopes tuberculatus* Marshall, 1906, habitus, male, dorsal view. Scale bar: 1 mm.

Tapinomorphus sylvicola Voss, 1962

(Fig. 7A)

Tapinomorphus sylvicola Voss, 1962: 291 (original description).

Cathormiocerus africanus Hoffmann, 1965: 394 (original description), **syn. n.**

Type locality. Kilimandjaro [Tanzania].

Material examined. *Tapinomorphus sylvicola*. Paratype: 1 spec. (RMCA), PARATYPUS [orange label, p] / Récolté dans l'humus [blue label, p] / COLL: MUS. CONGO Tanganyika Terr.: Kilimanjaro, Marangu, 2400m, 20-II-1956 [p] / Mission Zoolog. I.R.S.A.C. en Afrique orientale (J. et N. Leleup) [p]. *Cathormiocerus africanus*. Lectotype (here designated): 1 spec. (NHMW, Franz's coll.), 'Kilimanjaro, Tanganyika [p] / Gebrigswald ob. Marangu lg. H. Franz [p] / TYPE [p, red] / *Cathormiocerus africanus* m. ♂ [hw], A. Hoffmann det. [p] / LECTOTYPE, *Cathormiocerus africanus* Hoffmann, R. Borovec & J. Skuhrovec des. 2017 [red label, p] / *Tapinomorphus sylvicola* Voss, syn. n. R. Borovec & J. Skuhrovec det. 2017' [p] (Fig. 7A). Paralectotypes: 4 spec. (NHMW, Franz's coll.), same data as lectotype but without Hoffmann's identification label and with a label reading 'PARALECTOTYPE, *Cathormiocerus africanus* Hoffmann, R. Borovec & J. Skuhrovec des. 2017'.

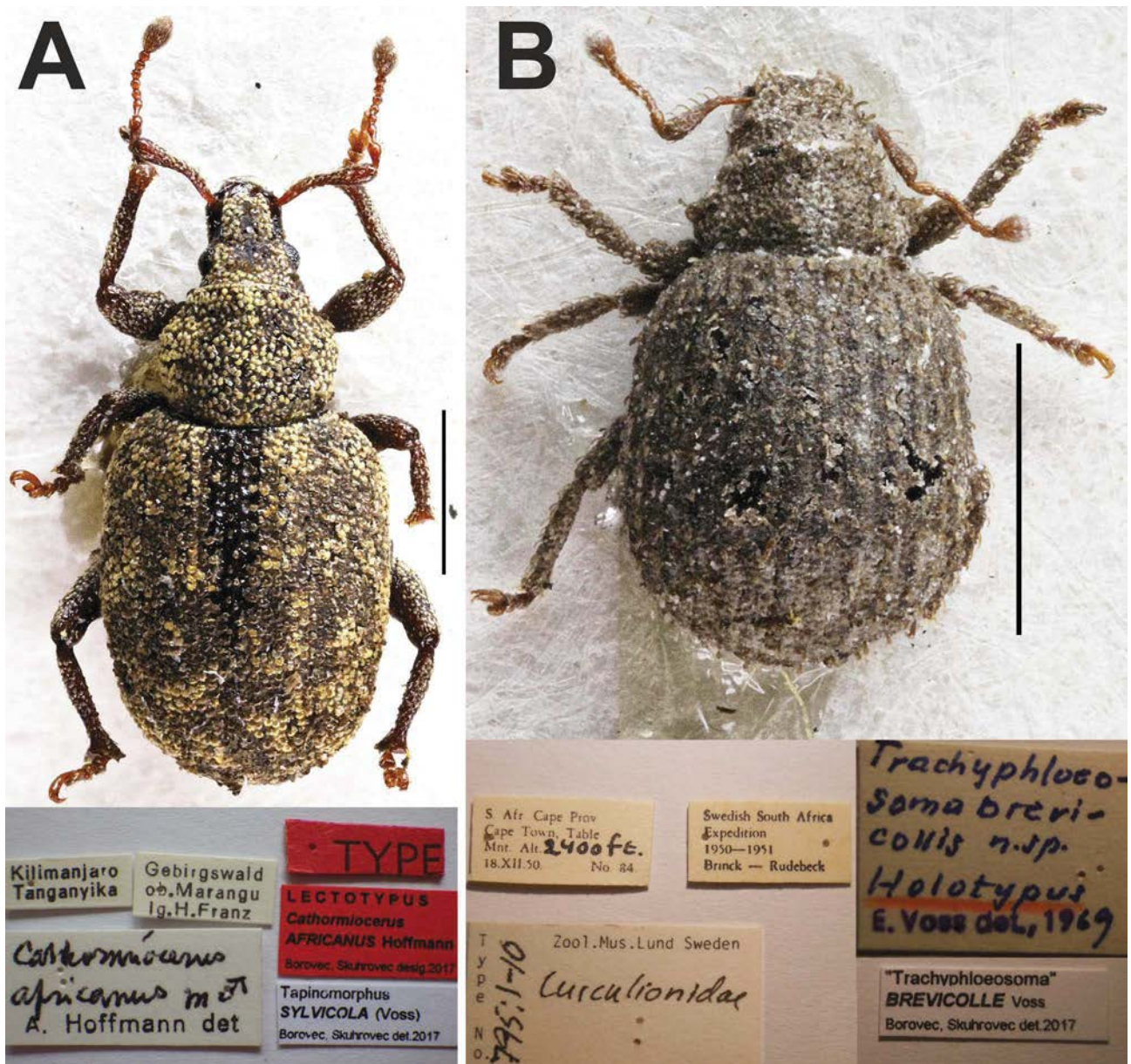


FIGURE 7. A—*Tapinomorphus sylvicola* Voss, 1962, habitus, male, dorsal view, Lectotype of *Cathormiocerus africanus* Hoffmann, 1965, and its labels. B—“*Trachyphloeosoma*” *brevicolle* Voss, 1974, habitus, male, dorsal view, Holotype, and its labels. Scale bar: 1 mm.

Remarks. Hoffmann (1965) based his description of *Cathormiocerus africanus* on seven specimens, in the collection of H. Franz (NHMW). One of them is fitted with a red “TYPE” label and an identification label by

Hoffmann reading “*Cathormiocerus africanus* m. ♂”, but the others are only labelled as “*Cathormiocerus* sp. n.” by Hoffmann. Four of them carry the same locality labels as the “TYPE”, and we treat them to be other syntypes of the same species. The other two specimens are labelled as follows: ‘Kilimanjaro, Tanganyika [p] / Kibo SW-Hang, 2500–3100m lg. H.Franz [p]’, and they apparently belong to another species of the same genus, which we describe below.

All these type specimens attributed by Hoffmann to *Cathormiocerus* clearly differ from this Palaearctic genus and are assignable to the genus *Tapinomorphus* Hartmann, 1904 (tribe Sciaphilini) on the following characters: epifrons at base almost as wide as space between eyes, clearly separated from head by narrow, V-shaped sulcus; frons glabrous and declivous; antennal scrobes laterally placed, well defined but wide, reaching eyes; elytra angular; procoxae touching anterior border of pronotum; metatibiae lacking corbels, with glabrous apical surface; claws connate; metaventral process very wide; abdominal ventrite 2 as wide as ventrite 3 or 4, with suture between ventrite 1 and 2 straight. The type specimens of *Cathormiocerus africanus* are conspecific with the type material of *Tapinomorphus sylvicola* Voss, 1962, and we therefore here synonymise these two names.

***Tapinomorphus franzi* sp. n.**

(Figs 8A–E)

Material examined. Holotype: ♀, (NHMW, Franz’s coll.), ‘Kilimanjaro, Tanganyika [p] / Kibo SW—Hang, 2500–3100 m, lg. H. Franz [p] / HOLOTYPE, *Tapinomorphus franzi* sp. n., R. Borovec & J. Skuhrovec det. 2017 [p, red label]’ (Fig. 8A). Paratype: 1 ♀, (NHMW, Franz’s coll.), the same data as holotype, but ‘PARATYPE’.

Description. Body length: holotype 4.13 mm, paratype 3.88 mm. Vestiture. Body (Fig. 8A) dark brown, antennae and legs paler, reddish brown. Elytra covered with (1) long oval appressed scales, larger greyish and smaller brownish, with pearly or cupreous sheen, irregularly placed, forming narrow transverse wavy stripes, and (2) an inconspicuous, dense, irregular row of short, fine, semi-erect piliform setae on each interstria, setae slightly shorter the half the width of one interstria, visible mainly in lateral view. Pronotum, head and rostrum covered with same appressed setae as elytra, sparsely irregularly scattered; head and rostrum with short semi-erect setae, pronotum without them. Ventral part glabrous. Antennae and legs glabrous, with sparse short semi-erect fine setae.

Rostrum (Figs 8A–C) widest at base, $1.19\text{--}1.22 \times$ wider than long, at base $1.12\text{--}1.16 \times$ wider than at apex, evenly tapering apicad, with straight sides, at apex weakly laterally enlarged around scrobes; laterally only slightly convex and faintly separated from head by transverse sulcus. Epifrons widest at base, distinctly tapering apicad, with weakly concave sides, dorsally longitudinally shallowly depressed, posteriorly separate from head by narrow V-shaped sulcus. Frons glabrous, posteriorly not distinguishable from the epifrons. Epistome not developed. Scrobes dorsally narrowly reniform, visible in apical half of rostrum; laterally linear, narrow, almost straight, directed below eyes, dorsal margin not reaching eye. Head wide; vertex slightly convex. Eyes convex, moderately prominent from outline of head; in lateral view almost reaching dorsal margin of head.

Antennae (Fig. 8A) very slender; scape weakly curved at midlength, in apical half evenly widening apicad, at apex as wide as club. Funicles 7-segmented; segment 1 as long as 2, $2.2 \times$ longer than wide; segment 2 $2.6\text{--}2.8 \times$ longer than wide; segment 3 $1.2\text{--}1.3 \times$ longer than wide; segment 4 $1.1\text{--}1.2 \times$ longer than wide; segments 5 and 6 isodiametric; segment 7 $1.2\text{--}1.3 \times$ wider than long; club spindle-shaped, narrow, $2.3\text{--}2.4 \times$ longer than wide.

Pronotum (Fig. 8A) $1.28\text{--}1.30 \times$ wider than long, widest before midlength, posteriorly evenly tapering with almost straight sides, constricted behind anterior margin. Disc moderately roughly punctate, in teneral specimen intervals between punctures flatly granulate. Pronotum in lateral view weakly convex.

Elytra (Fig. 8A) oval, $1.19\text{--}1.23 \times$ longer than wide, widest at midlength, dorsolaterally with weakly prominent protuberances: at basal part on interstria 9, at middle on interstria 8 and at posterior third on interstria 5–7. Striae moderately roughly punctate, deep; interstriae 1, 3 and 5 slightly wider and more elevated than others, at posterior declivity with indistinct flat humps, forming irregular transverse arched elevated wave. Elytra in lateral view regularly convex.

Abdominal ventrites $1.5 \times$ longer than wide, glabrous, shiny, with only several short piliform appressed setae. Ventrite 1 in middle $1.5 \times$ longer than ventrite 2; ventrite 2 as long as segments 3 and 4 combined. Metaventral process obtuse, broader than width of metacoxa.

Femora unarmed. Tibiae (Fig. 8D) slender and long, protibiae in apical quarter distinctly curved inwards, at

apex rounded with very fine fringe of short brownish setae. Tarsi with segments 2 and 3 isodiametric, deeply bilobed, segment 3 $1.5 \times$ wider than segment 2; onychium $1.1 \times$ longer than previous segment.

Male genitalia. Unknown.

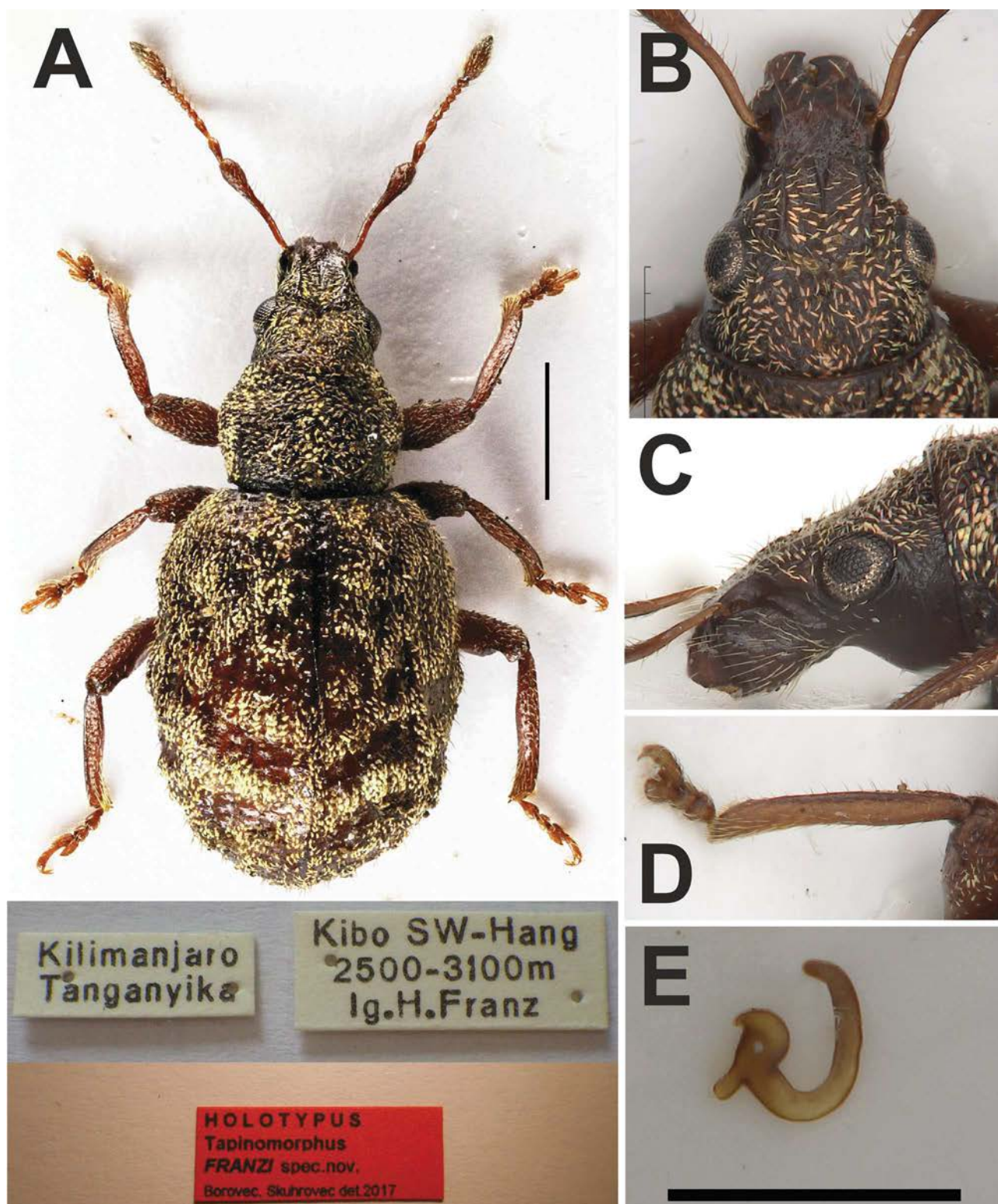


FIGURE 8. *Tapinomorphus franzi* sp. nov., Holotype, female. **A**—habitus, dorsal view, scale bar: 1 mm, and its labels, **B**—rostrum, dorsal view, **C**—rostrum, lateral view, **D**—protibia, **E**—spermatheca, scale bar: 0.5 mm.

Female genitalia. Sternite VIII with long and slender plate, comprising about half the length of the sternite, parallel-sided, with elongate sharp tip and two longitudinal sclerites along whole length; apodeme extending to

inside of plate at basal quarter, with pointed transverse caput. Gonocoxites moderately small, flat, weakly sclerotised, apically rounded with long, finely setose apical styli. Spermatheca (Fig. 8E) with long, slender, irregularly curved cornu and large, rounded corpus; ramus slender, tubular, longer than wide; nodulus a very small hump at tip of corpus.

Derivation of name. The species is dedicated to its collector, eminent Austrian entomologist and specialist on Scydmaeninae, Herbert Franz (1908–2002).

Differential diagnosis. *Tapinomorphus franzi* sp. n. is the largest species of the genus. It is most similar to *T. interjectus* Voss, 1962 in having small protuberances in the apical half of the elytra, equally long funicle segments 1 and 2 and the elytra longer than wide, but it can be distinguished from this species, known also from the Kilimandjaro, by having the interstriae 3 without a protuberance (vs. interval 3 with distinct elongate protuberances in *T. interjectus*), a shorter rostrum, tapering anteriorly (vs. rostrum longer and narrower, almost parallel-sided), a wider pronotum (vs. narrower pronotum), the protibiae distinctly curved inwards in apical quarter (vs. straight protibiae) and a larger body size, 3.9–4.1 mm (smaller, 2.0–3.2 mm).

“*Trachyphloeosoma*” *brevicolle* Voss, 1974

(Fig. 7B)

Trachyphloeosoma brevicolle Voss, 1974: 415 (original description).

Trachyphloeosoma brevicolle: Borovec & Meregalli, 2013: 501 (note).

Type locality. Cape Prov., Cape Town, Table Mnt. [South Africa, Western Cape].

Material examined. Holotype: 1 spec. (MZLU), ‘S. Afr. Cape Prov., Cape Town, Table Mnt. Alt 2400 ft., 18.XII.50, No. 84 [p, only 2400 ft hw] / Swedish South Africa Expedition 1950-1951, Brinck—Rudebeck [p] / Zool. Mus. Lund Sweden, Type No. [p] / 795: 1-10, Curculionidae [hw] / *Trachyphloeosoma brevicollis* [lapsus] n. sp., Holotypus [hw] E. Voss. det., 1969’ [p] (Fig. 7B). Paratypes: 9 spec. (MZLU), first two labels as in holotype, the other two as follows: ‘Type No. 795.2 [partly p, partly hw] / PARATYPE *Trachyphloeosoma brevicolle* Voss, R. Borovec & J. Skuhrovec vid. 2017’ [red, p] and type numbers (the third label) ‘795.4–795.10’.

Remarks. As stated by Borovec & Meregalli (2013), this species does not belong to the genus *Trachyphloeosoma* Wollaston, 1869, which is known only from China, Vietnam, Korea and Japan and introduced to Hawaii and the continental USA. It belongs to a distinct but undescribed genus occurring in the Western and Eastern Cape and the KwaZulu-Natal provinces, comprising another 14 undescribed species. These taxa will be described in a forthcoming revision.

“*Trachyphloeus*” *brevis* Boheman, 1842

(Fig. 9A)

Trachyphloeus brevis Boheman in Schoenherr, 1842: 113 (original description).

Trachyphloeus brevis: Seidlitz, 1868: 99 (monograph of Otiorhynchinae); Lona, 1937: 321 (catalogue); Borovec & Meregalli, 2013: 501 (note).

Type locality. Cap. Bonae Spei [Cape of Good Hope, South Africa; probably the Cape Peninsula].

Material examined. Lectotype (here designated): 1 spec. (NHRS, Schoenherr’s coll.), ‘Cap. b. sp. Drège [hw, historical label] / NRM Sthlm Loan 2752/08 [p, green] / LECTOTYPUS *Trachyphloeus brevis* Boheman, Borovec, Skuhrovec det. 2017 [red label, p] / “*Trachyphloeus*” *brevis* Boheman Borovec, Skuhrovec des. 2017’ (Fig. 9A).

Remarks. Boheman gave the origin of this species as ‘Caput Bonae spei. Dom. DRÈGE. MUS. SCHH.’. There is a specimen labelled ‘Cap. b. sp. Drège’ standing under the name “*brevis*” in Schoenherr’s collection (NHRS), 2.19 mm in length. It belongs to the tribe Trachyphloeini due to the conditions of its rostrum, scrobes and pro- and metatibiae, and its free claws show that it belongs to the group of genera that will be revised in future papers. It represents a new genus, which also comprises two undescribed species from the Eastern Cape.

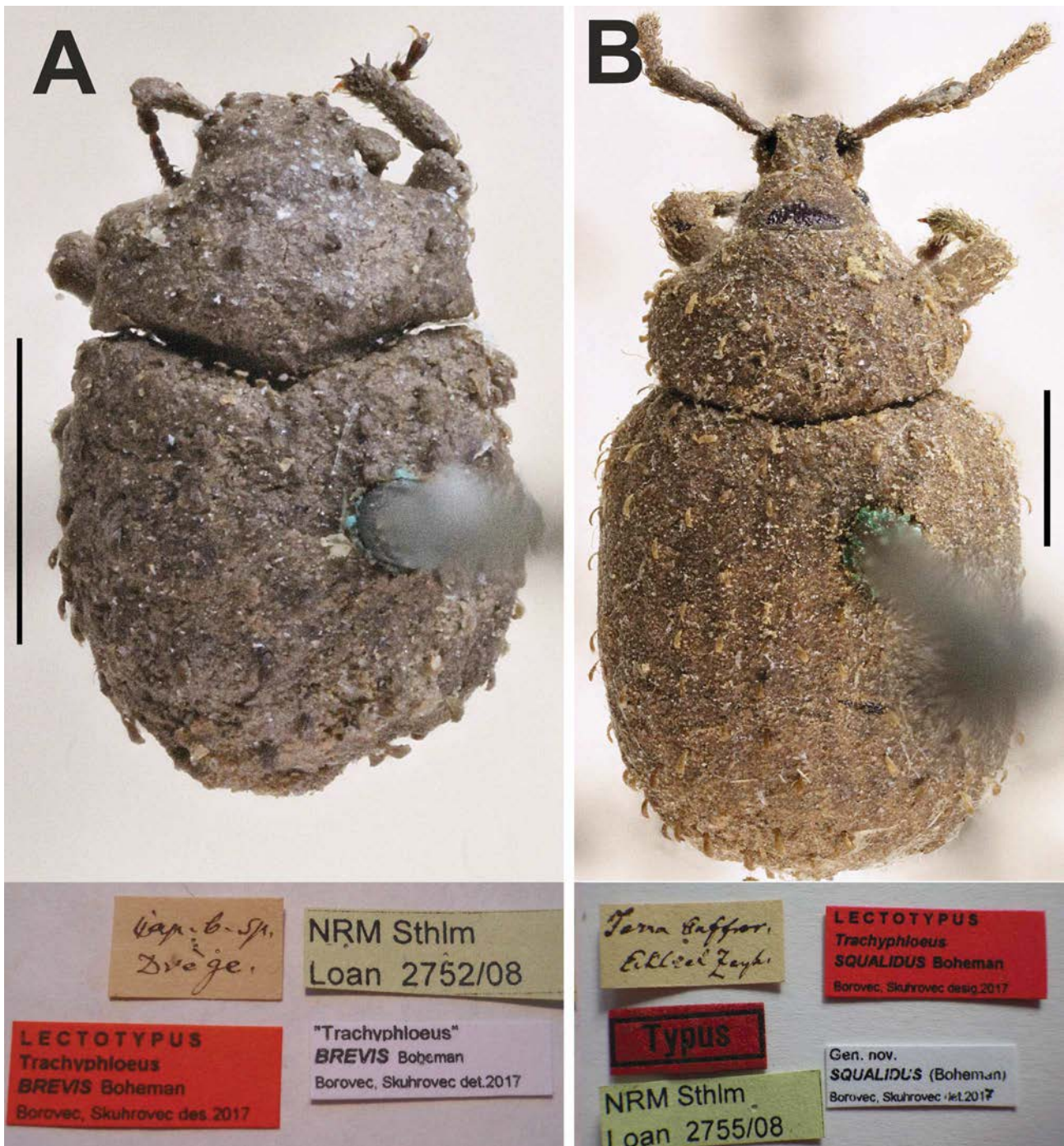


FIGURE 9. A—“*Trachyphloeus*” *brevis* Boheman, 1842, Lectotype, and its labels. B—“*Trachyphloeus*” *squalidus* Boheman, 1842, habitus, male, dorsal view, Lectotype, and its labels. Scale bar: 1 mm.

“*Trachyphloeus*” *nodifrons* Hoffmann, 1968

Trachyphloeus nodifrons Hoffmann, 1968: 14 (original description).

Type locality. Kindamba Meya, environs grotte d’Adam [Republic of the Congo].

Material examined. Holotype, male (HNHM): ‘Soil—Zoological Exp. Congo—Brazzaville Kindamba, Méya near Adam cave / 7.11.1963 No 120 sifted in trunks leg. Endrödy-Younga / Holotype 1968 *Trachyphloeus nodifrons* Hoffmann / ♂ Type / *Trachyphloeus nodifrons* m. A. Hoffmann det. ♂’. Paratypes, 12 spec. (HNHM), 10 spec. labelled as holotype; 1 spec.: ‘Soil—Zoological Exp. Congo—Brazzaville Kindamba, Méya Luolo river /

2.11.1963 No 78 sifted in litter leg. Endrödy-Younga'; 1 spec.: 'Soil—Zoological Exp. Congo—Brazzaville Kindamba, Méya Luolo river / 10.11.1963 No 148 soil trap leg. Balogh & Ziesi'.

Remarks. Hoffmann (1968) described this very interesting species from 30 specimens from the Adam Cave and Luolo River in the Republic of Congo. The type material was examined by the first author many years ago. The species certainly does not belong in *Trachyphloeus*, and its placement in the tribe Trachyphloeini is also doubtful. We provisionally leave it in *Trachyphloeus*.

“*Trachyphloeus*” *squalidus* Boheman, 1842

(Fig. 9B)

Trachyphloeus squalidus Boheman in Schoenherr, 1842: 110 (original description).

Trachyphloeus squalidus: Seidlitz, 1868: 97 (monography of Otiorynchinae); Lona, 1937: 332 (catalogue); Borovec & Meregalli, 2013: 501 (note).

Type locality. Terra Caffrorum [South Africa, Eastern Cape].

Material examined. Lectotype (here designated): 1 spec. (NHRS, Schoenherr's coll.), 'Typus [red label, p] / Terra Caffrar. Eckl. et Zeyh. [hw] / LECTOTYPUS *Trachyphloeus squalidus* Boheman, Borovec, Skuhrovec des. 2017 [red label, p] / Gen. nov. *squalidus* (Boheman) Borovec, Skuhrovec det. 2017' [p] (Fig. 9B).

Remarks. In Schoenherr's collection there is one well preserved specimen standing under the name “*squalidus*”, 4.19 mm in length. Owing to its clearly developed metatibial corbels and connate claws, it belongs in the tribe Embrithini, in which it represents an undescribed genus due to having the rostrum separated from the head by a wide and shallow, transverse furrow, robust antennae and legs and the apex of the protibiae lobed and armed with spines. This genus also includes four undescribed species from the Eastern Cape and will be described in a pending revision of a group of related genera.

Acknowledgements

We thank Max Barclay (BMNH), Johannes Bergsten (NHRS), Christoffer Fägerström (MZLU), Mark de Meyer (RMCA), Hélène Perrin (MNHN), Harald Schillhammer (NHMW), Eva Sprecher (NHMB) and Gyöző Szél (HNHM) for the loan of specimens for study. Johannes Bergsten (NHRS) was kindly helped the first author with photographs of the types of both *Afrophloeus* species. Special thanks to Rolf G. Oberprieler (CSIRO Ecosystem Sciences, Canberra, Australia) for his critical comments and valuable remarks. We thanks Jon Cooter (Oxford) for improving the English. The research was supported by grant IGA No. B07/17 of the Czech University of Life Sciences Prague, Faculty of Forestry and Wood Sciences.

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Systematic position of *Ascopus* Marshall, *Oreosecus* Marshall, *Perarogula* Hoffmann and *Rhadinocopes* Hustache (Coleoptera: Curculionidae: Entiminae) with description of a new species of *Ascopus* from Guinea

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Abstract

Type material of the described species of *Ascopus* Marshall, 1951, *Oreosecus* Marshall, 1950, *Perarogula* Hoffmann, 1963 and *Rhadinocopes* Hustache, 1931 was examined and their taxonomic status is discussed. *Oreosecus* Marshall, 1950 and *Rhadinocopes* Hustache, 1931 are proposed as junior synonyms of *Tapinomorphus* Hartmann, 1904, *Perarogula* Hoffmann, 1963 is proposed as a junior synonym of *Ascopus* Marshall, 1951. *Rhadinocopes curvipes* Hustache, 1931, *R. echinatus* Marshall, 1951 and *Perarogula lamottei* Hoffmann, 1963 are transferred as valid species to the genus *Ascopus*, *Rhadinocopes alticola* Hustache, 1939, *R. orientalis* Hustache, 1931 and *Oreosecus porculus* Marshall, 1950 are transferred as valid species to the genus *Tapinomorphus*. Lectotypes of *Rhadinocopes orientalis* Hustache, 1931 and *Rhadinocopes alticola* Hustache, 1939 are designated. *Ascopus girardi* sp. nov. from Guinea, Mt. Nimba, is described and compared with all other species of the genus. Male and female genitalia of *Ascopus* are described and illustrated for the first time. A key to *Ascopus* species is presented.

Key words: Weevils, taxonomy, new combinations, new synonyms, Cneorhinini, Sciaphilini, Afrotropical region, species discovery

Introduction

Our knowledge of terricolous weevils of the Eastern and Western regions of Africa is only fragmentary, based on only occasionally collected material. A part of the material belongs to small genera of the short nosed weevils (Curculionidae: Entiminae) historically described by several authors, but none of which have ever been compared. Most of the genera were placed historically into tribes only according to the original differential diagnosis. This fact leads to situations where some of the type species are congeneric, even though the genera they belong to are listed in different tribes. For this paper we have reexamined the type specimens of the type species of several of these genera known only from their original descriptions. This paper focuses on genera of small entimines with “brachyderine” type antennal scrobes, including only a few species. A limited number of specimens have been collected from forest litter, with many species known only from the type series. These genera are very similar, and it is easy to confuse them with one another. Our goal was to reassess the taxonomic position of these short-nosed weevils. In the process we were able to determine the correct taxonomic position of several of these genera. These genera have never been revised subsequently, and are only occasionally noted (Marshall 1951, Hoffmann 1963) and listed in catalogues (Emden & Emden 1939; and Alonso-Zarazaga & Lyal 1999).

Material and methods

The body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of

the elytra, excluding the rostrum. The rostrum width/length ratio was measured as the maximum width at the base relative to the maximum length from the posterior junction with the head to the most anterior part of the rostrum, the base of the mandibles. Width/length ratios of the pronotum, elytra, antennal segments and tarsal segments were taken at the maximum width and length of the respective parts, in dorsal view. Female genitalia were embedded in Solakryl BMX (Medika, Prague, toluen-soluble); male genitalia were mounted dry on the same card as the respective specimen. The terminology for the description of the rostrum and genitalia follows Oberprieler *et al.* (2014). The habitus image was taken with a Canon EOS 5D mark II camera in combination with a Canon MP-E65 1-5x macro lens. Images were stacked by Zerene Stacker and edited in Adobe Photoshop CC 2015.

Exact label data of type specimens are cited: separate labels are indicated by double slash (//), separate lines by a simple slash (/). Authors' remarks and comments are in square brackets ("p" = printed, "hw" = handwritten). Specimens are deposited in the following museums and private collections:

BMNH	The Natural History Museum, London, United Kingdom, Maxwell Barclay, Michael Geisler;
IFAN	Institut français d'Afrique noire (since 1966, Institut fondamental d'Afrique noire), now deposited in MNHN;
MNHN	Muséum National d'Histoire Naturelle, Paris, France, Hélène Perrin;
RMCA	Royal Museum of Central Africa, Tervuren, Belgium, Mark de Meyer.

Taxonomy

The genus *Rhadinocopes* was described by Hustache (1931), based on the two species, *R. orientalis* Hustache, 1931 and *R. curvipes* Hustache, 1931. Later, Hustache described the third species of the genus, *R. alticola* Hustache, 1939 and the last species was added by Marshall as *R. echinatus* Marshall, 1951. The genus was listed in the World Catalogue of Curculionoidea (Alonso-Zarazaga & Lyal 1999) in the tribe Cneorhinini Lacordaire, 1863. Four described *Rhadinocopes* species are transferred to two different genera in the present paper, so a new generic synonym follows placement of the type species of the genus, *R. orientalis*.

The genus *Oreosecus* was described by Marshall (1950) as monotypic, and compared with *Neomias* Hustache, 1936 and *Oreosystates* Marshall, 1933; all of them now listed in Peritelini Lacordaire, 1863 (Alonso-Zarazaga & Lyal 1999).

The genus *Ascopus* Marshall, 1951 was described also as monotypic and was compared by Marshall with the *Rhadinocopes* represented in the description with *R. curvipes*. Analogously, it is listed in the tribe Cneorhinini (Alonso-Zarazaga & Lyal 1999).

The genus *Perarogula* Hoffmann, 1963 was described as monotypic, and Hoffmann stated it was similar (with gular striae) to "Coenopsis (Otiorrhynchinae)" [= *Caenopsis* Bach, 1854, *Trachyphloeini* Lacordaire, 1863 now] and in this tribe it was listed in Alonso-Zarazaga & Lyal (1999), but with the note "Probably a *Sciaphilini*".

Ascopus Marshall, 1951

Ascopus Marshall, 1951: 323 (original description), type species: *Ascopus pyriformis* Marshall, 1951 by original designation. Gender masculine.

Ascopus: Hoffmann 1963: 310 (note); Alonso-Zarazaga & Lyal 1999: 149 (catalogue).

Perarogula Hoffmann, 1963: 313 (original description), **syn. nov.**, type species: *Perarogula lamottei* Hoffmann, 1963 by original designation.

Perarogula: Alonso-Zarazaga & Lyal 1999: 183 (catalogue); Borovec & Skuhrovec 2017: 528 (note).

Rhadinocopes: Hustache 1931: 59 (species description); Marshall 1951: 321 (species description).

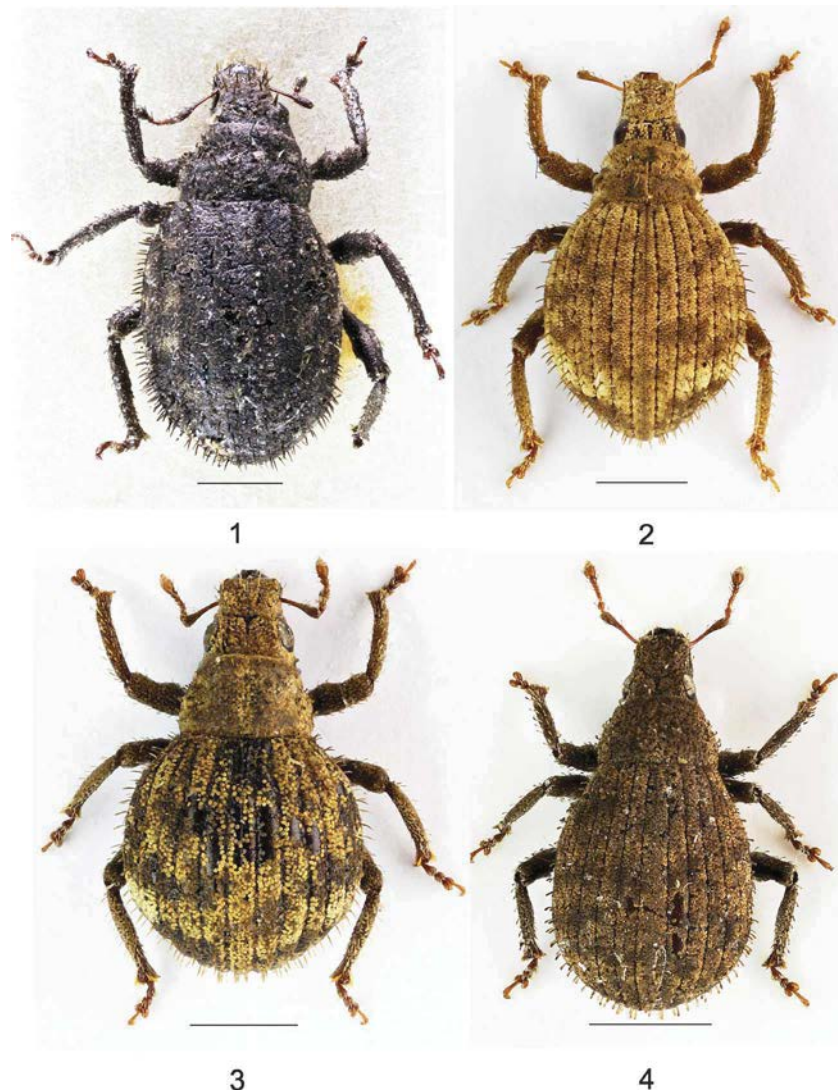
Diagnosis. Small Cneorhinini at most 4.8 mm long, with antennal scrobes dorsally invisible, in profile narrow, curved downwards, not reaching ventral border of eye; frons short, glabrous; epistome small, posteriorly narrowly carinate, ending before anterior border of antennal insertion; antennal scapes very short, reaching middle of eyes in repose; eyes in dorsal view not protruding laterally from the head; elytra lacking laterally prominent humeral calli; femora unarmed; metatibiae with narrow corbel; claws connate; abdominal ventrites with suture between ventrite 1 and 2 straight; ventrite 1 as long as ventrites 2–4 combined.

Remarks. The genus belongs to the tribe Cneorhinini Lacordaire, 1863 primarily by having laterally positioned scrobes, curved downwards, elytra lacking laterally prominent humeral calli, connate claws and metatibiae with narrow corbel. Among Cneorhinini *Ascopus* could be recognize by head did not constricted behind eyes, rostrum separated from head by slender, but well-edged V-shaped transverse sulcus, small epistome, short scapes and abdominal ventrites with suture between ventrites 1 and 2 straight. Among Cneorhinini *Ascopus* is similar only to other small terricolous genera as *Proictes* Schoenherr, 1840, *Pseudoscolochirus* Hoffmann, 1963 and *Scolochirus* Marshall, 1944, known also from western Africa. From all these three genera *Ascopus* could be easily recognize by epistome small, not reaching antennal insertion in its posterior angle (large, exceeding antennal insertion in named three genera), well edged transverse sulcus between head and rostrum (lacking sulcus), ventrite 1 conspicuously longer than ventrite 2 (equally long), suture between ventrite 1 and 2 straight (sinuose), and from *Pseudoscolochirus* and *Scolochirus* also by lacking tooth on inner side of protibiae (having sharp triangular tooth a little beyond the middle of inner side). *Ascopus* contains 5 species, including newly described and newly transferred species in this paper, known from Ghana, Guinea, Ivory Coast and Togo.

Ascopus lamottei (Hoffmann, 1963), **comb. nov.**
(Fig. 1)

Perarogula lamottei Hoffmann, 1963: 313 (original description).

Perarogula lamottei: Lamotte & Roy 1998: 126 (faunistic note); Alonso-Zarazaga & Lyal 1999: 183 (catalogue).



FIGURES 1–4. Dorsal habitus. 1. *Ascopus lamottei* (Hoffmann); 2. *A. curvipes* (Hustache); 3. *A. echinatus* (Marshall); 4. *A. pyriformis* Marshall. Scale = 1.00 mm.

Type locality. Nimba, Camp II [Guinea].

Type material. Type [=Holotype, sensu Hoffmann] ♂ (MNHN): ‘76 Ph’[hw] // IFAN / NIMBA (Guinée) / Lamotte et Roy / VII – XII 51 [p, blue] // Perarogula n.g. / Lamottei n.sp. m [hw] / A. Hoffmann det. [p] // TYPE [p, red] // Muséum Paris [p] Guinée M. Lamotte [hw, blue] // Ascopus / lamottei (Hoffmann) / Borovec & Perrin det. 2019 [p]’. Paratypes, 4 spec. (MNHN): ‘76 Pb [in other three specimens ‘Pa’, ‘Ph’ and ‘Pg’] [hw] // IFAN / NIMBA (Guinée) / Lamotte et Roy / VII – XII 51 [p, blue] // Perarogula / Lamottei m [hw] / A. Hoffmann det. [p] // PARATYPE [p, red] // Muséum Paris [p] Guinée M. Lamotte [hw, blue] // Ascopus / lamottei (Hoffmann) / Borovec & Perrin det. 2019 [p]’; 1 spec. (MNHN): the same data as the previous three specimens, but with two added labels: ‘Mt To (1600 m) / Camp 1 [p] // Omotrachelus / sp. ign. [hw] / Det. G. A. K. Marshall [p]’; 1 spec. (MNHN): ‘Mt. Nimba / Guinée VII-XII 51 / Lamotte et Roy [hw] // Perarogula / Lamottei m [hw] / A. Hoffmann det. [p] // PARATYPE [p, red] // Muséum Paris [p] Guinée M. Lamotte [hw, blue] // Ascopus / lamottei (Hoffmann) / Borovec & Perrin det. 2019 [p]’; 2 spec. ♂, ♀ (MNHN): ‘Mt. Nimba / Guinée VII-XII 1951 / Lamotte et Roy [hw] // Perarogula Lamottei m. [hw] / A. Hoffmann det. [p] // PARATYPE [p, red] // Muséum Paris / 1968 / Col. A. Hoffmann [p, blue] // Ascopus / lamottei (Hoffmann) / Borovec & Perrin det. 2019 [p]’.

Remarks. *Ascopus lamottei* was described from 7 specimens of both sexes from “Nimba (Guinea)”. However, there are 9 specimens labelled by Hoffmann in red labels as type and paratypes in his collection. The antennal scrobes are furrow-shaped (“brachyderine”-type), invisible dorsally and in profile directed below the eyes and not touching them, short antennal scape not reaching anterior border of pronotum, eyes not protruding laterally from the head, connate claws and metatibiae lacking corbels. Based on the above features, this species is clearly congeneric with *Ascopus pyriformis* Marshall, 1951 and it represents another valid species of the genus. Thus *Perarogula* Hoffmann, 1963 is a junior synonym of *Ascopus* Marshall, 1951, **syn. nov.**

***Ascopus curvipes* (Hustache, 1931), comb. nov.**

(Fig. 2)

Rhadinocopes curvipes Hustache, 1931: 59 (original description).

Rhadinocopes curvipes: Emden & Emden 1939: 233 (catalogue).

Type locality. Côte occidentale d’Afrique, Assinie [Ivory Coast].

Type material. Not examined.

Additional material examined. 1 spec., Côte occidentale africaine, Assinie (MNHN); 1 spec., Ivory Coast, 1.x.1957, P. Cachan lgt. (MNHN); 1 spec., Ivory Coast, Banco, M. Taou, 8.ii.1960, P. Cachan lgt. (MNHN); 1 spec., Ivory Coast, Adiopodoumé, iv.1953, P. Cachan lgt. (MNHN); 2 spec., Ivory Coast, Mt. Nimba camp., Savannah & gallery forest, 07°35’15” N, 08°25’05” W, 28.iv.-8.v.2016, 823 m, Aristophanous M., Geiser M., Moretto P. leg. (BMNH); 3 spec., Ivory Coast, Bingerville, viii. 1961, humus en forêt secondaire, J. Decelle lgt. (RMCA).

Remarks. The species was described based on four specimens collected by Ch. Alluaud. We were not able to examine type specimens, but had one specimen available from the type locality, Assinie, that fits the original description very well. This specimen, based on the shape of rostrum, well developed epistome and scrobes laterally curved downwards and not touching the ventral border of the eye, flat eyes and short antennal scapes, is clearly congeneric with *Ascopus pyriformis* and must be transferred to that genus as *A. curvipes* (Hustache, 1931), **comb. nov.** Here we create a valid species, extremely similar to *A. echinatus*, separable according to characters stated below in the key.

***Ascopus echinatus* (Marshall, 1951), comb. nov.**

(Fig. 3)

Rhadinocopes echinatus Marshall, 1951: 321 (original description).

Rhadinocopes echinatus: Hoffmann 1963: 311 (noted).

Type locality. Gold Coast: Enchi [Ghana].

Type material examined. Type, 1 spec. (BMNH): ‘Type [p, rounded, red margin] // Gold Coast Colony: /

Enchi. / Capt. B. D. Peake. / B. M. 1924-368. [p] // *Rhadinocopes / echinatus*, Mshl. / TYPE ♀ [hw] // *Ascopus / echinatus* (Marshall) / Borovec & Perrin det. 2019 [p]'. Cotype, 1. Spec. (BMNH): 'Cotype [p, rounded, yellow margin] // IFAN-1946 / TONKOU C.I. / 900-1200 m / A. VILLIERS [hw] // FORET PRIM / 20-30-IX [hw] // *Rhadinocopes / echinatus*, Mshl. / COTYPE [hw] // Pres by / Com. Inst. Ent. / B. M. 1951-61 [p] // *Ascopus / echinatus* (Marshall) / Borovec & Perrin det. 2019 [p]'.

Additional material examined. 5 spec., Togo, Missahomé, viii.1964 (MNHN); 1 spec., Togo, viii.1964 (MNHN); 1 spec., Guinée, Nimba, Nzo, 2.vi.1942, M. Lamotte lgt. (MNHN); 1 spec., the same data as previous, only without Nzo, but with the label TYPE and identification label of Marshall (MNHN) [the specimen does not belong to type series, because the date and name of collector differs from the data stated in original description]; 1 spec., Ivory Coast, Mt. Tonkoui Peak, , 07°27'15.2" N, 007°38'12.5" W, 12.-18.vii.2015, 1171 m, Aristophanous M., Moretto P., Ruzzier E. leg. (BMNH); 2 spec., Guinée, Mt. Nimba, Gouéla, Forêt de Piedmont, 6.-8.vi.1991, C. Girard lgt. (MNHN); 1 spec., Guinée, Mt. Nimba, Forêt de Séringbara, 600 m, 5.x.2008, Vanderbergh lgt. (coll. Vanderbergh).

Remarks. The species description was based on 7 specimens from three localities, collected in Ghana, Ivory Coast and Guinea, and is very similar to that for *R. curvipes*. Marshall in the same article also described a new genus *Ascopus*, but listed *echinatus* in *Rhadinocopes* using three characters for distinguishing between these two genera – apex of protibiae straight or curved and elytra as wide as long or longer than wide with dorsal curvature continuous with that of pronotum or more convex. He simultaneously used the later character for distinguishing between *echinatus* and *curvipes*. The above three characters differ between species in many of Entiminae genera and have limited value in distinguishing between genera, especially *Rhadinocopes* and *Ascopus*. Because *Rhadinocopes echinatus* Marshall, 1951 is congeneric with *Ascopus pyriformis* Marshall, 1951, it must therefore be transferred to the genus *Ascopus* as *A. echinatus* (Marshall, 1951), **comb. nov.**

Ascopus pyriformis Marshall, 1951

(Fig. 4)

Ascopus pyriformis Marshall, 1951: 323 (original description).

Ascopus pyriformis: Marshall 1954: 20 (list); Hoffmann 1963: 310 (note); Alonso-Zarazaga & Lyal 1999: 149 (catalogue).

Type locality. Ivory Coast: Mt. Tonkoui.

Type material examined. Type (MNHN): 'IFAN-1946 / TONKOU C.I. / 500-900 m / A. VILLIERS [p] // FORET SECON [p] / 20-30-IX [hw] // TYPE [pr, red] // Museum Paris [p, blue] // *Ascopus / pyriformis*, Mshl. / TYPE ♂ [hw, by Marshall]'. Syntypes, 6 spec. (BMNH): 'SYNTYPE [p, rounded, blue margin] // Cotype [p, rounded, yellow margin] // IFAN-1946 / TONKOU C.I. / 900-1200 m / A. VILLIERS [hw] // FORET PRIM / 20-30-IX [hw] // *Ascopus / pyriformis*, Mshl. / COTYPE [hw] // Pres by / Com Inst Ent / B M 1951-61 [p]'. Four syntypes are from lower altitudes, having stated 500-900 m in the third label.

Additional material examined. 7 spec., Guinée, Nimba, Keoulenta, 2.vi.1942, M. Lamotte lgt. (MNHN); 3 spec., Guinée, Mt. Nimba, Gbakoré, 700 m, 30.x.2008, Vanderbergh lgt. (coll. Vanderbergh); 2 spec., Guinée, Mt. Nimba, Gbakoré, mare d'hivernage, 1625 m, 2.x.2008, Vanderbergh lgt. (coll. Vanderbergh); 26 spec., Ivory Coast, Mt. Nimba camp., Savannah & gallery forest, 07°35'15" N, 08°25'05" W, 28.iv.-8.v.2016, 823 m, Aristophanous M., Geiser M., Moretto P. leg. (BMNH); 6 spec., Ivory Coast, Mt. Tonkoui Peak, 07°27'15.2" N, 007°38'12.5" W, 12.-18.vii.2015, 1171 m, Aristophanous M., Moretto P., Ruzzier E. leg. (BMNH).

Remarks. The original description was based on 64 specimens from Ivory Coast and Guinea. *Ascopus pyriformis* is typical among other *Ascopus* species and is characterized by long oval elytra and straight protibiae, which makes this species easily distinguishable. Marshall (1954), stated there were another 30 specimens from Mont Nimba, Nion, but these were not examined by us.

Ascopus girardi sp. nov.

<http://zoobank.org/urn:lsid:zoobank.org:act:827697EC-1D8D-48CE-84D4-72E86AE74183>

(Figs 5, 9–17)



5



6



7



8

FIGURES 5–8. Dorsal habitus. 5. *A. girardi* sp. nov.; 6. *Tapinomorpha alticola* (Hustache); 7. *T. orientalis* (Hustache); 8. *T. porculus* (Marshall). Scale = 1.00 mm.

Type locality. Guinea, Reserve naturelle du Mont Nimba, forest-gallery of river Zié.

Type material. Holotype: ♂, 'FT. GAL. DU ZIÉ [Forêt galerie du Zié = forest-gallery of river Zié] [p] / 1450

m, 29.V.1991 [hw] // GUINÉE-NIMBA / C. GIRARD REC. [p] // battage / arbustes [beating of shrubs] [hw] // Muséum Paris [p] // HOLOTYPE / *Ascopus girardi* sp. nov. / R. Borovec & H. Perrin det. 2019 [p, red] (MNHN). Paratypes: 9 ♂♀, the same data as holotype; 4 spec., Forêt du / Zougoué / 750 m [hw] // battage des / arbustes [beating of shrubs] / 30.VI.1991 [hw] // Guinée / Mt. Nimba / C. Girard [hw, blue]; 6 spec., Forêt du / Zougoué / vers 800 m [hw] // battage / arbustes [beating of shrubs] / 19.VI.1991 [hw] // Guinée / Mt. Nimba / C. Girard [hw, blue]; 5 spec., Forêt-galerie [gallery forest] / du Zougoué / 750-850 m [hw] // battage / strate basse [beating field layer] / 14.VI.1991 [hw] // Guinée / Mt. Nimba / C. Girard [hw, blue]; 6 spec., Forêt-galerie [gallery forest] / du Zougoué / 750-850 m [hw] // battage / strate basse [beating field layer] / 4.VI.1991 [hw] // Guinée / Mt. Nimba / C. Girard [hw, blue]; 9 spec., Forêt-galerie [gallery forest] / du Zié 1300 m / 2.VI.1991 [hw] // battage / strate / arbustive [beating shrub layer] [hw] // Guinée / Mt. Nimba / C. Girard [hw, blue]; 5 spec., Forêt-galerie [gallery forest] / du Zié 1300 m / 25.VI.1991 [hw] // battage / strate / arbustive [beating shrub layer] [hw] // Guinée / Mt. Nimba / C. Girard [hw, blue]; 1 spec., A. V. no 27 [hw] // NIMBA (Guinée) / Lamotte, Amiet / Vanderplaetsen / XII.56-V.57 [p, blue] (all MNHN).

Description. Body length 2.43–2.69 mm, holotype 2.43 mm. Body (Fig. 5) dark brownish to blackish; only antennae, short apical part of tibiae and tarsi paler, reddish brown. The whole body densely covered with rounded appressed scales, slightly imbricated, 5–6 across width of one interval. Elytra with one dense regular row of long, subspatulate erect setae; setae at tip slightly wider than diameter of one appressed scale, somewhat shorter than width of one interval, distance of setae 2–3 × longer than length of one seta. Erect setae bordering inner margin of eyes identical to elytral ones; erect setae on pronotum and rostrum half as long as elytral ones, densely and irregularly scattered. Femora, tibiae and tarsi with conspicuous long semierect subspatulate setae; scapes with short semiappressed setae; funicles with short semierect bristles; clubs finely setose. Vestiture of dorsal part of body dark brownish, elytra with densely scattered light brownish spots.

Rostrum (Figs 9, 10) in dorsal view as long as wide, widest at base and slightly tapered anteriorly with straight sides, only ventral borders of scrobes form small and short, laterally prominent teeth; in lateral view regularly distinctly vaulted, separated from head by shallow transverse sulcus. Epifrons wide, in dorsal view occupying the whole rostral area, slightly tapered anteriorly with straight sides; flat area with indistinct, U-shaped stria, concealed by appressed scales. Frons extremely short, glabrous, forming only narrow stripe along epistome. Epistome small but distinct, V-shaped, narrowly carinate. Antennal scrobes invisible in dorsal view; in lateral view narrow, straight, furrow-shaped, well edged, inserted directly beneath eye, extending to approximately midway of it. Eyes of medium size, weakly vaulted, hardly prominent from outline of head; in lateral view subcircular, placed in dorsal third of head. Head short; vertex wide and flat.

Antennae (Fig. 5) slender and short; scapes reaching to the middle of eye when folded, 1.2–1.3 × longer than funicle, straight, slightly evenly enlarged at apical third, at apex 0.8–0.9 × as wide as clubs. Funicle 7-segmented; segment 1 conical, twice as long as wide and twice as long as segment 2, which is 1.3 × longer than wide; segments 3–5 1.3–1.4 × wider than long; segment 6 1.4–1.5 × wider than long; segment 7 1.5–1.6 × wider than long; clubs 1.6–1.7 × longer than wide.

Pronotum (Fig. 5) short, 1.53–1.61 × wider than long, widest at mid-length, behind anterior border constricted; disc regularly vaulted; base straight. Pronotum in lateral view vaulted, behind anterior border flattened.

Elytra (Fig. 5) nearly pear-shaped, 1.07–1.12 × longer than wide, behind base slightly narrowed and then with widely rounded sides; in lateral view distinctly vaulted just from base. Striae narrow, indistinctly punctured, completely hidden by appressed scales; intervals wide, slightly vaulted.

Abdominal ventrites 1.1 × longer than wide; ventrite 1 at middle about as long as ventrites 2–4 combined, behind metacoxa about 1.5 × longer than ventrite 2; ventrite 2 slightly longer than short ventrite 3 or 4; ventrite 5 subtrapezoidal. Suture between ventrite 1 and 2 slightly arched and fine, the others straight, wide and deep. Meta-ventral process obtuse, slightly longer than transverse diameter of metacoxa.

Femora (Fig. 11) moderately long, adentate; tibiae regularly distinctly curved, 5.4–5.6 × longer than wide at mid-length, apically obliquely subtruncated, fringed by very short and fine, yellowish setae, mucronate. Metatibiae with glabrous apical surface, lacking corbels. Tarsi with segment 2 1.3 × wider than long; segment 3 1.4 × wider than long and 1.3–1.4 × wider than segment 2; onychium as long as segment 3; claws solidly fused at basal half.

Penis (Fig. 12) short, widest at base and regularly tapered apically, at basal half more sclerotised than at apical half, with slender fenestra just before the tip, tip narrowly rounded; temones twice as long as body of penis and 3.1–3.3 × longer than tegminal manubrium; endophallus long, with two elongated but wide sclerites at base. Teg-

men with slender complete ring without parameres with manubrium short, 0.6–0.7 × shorter than diameter of ring. Sternite IX (Fig. 14) with spiculum gastrale moderately long, weakly curved anteriorly and tapered, posteriorly with fused, V-shaped basal arms.

Gonocoxites (Fig. 17) long and slender, evenly tapered apicad, apically shortly obtuse with short apical styli, about as long as wide with tuft of 3–4 fine long setae. Sternite VIII (Fig. 16) with long and slender apodeme, 3.0–3.3 × longer than plate, terminating just inside of plate; plate small, umbrella-shaped, with basal margin membranous and apical margin slender but developed, fringed by short and fine setae. Spermatheca (Fig. 15) with slender, short and regularly curved cornu; corpus rounded; ramus very short, distinctly wider than long, hardly prominent from outline of corpus; nodulus tubular-shaped, slightly longer than cornu, evenly tapered apicad and distinctly curved backwards.

Biology. The type specimens were beaten from shrubs in canopy forest.

Etymology. The species is dedicated to Claude Girard, our colleague for many years in MNHN, a specialist on African Elateridae and collector of these specimens.

Differential diagnosis. The newly described species is easily distinguishable from all other species of the genus by laterally placed small eyes, with a wide vertex between, as wide as space between antennal insertions, rostrum only slightly tapered apicad and erect subspatulate elytral setae. *Ascopus girardi* resembles *A. pyriformis* by the slightly pear-shaped elytra, but it is easy to recognize it by its distinctly curved protibiae. By contrast, the curved protibiae in *A. girardi* are similar to those in *A. curvipes* and *A. echinatus*, but except for characters stated above it is possible to distinguish it by its subglobular elytra and pronotum widest at mid-length.

Key to species of *Ascopus*

1. Raised elytral setae on odd intervals denser than on even ones, creating two irregular rows. Funicle segment 6 isodiametric, segment 7 slightly wider than long. Larger species 4.2–4.8 mm. *A. lamottei* (Hoffmann)
- Raised elytral setae on odd and even intervals equally dense, creating one regular row on each interval. Funicle segments 6 and 7 distinctly wider than long. Smaller species 2.4–3.8 mm. 2
2. Protibiae straight. Elytra elongate oval, 1.19–1.26 × as long as wide. Ventral borders of scrobes in dorsal view with small laterally prominent teeth. *A. pyriformis* Marshall
- Protibiae apically distinctly inwardly curved. Elytra globular or subglobular, at most 1.12 × as long as wide. Rostrum with straight sides in dorsal view. 3
3. Elytra subglobular, 1.08–1.12 × longer than wide, in short distance behind base narrowed. Eyes small, lateral, space between them equal to space between antennal insertions. Rostrum slightly tapered anteriorly, at base at most 1.1 × wider than at apex. Pronotum widest at mid-length. Elytral erect setae subspatulate, apically rounded. *A. girardi* sp. nov.
- Elytra globular, at most 1.06 × longer than wide, regularly enlarged posteriorly just behind base. Eyes large, subdorsal, space between them slightly narrower than space between antennal insertions. Rostrum distinctly tapered apicad, at base 1.2 × wider than at apex. Pronotum widest at base. Elytral erect setae lanceolate, tip pointed. 4
4. Elytra in lateral view distinctly vaulted just from base; elytra 1.03–1.06 × longer than wide. Pronotum with small lateral projection in the middle. Rostrum longer, at base 1.07–1.14 × as wide as long. Elytral intervals almost flat, 4 × as wide as narrow striae. *A. curvipes* (Hustache)
- Dorsal curvature of elytra almost continuous with that of pronotum; elytra as long as wide to 1.04 × wider than long. Pronotum without lateral projection. Rostrum shorter, at base 1.21–1.28 × as wide as long. Elytral intervals vaulted, 2.5–3 × wider than wide striae. *A. echinatus* (Marshall)

Tapinomorphus Hartmann, 1904

Tapinomorphus Hartmann, 1904: 372 (original description), type species: *Tapinomorphus metallicus* Hartmann, 1904 by subsequent designation. Gender masculine.

Tapinomorphus: Emden & Emden 1939: 96 (key to genera); Marshall 1940: 39 (new species description); Marshall 1953: 2 (new species descriptions); Voss 1962: 290 (new species descriptions); Alonso-Zarazaga & Lyal 1999: 178 (catalogue); Borovec & Skuhrovec 2017: 533 (new species description).

Oreosecus Marshall, 1950: 75 (original description), **syn. nov.**, type species: *Oreosecus porculus* Marshall, 1950 by original designation.

Oreosecus: Alonso-Zarazaga & Lyal 1999: 172 (catalogue).

Rhadinocopes Hustache, 1931: 58 (original description), **syn. nov.**, type species: *Rhadinocopes orientalis* Hustache, 1931 by original designation.

Rhadinocopes: Alonso-Zarazaga & Lyal 1999: 150 (catalogue).

Rhadinoscopes Hoffmann, 1966: 1003 (lapsus).

Diagnosis. Small Sciaphilini, less than 4.2 mm, epifrons at base almost as wide as space between eyes, clearly separated from head by narrow, V-shaped sulcus; frons glabrous and declivous; epistome not developed; antennal scrobes laterally placed, well edged and curved downwards; antennae very slender; elytra dorsally lacking humeral calli; procoxae touching anterior border of pronotum; femora unarmed; metatibiae lacking corbels, with glabrous apical surface; claws connate; metaventral process distinctly wider than transverse diameter of metacoxa; abdominal ventrites glabrous, with suture between ventrite 1 and 2 straight and with ventrite 2 shorter than ventrites 3 and 4 together.

Remarks. The genus belongs among entimines with “brachyderine” type of antennal scrobes which means scrobes laterally placed, in profile furrow-shaped and curved downwards, and here is listed in the tribe Sciaphilini Sharp, 1891, by having pronotum lacking ocular lobes or setae in lateral part of anterior border, metatibiae lacking corbels, claws connate and elytra without laterally prominent humeral calli. All these characters are identical for the Sciaphilini and also Brachyderini Schoenherr, 1826, the latter is distinguishable by having conical head and rostrum. However, separation of these two tribes must be confirmed by more detailed study in future. *Tapinomorphus* is among all Sciaphilini genera recognizable mainly by using of following set of characters: body covered by appressed oval or rounded scales, frons posteriorly not carinate, scapes reaching behind anterior border of pronotum in repose, tarsi not very slender, with segment 1 less than twice longer than wide and shorter than segment 2 and 3 together and metaventral process distinctly wider than transverse diameter of metacoxa. Genus includes 19 species including 3 species newly transferred in this paper, all described from Kenya, Tanzania and Democratic Republic of Congo, with at least the same number of undescribed species mainly from Tanzania and Democratic Republic of Congo. Some species of the genus occur further south of its current distribution area, about ten undescribed species are known to the first author from Angola, Malawi, Zambia and Zimbabwe. Moreover, undoubtedly some species originally assigned to the genus *Dysommatus* Marshall, 1933 belong also to *Tapinomorphus*. From all these reasons revision of the genus is necessary.

***Tapinomorphus alticola* (Hustache, 1939), comb. nov.**

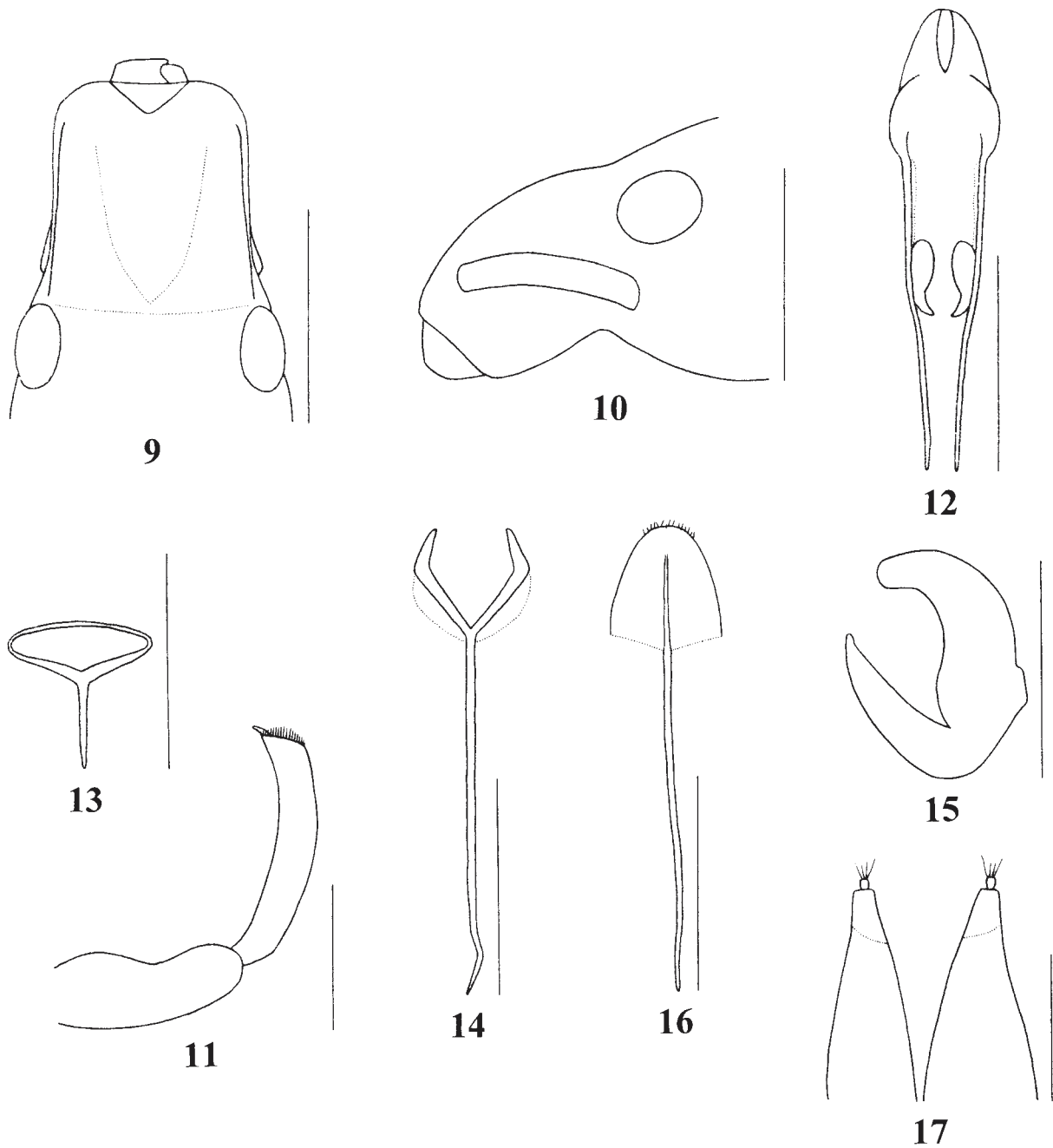
(Fig. 6)

Rhadinocopes alticola Hustache, 1939: 180 (original description).

Type locality. [Kenya] Chip Cherangani, Marakwett, 3 500 m.

Type material. *Rhadinocopes alticola*. Lectotype (here designated): 1 spec. (MNHN, Hustache coll.), ‘KENYA / Chip Cherangani / MARAKWET / 3.500 m [p] // MUSÉUM DE PARIS / Mission de l’Omo / C. ARAMBOURG / P. A. CHAPPUIS & R. JEANNEL / 1932-33 [p, blue label] // ♀ [hw] // COTYPE [p, red ink] // MUSEUM PARIS / 1949 / Col. A. HUSTACHE [p, blue label] // *Rhadinocopes alticola* / m. [hw] // LECTOTYPUS / *Rhadinocopes alticola* Hustache, 1939 / Borovec & Perrin desig. 2019 [p, red] // *Tapinomorphus alticola* (Hustache) / Borovec et Perrin det. 2019 [p]’. Paralectotypes: 1 male, 1 female (MNHN), ‘KENYA / Chip Cherangani / MARAKWET / 3.500 m [p] // MUSÉUM DE PARIS / Mission de l’Omo / C. ARAMBOURG / P. A. CHAPPUIS & R. JEANNEL / 1932-33 [p, blue label] // TYPE [p, red ink] // *Rhadinocopes alticola* / m. [hw] / Hustache det. [p, the identification only for the ♀] // PARALECTOTYPUS / *Rhadinocopes alticola* Hustache, 1939 / Borovec & Perrin desig. 2019 [p, red] // *Tapinomorphus alticola* (Hustache) / Borovec & Perrin det. 2019 [p]’.

Remarks. The lectotype of *Rhadinocopes alticola*, here designated, is 2.31 mm long and according to the same characters as *R. orientalis* it belongs in the genus *Tapinomorphus*. In this genus *T. alticola* is very near *T. divergens* Voss, 1962 based on the odd intervals more elevated than even ones with regular row of semierect, subspatulate elytral setae. *Tapinomorphus alticola* is easily distinguishable from *T. divergens* by funicle 7-segmented (vs. 5-segmented in *T. divergens*: this character was overlooked by Voss in his original description of *T. divergens* and also in the key to *Tapinomorphus* species), but also by rostrum parallel-sided (vs. weakly tapered anteriorly), funicular segment 2 short, as long as wide (vs. very long, 2.9 × as long as wide), pronotum widest at basal third (vs. at mid-length) and elytral semierect setae shorter than half the width of one interval (vs. longer than half the width of one interval).



FIGURES 9–17. Structural details of *Ascopus girardi* **sp. nov.** 9. head with rostrum, dorsal view; 10. head with rostrum, lateral view; 11. femur and tibia of right foreleg; 12. penis, dorsal view; 13. tegmen, dorsal view; 14. sternite IX of male; 15. spermatheca; 16. sternite VIII of female, dorsal view; 17. ovipositor, dorsal view. Scale = 0.50 mm, only 17 = 0.25 mm.

***Tapinomorphus carinirostris* Marshall, 1953**

Tapinomorphus carinirostris Marshall, 1953: 3 (original description).

Type locality. [Democratic Republic of Congo] Belgian Congo: Kivu, Kabare, Nyakasiba, 2 350 m.

Type material. Paratype: 1 spec. (RMCA), ‘PARATYPUS [p] / ♀ [hw, orange] // Récolté dans / l’humus [p, blue] // I.R.S.A.C.-MUS.CONGO / Kivu: Kabare Nyakasi - / ba 2350 XII-1950 / N. Leleup [p] / (Forêt de montagne) [hw] // R. DET. / F. / 6243 [hw] // Tapinomorphus / carinirostris Mshl. / COTYPE ♀ [hw, Marshall’s handwriting]’.

***Tapinomorphus divergens* Voss, 1962**

Tapinomorphus divergens Voss, 1962: 293 (original description).

Type locality. [Tanzania] Tanganyika Terr.: Mt. Meru, Olkokola.

Type material. Paratype: 1 spec. (RMCA), ‘Paratypus [p, orange] // COLL. MUS. CONGO / Tanganyika Ter.: Mt Meru, / Olkokola, versant N. O. / 2800 m. 24-VI/1-VIII-57 [p] // Mission Zoolog. I.R.S.A.C. / en Afrique orientale / (P. Basilewsky et / N. Leleup [p] // *Tapinomorphus / divergens* n. sp. / E. Voss det. 1961 [hw]’.

***Tapinomorphus orientalis* (Hustache, 1931), comb. nov.**

(Fig. 7)

Rhadinocopes orientalis Hustache, 1931: 59 (original description).

Rhadinocopes orientalis: Emden & Emden 1939: 233 (catalogue); Alonso-Zarazaga & Lyal 1999: 150 (catalogue).

Type locality. Ostafrika [East Africa].

Type material. *Rhadinocopes orientalis*. Lectotype (here designated): 1 female (MNHN, Hustache coll.), ‘Ost Africa / Kraatz [hw] // COTYPE [p, red ink] // MUSEUM PARIS / 1949 / Col. A. HUSTACHE [p] // LECTOTYPUS / *Rhadinocopes / orientalis* Hustache, 1931 / Borovec & Perrin desig. 2019 [p, red] // *Tapinomorphus / orientalis* (Hustache) / Borovec & Perrin det. 2019 [p]’. Paralectotype: 1 spec. (MNHN, Hustache coll.), ‘Ost Africa / Kraatz [hw] // MUSEUM PARIS / 1949 / Col. A. HUSTACHE [p] // *Rhadinocopes / orientalis / m* [hw] // PARALEC-TOTYPUS / *Rhadinocopes / orientalis* Hustache, 1931 / Borovec & Perrin desig. 2019 [p, red] // *Tapinomorphus / orientalis* (Hustache) / Borovec & Perrin det. 2019 [p]’.

Remarks. *Rhadinocopes orientalis* was described based on 5 specimens from Kraatz’s collection. The lectotype, here designated, is 2.56 mm long and undoubtedly belongs in the genus *Tapinomorphus* Hartmann, 1904 (tribe Sciaphilini Sharp, 1891), characterized by rostrum with epifrons at base almost as wide as space between eyes, clearly separated from head by narrow V-shaped stria, glabrous, declined frons, epistome absent, antennal scrobes laterally placed, furrow-shaped, reaching ventral border of the eyes, elytra without prominent humeral calli, procoxae touching anterior border of pronotum, metatibiae lacking corbels with glabrous apical surface, claws fused, metaventral process very wide, abdominal ventrites glabrous with ventrite 2 equally wide as ventrite 3 or 4, with suture between ventrite 1 and 2 straight. Because *Rhadinocopes orientalis* Hustache, 1931 is the type species of the genus *Rhadinocopes* Hustache, 1931, *Rhadinocopes* is a junior subjective synonym of *Tapinomorphus*, **syn. nov.**

Within *Tapinomorphus*, *T. orientalis* is very similar to *T. carinirostris* Marshall, 1953, based on the following characters: elytra without bumps or elevated intervals which are equally wide and rostrum with slender, median, longitudinal carina. It is possible to distinguish it from *T. carinirostris* by the longer rostrum, $1.19 \times$ as wide as long, widest at base and tapered apicad (vs. shorter rostrum, $1.31 \times$ as wide as long and parallel sided in *T. carinirostris*), frons matt (vs. glabrous), first two funicular segments equally long (vs. segment 1 longer than segment 2), humeral parts of elytra regularly rounded (vs. obliquely subtruncate with slightly concave sides), elytra apically broadly rounded (vs. narrowly tapered apicad), intervals on elytral disc as wide as striae (vs. intervals more slender than striae), elytra with conspicuous, erect, slender subspatulate setae, distinctly longer than half the width of interval (vs. inconspicuous, semiappressed, long oval setae, as long as half the width of one interval) and appressed elytral setae subtriangular, posteriorly with concave margin (vs. long oval appressed scales).

***Tapinomorphus porculus* (Marshall, 1950), comb. nov.**

(Fig. 8)

Oreosecus porculus Marshall, 1950: 75 (original description).

Oreosecus porculus: Alonso-Zarazaga & Lyal 1999: 172 (catalogue).

Type locality. Tanganyika [Tanzania], Kilimanjaro, Shira Plateau.

Type material. Type: 1 spec. (BMNH), Type [p, rounded, red margin] // 14,500 ft [4 420 m] above / lent valley.

/ under stones [hw] // Shira plateau. / Kilimanjaro T.T. / 28.xi.1948. G. Salt [p] // Brit. Mus. / 1952-70 [p] // *Oreosecus* / *porculus*, Mshl. / TYPE ♂ [hw] // *Tapinomorphus* / *porculus* (Marshall) / Borovec & Perrin det. 2019 [p]. Paratypes: 1 spec. (BMNH), the same labels as Type, except for the last label saying COTYPE ♀; 1 spec. (BMNH), Cotype [p, rounded, yellow margin] // 14,500 ft [4 420 m] above / lent valley. / under stones. [hw] // Shira plateau. / Kilimanjaro T.T. / 28.xi.1948. G. Salt [p] // “Under stones.” [p] // Kilimanjaro T.T. / 14,500 ft. [4 420 m] XI.1948. [p] // Brit. Mus. / 1952-70 [p] // *Oreosecus* / *porculus*, Mshl. / COTYPE ♂ [hw] // *Tapinomorphus* / *porculus* (Marshall) / Borovec & Perrin det. 2019 [p].

Remarks. Based on the following characters *Oreosecus* is congeneric with *Tapinomorphus*: structure of rostrum with base of epifrons as wide as space between borders of eyes, separated from head by slender V-shaped stria, without developed epistome, with moderately shiny frons, slender long antennal scapes reaching anterior border of pronotum, metatibiae lacking corbels and claws fused. Thus *Oreosecus* Marshall, 1950 is a junior synonym of *Tapinomorphus* Hartmann, 1904, **syn. nov.**

Within the genus, *Tapinomorphus porculus* is most similar to *T. alpinus* Voss, 1962 based on the following characters: elytra without bumps or elevated intervals, rostrum without middle longitudinal carina and funicular segments 1 and 2 equally long. *Tapinomorphus porculus* can be distinguished from *T. alpinus* by dorsal part of body sparsely clothed with very short recumbent setae, without scales (vs. elytra and pronotum densely covered with short oval appressed scales in *T. alpinus*), elytra with sparse row of very short erect setae, shorter the half the width of one interval (vs. long erect setae, weakly longer than half the width of one interval) and rostrum as long as wide, parallel-sided (vs. wider than long, tapered anteriorly).

Discussion

The present paper is the third recent overview based on examination of type material of described small terricolous entomines from East and West Africa, following a survey of *Omotrachelus* (Kania 2004) and a survey of species described in the tribe Trachyphloeini (Borovec & Skuhrovec 2017). It follows on previous articles mainly describing species or presenting faunistic data and giving a first preview on the richness of the terricolous fauna of the region. These three papers are an effort to provide a base for studies of weevils associated with forest leaf-litter in subtropical and tropical parts of Africa. However, other studies of described taxa are urgently required. For example, species described under the genus *Dysommatus* Marshall, 1933, contain species of several genera and must be transferred to the correct genus, and these genera must be redefined and keyed. Further revisions of genera, such as for example the speciose genus *Tapinomorphus*, should necessarily follow.

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***Epistomius*, a new genus of African forest litter
Trachyphloeini, with descriptions of seven new species
(Coleoptera: Curculionidae: Entiminae)**

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Abstract. A new genus of Trachyphloeini, *Epistomius* gen. nov. (Coleoptera: Curculionidae: Entiminae) living in forest litter in the eastern part of South Africa is described, illustrated and its position in the subfamily Entiminae is discussed. Seven new species are described: *E. bulirschii* sp. nov. (KwaZulu-Natal), *E. colonnellii* sp. nov. (Eastern Cape), *E. janaki* sp. nov. (KwaZulu-Natal), *E. natalensis* sp. nov. (KwaZulu-Natal), *E. ngomiensis* sp. nov. (KwaZulu-Natal), *E. niger* sp. nov. (KwaZulu-Natal), and *E. wanati* sp. nov. (Mpumalanga), and included in this new genus. All species are keyed and illustrated.

Key words. Coleoptera, Curculionidae, Entiminae, Trachyphloeini, taxonomy, new genus, new species, South Africa

Introduction

South Africa is well known as a country with an incredibly high gymnosperm plant species diversity and is treated as a separate phytobiogeographic region, known as the Capensis Region (HENDRYCH 1984). It is thus highly probable that a high species richness of phytophagous insects, such as weevils, also awaits discovery. The revision of *Gymnetron* Schoenherr, 1825 with descriptions of 54 new species (CALDARA 2003), *Sibinia* Germar, 1817 with descriptions of 41 new species (CALDARA 1989a), or *Tychius* Germar, 1817 with descriptions of 27 new species (CALDARA 1989b) are recent examples of the huge undiscovered insect diversity in South Africa. This high species richness of the floricolous genera is in contrast to the generic richness of the terricolous weevil fauna in that region. The terricolous weevils in this region have great generic-level diversity known from the beginning of 20th century, when for

example, Marshall and Hustache described 31 new genera containing mainly newly described species in the tribe Embrithini Marshall, 1942 (ALONSO-ZARAZAGA & LYAL 1999, BOROVEC & OBERPRIELER 2013). On the other hand, research of the terricolous weevil fauna in this region is still only at the beginning and the species richness of the fauna should be also very high, as we can conclude from the number of undescribed species recently seen by us.

As a first part of study of Trachyphloeini and Embrithini found in forest litter from the eastern part of South Africa we resolved the taxonomic position of Trachyphloeini species living in South Africa described under *Trachyphloeus* and any other Trachyphloeini genus known from the Palaearctic or Oriental Regions (BOROVEC & SKUHROVEC 2017). The second part of our study of Entiminae associated with forest litter from eastern part of South Africa is devoted to the definition of species around the species *Lalagetes subfasciatus* Boheman, 1842 (type species of the genus *Lalagetes* Schoenherr, 1842) and their differentiation from the genus *Phylomerinthus* Schoenherr, 1842 which accommodates the remaining part of species previously placed in *Lalagetes*, not congeneric with its type species *L. subfasciatus* (BOROVEC & SKUHROVEC in press). In the third part, we recently describe the well defined and monophyletic genus *Epistomius* gen. nov. with seven new species. In the fourth part, we will revise the genus *Pentatrachyphloeus* Voss, 1974, where we have recently found 22 new species. In the fifth part we plan to finish the study of this group by description of two new monotypic genera, and to give a complete overview with analysis of this complex group.

Taxonomic position of *Epistomius* gen. nov.

When sorting the abundant material recently collected in South Africa we have to solve the fundamental problem of assigning species to genera, where more than 90% of the species in our study are new to science. All these species should be described, but the majority of the already described species have been assigned to known Palaearctic genera not otherwise occurring in the Afrotropical Region (BOROVEC & SKUHROVEC 2017). Some morphological characters normally used in this group for adults for generic assignment could not be used in this region due to their high variability within species. For example, the structure of the pronotum or elytra, or antennal scrobes in dorsal view creating an almost complete spectrum from dorsally invisible to hardly visible, slightly visible to creating slender furrows, up to a pit-shaped form. In our opinion, one of the most valuable overviews with a detailed evaluation of the morphological characters of Entiminae (which we completely accept and use) was carried out by OBERPRIELER (1995), who, after examining many morphological characters, used the four most valuable for the grouping of the Myrorhinini; (1) the state of tarsal claws (free or connate), (2) the state and structure of metatibial corbels (open or closed), (3) presence/absence of ocular lobes, and (4) the state of a transverse groove dorsally separating the rostrum from the head. The state of tarsal claws (1) is a morphological character used very often at the generic level in the Palaearctic Region (for example BOROVEC 2009). In view of the currently used terminology (OBERPRIELER et al. 2014) metatibial corbels (2) mean metatibiae with or without corbels (bevels), and in the literature it is one of the main morphological character defining the tribes in Entiminae, first used by LACORDAIRE (1863). This approach to tribal classification will have to be reassessed, because for example in Oosomini Lacordaire,

1863 we can recognize genera with all three positions of corbels – true, false, or missing, as redefined in OBERPRIELER et al. (2014). So, for generic definition this character is largely unuseable. The presence of ocular lobes (3) is defined as one of the most significant morphological characters for example in the tribe Tanyrhynchini, and based on their absence in some genera of Embrithini, Oosomini and Trachyphloeini, these could be separated from very small species of, for example, the tanyrhynchine genus *Eremnus* Schoenherr, 1826. The transverse groove separating rostrum and head (4) has two different states – either very narrow, well edged, mostly V-shaped sulcus, or transverse groove, mostly shallow and moderately broad furrow with ill-defined borders. The correct evaluation of this character is possible only after removal of dense scales covering head and rostrum by scraping them off with very thin pin and small brush. The appressed scales completely hide the details of integumental structure, and the rostrum seems to be without a transverse sulcus or groove, although it may often have a very different structure which is however hidden under the scales. The majority of Embrithini genera have a very slender, V-shaped sulcus, but this character state in Trachyphloeini was previously unknown in the literature focusing not only on South Africa. After a detailed examination of the type species of *Pentatrachyphloeus*, *P. patruelis* Voss, 1974, this character state was confirmed also in Trachyphloeini, and later its presence was also confirmed in all other, undescribed species of *Pentatrachyphloeus*. To the list of four most useful morphological characters according to OBERPRIELER (1995), it is possible to add several others, mainly ventral and anatomical characters: the state of abdominal ventrites – not only the relative length of ventrites, but also the state of different structures on sutures, form of vestiture, and of course the state of different parts in male and female terminalia. As for the male genitalia, the absence or presence of parameres and/or flagellate genital armature seems to be one of the most significant characters useful for species grouping. Regarding the female genitalia, the shape of sternite VIII is as significant as in the Palaearctic Trachyphloeini (BOROVEC 2009), and the base provides several useful differential features, i.e. form of apodeme termination, form of basal margin, apical setae and also the sclerotisation of plate.

According to the latest revisions of Trachyphloeini in the Palaearctic and Oriental Regions (BOROVEC 2009, 2014) and the diagnosis of the tribe, one can present three main claims for this group in South Africa:

1. A group of more than ten undescribed genera and more than hundred undescribed species from South Africa completely corresponding with the states of morphological characters defined by BOROVEC (2009), could be putative South African Trachyphloeini, without a clear relationship to Embrithini. South African Trachyphloeini evolved from them mainly lacking metatibial corbels (LACORDAIRE 1863, MARSHALL 1942, BOROVEC & OBERPRIELER 2013). The relationship between these two tribes should be one of the main topics of further study of South African Trachyphloeini, especially based on molecular analyses, because, as it was stated above, this character itself (corbels) has several different positions also within the tribes and it can hardly be used as the only distinguishing character. Until the results of precise molecular studies of the tribe Trachyphloeini are available, we will follow a conservative separation of Embrithini and Trachyphloeini for South African terricolous entomines. All genera newly described

by us within the tribe Trachyphloeini will be for accuracy also compared with similar terricolous Embrithini genera.

2. The true *Trachyphloeous* or any other Palaearctic or Oriental Trachyphloeini genus is not present in South Africa (BOROVEC & SKUHROVEC 2017). South African Trachyphloeini fauna represents a group of several genera absolutely different from all known genera of this tribe from other regions.
3. Despite detailed search for Trachyphloeini in the material from equatorial Africa (mainly in several tens of thousands of terricolous Entiminae specimens deposited in the African Museum in Tervuren and sifted by N. Leleup), not a single representative of Trachyphloeini from this region was discovered. Due to this unsuccessful detailed search, it is possible to postulate that South African Trachyphloeini represent an absolutely separate entity. Trachyphloeini could also have a disjunct area. This claim could be confirmed only by a huge molecular study, which may reveal or disprove a relationship with the Mediterranean Trachyphloeini, and eventually confirm an adaptive convergence to live in very similar habitat conditions.

Material and methods

Body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of the elytra, excluding the rostrum. Width/length ratio of the rostrum was measured as the maximum width at base versus the maximum length to the base of the mandibles. Width/length ratios of pronotum, elytra, antennal segments and tarsomeres were taken at the maximum width and length of the respective parts in dorsal view. Dissected male and female genitalia were studied in glycerine. Female genitalia were afterwards embedded in Solakryl BMX (Medika, Prague); male genitalia were mounted dry on the same card as the respective specimen. The photos of adults were taken with Canon EOS 550D cameras with an MP-E 65 mm macro lens and combined using CombineZM and GIMP2 softwares. Details of adults and genitalia were taken and corrected with a HIROX RH-2000 digital microscope. The terminology of the rostrum and genitalia follows OBERPRIELER et al. (2014). The terminology of antennae is in accordance with curculionid literature with the numbering of the antennomeres as follows: scape (I), funicle segments (II–VIII), club (IX–XI).

The specimens have been deposited in the following museums and private collections:

ECRI	Enzo Colonnelli collection, Rome, Italy;
GOVI	Giuseppe Osella collection, Verona, Italy;
JJRC	Jiří Janák collection, Rtyň nad Bílinou, Czech Republic;
JSPC	Jiří Skuhrovec collection, Prague, Czech Republic;
MNHW	Museum of Natural History, Wrocław University, Poland (Marek Wanat);
NMPC	Národní Muzeum, Prague, Czech Republic (Jiří Hájek);
RBSC	Roman Borovec collection, Sloupno, Czech Republic;
SANC	National Collection of Insects, Pretoria, South Africa (Riaan Stals);
SMNS	Staatliches Museum Für Naturkunde, Stuttgart, Germany (Wolfgang Schawaller);
TMSA	Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa (Ruth Müller).

Taxonomy

Epistomius gen. nov.

(Figs 1A–C, 2A–I, 3A–G, 5A–G, 6A–G, 7A–G, 8A–G, 9A–G, 10A–G, 11A–G)

Type species. *Epistomius colonnellii* sp. nov., here designated.

Diagnosis. Small Trachyploeini, less than 2.6 mm in body length, dorsum sparsely covered with appressed scales and glabrous ventrally; rostrum different in both sexes, not separated from head by any sulcus; frons glabrous; epistome short but wide, prominent anteriorly and laterally creating sharp teeth directed dorsally; antennae and tibiae long and slender; metatibiae with apical surface glabrous, without corbels; claws connected at base; abdominal ventrites glabrous; tegmen without parameres; sternite VIII in females with triangular plate, short and robust apodeme terminating inside plate and reaching apex of plate, tip of plate with distinct Y-shaped process, prominent anteriorly.

Description. Length 1.6–2.6 mm. Body dark brownish, antennae, extreme apical part of tibiae and tarsi paler, reddish brown, tarsi sometimes paler than antennae. Elytra sparsely covered with appressed irregularly shaped scales - subcircular, subsquared, subtriangular, or awned apically, not covering integument, with moderately wide space between scales. Pronotum, and head with rostrum with dense subrounded scales, with fine fan-shaped striae, creating short, fine and dense fringes on almost half of circumference; scales leaving only short spaces between them. Gena and subgena densely squamose. Scape, femora and tibiae squamose; funicle and tarsi glabrous; club finely moderately densely setose with appressed and also short semiappressed setae. Scale-like setae on elytra long and conspicuous, distinctly longer on posterior declivity than on anterior disc, lance-shaped or subspatulate, creating one regular, moderately dense row on each interval. Setae on pronotum and head with rostrum slightly shorter than setae on elytral disc, on interocular space twice as long as the others. Scape, femora and tibiae with only very short and inconspicuous semiappressed setae, not prominent from outline. Colour pattern of body light brownish to greyish; raised setae paler.

Head (Fig. 1A). Rostrum in four species more slender in males than in females (Figs 5B–C, 6B–C, 9B–C, 10A–G), in males 1.1–1.2× as wide as long, at base as wide as at apex to 1.1× wider at apex than at base, with distinctly and regularly concave sides, in place of anterior border of antennal scrobes abruptly, angle-shapedly tapered anteriorly; in females 1.2–1.3× as wide as long, at base as wide as at apex to 1.1× wider at base than at apex, in basal half weakly tapered anteriorly with faintly concave sides, in anterior half regularly rounded around antennal scrobes; in two species equal in both sexes, formed as females rostrum of previous species. Rostrum in lateral view (Figs 5D, 6D, 7D, 8D, 9D, 10D, 11D) weakly regularly convex, not separated from head. Epifrons widest at base, here equally wide as space between anterior margins of eyes, tapered anteriorly with distinctly concave sides, flat, with slender longitudinal median stria along whole length. Epifrons when cleared of scales shiny, not separated from head by any stria or furrow, shallowly deepened, with longitudinal median stria and lateral longitudinal narrow keels, differently shaped in species. Frons glabrous and deepened, sometimes finely longitudinally striate, very short, creating narrow stripe along posterior border of epistome, without setae. Epistome distinctly developed, short but wide, asquamose,

shiny, posteriorly distinctly carinate and elevated, carina regularly arched, anteriorly declined to mandibles, bigger in males than in females, creating in lateral view sharp teeth directed dorsally, longer in males; in males epistome distinctly wider, in females equally wide as epifrons at midlength, in two species equal in males and females, similar to female epistome of previous species. Antennal scrobes (Figs 5A, 6A, 7A, 8A, 9A, 10A, 11A) in dorsal view clearly visible on anterior half of rostrum, open, pit-shaped; in lateral view short, reaching about half distance from antennal insertion to eyes, glabrous, weakly curved and moderately enlarged posteriad, with dorsal border directed to dorsal border and ventral border directed to ventral border of eyes. Head wide and convex; when cleared of scales shiny, sometimes with fovea and fine, narrow, longitudinal striae, mostly radiate. Eyes moderately large and convex, dorsally weakly prominent from outline of head; laterally subcircular, placed in dorsal third of head. Head including eyes in males 1.1–1.2× as wide and in females 1.2–1.3× as wide as rostrum at apex. Mandibles small, asquamose, trisetose. Submentum with pair of long, very fine setae. Gena densely squamose, subgena squamose in basal and lateral part, middle part glabrous.

Antennae (Figs 5A, 6A, 7A, 8A, 9A, 10A, 11A) long and slender. Scape long and slender, 4.9–6.1× as long as wide, 1.5–1.6× as long as funicle, faintly curved at midlength, weakly gradually enlarged in apical third, weakly slenderer than club or at most equally wide. Funicle 7-segmented, with segment I enlarged, long, slender and conical; segment II conical, distinctly shorter and narrower than segment I; segments III–VII at most 1.5× as wide as long; segments III–V weakly shorter than segments VI or VII. Segment I in club the longest one.

Pronotum (Figs 5A, 6A, 7A, 8A, 9A, 10A, 11A) in males weakly slenderer than in females, in males 1.4–1.5×, in females 1.4–1.6× as wide as long, regularly rounded, widest at midlength or just behind, more tapered anteriorly than posteriorly, regularly convex at disc without any furrow, stria or depressions. When cleared of scales shiny, sparsely irregularly and coarsely punctured, behind anterior margin bordered by transverse dense row of fine punctures. Pronotum laterally almost flat, behind anterior border lowered. Base straight. Anterior border in lateral view perpendicular to longitudinal axis, without ocular lobes or setae. Procoxal cavities contiguous, round, in middle of prosternum; procoxae subglobular. Scutellum not visible.

Elytra (Figs 5A, 6A, 7A, 8A, 9A, 10A, 11A) oval, widest at midlength with regularly rounded sides and broadly rounded at apex, in males 1.1–1.3×, in females 1.2–1.3× as long as wide, in lateral view strongly convex, posterior declivity overhanging apex. Base straight, slightly wider than base of pronotum, elytra in short distance behind base distinctly constricted; posthumeral calli weakly developed, visible in dorso-lateral view. Elytra 10-striate, striae slender, deeply sparsely punctured, intervals when cleared of scales shiny, almost flat, equally wide and elevated; interval 1 behind base somewhat tapered anteriorly. Mesocoxae semiglobular, narrowly separate, mesosternal process about as wide as quarter of diameter of mesocoxa. Metacoxae shortly transverse.

Legs (Figs 5A, 6A, 7A, 8A, 9A, 10A, 11A). Femora unarmed, medially inflated, flattened. Tibiae long and slender; protibiae (Figs 5E, 6E, 7E, 8E, 9E, 10E, 11A) 5.5–6.4× as long as wide at midlength, at apex obliquely subtruncate, armed with 5–6 sparse, fine and slender yellowish, almost translucent spines and one conspicuous long and slender, almost straight spine directed inwards; lateral edge weakly curved inwards with short and shallow indentation

just at apex; mesal edge distinctly enlarged inwards; meso- and metatibiae laterally fringed by dense fringe of fine, long, yellowish, bristle-shaped setae and one inward curved mucro, mucro longer in mesotibiae than in metatibiae and longer in females than in males. Apical surface of meso- and metatibiae glabrous, shiny; metatibiae without corbels. Tarsi long and slender, tarsomere I shorter than tarsomeres II and III together, tarsomere II transverse, tarsomere III distinctly wider than tarsomere II and bilobed, onychium long and slender, distinctly enlarged apicad. Claws fused in short basal part, then divergent.

Abdominal ventrites (Fig. 1B) in males equally wide and long to $1.04\times$ wider than long, in females $1.06\text{--}1.13\times$ as long as wide; ventrite 1 in middle slightly shorter than ventrites 2–4 together, behind metacoxa equally long as ventrite 2; ventrite 2 in middle slightly longer than ventrite 3 or 4; ventrite 5 in males shorter, subtrapezoidal, in females longer, subtriangular. Suture between ventrites 1 and 2 straight, fine and narrow, between 2–5 weakly arched, wide and deep. All ventrites asquamose, shiny, unpunctured, with several inconspicuous, short and fine, appressed piliform setae. Metaventral process obtuse, slightly wider than transverse diameter of metacoxa.

Sexual dimorphism. Males and females are easily distinguished by many external characters; males have rostrum more slender with distinctly wider and more conspicuous epistome (Figs 5B, 6B, 7B, 8B, 9B, 10B, 11B), rostrum at apex abruptly angularly tapered anteriorly, while females have rostrum at apex regularly rounded around antennal scrobes (Figs 5C, 6C, 7C, 8C, 9C, 10C, 11C); pronotum slenderer in males; elytra slenderer in females; females have mucro in meso- and metatibiae longer than males; females have longer abdominal ventrites and longer, subtriangular ventrite segment 5.

Variability (Figs 2A–I). In three newly described species conspicuous variability in shape of raised elytral setae was registered. Similar variability in shape of setae is known only in Palearctic Trachyphloeini, where parthenogenetic species with a large region of occurrence

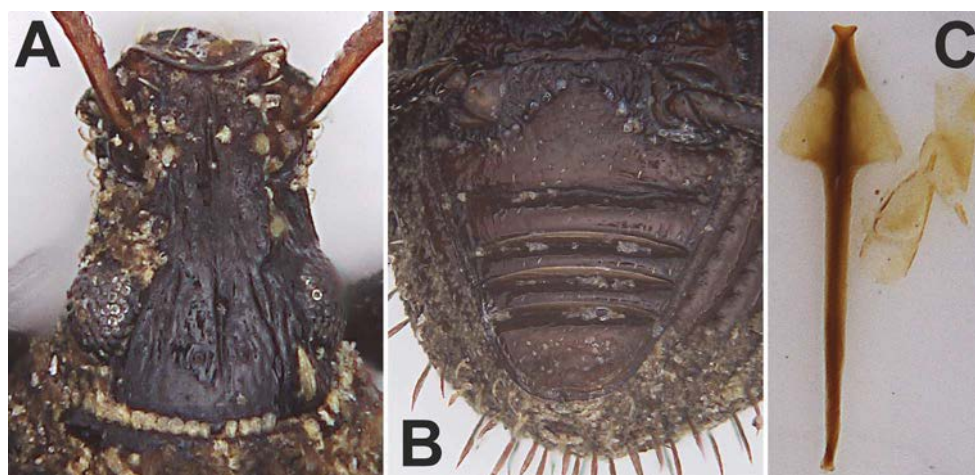


Fig. 1. *Epistomius colonnellii* sp. nov. A – rostrum without scales, dorsal view, B – abdominal ventrites; C – female sternite 8 and gonocoxites, dorsal view.

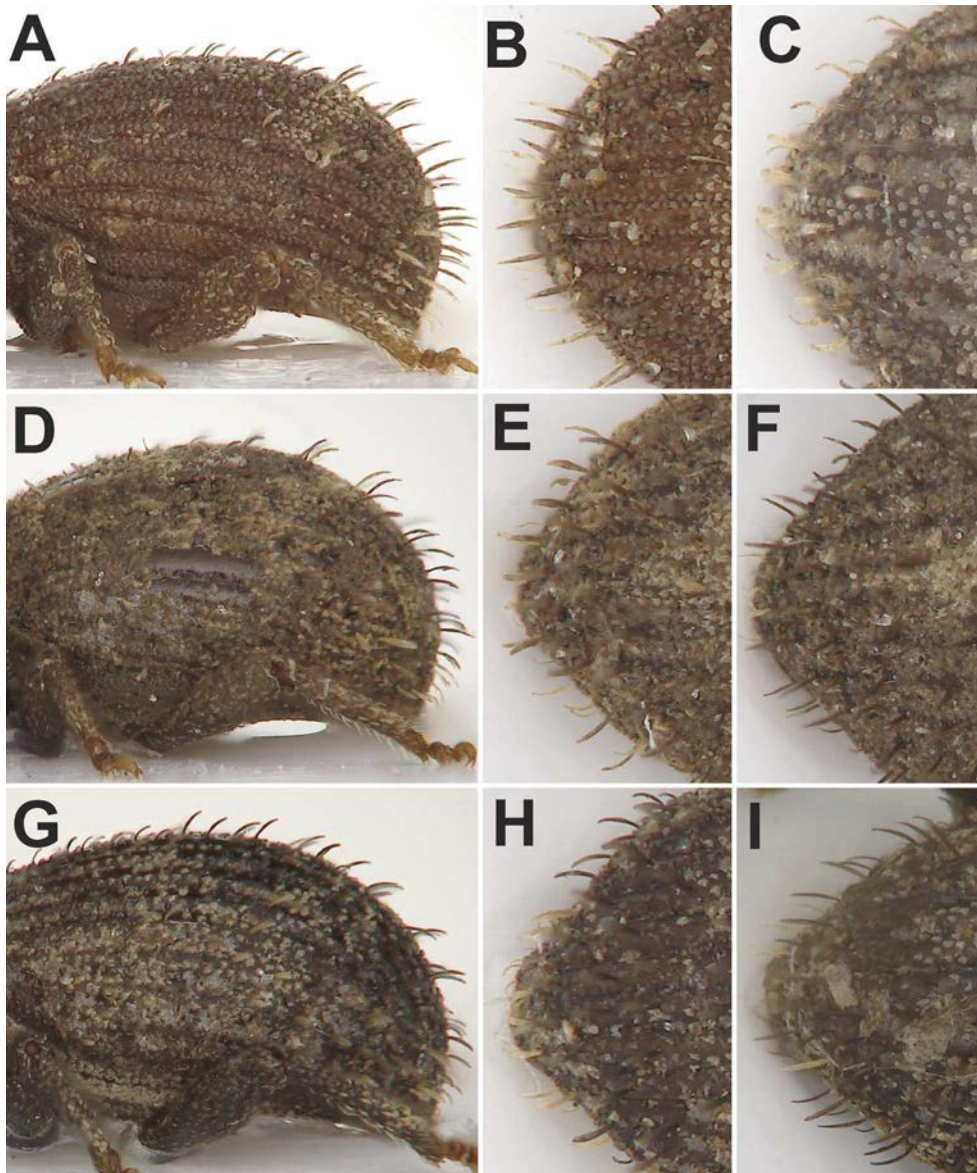


Fig. 2. Variability in elytral scales in three species. *Epistomius colonnellii* sp. nov. (A – lateral view, B, C – variability in dorsal view); *Epistomius natalensis* sp. nov. (D – lateral view, E, F – variability in dorsal view); *Epistomius niger* sp. nov. (G – lateral view, H, I – variability in dorsal view).

also show different shape of raised setae, because each new population is cloned without recombinations of genes. But this variability of amphigonic species in small regions is exceptional and for the time being known only from several other undescribed South African Trachyphloeini (R. Borovec, unpublished data). Although different shapes of setae suggest possibility of different species, these populations with different setae are conspecific in all other characters, as shape of rostrum, ratio of setal length in comparison between setae on the disc and posterior declivity, shape of antennal segments, tarsomeres, and penis. However, to conserve typical characters for all these three species, we include only one type of raised setae in the type series.

Male genitalia. Penis short, well sclerotised, tementes 3.1–4.7× longer than body of penis and 1.7–3.1× longer than tegminal manubrium; endophallus with thick flagellate sclerite (Figs 5G, 6G, 7G, 8G, 9G, 10G, 11G). Tegmen with moderately wide ring without parameres, its manubrium 1.3–2.3× as long as ring diameter. Sternite IX with spiculum gastrale anteriorly enlarged to flat, slender elongate plate, posteriorly with fused basal arms and with two very slender, regularly curved hemisternites. Shape of penis differing among the species (Figs 3A–G).

Female genitalia. Gonocoxites short and wide, evenly tapered apically, with long and slender apical styli with tuft of 3–4 fine setae (Fig. 1C). Sternite VIII (Fig. 1C) with short and robust apodeme, 2.0–2.5× as long as plate, evenly enlarged to plate, terminating just inside plate and here also robust, reaching apical part of plate; plate subtriangular, with basal and apical margin slender but developed, tip of plate distinctly more sclerotised than remaining part of plate, Y-shaped, enlarged, prominent anteriorly. Spermatheca (Figs 5F, 6F, 7F, 8F, 9F, 10F, 11F) large, crescentic, with short and robust cornu and elongated corpus, irregularly tapered anteriorly and posteriorly, without differentiated nodulus and ramus. Gonocoxites, sternum VIII and also spermatheca not differing among the species.

Etymology. The Latin name of this new genus reflects the conspicuous large epistome. Gender is masculine.

Biology. All type material was collected either by sifting or in unbaited pitfall traps, all in afro-montane indigenous forest or rain forest. All species are amphigonic.

Distribution. Known only from South Africa, provinces Eastern Cape, KwaZulu-Natal, and Mpumalanga (Fig. 4).

Species included. Seven newly described species below.

Taxonomical remarks. *Epistomius* gen. nov. belongs to the tribe Trachyphloeini based on the following morphological characters: rostrum wider than its length; scrobes placed subdorsally, laterally directed towards the eyes and evanescent before them; epifrons with well defined margins along the whole length, at base as wide as the space between anterior eye margins; elytra without developed humeral calli, grown together; the entire dorsal part of body densely squamose; and metatibiae lacking corbels. The last character is in fact the only character allowing the separation of both tribes, Trachyphloeini and Embrithini, which include not only large arboreal and floricolous genera and species, but also many small terricolous forms, for example *Afrophloeus* Borovec & Oberprieler, 2013, and also some still undescribed genera with undescribed species (Borovec, unpublished data).

The group of South African Trachyphloeini includes up to now only two described genera

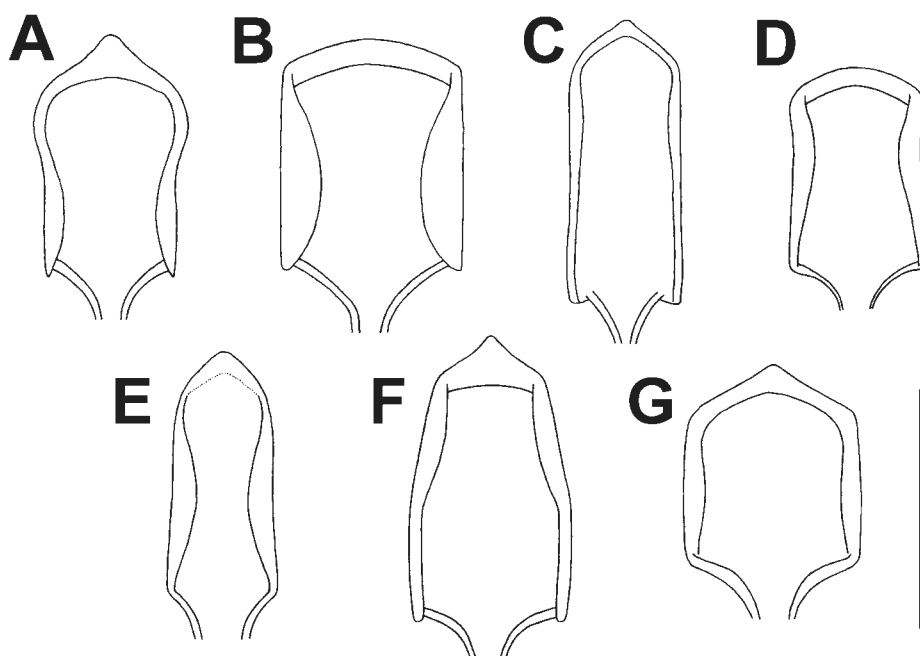


Fig. 3. Apex of penis. A – *Epistomius bulirschi* sp. nov.; B – *Epistomius colonnellii* sp. nov.; C – *Epistomius janaki* sp. nov.; D – *Epistomius natalensis* sp. nov.; E – *Epistomius ngomiensis* sp. nov.; F – *Epistomius niger* sp. nov.; G – *Epistomius wanati* sp. nov.

- *Pentatrachyphloeus* Voss, 1974 and *Nama* Borovec & Meregalli, 2013. The genus *Epistomius* gen. nov. is easily distinguishable from *Pentatrachyphloeus* species by the following characters: rostrum continuous with the head, without any transverse sulcus (vs. with slender transverse sulcus); protibiae slender and long, 5.5–6.4× as long as wide, with fringe of yellowish setae only at apex (vs. short and robust, 3.6–4.9× as long as wide, armed with 4–6 small, short and fine, sparse spines); frons glabrous (vs. squamose); ventrites glabrous (vs. densely squamose); epistome prominent anteriorly and laterally creating sharp teeth directed dorsally (vs. small, dorsally hardly visible); elytra without posthumeral calli (vs. with posthumeral calli); and tip of plate in female sternite VIII with distinct Y-shaped process, prominent anteriorly (vs. plate umbrella-shaped, apically broadly rounded). The genus *Epistomius* gen. nov. is also very easily distinguishable from the genus *Nama* mainly thanks to claws connected at base (*Nama* species has free claws).

The status of the new genus and its comparison with the known Palearctic Trachyphloeini genera is as follows: *Epistomius* gen. nov. differs from both *Trachyphloeus* and *Pentatrachyphloeus* in the identical set of characters, except that *Trachyphloeus* lacks the sulcus between head and rostrum, and posthumeral calli. The new genus, *Epistomius* gen. nov., may probably be close to genera *Pelletierellus* Borovec, 2009, *Zarazagaia* Borovec, 2009, and *Stuebenius* Borovec, 2009, due to the identical status of the following morphological characters: absent ocular lobes, striae in lateral part of head, laterally triangular scrobes, and claws connected at

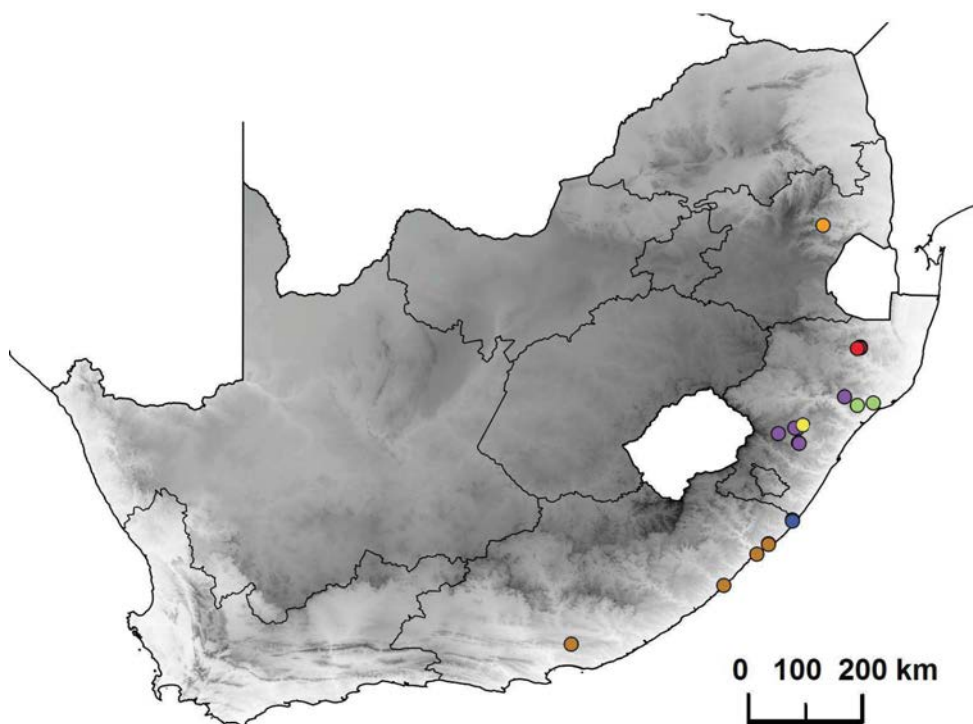


Fig. 4. Distribution of *Epistomius* species in South Africa; *Epistomius bulirschi* sp. nov. (yellow circle); *Epistomius colonnellii* sp. nov. (brown circles); *Epistomius janaki* sp. nov. (violet circles); *Epistomius natalensis* sp. nov. (blue circles); *Epistomius ngomiensis* sp. nov. (red circles); *Epistomius niger* sp. nov. (green circles); and *Epistomius wanati* sp. nov. (orange circle).

base. The new genus is well distinguishable from the first two mentioned genera also by rostrum not separated by shallow transverse furrow, pronotum without depressions and furrows, ventrites glabrous, tegmen lacking parameres, sternite VIII in females with apical Y-shaped process, and smaller body size; and from *Pelletierellus* also due to scrobes not visible dorsally. *Epistomius* gen. nov. is easily distinguishable from the genus *Stuebenius* by rostrum not separated by shallow transverse furrow, slender and moderately long scape and tibiae, ventrite 2 distinctly shorter than ventrites 3 and 4 together, suture between ventrite 1 and 2 straight, sternite VIII in females with short and robust apodeme, and with apical Y-shaped process.

***Epistomius bulirschi* sp. nov.**

(Figs 3A, 5A–G)

Type locality. South Africa, KwaZulu-Natal, Karkloof Forest, Bushwillow to waterfall trail, km 1–3, 29°30'17"S, 30°29'76"E, 1350–1500 m a.s.l.

Type material. HOLOTYPE: ♂, 'RSA (E) [South Africa, East], KwaZulu-Natal, 29.3017S/30.2976E, Karkloof Forest, Bushwillow to waterfall trail, km 1-3, sifting, 1350-1500 m, 8.11.2013, leg. M. Wanat' (TMSA). PARATYPES: 11 ♂♀, the same data as holotype (MNH, RBSC).

Description (Figs 5A–G). Body length 1.63–2.09 mm, holotype 1.98 mm. Body dark brownish to blackish, antennae reddish brown but club blackish, sometimes apical part of scape slightly darker, short apical part of tibiae and tarsi yellowish red to reddish brown. Elytra sparsely covered with appressed scales of irregular shape, 3 across width of one interval, subrounded, star- to fan-shaped, with short fringes, leaving short distance between scales. Pronotum and head with rostrum with fan-shaped scales with fringes, scales on pronotum sparse, on head with rostrum dense, almost covering integument. Appressed scales on scape, femora and tibiae identical to elytral ones but smaller. Setae on elytra inconspicuous, semiappressed, subspatulate, on basal half shorter than half width of one interval, on apical half about as long as half width of one interval, twice as long as setae on basal half, distance between two setae on posterior declivity more than twice the length of one seta. Setae on pronotum and head with rostrum subspatulate, short, about equal to those of basal half of elytra, semiappressed, hardly prominent in lateral view, setae on interocular space twice as long as the others. Scape, femora and tibiae with short, long-oval semiappressed setae, hardly prominent from outline. Body vestiture light greyish brown, elytra with moderately large dark brownish spot on disc, pronotum with two wide, longitudinal, curved dark brownish stripes.

Head (Figs 5A–D). Rostrum in males (Fig. 5B) extremely enlarged in apical half, apical part distinctly prominent laterally, 1.19–1.27× as wide as long, at apex 1.14–1.17× as wide as at base and equally wide as head including eyes; in females (Fig. 5C) parallel-sided, in apical half indistinctly enlarged around scrobes, 1.08–1.09× as wide as long, at apex 0.96–0.98× as wide as at base, distinctly narrower than head including eyes. Epifrons when cleared of scales shiny, smooth, unpunctured, with very slender longitudinal median stria and with two inconspicuous lateral longitudinal keels weakly tapered posteriad. Frons deepened, smooth. Epistome in males wider than width of epifrons at midlength, in females narrow, about equally wide as epifrons at midlength. Head when cleared of scales shiny and smooth, with very small fovea and with several very short and fine, almost indistinct longitudinal striae in middle. Eyes faintly prominent from outline of head.

Antennae (Fig. 5A). Antennal scape 5.5–5.8× as long as wide and 1.6–1.7× as long as funicle, at apex 0.9× as wide as club. Funicle segment I 1.9–2.0× as long as wide and 2.0× as long as segment II, which is 1.1× as long as wide; segments III–VI 1.6–1.7× as long as wide; segment VII 1.3× as wide as long. Club 2.3–2.4× as long as wide.

Pronotum (Fig. 5A) 1.33–1.43× as wide as long, widest behind midlength, with distinctly rounded sides, more tapered anteriorly than posteriorly, weakly constricted behind anterior margin. When cleared of scales regularly convex, shiny, sparsely irregularly coarsely punctured, with 6–7 punctures along the length, punctures moderately large, distance between punctures about equal to their diameter, behind anterior margin bordered by transverse sparse row of finer punctures. Pronotum in lateral view weakly convex, behind anterior border lowered.

Elytra (Fig. 5A) in males 1.09–1.13× as long as wide, in females 1.14–1.17× as long as wide.

Legs (Figs 5A, E). Tarsomere II 1.6–1.7× as wide as long; tarsomere III 1.4× as wide as long and 1.4× as wide as tarsomere II; onychium 1.6–1.7× as long as tarsomere III.

Male genitalia (Figs 3A, 5G). Penis short but weakly longer than wide, narrowest at base, in basal third subparallel-sided, in middle third weakly enlarged apically, in apical third

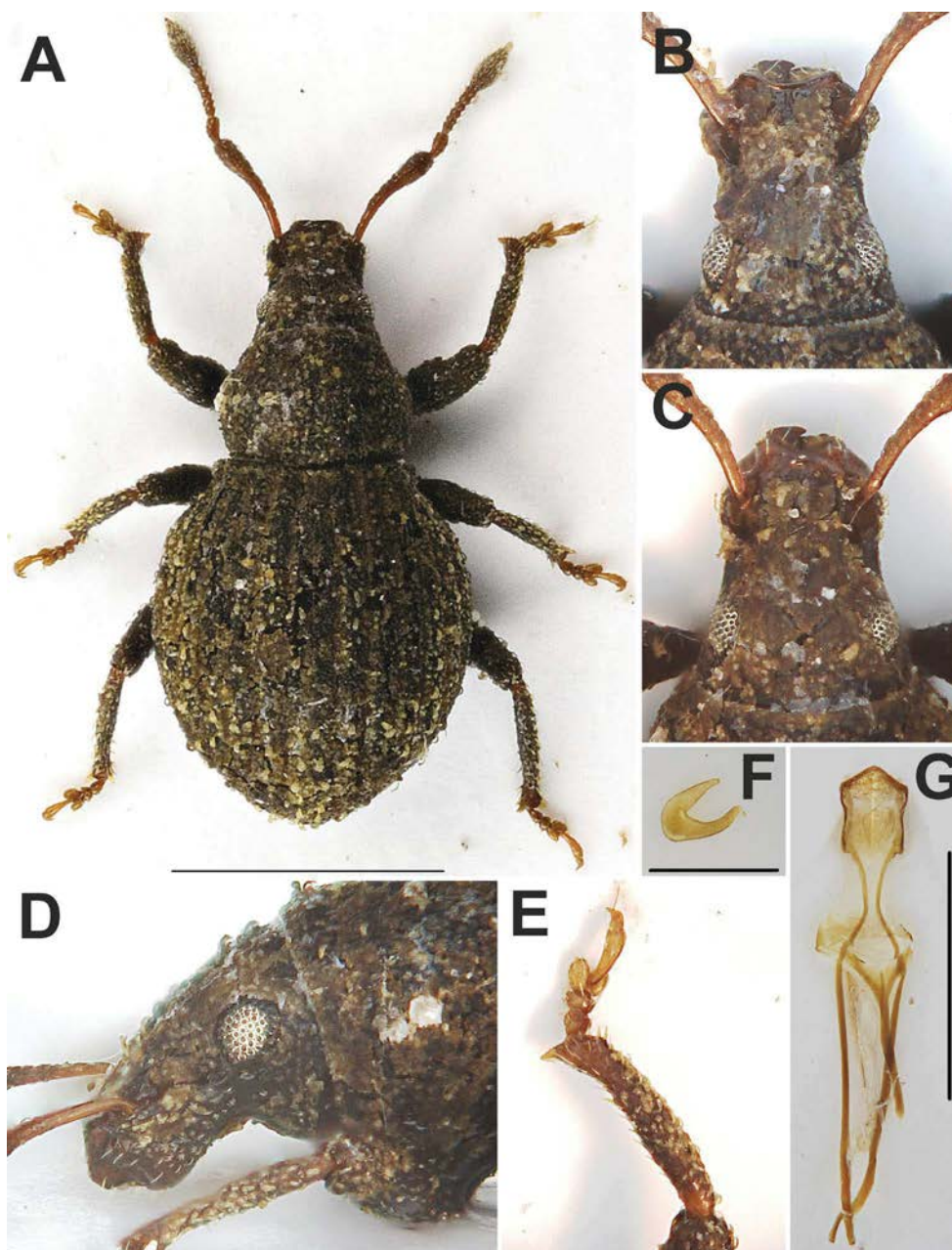


Fig. 5. *Epistomius bulirschi* sp. nov. A – habitus, dorsal view, holotype, male; B – rostrum, male, dorsal view; C – rostrum, female, dorsal view; D – rostrum, male, lateral view; E – protibia, male; F – spermatheca; G – aedeagus. Scale bars: 1 mm (A), 0.5 mm (G) and 0.2 mm (F).

subtriangular, evenly tapered apicad; in lateral view weakly curved with slender lengthened tip in apical third.

Etymology. Species is dedicated to Petr Bulirsch (Prague, Czech Republic), a Carabidae specialist, who provided an extensive material of small sifted entomines from South Africa to the first author.

Biology. The type material was sifted from forest litter.

Distribution. South Africa: KwaZulu-Natal (Fig. 4).

Differential diagnosis. The species is characterized by elytral setae on apical declivity semiappressed, rostrum in males distinctly enlarged anteriorly, at apex equally wide as head including eyes, and by penis short, at apex regularly triangular, in basal half concave. This set of characters easily distinguishes *E. bulirshi* sp. nov. from all other species of the genus.

***Epistomius colonnellii* sp. nov.**

(Figs 1A–C, 2A–C, 3B, 6A–G)

Type locality. South Africa, Eastern Cape, Mbotyi Forest, 31°27'S, 29°44'E.

Type material. HOLOTYPE: ♂, 'South Africa, Eastern Cape, Mbotyi Forest, 31°27'S, 29°44'E, 1.–3.xii.2006, forest litter, sifting, J. Janák lgt.' (TMSA). PARATYPES: 28 ♂♀, the same data as holotype (JJRC, JSPC, NMPC, RBSC); 14 ♂♂, 'South Africa, Eastern Cape, Grahamstown, Alicedale, Blaukranz (forest), 15.XI.2006, G. Osella lgt.'; 12 ♂♀, 'South Africa, Eastern Cape, Port St. Johns (foresta), 10.XI.2006, G. Osella lgt.'; 203 ♂♀, 'South Africa, Eastern Cape, 5 km S-E di Port St. Johns (foresta costiera), S 31°36'58" E 29°34'61", 8.XI.2006, G. Osella leg. (GOVI); 14 ♂♀, 'South Africa: E [Eastern] Cape, Port St. Johns – second plage, 31.38.66 S, 29.31.25 E, 8/9.XI.2006, E. Colonnelli [lgt.]'; 14 ♂♀, 'South Africa, E [Eastern] Cape, 5 km E Port St. Johns, 31°36'58" S, 29°34'61" E, 8/9.XI.2006, E. Colonnelli [lgt.]'; 11 ♂♀, 'RSA [South Africa]: Eastern Cape (Transkei), Mbotyi Coast and Forest, 29.XI.-3.XII.2003, leg. W. Schawaller' (SMNS); 2 ♂♀, 'RSA (E) [South Africa, East], E [Eastern] Cape, Silaka Nat. Res. (top) nr. Port St. Johns, 31.6518 S/29.4999 E, 13.11.2013, 150 m, sifted litter, leg. M. Wanat' (MNHV); 48 ♂♀, 'South Africa, Eastern Cape, Silaka NR, Port St. John env., 31°39.0' S 29°30.3' E, 14.i.2016, J. Janák lgt.' (JJRC, RBSC). **Additional material examined.** 28 ♂♀, 'South Africa, Eastern Cape, Cwebe NR, 32°13.6' S 28°53.8' E, 17.–18.ii.2014, J. Janák lgt.' (JJRC, RBSC).

Description (Figs 1A–C, 2A–C, 6A–G). Body length 1.88–2.56 mm, holotype 2.29 mm. Body dark brownish to blackish, scape and funicle reddish brown, apical quarter of tibiae and tarsi yellowish red. Elytra with sparse appressed scales of irregular shape, 4 across width of one interval, subsquared or subtriangular, finely longitudinally striate, in some scales with short fine fringes on one edge of scale; distance between two scales about as long as half diameter of one scale. Pronotum and head with rostrum with dense subrounded scales, with fine fan-shaped striae, creating short, fine and dense fringes on almost half of circumference, scales leaving only short spaces between them. Appressed scales on scape, femora and tibiae identical to pronotal ones, only slightly smaller. Perpendicularly erect elytral setae conspicuous, on posterior declivity distinctly longer than on disc, here longer than width of interval, slender, lancet-shaped, regularly sharply tapered apicad, finely longitudinally striate, creating one regular row on each interval, distance between two setae on posterior declivity slightly shorter than length of one seta. Setae on pronotum and head with rostrum somewhat shorter than setae on anterior part of elytra, perpendicularly erect, slender, subparallel-sided, setae on interocular space twice as long as the others. Scape, femora and tibiae with short, long-oval, semiappressed setae, densely irregularly scattered, hardly visible, not prominent

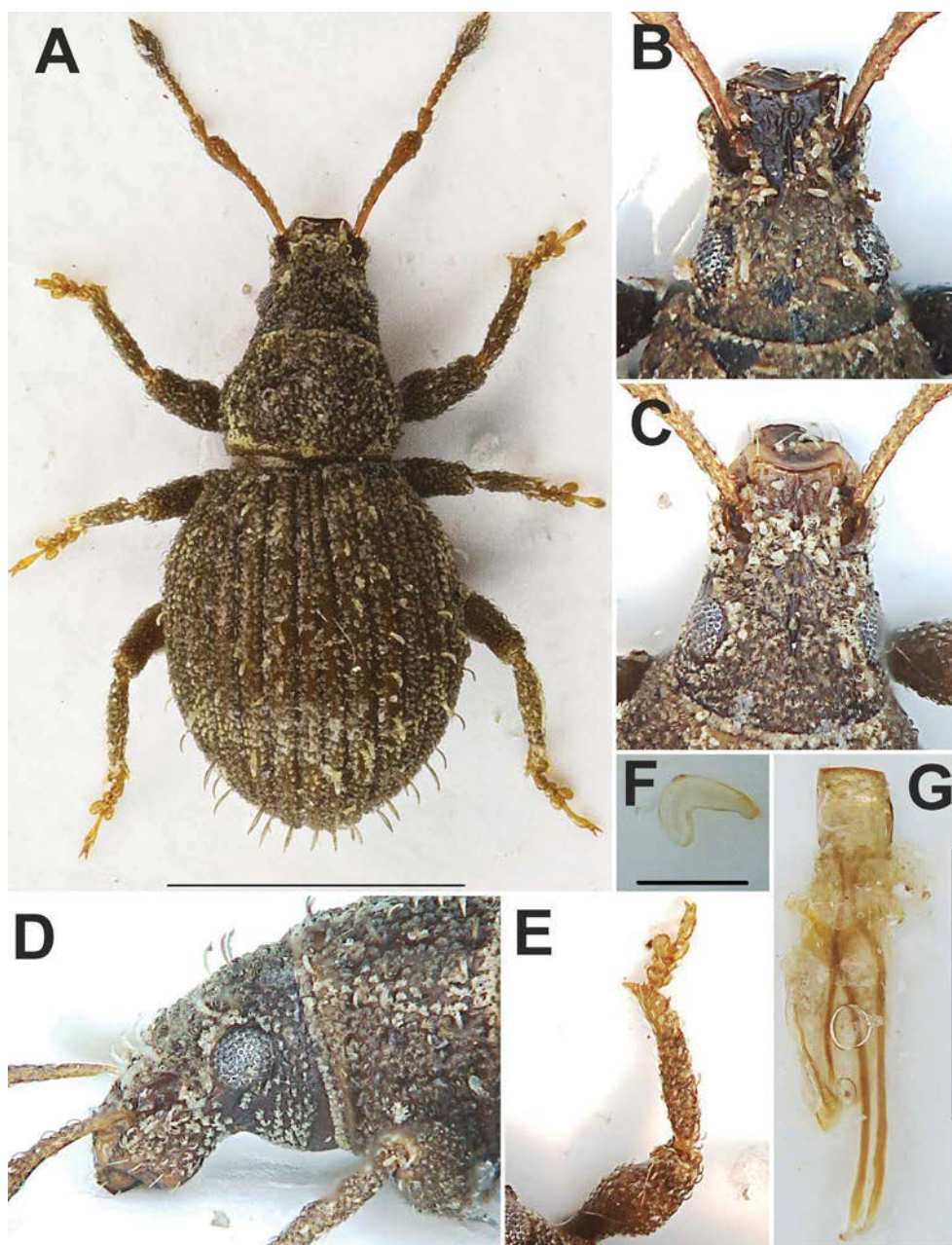


Fig. 6. *Epistomius colonnellii* sp. nov. A – habitus, dorsal view, holotype, male; B – rostrum, male, dorsal view; C – rostrum, female, dorsal view; D – rostrum, male, lateral view; E – protibia, male; F – spermatheca; G – aedeagus. Scale bars: 1 mm (A), 0.5 mm (G) and 0.2 mm (F).

from outline. Body vestiture light brownish with partly visible integumental colour, elytra with slender greyish V-shaped transverse stria on posterior declivity; pronotum with three slender longitudinal greyish striae; erect setae light brownish.

Head (Figs 1A, 6A–C). Rostrum in males (Fig. 6B) distinctly tapered in basal half and enlarged in apical half, with concave sides and subparallel-sided in females (Fig. 6C), slightly tapered in basal half and indistinctly enlarged in apical half, rounded around scrobes, in males 1.15–1.17× as wide as long, at apex 1.01–1.07× as wide as at base; in females 1.27–1.33× as wide as long, at base 1.04–1.07× as wide as at apex. Epifrons with slender longitudinal median stria, when cleared of scales shiny, with moderately wide longitudinal median furrow along whole length, with two very slender longitudinal keels along whole length, weakly tapered basad and with several short, irregular longitudinal striae. Frons deepened, finely irregularly rough. Epistome in males wide, wider than epifrons at midlength, in females narrow, equally wide as epifrons at midlength. Head when cleared of scales with several fine and short longitudinal striae radiating from base of epifrons furrow, not reaching anterior border of pronotum. Eyes faintly prominent from outline of head.

Antennae (Fig. 6A). Antennal scape 6.0–6.1× as long as wide and 1.5× as long as funicle, club 1.1× as wide as scape at apex. Funicle segment I 1.9–2.0× as long as wide and 1.8–2.0× as long as segment II, which is 1.6–1.7× as long as wide; segments III–V 1.1–1.2× as wide as long; segment VI 1.1× as wide as long; segment VII isodiametric. Club 2.4–2.6× as long as wide.

Pronotum (Fig. 6A) in males 1.40–1.48×, in females 1.45–1.50× as wide as long, widest just behind midlength, with distinctly, regularly rounded sides, constricted behind anterior border. When cleared of scales regularly convex, shiny, sparsely irregularly coarsely punctured by large deep punctures, distance between them shorter than diameter of one puncture, anterior border reddish, bordered by transverse row of small punctures. Pronotum in lateral view almost flat, lowered behind anterior border.

Elytra (Fig. 6A) in males 1.15–1.18×, in females 1.17–1.22× as long as wide.

Legs (Figs 6A, E). Tarsomere II 1.3–1.4× as wide as long; tarsomere III 1.3× as wide as long and 1.4–1.5× as wide as tarsomere II; onychium 1.5× as long as tarsomere III.

Male genitalia (Figs 3B, 6G). Penis very short and wide, only slightly longer than wide, subparallel-sided with slightly rounded sides, apex obtuse, only slightly pointed.

Variability (Figs 2A–C). While material from Mbotyi Forest, Port St. Johns and Grahamstown has elytral setae perpendicularly erect and straight, on posterior disc longer than width of interval, slender, lancet-shaped and regularly sharply tapered apicad, material from the locality Cwebe has setae bent posteriad, as long as width of one interval, subspatulate, apically rounded. The material from Cwebe was not included in the type series to conserve the typical characters (see the variability chapter in *Epistomius* description).

Etymology. We are honoured to name the newly described species after our good friend, Enzo Colonnelli (Rome, Italy), an eminent specialist in weevils, mainly Ceutorhynchinae, who collected part of the type material.

Biology. All material was sifted from native forest litter.

Distribution. South Africa: Eastern Cape (Fig. 4).

Differential diagnosis. The species is characterized by elytral setae on apical declivity semierect

to erect, rostrum in males enlarged apicad, with epistome wider than epifrons. It is similar to *E. janaki* sp. nov., from which it can be distinguished by the following characters: elytral setae on posterior declivity long and slender, pointed, twice as long as conspicuous setae on basal half; tarsomere II 1.3–1.4× as wide as long; elytra in males longer, 1.15–1.18× as long as wide; and penis short, about as long as wide, at apex obtuse, tip not separated.

***Epistomius janaki* sp. nov.**

(Figs 3C, 7A–G)

Type locality. South Africa, KwaZulu Natal, Howick, Karkloof Range, 29°19.1'S, 30°15.5'E, 1325 m a.s.l.

Type material. HOLOTYPE: ♂, 'South Africa, KwaZulu Natal, Howick, Karkloof Range, 29°19.1' S 30°15.5' E, 23.xi.2006, 1325 m, J. Janák lgt.' (TMSA). PARATYPES: 16 ♂♀, the same data as holotype (JJRC, JSPC, NMPC, RBSC); 7 ♂♀, 'South Africa, KwaZulu Natal, Karkloof NR, 29°18.5' S 30°13.2' E, 2.i.2015, indig. forest, J. Janák lgt.' (JJRC, RBSC); 23 ♂♀, 'RSA (E) [South Africa, East], KwaZulu-Natal, Doreen Clark Nat. Res. nr. Pietermaritzburg, 29.5787 S/30.2892 E, 7.11.2013, 1110 m, sifted litter, leg. M. Wanat' (MNHW); 17 ♂♀, 'South Africa, KwaZulu-Natal, Fort Nottingham Nat. Reserve, 29°24.6' S 29°54.8' E, 22.i.2016, ind. forest, Berlese extraction, leaf & log litter, sifting, J. Janák lgt.' (JJRC, RBSC); 1 ♂, 'South Africa, KwaZulu Natal, PMB env.-Sweetwaters NR, 29°35.65' S 30°18.0' E, 3.i.2015, indig. forest, J. Janák lgt.' (RBSC); 2 ♂♀, 'South Africa, KwaZulu Natal, Nkandla Forest Reserve, 28°43.8' S 31°8.3-8.4' E, 4.i.2015, indig. forest, J. Janák lgt.' (RBSC).

Description (Figs 7A–G). Body length 1.63–2.06 mm, holotype 1.65 mm. Body dark brownish, basal half of scape or complete scape, funicle, club, short apical part of tibiae and tarsi reddish brown, tarsi sometimes paler. Elytra with moderately sparse appressed scales, 3–4 across width of one interval, irregularly subcircular, finely longitudinally striate. Pronotum and head with rostrum with dense subcircular scales, with fine fan-shaped striae, creating short, fine and dense fringes on almost half of circumference, almost covering integument. Appressed scales on scape, femora and tibiae similar to pronotal ones, slightly smaller. Elytra with subspatulate setae, apically rounded, finely longitudinally striate, creating one regular row on each interval, distance between two setae on posterior part slightly longer than length of one seta, very different on anterior third and posterior declivity. Anterior third with setae semiappressed, inconspicuous, about as long as half width of interval, posterior declivity with setae erect, about as long as width of one interval. Pronotum and head with rostrum with semiappressed subspatulate setae similar to those on anterior part of elytra, irregularly scattered, setae on interocular space twice as long as the others. Scape, femora and tibiae with short, long-oval semiappressed setae, densely irregularly scattered, hardly visible, not prominent from outline. Body vestiture light brownish, raised setae paler, greyish brown.

Head (Figs 7A–D). Rostrum in both sexes (Figs 7B–C) in basal third tapered apicad, in apical two thirds regularly enlarged apicad, in males more than in females, in males (Fig. 7B) 1.10–1.16× as wide as long, at apex 1.04–1.05× as wide as at base; in females (Fig. 7C) 1.18–1.22× as wide as long, at base as wide as at apex, in both sexes at apex distinctly narrower than head including eyes. Epifrons with slender longitudinal median stria, when cleared of scales shiny with two very slender keels, distinctly enlarged apicad from fovea at interocular space and creating triangular, shallowly deepened space with several fine punctures and short striae and with very slender and fine longitudinal median stria. Frons deepened, shortly densely and finely longitudinally striate. Epistome in males wider than epifrons at midlength, in females narrower, about equally wide as epifrons at midlength. Head when cleared of scales

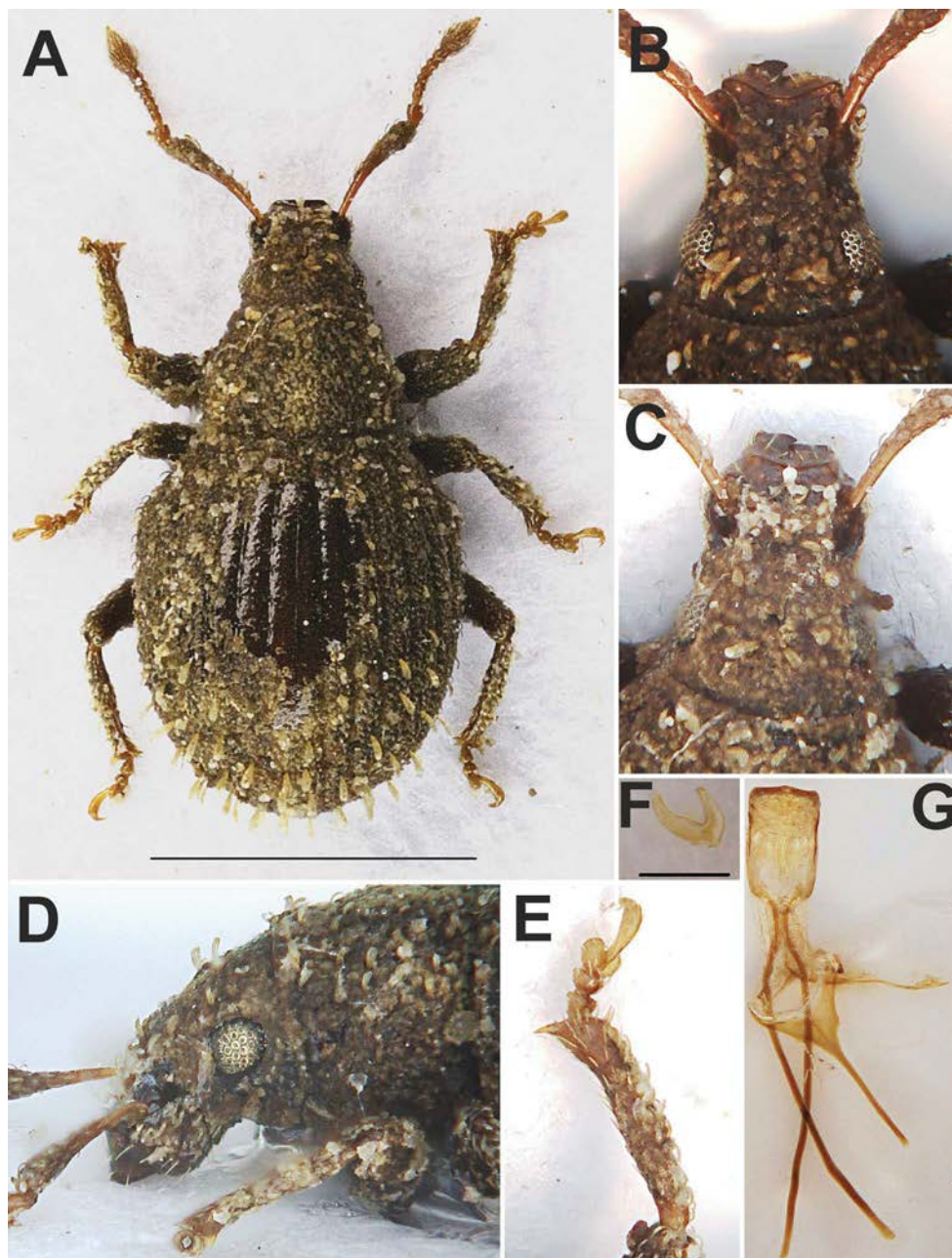


Fig. 7. *Epistomius janaki* sp. nov. A – habitus, dorsal view, holotype, male; B – rostrum, male, dorsal view; C – rostrum, female, dorsal view; D – rostrum, male, lateral view; E – protibia, male; F – spermatheca; G – aedeagus. Scale bars: 1 mm (A), 0.5 mm (G) and 0.2 mm (F).

convex with fine longitudinal striae, radiate from fovea posteriad. Eyes weakly prominent from outline of head.

Antennae (Fig. 7A). Antennal scape 4.9–5.0× as long as wide and 1.5–1.6× as long as funicle, at apex equally wide as club. Funicle segment I 1.7–1.8× as long as wide and 1.7–1.8× as long as segment II, which is 1.3–1.4× as long as wide; segments III–V 1.3–1.4× as wide as long; segment VI 1.4–1.5× as wide as long; segment VII 1.3–1.4× as wide as long. Club 1.9–2.0× as long as wide.

Pronotum (Fig. 7A) in males 1.50–1.53×, in females 1.56–1.64× as wide as long, widest just behind midlength, with distinctly rounded sides. When cleared of scales regularly convex, shiny, sparsely irregularly coarsely punctured, punctures shallow with small ring inside, distance between two punctures shorter than diameter of one puncture, anterior border dark brownish, bordered by transverse dense row of fine punctures. Pronotum in lateral view slightly convex, behind anterior border lowered.

Elytra (Fig. 7A) in males 1.12–1.14×, in females 1.20–1.28× as long as wide.

Legs (Figs 7A, E). Tarsomere II 1.5–1.6× as wide as long; tarsomere III 1.3× as wide as long and 1.2–1.3× as wide as tarsomere II; onychium 1.5× as long as tarsomere III.

Male genitalia (Figs 3C, 7G). Penis longer than wide, slender, widest in apical third, apically broadly rounded with separated small tip.

Etymology. The new species is dedicated to a long-time friend of the first author, Jiří Janák (Rtyně nad Bílinou, Czech Republic), an eminent specialist in Staphylinidae of the Palaearctic and Afrotropical Regions and collector of part of the type material, who directed the first author to specialise in weevils, when both had just started their interest in entomology.

Biology. The type material was sifted from native forest litter.

Distribution. South Africa: KwaZulu-Natal (Fig. 4).

Differential diagnosis. The species is characterized by elytral setae on apical declivity semi-erect to erect, rostrum in males enlarged apicad, with epistome wider than epifrons, and it is thus similar to *E. colonnellii* sp. nov., from which it can be distinguished by the following characters: elytral setae on posterior declivity subspatulate, rounded apicad, 4–5× as long as inconspicuous setae on basal half; tarsomere II 1.5–1.6× as wide as long; elytra in males shorter, 1.12–1.14× as long as wide; and penis distinctly longer than wide, with separated tip at apex and concave before it.

***Epistomius natalensis* sp. nov.**

(Figs 2D–F, 3D, 8A–G)

Type locality. South Africa, KwaZulu-Natal, Umtamwuna Nat. Res., trail from Beacon Hill, 31°01'09" S 30°16'97" E, 200–250 m a.s.l., rainforest.

Type material. HOLOTYPE: ♂, 'RSA (E) [South Africa, East], KwaZulu-Natal, 31.0109S/30.1697E, Umtamwuna Nat. Res., trail from Beacon Hill, 10.11.2013, 200–250 m, rainforest, sifted litter, leg. M. Wanat' (TMSA). PARATYPES: 32 ♂♀, the same data as holotype (MNH, RBSC).

Additional material examined. 21 ♂♀, 'South Africa, KwaZulu Natal, Umtavuna Nature Reserve, 31°1.5–6' S 30°10.1–2' E, 13.i.2016, J. Janák lgt.' (JJRC, JSPC, NMPC, RBSC).

Description (Figs 2D–F, 8A–G). Body length 2.06–2.41 mm, holotype 2.15 mm. Body dark brownish to blackish, antennae reddish brown, sometimes apical part of scape or club darker,

short apical part of tibiae and tarsi yellowish red to reddish brown. Elytra sparsely covered with appressed scales of irregular shape, rounded to angular, some of them with short fringes, 4 across width of one interval, leaving narrow spaces between them. Pronotum and head with rostrum with dense, irregularly shaped scales, subrounded on pronotal disc and head with rostrum, fan-shaped with fringes on lateral pronotal parts, on head and rostrum almost covering integument. Appressed scales on scape, femora and tibiae identical to those on pronotal disc, smaller and sparser. Elytral setae on basal half semiappressed, subspatulate, about as long as half width of one interval, on apical half perpendicularly erect, long and slender, lancet-shaped, somewhat longer than width of one interval, with indistinct concavity just at apex or pointed, 3–4× longer than setae on basal half, distance of two setae on posterior declivity somewhat longer than length of one setae. Pronotum and head with rostrum with setae somewhat shorter than setae on basal half of elytra, sparse, inconspicuous, semierect, subspatulate, setae on interocular space twice as long as the others. Scape, femora and tibiae with short, long-oval semiappressed setae, hardly prominent from outline. Body vestiture light greyish brown.

Head (Figs 8A–D). Rostrum in both sexes (Figs 8B–C) identical, in basal half slightly tapered apicad with straight sides, in apical half indistinctly enlarged around scrobes, not prominent laterally, 1.09–1.15× as wide as long, equally wide at base and at apex, at apex distinctly narrower than head including eyes. Epifrons with distinct longitudinal median stria along whole length, when cleared of scales shiny, smooth, unpunctured, with slender median longitudinal stria, shallowly regularly longitudinally depressed. Frons deepened, smooth. Epistome in both sexes narrow, about equally wide as epifrons at midlength. Head when cleared of scales shiny and smooth, unpunctured, with slender longitudinal fovea. Eyes faintly prominent from outline of head.

Antennae (Fig. 8A). Antennal scape 5.4–6.1× as long as wide and 1.5× as long as funicle, at apex equally wide as club. Funicle segment I 1.5–1.6× as long as wide and 1.7–1.8× as long as segment II, which is 1.2–1.3× as long as wide; segments III–VI 1.4× as wide as long; segment VII 1.3× as wide as long. Club 2.0–2.1× as long as wide.

Pronotum (Fig. 8A) 1.47–1.56× as wide as long, widest behind midlength, with distinctly rounded sides, behind anterior margin weakly constricted. When cleared of scales regularly convex, shiny, moderately densely coarsely punctured, punctures very large, 6–7 along whole length, distance between two punctures about equal to semidiameter of one puncture. Pronotum in lateral view weakly convex, behind anterior border lowered.

Elytra (Fig. 8A) in males 1.15–1.18×, in females 1.17–1.22× as long as wide.

Legs (Figs 8A, E). Tarsomere II 1.5–1.6× as wide as long; tarsomere III 1.4× as wide as long and 1.4–1.5× as wide as tarsomere II; onychium 1.5× as long as tarsomere III.

Male genitalia (Figs 3D, 8G). Penis somewhat longer than wide, narrowest at base, in apical half distinctly enlarged, almost regularly rounded; laterally almost straight, wide, at apex regularly tapered.

Variability (Figs 2D–F). Width of erect elytral setae varying between very slender and sharply pointed to weakly wider, narrowly dully pointed. But all these types keep the same form – lancet-shaped, and also the same length, mainly in comparison between setae on the disc and posterior declivity. The material from the locality Umtavuna was not included in

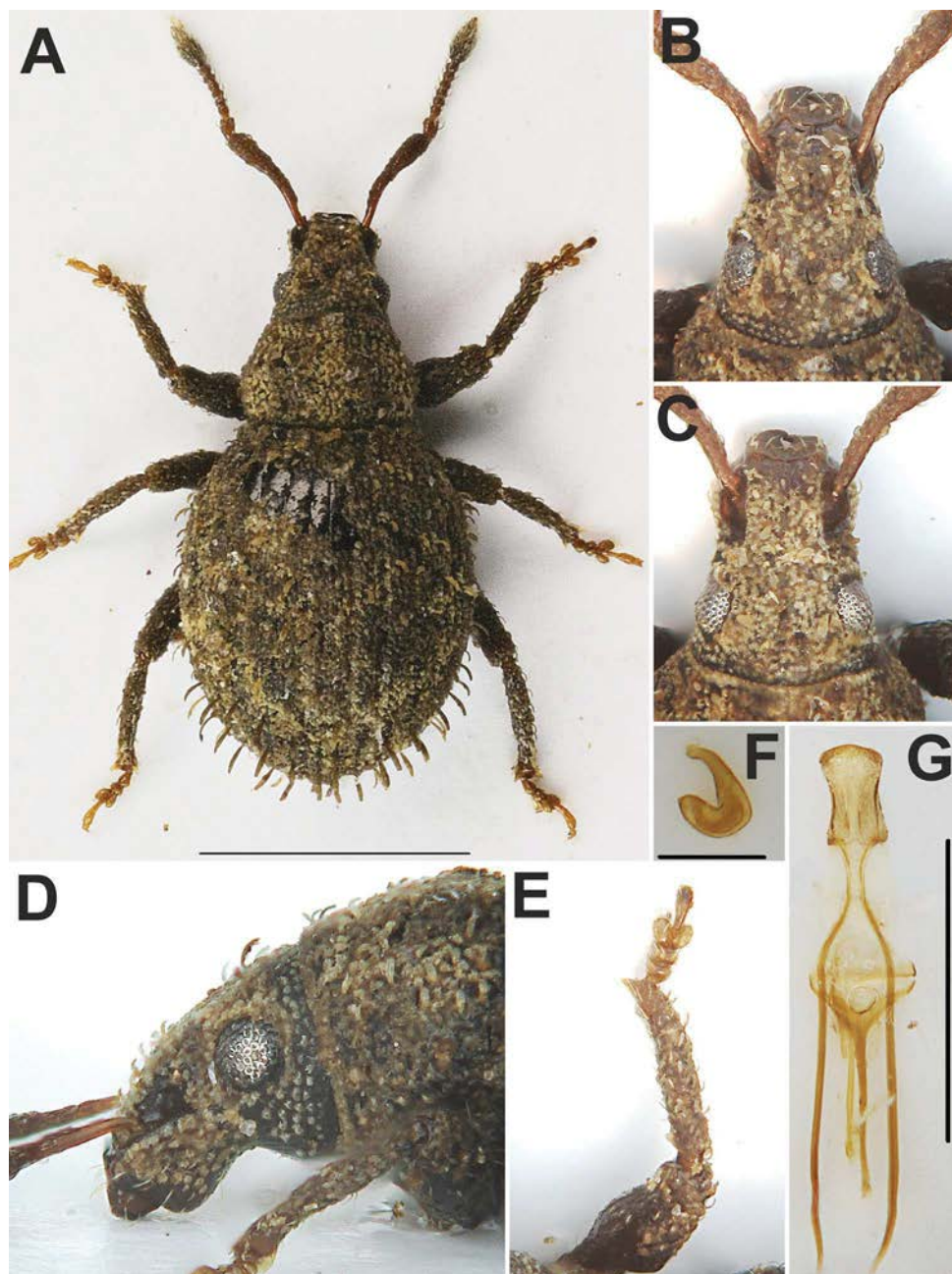


Fig. 8. *Epistomius natalensis* sp. nov. A – habitus, dorsal view, holotype, male; B – rostrum, male, dorsal view; C – rostrum, female, dorsal view; D – rostrum, male, lateral view; E – protibia, male; F – spermatheca; G – aedeagus. Scale bars: 1 mm (A), 0.5 mm (G) and 0.2 mm (F).

the type series to conserve the typical characters (see the variability chapter in *Epistomius* description).

Etymology. Patronymic, named after district Kwa-Zulu-Natal, where the type locality is placed.

Biology. The type material was sifted from native forest litter.

Distribution. South Africa: KwaZulu-Natal (Fig. 4).

Differential diagnosis. The species is characterized by elytral setae on apical declivity semi-erect to erect, rostrum in both sexes subparallel-sided with epistome in both sexes equal, as wide as epifrons at midlength, and it is similar to *E. wanati* sp. nov., from which it can be distinguished by the following characters: elytral setae on basal half short, semiappressed, on apical half longer than width of one interval, lancet-shaped, laterally weakly curved, 3–4× as long as setae on basal half; funicle segments 3–5 1.4× as wide as long; club long and slender, 2.0–2.1× as long as wide; and penis slender, longer than wide, widest in apical third, rounded, laterally wide.

***Epistomius ngomiensis* sp. nov.**

(Figs 3E, 9A–G)

Type locality. South Africa, KwaZulu-Natal, Ngome State Forest, 27°49.3'S, 31°25.0'E, 1150 m a.s.l.

Type material. HOLOTYPE: ♂, 'South Africa: KZN [KwaZulu-Natal], Ngome State Forest, 27°49.3' S 31°25.0' E, 18.ix.1992-18.x.1992, 1150m, Unbaited pitfall trap in dense afro-montane indigenous forest, Ngome Arthropod Survey, University of Pretoria, Sample 10/92-3A, M.v.d. Merwe [lgt.]' (SANC). PARATYPES: 1 ♂, the same data as holotype (SANC); 1 ♂, the same data as holotype, but '27°50.1' S 31°25.5' E, 1010m, Sample 10/92-2B'; 1 ♂, the same data as holotype, but '27°50.1' S 31°25.5' E, 18.vii.1992-18.viii.1992, 1010m, Sample 08/92-2B'; 4 spec., the same data as holotype, but '27°49.5' S 31°25.4' E, 18.i.1992-18.ii.1992, 1100m, Sample 02/92-2D'; 2 spec., the same data as holotype, but '27°49.5' S 31°25.2' E, 17.xii.1992-16.i.1993, 1130m, Sample 01/93-2A'; 1 spec., the same data as holotype, but '27°50.1' S 31°25.5' E, 18.viii.1992-18.ix.1992, 1010m, Sample 09/92-2B'; 2 spec., the same data as holotype, but '18.x.1992-18.xi.1992, 1150m, Sample 11/92-3A'; 1 spec., the same data as holotype, but '27°49.5' S 31°25.2' E, 18.ix.1992-18.x.1992, 1130m, Sample 10/92-2A'; 1 spec., the same data as holotype, but '27°49.4' S 31°25.7' E, 17.xii.1992-16.i.1993, 1140m, Sample 01/93-4B'; 1 spec., the same data as holotype, but '27°49.5' S 31°25.4' E, 18.x.1992-18.xi.1992, 1100m, Sample 11/92-2D'; 1 spec., the same data as holotype, but '27°50.5' S 31°25.2' E, 18.viii.1992-18.ix.1992, 1040m, Sample 09/92-2C'; 2 spec., the same data as holotype, but '27°49.5' S 31°25.2' E, 18.xi.1992-17.xii.1992, 1130m, Sample 12/92-2A'; 1 spec., the same data as holotype, but '27°49.5' S 31°25.2' E, 18.viii.1992-18.ix.1992, 1130m, Sample 09/92-2A'; 1 spec., the same data as holotype, but '27°49.5' S 31°25.4' E, 18.vii.1992-18.viii.1992, 1100m, Sample 08/92-2D'; 1 spec., the same data as holotype, but '18.vii.1992-18.viii.1992, Sample 02/92-2D'; 3 spec., the same data as holotype, but '27°49.5' S 31°25.7' E, 17.vi.1992-18.vii.1992, 1140m, Sample 07/92-4A'; 2 spec., the same data as holotype, but '27°49.5' S 31°25.7' E, 18.xi.1992-17.xii.1992, 1140m, Sample 12/92-4A'; 2 spec., the same data as holotype, but '27°49.4' S 31°25.8' E, 17.xii.1992-16.i.1993, 1110m, Sample 01/93-4C'; 1 spec., the same data as holotype, but '27°49.4' S 31°25.7' E, 14.ii.1994-15.iii.1994, 1140m, Sample 03/94-4B, R. Stals [lgt.]'; 2 spec., the same data as holotype, but '27°49.4' S 31°25.0' E, 18.viii.1993-18.ix.1993, 1140m, Sample 09/93-3B, R. Stals [lgt.]'; 1 spec., the same data as holotype, but '18.viii.1992-18.ix.1992, 1150m, Sample 09/92-3A' (all SANC); 7 ♂♀, 'South Africa, KwaZulu-Natal, Ngomi Forest, 27°51' S, 31°23' E, 24.-27.xi.2006, J. Janák lgt.' (JJRC, JSPP, RBSC); 120 ♂♀, 'S. Afr. [South Africa, KwaZulu-Natal], Zulu Drakensbg, Ngome tourist camp, 25.2.1997, 27.49 S – 31.25 E, E-Y: 3286, sifted indig. forest, leg. Endrödy-Younga' (TMSA); 27 ♂♀, ditto, but '20.2.1997, 27.50 S – 31.24 E, E-Y: 3289' (TMSA).

Description (Figs 9A–G). Body length 1.72–1.97 mm, holotype 1.88 mm. Body dark brownish to blackish, antennae and tarsi paler, reddish brown to dark brownish, apical part of scape sometimes darker. Elytra with moderately sparse appressed scales, subtriangular, owned apicad, with projecting bristle, 3–4 across width of one interval, distance between them about half

diameter of one scale. Pronotum and head with rostrum with dense subcircular scales, with fine fan-shaped striae, creating short, fine and dense fringes on almost half of circumference, almost covering integument; lateral parts of pronotum with scales half star-shaped, with long sparse fringes. Appressed scales on scape, femora and tibiae similar to pronotal ones, slightly smaller. Erect setae on elytra very varying, with shape from lancet-shaped to subspatulate or even spatulate, with length equal to width of one interval or longer, but having all other characters uniform, this seems to be highly variable within species; setae weakly shorter on anterior third than on posterior declivity, creating one regular row on each interval, in some species intervals 2 and 4 with very sparse setae. Pronotum and head with rostrum with semi-erect subspatulate setae similar to those on anterior part of elytra but shorter, irregularly scattered, setae on interocular space twice as long as the others. Scape, femora and tibiae with short, long-oval, semiappressed setae, densely irregularly scattered, hardly visible, not prominent from outline. Body vestiture light brownish, raised setae paler, greyish brown.

Head (Figs 9A–D). Rostrum in males (Fig. 9B) distinctly tapered in basal half and enlarged in apical half, with concave sides and subparallel-sided in females (Fig. 9C), slightly tapered in basal half and indistinctly enlarged in apical half, rounded around scrobes, in males 1.09–1.12× as wide as long, at apex as wide as at base; in females 1.16–1.25× as wide as long, at base 1.04–1.09× as wide as at apex, in both sexes distinctly narrower than head including eyes. Epifrons with slender longitudinal median stria, when cleared of scales shiny, shallowly deepened with several fine punctures, with short slender longitudinal median stria on basal half and with two very slender subparallel keels along whole length. Frons deepened, finely rough. Epistome in males wide, wider than epifrons at midlength, in females narrow, equally wide as epifrons at midlength. Head when cleared of scales shiny, distinctly convex, with small fovea and slender median longitudinal stria on apical half, with only several very slender and short striae and punctures mainly on anterior part and along eyes. Eyes weakly prominent from outline of head.

Antennae (Fig. 9A). Antennal scape 5.8–5.9× as long as wide and 1.5–1.6× as long as funicle, club 1.1–1.2× as wide as scape at apex. Funicle segment I 1.7–1.8× as long as wide and 1.7–1.8× as long as segment II, which is 1.3–1.4× as long as wide; segments III–V 1.5× as wide as long; segment VI 1.3–1.4× as wide as long; segment VII 1.2× as wide as long. Club 1.8–1.9× as long as wide.

Pronotum (Fig. 9A) in males 1.38–1.43×, in females 1.41–1.52× as wide as long, widest at about midlength, with distinctly rounded sides. When cleared of scales regularly convex, moderately shiny, irregularly sparsely and coarsely punctured, punctures shallow, with small ring inside, distance between two punctures shorter than diameter of one puncture, pronotum with anterior border reddish, bordered by transverse dense row of fine punctures. Pronotum in lateral view almost flat, lowered behind anterior border.

Elytra (Fig. 9A) in males 1.22–1.27×, in females 1.26–1.29× as long as wide.

Legs (Figs 9A, E). Tarsomere II 1.6–1.7× as wide as long; tarsomere III 1.3–1.4× as wide as long and 1.2–1.3× as wide as tarsomere II; onychium 1.5× as long as tarsomere III.

Male genitalia (Figs 3E, 9G). Penis longer than wide, slender, subparallel-sided, with regularly subtriangular apex.

Etymology. Patronymic, species is named after the Ngome forest, where an extensive material of the new species was collected.

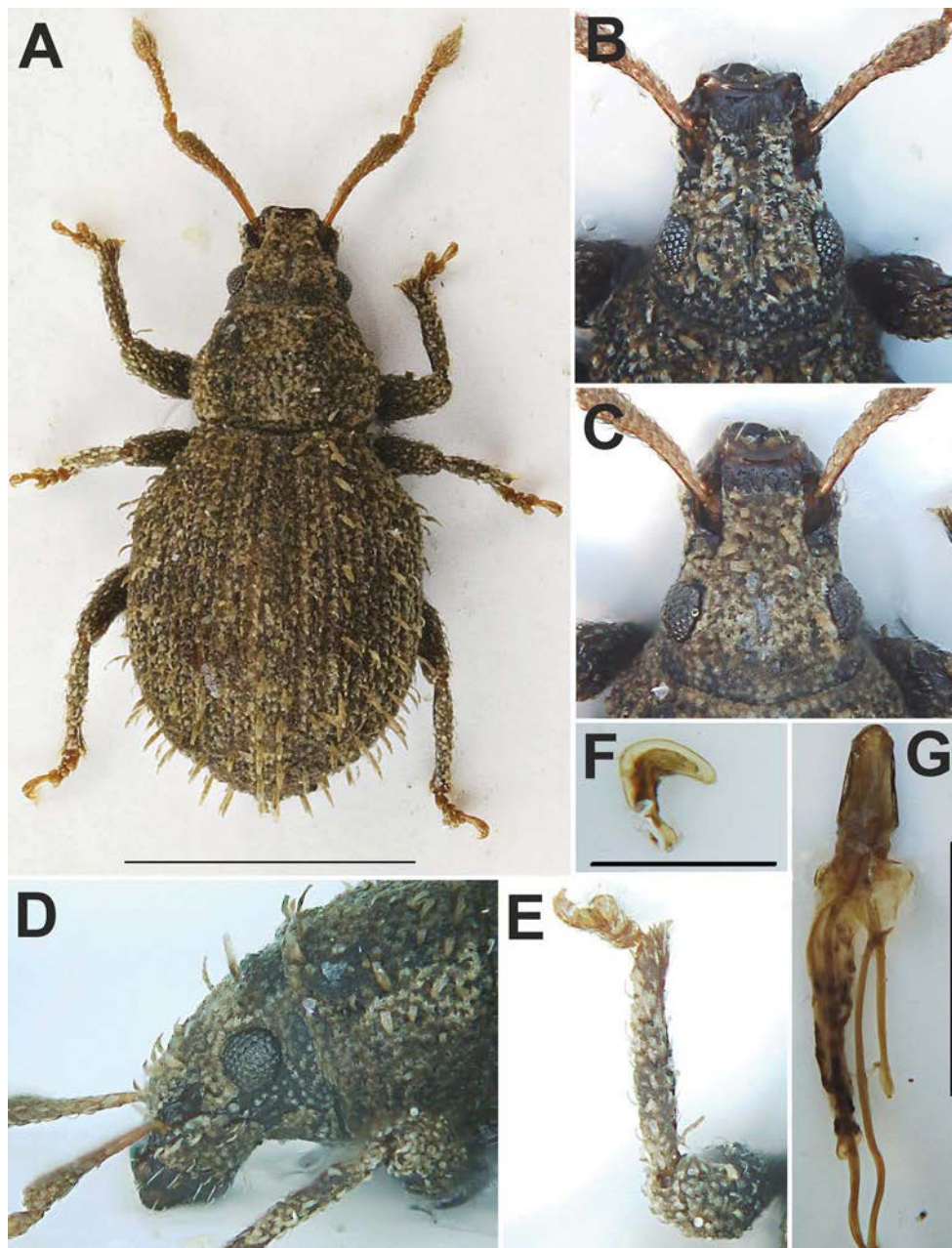


Fig. 9. *Epistomius ngomiensis* sp. nov. A – habitus, dorsal view, holotype, male; B – rostrum, male, dorsal view; C – rostrum, female, dorsal view; D – rostrum, male, lateral view; E – protibia, male; F – spermatheca; G – aedeagus. Scale bars: 1 mm (A), 0.5 mm (G) and 0.2 mm (F).

Biology. The majority of the material was collected in unbaited pitfall traps in dense afro-montane native forest, whereas a smaller part was sifted from forest litter.

Distribution. South Africa: KwaZulu-Natal (Fig. 4).

Differential diagnosis. The species is hardly distinguishable with varying shape and length of the raised elytral setae, but distinctly recognisable by appressed elytral scales awned, with projecting bristles, rostrum in males distinctly tapered in basal half and enlarged in apical half, with concave sides and subparallel-sided in females; and penis long and slender, without tip at apex. This set of characters easily distinguishes *E. ngomiensis* sp. nov. from all other species of the genus.

***Epistomius niger* sp. nov.**

(Figs 2G–I, 3F, 10A–G)

Type locality. South Africa, KwaZulu-Natal, Ongoye Forest Reserve, 28°50.6'S, 31°40.1–2'E.

Type material. HOLOTYPE: 1 ♂, 'South Africa, KwaZulu-Natal, Ongoye Forest Reserve, 28°50.6' S 31°40.1–2' E, 11.i.2016, Berlese extraction, leaf & log litter, sifting, J. Janák lgt.' (TMSA). PARATYPES: 24 ♂♀, the same data as holotype (JJRC, JSPC, NMPC, RBSC); 4 ♂♀, 'RSA [South Africa], KwaZulu-Natal, Ongoye Forest, Birders Lodge, 280 m, 2.–6.XII.2010, leg. D. Bartsch & J. Berg' (SMNS); 69 ♂♀, 'S. Afr. [South Africa], KWZ Natal [KwaZulu-Natal], Ongoye Forest, 294 m, 4.–5.12.2010, 28.50 S – 31.44 E, E-Y: 3890, sifting forest litter, leg. Ruth Müller' (TMSA).

Additional material examined. 14 ♂♀, 'South Africa, KwaZulu-Natal, Entumeni Nature Reserve, 28°53.2' S 31°22.6' E, 11.i.2016, J. Janák lgt.' (JJRC, RBSC).

Description (Figs 2G–I, 10A–G). Body length 1.71–2.31 mm, holotype 1.75 mm. Body blackish, basal two thirds on antennal scape, funicle and short apical part of tibiae reddish brown, tarsi yellowish brown. Elytra, pronotum and head with rostrum sparsely covered with appressed oval to drop-shaped scales, 3–4 across width of one interval, leaving between scales distance only slightly shorter than width of one scale. Appressed scales on femora and tibiae identical to elytral ones but smaller. Setae on basal half of elytra semiappressed, short, inconspicuous, on apical half erect, conspicuous, slender, widest at midlength, narrowly apically rounded, only slightly shorter than width of one interval, distance between two setae on posterior declivity more than twice as long as length of one seta. Setae on pronotum and head with rostrum subspatulate, short, about equal to those of basal half of elytra, semiappressed, hardly prominent in lateral view. Scape, femora and tibiae with short, long-oval semiappressed setae, hardly prominent from outline. Scales and setae light greyish brown.

Head (Figs 10A–D). Rostrum in males (Fig. 10B) extremely enlarged in apical half, apical part distinctly prominent laterally, 1.15–1.19× as wide as long, at apex 1.17–1.19× as wide as at base and 0.9× as wide as head including eyes; in females (Fig. 10C) evenly weakly enlarged apicad with weakly concave sides, 1.06–1.08× as wide as long, at apex 1.04–1.08× as wide as at base, 0.8× as wide as head including eyes. Epifrons with weakly concave sides, when cleared of scales shiny, smooth, unpunctured, with deep and well developed longitudinal median stria reaching to middle of vertex and with two inconspicuous lateral longitudinal keels. Frons deepened, smooth. Epistome in males distinctly wider than width of epifrons at midlength, in females narrower, only slightly wider than epifrons at midlength. Head when cleared of scales shiny and smooth, with several very fine, almost indistinct longitudinal striae. Eyes convex, somewhat prominent from outline of head.

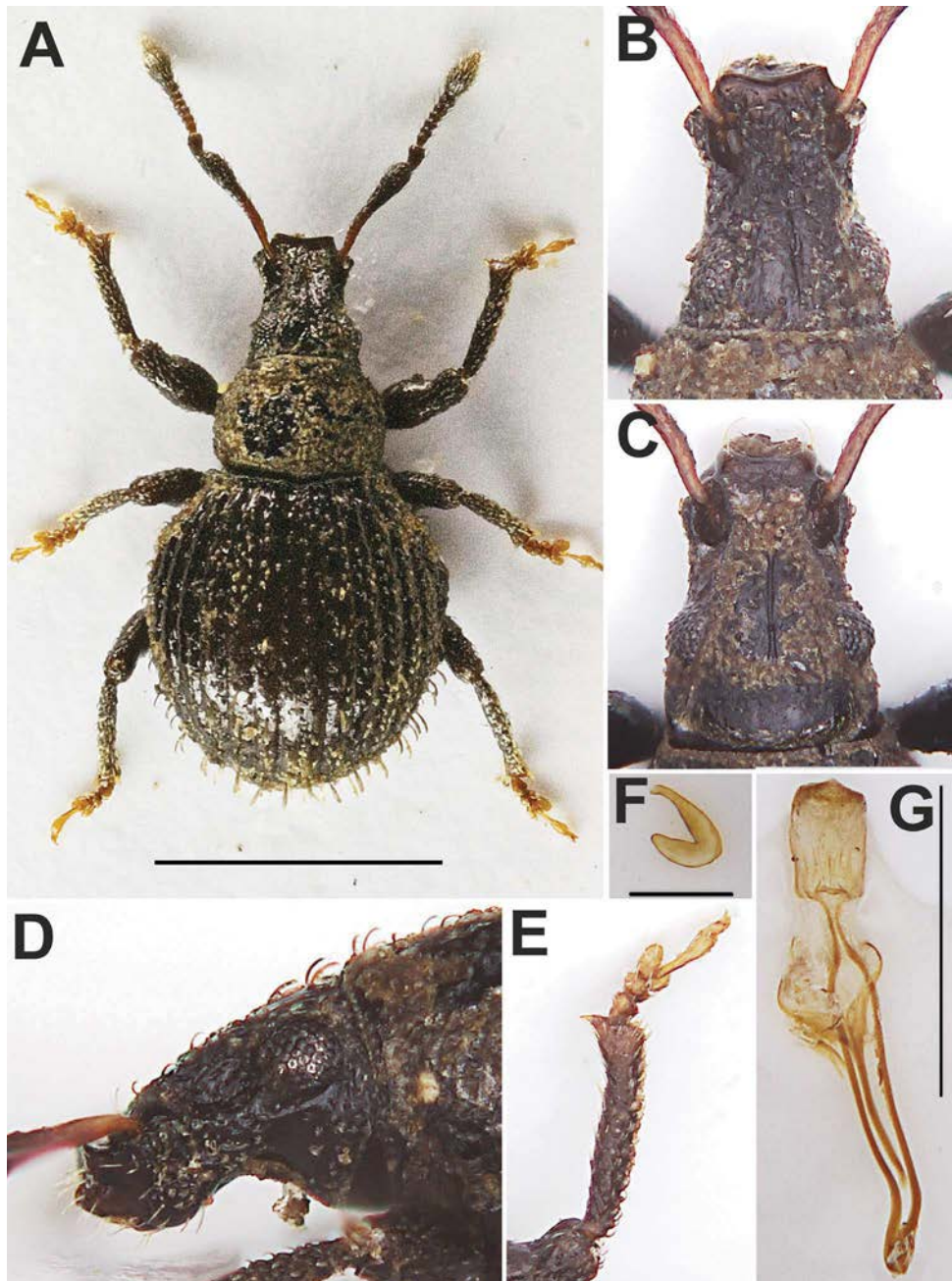


Fig. 10. *Epistomius niger* sp. nov. A – habitus, dorsal view, holotype, male; B – rostrum, male, dorsal view; C – rostrum, female, dorsal view; D – rostrum, male, lateral view; E – protibia, male; F – spermatheca; G – aedeagus. Scale bars: 1 mm (A), 0.5 mm (G) and 0.2 mm (F).

Antennae (Fig. 10A). Antennal scape 5.8–6.1× as long as wide and 1.5–1.6× as long as funicle, at apex 0.8× as wide as club. Funicle segment I 1.6–1.7× as long as wide and twice as long as segment II, which is 1.1–1.2× as long as wide; segments III–VI 1.3× as wide as long; segment VII 1.4–1.5× as wide as long. Club 1.6–1.7× as long as wide.

Pronotum (Fig. 10A) in males 1.43–1.49× as wide as long, in females 1.35–1.39× as wide as long, widest behind midlength, with rounded sides, more tapered anteriorly than posteriorly, constricted behind anterior margin. When cleared of scales regularly convex, shiny, densely coarsely punctured, with 6–7 punctures along the length, punctures large, distance of punctures shorter than their semidiameter. Pronotum in lateral view weakly convex, behind anterior border lowered.

Elytra (Fig. 10A) in males short, globular, 1.09–1.11× as long as wide, in females longer, oval, 1.16–1.19× as long as wide.

Legs (Figs 10A, E). Tarsomere II 1.6–1.7× as wide as long; tarsomere III 1.5× as wide as long and 1.3× as tarsomere II; onychium 1.9–2.1× as long as tarsomere III.

Male genitalia (Figs 3F, 10G). Penis short, weakly longer than wide, widest at base, slightly evenly tapered apically, apex subtriangular; in lateral view weakly irregularly curved, equally wide, tapered only at apex, with slender lengthened tip.

Variability (Figs 2G–I). Typical population from Ongoye has elytral setae on apical declivity slender, widest at midlength, apically shortly rounded, slightly shorter than width of one interval, while population from Entumeni has the same setae lancet-shaped, narrower, sharply apically pointed, weakly longer than width of one interval. The material from Entumeni was not included in the type series to conserve the typical characters (see the variability chapter in *Epistomius* description).

Etymology. The blackish colour of antennae, legs and integument suggested the Latin name of this new species.

Biology. The type specimens were sifted from leaf litter in native broad-leaved forest.

Distribution. South Africa: KwaZulu-Natal (Fig. 4).

Differential diagnosis. *Epistomius niger* sp. nov. is by conspicuously enlarged rostrum and globular elytra in males similar to *E. bulirschi* sp. nov., from which it can be easily distinguished by erect setae on posterior declivity, in males also by penis not enlarged in apical third and in females by rostrum weakly enlarged apically with epistome wider than epifrons at midlength. In view of the variability of elytral erect setae it could be confused mainly with *E. colonnellii* sp. nov. as it has similar shape of setae and rostrum in males distinctly enlarged apically, but it is distinguishable mainly by slenderer tibiae and tarsi with longer onychium, blackish antennal funicle and penis 1.6–1.7× as long as wide, tapered apically with small tip, while *E. colonnellii* sp. nov. has penis shorter and wider, 1.3–1.4× as long as wide, parallel-sided, apically obtuse.

***Epistomius wanati* sp. nov.**

(Figs 3G, 11A–G)

Type locality. South Africa, Mpumalanga, Berlin Forest near Kaapsehoop, Barretts trail, 25°57'22"S, 30°74'34"E, 1360 m a.s.l.

Type material. HOLOTYPE: ♂, 'RSA (N) [South Africa, North] Mpumalanga, 25.5722S/30.7434E, Berlin Forest nr. Kaapsehoop, sifting, 1360 m, Barretts trail, rainforest, 4.11.2013, leg. M. Wanat' (TMSA). PARATYPES: 8 ♂♀, the same data as holotype (MNH, RBSC).

Description (Figs 11A–G). Body length 1.94–2.13 mm, holotype 2.06 mm. Body dark brownish to blackish, antennae reddish brown but club blackish, sometimes apical part of scape slightly darker, short apical part of tibiae and tarsi yellowish red to reddish brown. Elytra sparsely covered with appressed scales of irregular shape, 3 across width of one interval, subrounded to star- to fan-shaped, with short fringes, leaving short distances between scales. Pronotum and head with rostrum with fan-shaped scales with fringes, scales on pronotum sparse, on head with rostrum dense, almost covering integument. Appressed scales on scape, femora and tibiae identical to elytral ones but smaller. Setae on elytra semierect, at apex bent posteriad, subspatulate, tip apically rounded, on basal half somewhat longer than half width of one interval, on posterior declivity slightly shorter than width of one interval, about twice longer than setae on disc, distance between two setae on posterior declivity somewhat longer than length of one seta. Setae on pronotum and head with rostrum about equally long as setae on anterior part of elytra, semierect, subspatulate, setae on interocular space slightly longer than the others. Scape, femora and tibiae with short, long-oval semiappressed setae, hardly prominent from outline. Body vestiture light greyish brown, elytra with dark brownish spot on inner 1–2 intervals and moderately large spot on each half of elytra at midlength; pronotum with two longitudinal wide dark brownish stripes on disc.

Head (Figs 11A–D). Rostrum in both sexes identical (Figs 11B–C), in basal half slightly tapered apicad with straight sides, in apical half indistinctly enlarged around scrobes, not prominent laterally, 1.09–1.14× as wide as long, at base 1.02–1.04× as wide as at apex, at apex distinctly narrower than head including eyes. Epifrons with faintly visible longitudinal median stria along whole length, when cleared of scales shiny, smooth, unpunctured, shallowly longitudinally depressed, with wide and shallow, ill-defined median longitudinal stria. Frons deepened, longitudinally striate. Epistome in both sexes narrow, about equally wide as epifrons at midlength. Head when cleared of scales shiny and smooth, unpunctured, with slender longitudinal fovea. Eyes weakly prominent from outline of head.

Antennae (Fig. 11A). Antennal scape 5.6–5.9× as long as wide and 1.4× as long as funicle, at apex 0.8–0.9× as wide as club. Funicle segment I 1.6–1.7× as long as wide and 1.6–1.7× as long as segment II, which is 1.3–1.4× as long as wide; segments III–V 1.1× as wide as long; segments VI and VII 1.2–1.3× as wide as long. Club 1.6–1.7× as long as wide.

Pronotum (Fig. 11A) 1.52–1.61× as wide as long, widest in posterior third, with distinctly rounded sides, behind anterior margin weakly constricted. When cleared of scales regularly convex, shiny, sparsely irregularly coarsely punctured, punctures very large, 5–6 along the whole length, on posterior half larger than on anterior half, distance between two punctures shorter than diameter of one puncture. Pronotum in lateral view weakly convex, behind anterior border lowered.

Elytra (Fig. 11A) 1.19–1.25× as long as wide with identical shape in both sexes.

Legs (Figs 11A, E). Tarsomere II 1.5–1.6× as wide as long; tarsomere III 1.4–1.5× as wide as long and 1.4–1.5× as wide as tarsomere II; onychium 1.6–1.7× as long as tarsomere III.

Male genitalia (Figs 3G, 11G). Penis short and wide, about isodiametric, somewhat squared, with slightly convex sides, with apex obtuse with small but distinct tip; laterally curved, slender, with short separated tip.

Etymology. The new species is dedicated to our friend Marek Wanat (MNHW), an eminent specialist in Apionidae and collector of several species of *Epistomius* gen. nov.

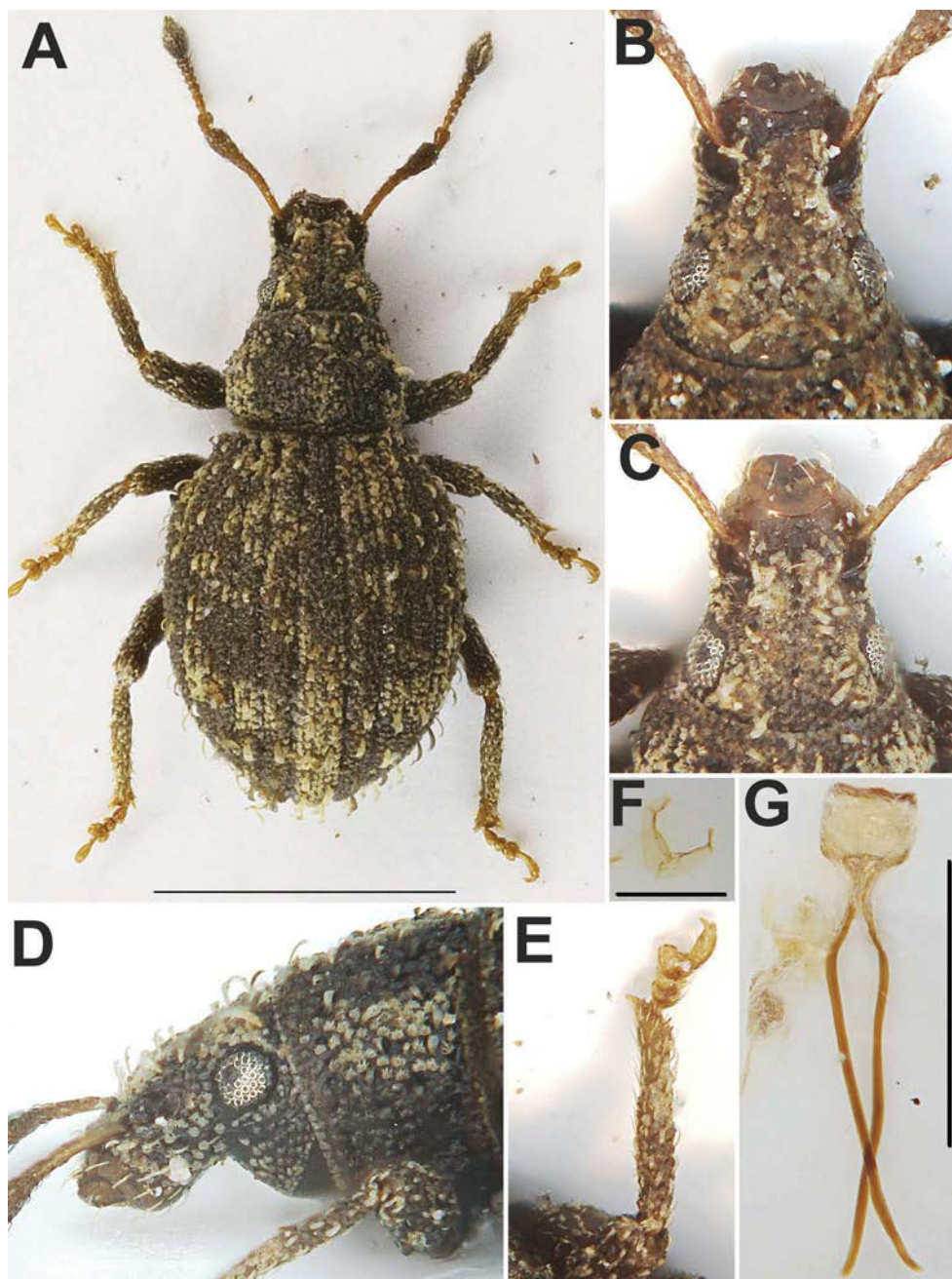


Fig. 11. *Epistomius wanati* sp. nov. A – habitus, dorsal view, holotype, male; B – rostrum, male, dorsal view; C – rostrum, female, dorsal view; D – rostrum, male, lateral view; E – protibia, male; F – spermatheca; G – aedeagus. Scale bars: 1 mm (A), 0.5 mm (G) and 0.2 mm (F).

Biology. The type material was sifted from rainforest litter.

Distribution. South Africa: Mpumalanga (Fig. 4).

Differential diagnosis. The species is characterized by elytral setae on apical declivity semierect to erect, rostrum in both sexes subparallel-sided with epistome in both sexes equal, as wide as epifrons at midlength similar to *E. natalensis* sp. nov., from which it can be distinguished by the following characters: elytral setae on basal half longer, semierect, on apical half shorter than width of one interval, subspatulate, laterally at apex bent, twice as long as setae on basal half; funicle segments III–V 1.1× as wide as long; club short and wide, 1.6–1.7× as long as wide; and penis wide, about as long as wide, subsquared, widest at midlength, laterally slender.

Key to the species of *Epistomius*

- 1 Elytral setae on apical declivity semiappressed (Fig. 5A). Rostrum in males distinctly enlarged anteriorly, at apex as wide as head including eyes (Fig. 5B). Penis short, at apex regularly triangular, in basal half concave (Fig. 3A). Body length 1.6–2.1 mm. *E. bulirschii* sp. nov.
- Elytral setae on apical declivity semierect to erect (Figs 6A, 7A, 8A, 9A, 10A, 11A). Rostrum in males moderately enlarged anteriorly or subparallel-sided, at apex narrower than head including eyes (Figs 6B, 7B, 8B, 9B, 10B, 11B). Penis short or long, at apex obtuse, rounded or with small tip, concave or subparallel-sided (Figs 3B–G). 2
- 2 Appressed elytral scales awned, with projecting bristles (Fig. 9A). Penis long, without tip at apex (Fig. 3E). Body length 1.7–2.0 mm. *E. ngomiensis* sp. nov.
- Appressed elytral scales irregularly subcircular or irregularly star- to fan-shaped (Figs 6A, 7A, 8A, 10A, 11A). Penis short or long, when long, then with small tip (Figs 3B–D, F, G). 3
- 3 Rostrum in males enlarged apically, in females subparallel-sided (Figs 6B, 7B, 10B). Epistome wider than epifrons at midlength, and also wider in males than in females (Figs 6B–C, 7B–C, 10B–C). 4
- Rostrum in both sexes subparallel-sided (Figs 8B–C, 11B–C). Epistome as wide as epifrons at midlength and equal in both sexes (Figs 8B–C, 11B–C). 6
- 4 Protibiae long and slender, 6.4–6.9× as long as wide at midlength (Fig. 10E). Onychium long, at least 1.9× as long as tarsomere III. Antennal funicle blackish (Fig. 10A). Penis tapered apically (Fig. 10G). Body length 1.7–2.3 mm. *E. niger* sp. nov.
- Protibiae shorter and more robust, 5.1–5.3× as long as wide at midlength (Figs 6E, 7E). Onychium short, at most 1.5× as long as tarsomere III. Antennal funicle brownish (Figs 6A, 7A). Penis parallel-sided (Figs 6G, 7G). 5
- 5 Elytral setae on posterior declivity long and slender, pointed, twice as long as conspicuous setae on basal half (Fig. 6A). Tarsomere II 1.3–1.4× as wide as long. Elytra in males longer (Fig. 6A), 1.15–1.18× as long as wide. Penis short, about as long as wide, at apex obtuse, tip not separated (Fig. 3B). Body length 1.9–2.6 mm. *E. colonnellii* sp. nov.

- Elytral setae on posterior declivity subspatulate, rounded apicad, 4–5× as long as inconspicuous setae on basal half (Fig. 7A). Tarsomere II 1.5–1.6× as wide as long. Elytra in males shorter (Fig. 7A), 1.12–1.14× as long as wide. Penis distinctly longer than wide, with separated tip at apex and concave before it (Fig. 3C). Body length 1.6–2.1 mm. ...
..... ***E. janaki* sp. nov.**
- 6 Elytral setae on basal half short, semiappressed, on posterior declivity longer than width of one interval, lancet-shaped, laterally almost straight, 3–4× as long as setae on basal half (Fig. 8A). Funicle segments III–V 1.4× as wide as long (Fig. 8A). Club long and slender, 2.0–2.1× as long as wide (Fig. 8A). Penis slender, longer than wide, widest in apical third, rounded, laterally wide (Fig. 3D). Body length 2.1–2.4 mm.
..... ***E. natalensis* sp. nov.**
- Elytral setae on basal half longer, semierect, on posterior declivity shorter than width of one interval, subspatulate, laterally at apex bent, twice as long as setae on basal half (Fig. 11A). Funicle segments III–V 1.1× as wide as long (Fig. 11A). Club short and wide, 1.6–1.7× as long as wide (Fig. 11A). Penis wide, about as long as wide, subquadrate, widest at midlength, laterally slender (Fig. 3G). Body length 1.9–2.1 mm.
..... ***E. wanati* sp. nov.**

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Afromuelleria, a new genus of Trachyphloeini from Limpopo, with descriptions of four new species (Coleoptera: Curculionidae: Entiminae)

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Key words. Coleoptera, Curculionidae, Entiminae, Trachyphloeini, *Afromuelleria*, taxonomy, new genus, new species, Afrotropical region, South Africa

Abstract. A new genus, *Afromuelleria* gen. n., assigned to the tribe Trachyphloeini Lacordaire, 1863, is described for four South African species of weevils: *A. awelani* sp. n., *A. baobab* sp. n., *A. limpopo* sp. n. and *A. venda* sp. n. All species are illustrated and keyed. Taxonomic status of the new genus is discussed and compared with similar genera of Trachyphloeini and Embrithini Marshall, 1942.

ZooBank Article LSID: 02D78E92-405C-4C8B-A670-ABC65E561AB6

INTRODUCTION

The Cape Floristic Region is by far the smallest in the world, characterized mainly by a very high species diversity of angiosperms, with about 8,700 species in 165 families, which is about 20% of all African angiosperms (Hendrych, 1984). The phytophagous superfamily of weevils (Curculionoidea), the largest superfamily of living organisms with about 62,000 described species (Oberprieler et al., 2007), should be very speciose in this botanically rich region, but at present, we know only a very small fragment of this weevil fauna. This is true also of the Entiminae Schoenherr, 1823, the largest weevil subfamily with about 12,000 described species (Oberprieler et al., 2007). First genera and species of South African entimines were described by Boheman (in Schoenherr, e.g., 1842, 1845) or Schoenherr (e.g., 1843, 1847) in Schoenherr's monumental monograph of world weevils. Continuation of this study based on material collected mainly during the first botanical expedition to South Africa (Gunn & Codd, 1981) were descriptions by Fähræus (1871). The extensive work by G.A.K. Marshall, who published between 1902 and 1962 about 110 articles focused on Afrotropical and particularly South African weevils, contain descriptions of a number of genera and species of Curculionoidea, as well as several revisions providing keys. Additional studies were later

published by Voss (e.g., 1959, 1974) and Oberprieler (e.g., 1988, 1995).

The majority of the genera and species of Entiminae so far described are floricolous and arboricolous taxa, which are easily available for study and most often collected. Small, terricolous, short-nosed weevils were almost entirely overlooked in the past, mainly due to the difficulty in collecting them, but also due to the lack of specialists focused on this very specific and speciose component of the fauna. Currently, there are a few species that were described by Boheman (in Schoenherr, e.g., 1842, 1845) and Fähræus (e.g., 1871). Several new species are described in articles with a broader focus by Marshall (e.g., 1923, 1955) or Voss (1974). The majority of these species were described in Palaearctic genera such as *Trachyphloeus* Germar, 1817 or *Trachyphloeosoma* Wollaston, 1869, only Schoenherr (1842, 1847) and Voss (1974) describe several South African genera of small terricolous entimine weevils. The first special works on this very poorly known specific fauna were published only recently, as revisions of already described genera (Borovec et al., 2009, 2014; Borovec & Skuhrovec, 2018), or descriptions of new genera with new species (Borovec & Meregalli, 2013; Borovec & Oberprieler, 2013; Borovec & Skuhrovec, 2017b).

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However, there is a lot of unidentified material collected mainly in recent decades and deposited in European as well as South African museums and private collections, mainly among unsorted material. The ratio of undescribed to described species is very high (Oberprieler et al., 2007) and many of the undescribed species belong also to undescribed genera. We describe herein a small genus including four species, known only from Limpopo province, which is easily distinguished from all other known genera not only by its external morphological characters (e.g., extremely short and wide rostrum) but also by unique characters of the males and unusual characters of female genitalia. We also discuss its taxonomic position and relation to other genera of small, terricolous entomines.

MATERIAL AND METHODS

Body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of the elytra, excluding the rostrum. Width/length ratio of the rostrum was calculated using the maximum width at the base and maximum length to the base of the mandibles. Width/length ratios of pronotum, elytra, antennal segments and tarsomeres were based on the maximum width and length of the respective parts in dorsal view; length of onychium refers to the part protruding beyond the outline of tarsal segment 3. Dissected male and female genitalia were studied in glycerine. Female genitalia were afterwards embedded in Solakryl BMX (epoxy resin soluble in toluene; Medika, Prague); male genitalia were mounted dry on the same card as the respective specimen, with tegmen and sternite IX embedded in Solakryl BMX. Photographs of adults were taken with a Canon EOS 700D camera with an MP-E 65 mm macro lens and combined using Zerene Stacker and GIMP2 software. Details of adults (rostrum – dorsal and lateral view, protibia, ventrites) and genitalia were taken and enhanced using a HIROX RH-2000 digital microscope. The terminology used to describe the details of the rostrum, antenna and genitalia follows Oberprieler et al. (2014).

Exact label data of type specimens are cited: separate labels are indicated by a slash (/). Authors' remarks and comments are in square brackets.

Specimens are deposited in the following museums and private collections: NHMUK – Natural History Museum, London, United Kingdom (formerly British Museum of Natural History) (Maxwell Barclay); JSPC – Jiří Skuhrovec collection, Praha, Czech Republic; MMTI – Massimo Meregalli collection, Torino, Italy; BMSA – National Museum, Bloemfontein, South Africa (Burgert Muller); NMPC – National museum Praha, Czech Republic (Jiří Hájek); RBSC – Roman Borovec collection, Sloupno, Czech Republic; TMSA – Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa (Ruth Müller).

TAXONOMY

Genus *Fromuelleria* gen. n.

Figs 1A–C, 7A–D, 8A–H, 9A–H, 10A–D, 11A–D, 12A–D

ZooBank taxon LSID:

6AA81AF2-37CB-4B3B-BB97-136D981FDF15

Type species. *Fromuelleria awelani* sp. n., here designated.

Diagnosis. Very small Entiminae, up to 2.1 mm; rostrum extremely short and wide, at base as wide as head with eyes or wider, continuous with head; epifrons at base as

wide as interocular space, with median longitudinal furrow; frons densely squamose; epistome very short, not projecting anteriorly; antennal scrobes in dorsal view visible along the whole length, in lateral view triangular, reaching above and below posterior margin of eye; eyes small, hardly projecting beyond the outline of head in dorsal view; head in ventral and lateral views partly finely densely longitudinally striate (striae well visible in glabrous transverse stripe); tibiae short and robust, amucronate, metatibiae without corbels; ventrite 1 in middle slightly shorter than ventrite 2, suture between them distinctly sinuate; ventrites glabrous; tegmen with ring expanded into tegminal plate bearing elongated membraneous parameres; female sternite VIII with long and slender apodeme and small, widely oval, slightly wider than long plate, terminating at base of plate, plate with slender basal margin.

Description. Body length 1.5–2.1 mm. Integument of body brownish to blackish, legs and antennae unicolourous, reddish brown or brownish. Vestiture on body consists of dense appressed rounded scales; scales on elytra flat, 2 across one elytral interstria, leaving very slender glabrous striae; scales on pronotum slightly imbricate, with distinct deep puncture in centre. Antennal scapes, femora and tibiae covered with dispersed appressed scales with punctures in centres, with indistinct structure, funicles and tarsi without appressed scales; clubs finely and densely setose. Elytra covered with one dense mostly conspicuous regular row of semiappressed to erect, subspatulate to spatulate setae; pronotum and head with rostrum with similar, but shorter, densely irregularly scattered setae, rostrum moreover with regular row of these setae laterally projecting from outline and border its outline. Antennal scapes, femora and tibiae covered with slender, subspatulate, semierect setae; tarsi and funicles with short semierect bristles.

Rostrum (Figs 1B, C, 7B, C, 10B, C, 11B, C, 12B, C) extremely short and wide, 1.5–1.9× wider than long, widest at base or just before the base, evenly tapered apicad with straight or slightly rounded sides, apically widely rounded, at base as wide as head with eyes or wider, continuous with head; in lateral view weakly convex to almost flat, at the same level as head, anteriorly abruptly declivous beyond antennal insertion. Epifrons flat and wide, distinctly and evenly tapered apicad with straight sides, at base as wide as interocular space and evenly directly continuing posteriorly to posterior margins of eyes; space of epifrons with slender, median longitudinal furrow along the whole length, evanescent shortly before epistome and with shorter furrow very nearly parallel with margin of epifrons; when cleared of scales, shiny, smooth, regularly continuous with head, with long, fine and slender longitudinal ridges along the whole length, converging towards slender median furrow and multiplied by shorter and finer ridges on vertex. Frons not differentiated, densely squamose. Epistome small and very short, glabrous, posteriorly slightly carinated, hidden from above by a pair of large spatulate transverse scales. Mandibles not squamose, trisetose, weakly projecting anteriorly. Prementum with a pair of long setae. Subgena (ventral part of rostrum) moderately densely covered by

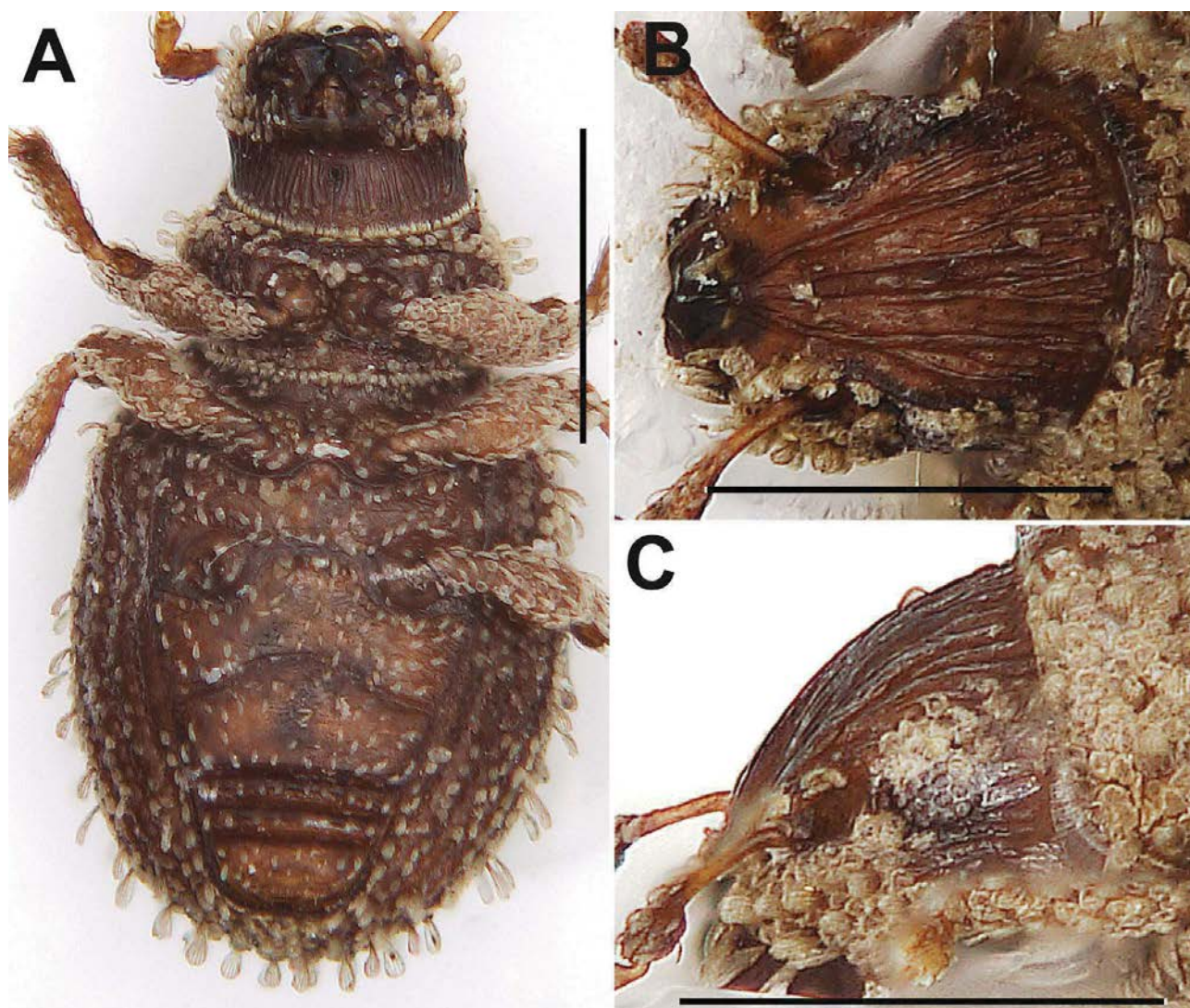


Fig. 1. *Afromuelleria awelani* sp. n. A – habitus, ventral view, male; B – rostrum without scales, dorsal view, male; C – rostrum without scales, lateral view, male. Scale bars: 0.5 mm.

appressed subspatulate scales. Gena as long as subgena, glabrous, finely, densely, longitudinally striate; borderline between gena and subgena arched. Scrobes in dorsal view visible along the whole length as a narrow furrow, distinctly constricted in anterior third and then evenly enlarged posteriad, reaching base of rostrum before eyes; in lateral view short, slightly curved, triangular, sharply set off from densely squamose lateral part of rostrum, distinctly enlarged posteriad, reaching eye, with well defined edges and reaching posterior margin of eye, dorsal border aligned with dorsal border of eye, ventral border below eye, leaving slender glabrous furrow between it and eye. Head very wide and flat, with slender longitudinal stria in middle and next to borders, continuing into striae on epifrons. Eyes very small, convex, but not or only slightly projecting beyond outline in dorsal view, in lateral view subcircular, positioned approximately in the middle of head height. Head in lateral and ventral part with glabrous transverse stripe, finely densely longitudinally striate (except a subtriangular squamose spot in lateral view and a narrow anterior stripe in ventral view).

Antennae (Figs 7A, 10A, 11A, 12A) short and slender; scapes hardly reaching anterior border of pronotum, 1.2–1.4× longer than funicle, basal half very slender, curved at midlength, apical half distinctly enlarged, clavate, apex as wide as club; funicle 5-, 6- or 7-segmented; segment 1 conspicuously larger, distinctly longer and wider than other segments, faintly narrower than apex of scape; segment 2 longer than wide; segments 3–7 isodiametric to wider than long; club oval.

Pronotum (Figs 7A, 10A, 11A, 12A) short and wide, 1.5–1.8× wider than long, sides rounded, widest at midlength or before, behind anterior border slightly constricted with anterior border slightly narrower than posterior border; disc regularly convex without furrow or depression; base straight. Anterior border in lateral view straight, without ocular lobes or setae.

Procoxal cavities contiguous, round in middle of prosternum. Scutellar shield indistinct.

Elytra (Figs 7A, 10A, 11A, 12A) oval, 1.2–1.4× longer than wide, widest at midlength, sides rounded, apically widely rounded, with regularly rounded humeral calli;



Fig. 2. Habitat of *Afromuelleria awelani* sp. n. Adults were sifted from forest litter in mopane type forest, below a big *Ekebergia* sp. (Meliaceae), in partly rocky terrain.

striae distinctly narrowly punctate, sometimes hidden under appressed scales; interstria flat; disc in lateral view slightly convex to almost flat, slope overhanging apex.

Tergite VII in males subtrapezoidal, translucent, with sclerotized narrow margins, apically concave; tergite VIII in males subsquare, weakly sclerotized. Tergite VII and VIII in females similar to those in males, more weakly sclerotized, slightly larger, tergite VII with convex apical margin.

Legs (Figs 7A, 10A, 11A, 12A) short and robust. Procoxae subglobular. Mesocoxae semiglobular, moderately widely separate, mesosternal process about as wide as half of diameter of mesocoxa, not reaching posterior margin of mesocoxae. Metacoxae shortly transverse, separated by about 1.5× their width. Femora faintly swollen, unarmed. Tibiae very short, without mucro, lateral margin straight, mesal margin indistinctly bisinuate; protibiae (Figs 7D, 10D, 11D, 12D) 3.2–3.8× longer than wide at apex, apex obliquely subtruncated with fringe of slender and moderately long, sparse, brownish to blackish bristles; meso- and metatibiae with moderately small apical surface, glabrous, fringed by long blackish bristles, laterally longer than mesally; metatibiae without corbels. Tarsi short, segment 2 wider than long, segment 3 bilobed and distinctly wider

than segment 2, onychium 1.2–1.8× longer than segment 3; basal half of claws solidly fused, apical half divaricate.

Abdomen ventrally longer than wide (Fig. 1A); middle of ventrite 1 slightly shortened, behind metacoxa about as long as ventrite 2, ventrite 2 1.5× as long as ventrites 3 and 4 combined; ventrites 3 and 4 short, equally long; ventrite 5 subtrapezoidal, obtuse, equal in both sexes; suture between ventrites 1 and 2 distinctly sinuate, fine, other sutures wide, rough, straight; all ventrites glabrous, unpunctured, finely shagreened, sparsely covered with semiappressed spatulate scales. Metaventral process obtuse, slightly longer than transverse diameter of metacoxa.

Male terminalia. Penis (Figs 8A–D) moderately long, slender, differing between species in shape; temones short, as long as penis and longer than tegminal manubrium. Tegmen (Figs 8E–H) very exceptional in Entiminae, with tegminal plate; ring moderately small, enlarged at base of manubrium, which is short, longer than diameter of ring; ring incomplete, interrupted in middle, expanded to form a large membranous, not diversified tegminal plate, almost as long as diameter of ring, lateral edges slightly more sclerotized and elongate forming two differently long, slender, membranous parameres, distant at base. Sternite IX with spiculum gastrale moderately long, anteriorly perpendicu-

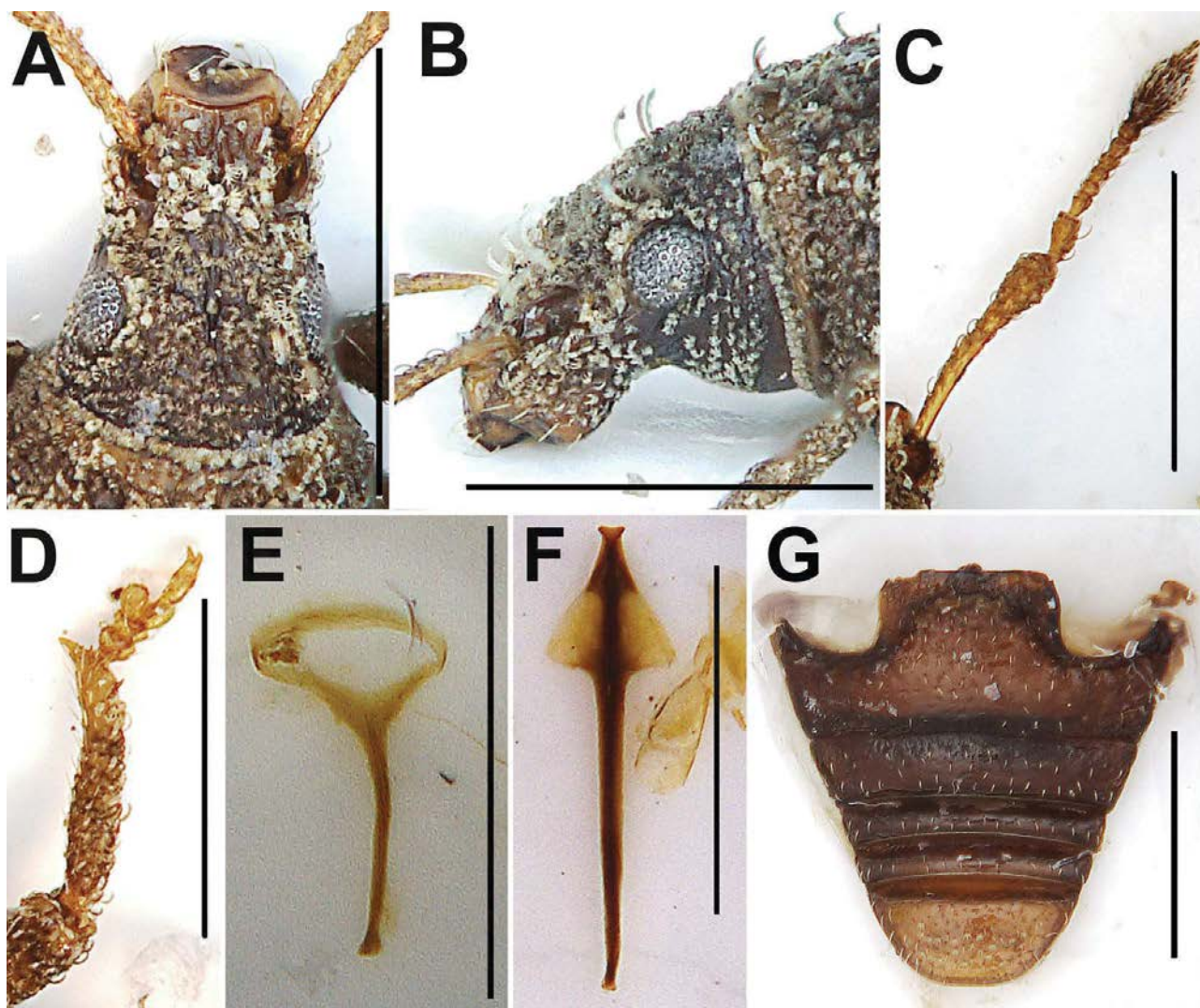


Fig. 3. *Epistomius colonnellii* Borovec & Skuhrovec, 2017. A – rostrum, dorsal view, female; B – rostrum, lateral view, female; C – antenna, female; D – protibia, female; E – tegmen, male; F – sternite VIII, female; G – ventrites, female. Scale bars: 0.5 mm.

larly curved and tapered, posteriorly with U-shaped basal plate.

Female terminalia. Sternite VIII (Figs 9A–C) with long and slender apodeme, 5.8–7.7× longer than plate; plate small, oval, nearly isodiametric, with basal half slightly sclerotized, apical margin sparsely fringed with short and fine setae, apodeme terminates at base of plate, basal margin developed. Gonocoxites (Figs 9D, E) long and slender, subtriangular, weakly sclerotised, with slender and moderately long apical styli with apical setae. Spermatheca (Figs 9F–I) with slender, pointed, regularly curved cornu and short but differentiated ramus and nodulus, differing between species.

Sexual dimorphism. Not present. Sexes externally indistinguishable.

Derivation of name. This newly described genus is dedicated to our German colleague and friend, born in Angola and living in South Africa, Ruth Müller, curator of Ditsong National Museum of Natural History in Pretoria. She is extremely enthusiastic and keen about nature and has helped many specialists working on beetles in South Africa. Moreover, Ruth during many field trips collected a remarkable amount of important material for the mu-

seum and science, for example, two of the four new species of this newly described genus.

Distribution. The genus contains four newly described species; all are known only from the northern part of Limpopo province in South Africa.

Biology. *Afromuelleria awelani* sp. n. was sifted from forest litter in mopane type forest, below a big *Ekebergia* sp. (Meliaceae), in partly rocky terrain (Fig. 2). *Afromuelleria limpopo* sp. n. was collected using ground traps baited with banana. Species of this genus seem to be inhabitants of forests, living in litter below trees in more humid habitats.

Taxonomical remarks. *Afromuelleria* gen. n. belongs to the tribe Trachyploeini Lacordaire, 1863 based on the following morphological characters: rostrum wider than its length; scrobes located subdorsally, laterally directed towards eyes; epifrons with well defined margins along the whole length, at base as wide as the space between anterior eye margins; elytra without humeral calli, fused at suture; the entire dorsal part of body densely squamose and metatibiae lacking corbels.

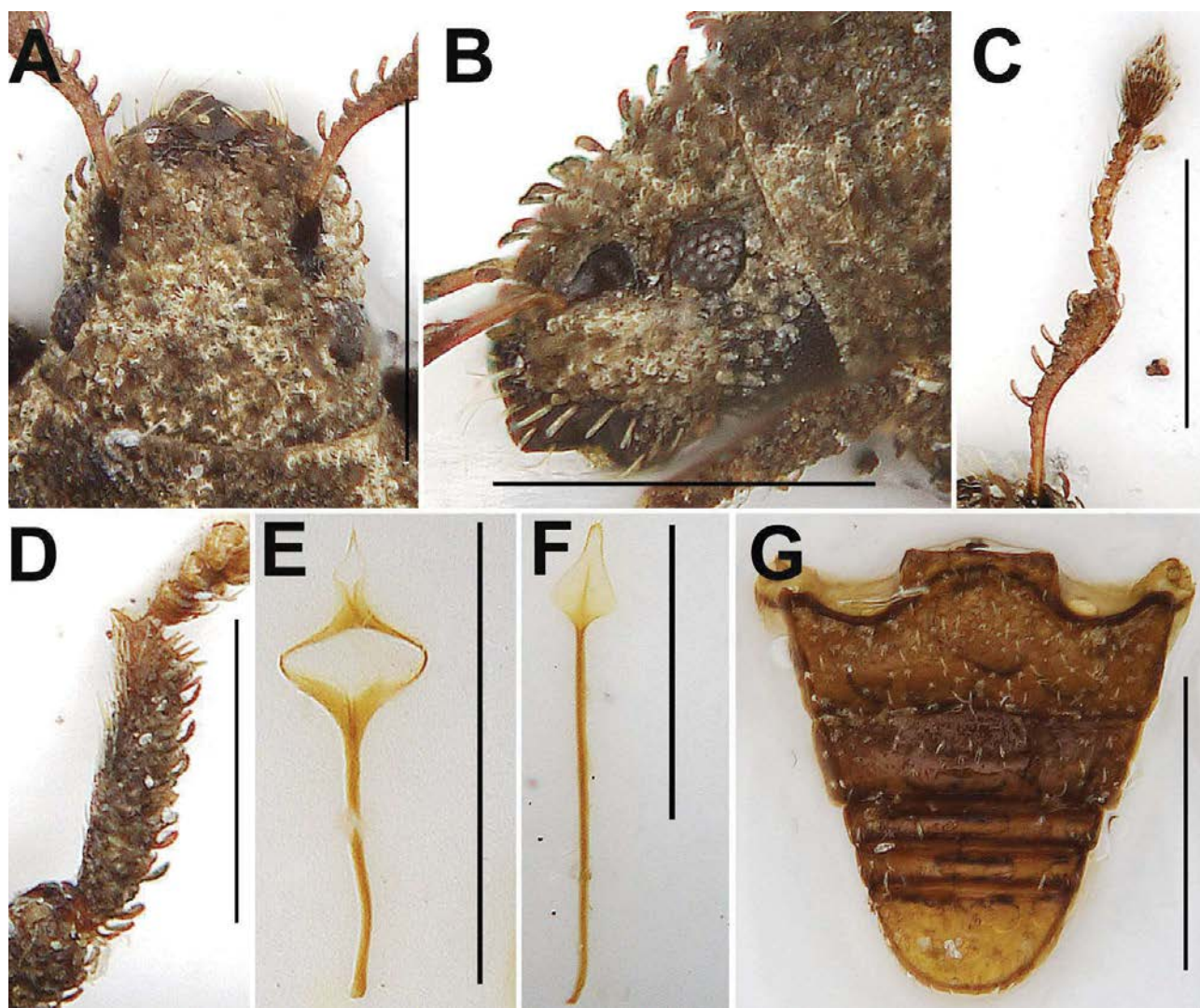


Fig. 4. "*Trachyphloeosoma brevicolle* Voss, 1974. A – rostrum, dorsal view, male; B – rostrum, lateral view, male; C – antenna, male; D – protibia, male; E – tegmen, male; F – sternite VIII, female; G – ventrites, male. Scale bars: 0.5 mm.

In the tribe Trachyphloeini, *Afromuelleria* gen. n. is very exceptional in having the following set of characters: rostrum extremely short and wide, at base as wide as head with eyes or wider, with regular row of spatulate setae; antennal scrobes in lateral view triangular, reaching posterior margin above and below the eyes; tibiae without mucro, tegmen with ring expanded into a tegminal plate elongated into membraneous parameres, and female sternite VIII with a slender and long apodeme, $5.8\text{--}7.7\times$ longer than small oval plate, terminating at slender basal margin. Among Trachyphloeini genera with connate claws, *Afromuelleria* gen. n. and *Epistomius* Borovec & Skuhrovec, 2017 are the only genera with a rostrum continuous with their head, while the other Trachyphloeini genus with connate claws, *Pentatrachyphloeus* Voss, 1974, has rostrum clearly separated from the head by a slender transverse sulcus.

Afromuelleria gen. n. and *Epistomius* can be easily distinguished by the following characters:

***Afromuelleria* gen. n.** Rostrum $1.5\text{--}1.9\times$ wider than long (Figs 7B, 10B, 11B, 12B). Frons densely squamose, flat (Figs 7B, 10B, 11B, 12B). Epistome not projecting ante-

riad (Figs 7B, 10B, 11B, 12B). Epifrons with straight sides (Figs 7B, 10B, 11B, 12B). Antennal scrobes in dorsal view visible along the whole length, in lateral view they reach the eyes (Figs 7B, 10B, 11B, 12B). Elytra not constricted behind base (Figs 7A, 10A, 11A, 12A). Tibiae short and robust, without a mucro; protibiae $3.2\text{--}3.8\times$ longer than width at apex (Fig. 7A, D). Ventrites with conspicuous spatulate setae, ventrite 1 in middle slightly shorter than ventrite 2, ventrite 2, $1.5\times$ as long as ventrites 3 and 4 combined (Fig. 1A). Suture between ventrites 1 and 2 distinctly sinuate, between 2–5 straight (Fig. 1A). Tegmen with ring extending to the tegminal plate (Figs 8E–H). Sternite VIII in females with apodeme $5.8\text{--}7.7\times$ as long as a plate, ending at basal margin; plate small, oval, without apical process (Figs 9A–C). Spermatheca with differentiated nodulus and ramus (Figs 9F–H).

***Epistomius* Borovec & Skuhrovec.** Rostrum $1.1\text{--}1.3\times$ wider than long (Figs 3A, B). Frons glabrous and deepened (Fig. 3A). Epistome projecting anteriorly and laterally forming sharp teeth directed dorsally (Fig. 3A). Epifrons with distinctly concave sides (Fig. 3A). Antennal scrobes

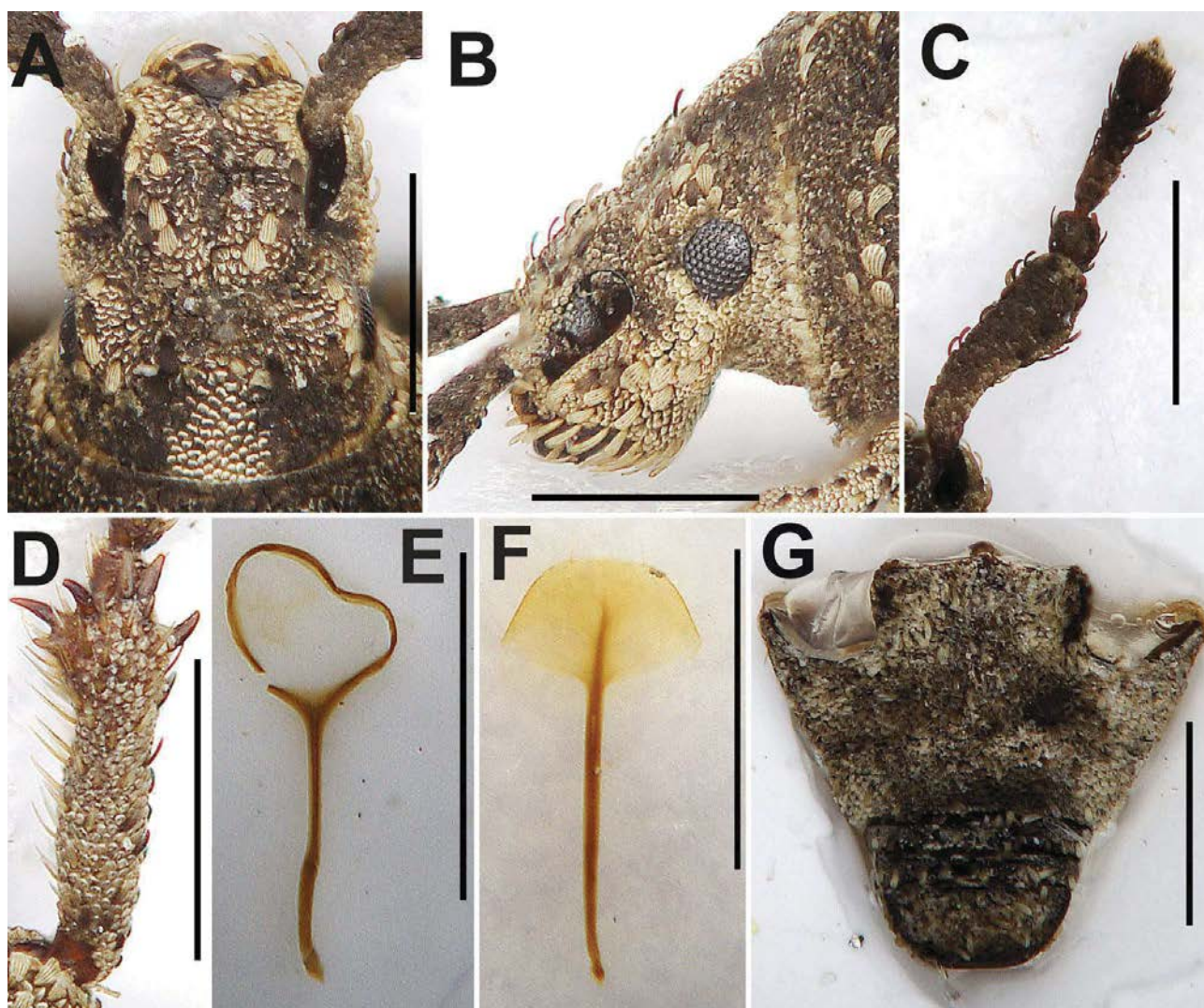


Fig. 5. *Afrophloeus spathulatus* (Boheman, 1842) (A–D, F), *A. squamifer* (Boheman, 1842) (E, G). A – rostrum, dorsal view, female; B – rostrum, lateral view, female; C – antenna, female; D – protibia, female; E – tegmen, male; F – sternite VIII, female; G – ventrites, female. Scale bars: 0.5 mm.

in dorsal view visible on anterior half of rostrum, in lateral view short, reaching about half the distance from antennal insertion to eyes (Figs 3A, B, C). Elytra behind base constricted. Tibiae long and slender, mucronate; protibiae 5.5–6.4× longer than the width at midlength (Fig. 3D). Ventrites with inconspicuous fine piliform setae, ventrite 1 in middle slightly shorter than ventrites 2–4 together, ventrite 2 in middle slightly longer than ventrites 3 or 4 (Fig. 3G). Suture between ventrites 1 and 2 straight, between 2–5 weakly arched (Fig. 3G). Tegmen without a tegminal plate (Fig. 3E). Sternite VIII in females with apodeme 2.0–2.5× as long as a plate, terminating inside plate; plate triangular, apex with a Y-shaped process (Fig. 3F). Spermatheca without differentiated nodulus and ramus.

Among Trachyphloeini with free claws, *Afromuelleria* gen. n. is only similar in general habitus (small size with extremely short and wide rostrum) to “*Trachyphloeosoma*” *brevicolle* Voss, 1974, known from the Western Cape (this species was described by Voss by mistake in his original description of the genus *Trachyphloeosoma* Wollaston, 1869, see Borovec & Skuhrovec, 2017a). This species belongs

to an undescribed genus including 14 undescribed species native primarily to Western Cape, Eastern Cape, but we also know two species from KwaZulu-Natal, (Borovec & Skuhrovec, 2017a). Both genera share not only short and wide rostrum but also rostrum continuous with head, short and slender antennae, tegmen with parameres and female sternite VIII with long and slender apodeme. In having free claws “*Trachyphloeosoma*” *brevicolle* belongs to a group of species and genera related to *Nama* Borovec & Meregalli, 2013, native to Western and Northern Cape and southern Namibia. “*Trachyphloeosoma*” *brevicolle* and its allies will be described in a forthcoming revision dedicated to all Trachyphloeini with free claws. However, both genera can be distinguished by the following characters:

***Afromuelleria* gen. n.** Claws connate. Frons squamose (Figs 7B, 10B, 11B, 12B). Rostrum at base wider than head including eyes (Figs 7B, 10B, 11B, 12B). Antennal scrobes in lateral view reaching eyes (Figs 7C, 10C, 11C, 12C). Head and rostrum when cleared of scales shiny, deeply and densely longitudinally striate along the whole length (Figs 1B, C). Pronotum in lateral part without projecting protu-

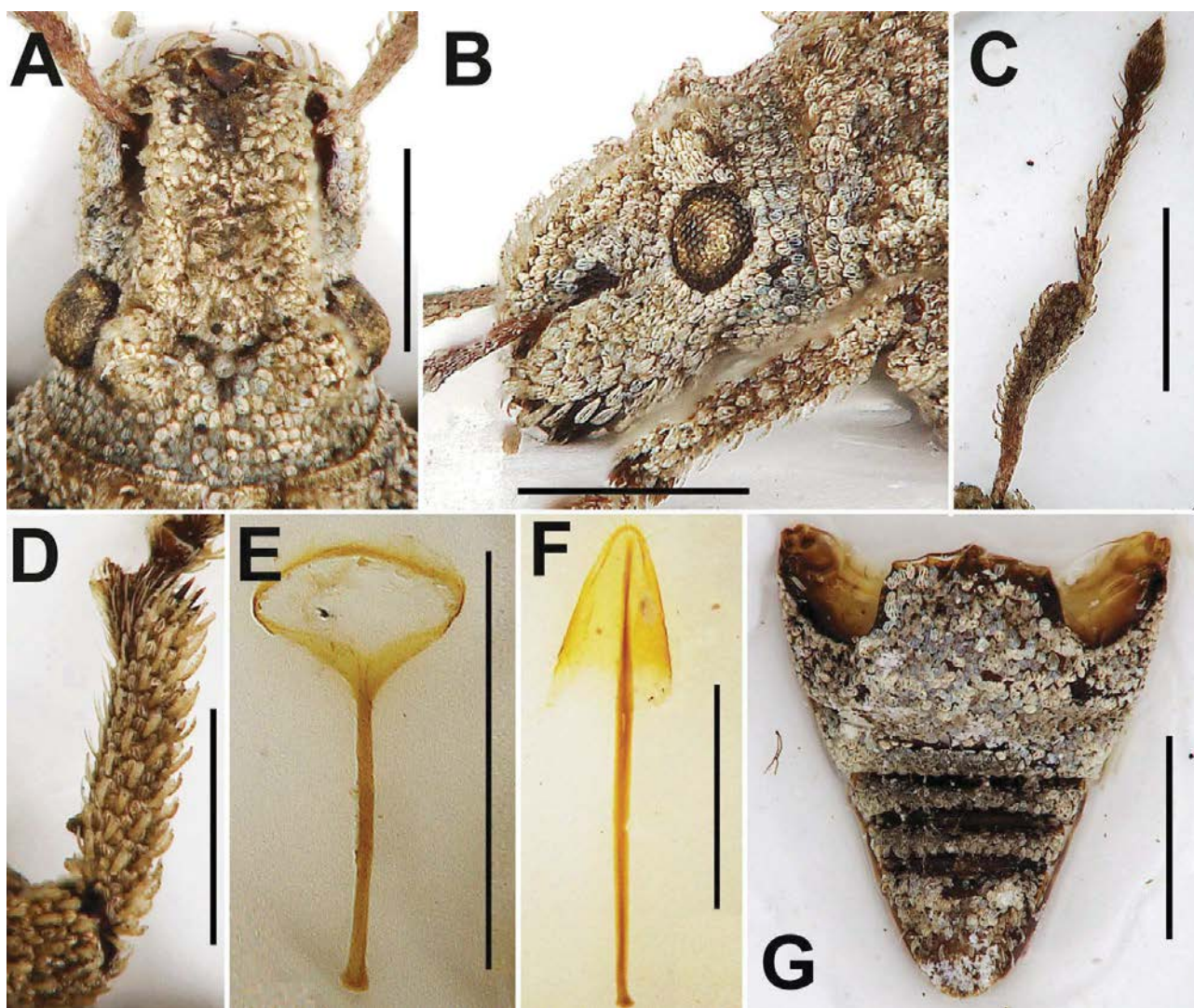


Fig. 6. *Glyptosomus costipennis* Schoenherr, 1847. A – rostrum, dorsal view, female; B – rostrum, lateral view, female; C – antenna, female; D – protibia, male; E – tegmen, male; F – sternite VIII, female; G – ventrites, female. Scale bars: 0.5 mm.

berances (Figs 7A, 10A, 11A, 12A). Tegmen with a tegminal plate (Figs 8E–H). Female sternite VIII with small, oval plate (Figs 9A–C).

“*Trachyphloeosoma*” *brevicollis* Voss and related species. Claws free. Frons glabrous (Fig. 4A). Rostrum at base narrower than head including eyes (Figs 4A, B). Antennal scrobes in lateral view separated from eyes by squamose stripe (Fig. 4B). Head and rostrum when cleared of scales, matt, densely finely irregularly punctate. Pronotum in lateral part with a different number of laterally projecting protuberances. Tegmen without a tegminal plate (Fig. 4E). Female sternite VIII with small, narrowly rhombus-shaped plate (Fig. 4E).

The presence of corbels on the metatibial apex is, in fact, the only character separating the Trachyphloeini and Embrithini Marshall, 1942. The mutual relationship between these two tribes is unclear at present because the separation of these two tribes is based on only one character, which appears to be unstable. This fact becomes more apparent when the fact that metatibial corbels have several different forms and could also be variable inside one tribe, for

example, Oosomini Lacordaire, 1863, which currently contains genera with different forms of corbels and even genera lacking corbels. On the other hand, the very speciose genus *Naupactus* Dejean, 1821 (Naupactini Gistel, 1856) from South America even contains species with and without corbels (Del Río et al., 2018). Clarification of this situation is not a topic of the present paper, but it is the reason why we compare the newly described genus with the tribe Embrithini. It includes also small terricolous forms, although most are still undescribed. Except for the metatibiae, it is only possible to compare *Afromuelleria* gen. n. with two embrithine genera, *Afrophloeus* Borovec & Oberprieler, 2013 and *Glyptosomus* Schoenherr, 1847, with which it shares mainly a densely squamose frons and short and robust protibiae. These two characters separate all three genera from other genera including small, terricolous entomines, such as *Phylomerinthus* Schoenherr, 1842 and *Lalagetes* Schoenherr, 1842. *Afromuelleria* gen. n. can be easily distinguished from *Afrophloeus* Borovec & Oberprieler by the following characters:

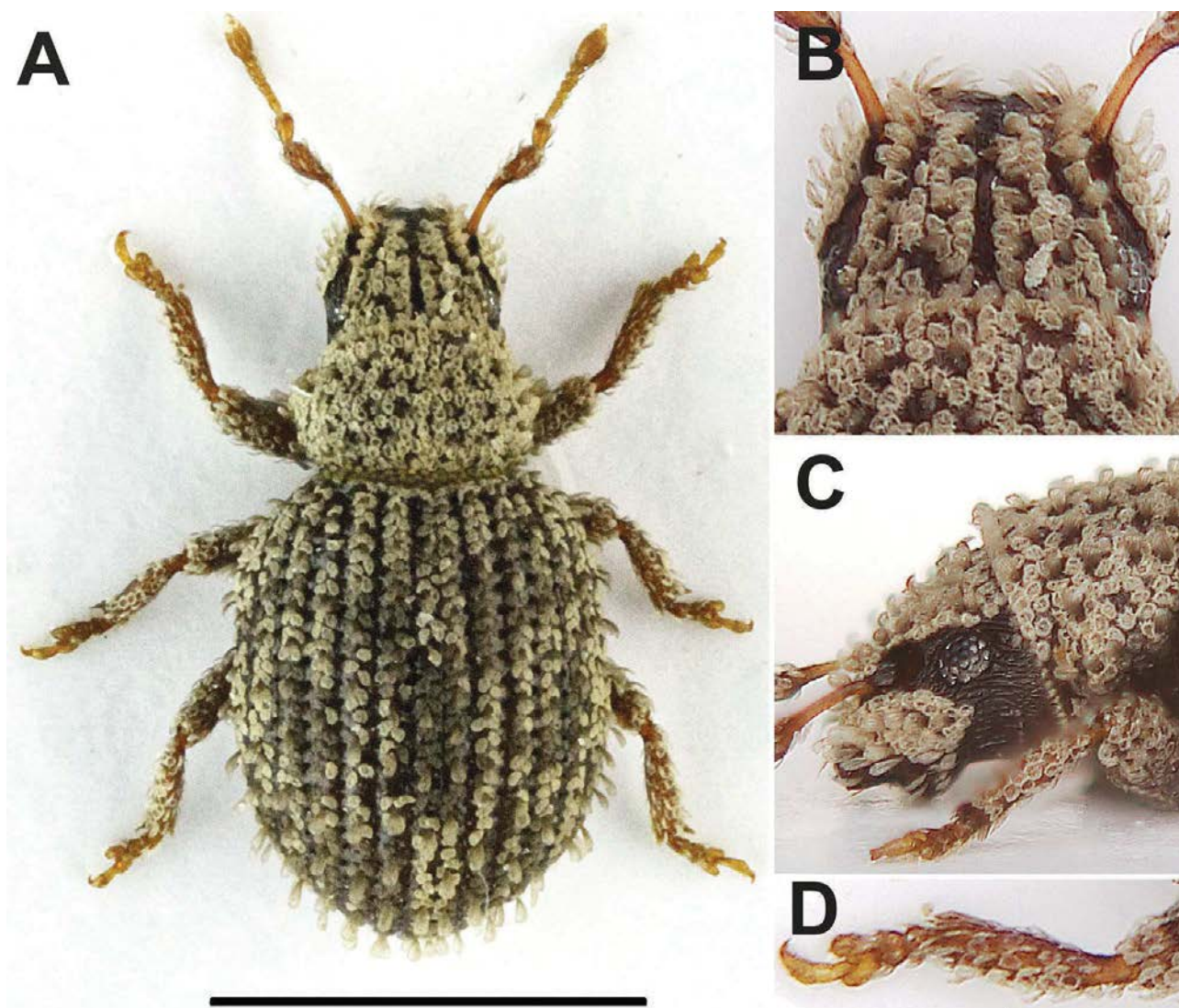


Fig. 7. *Afromuelleria awelani* sp. n. A – habitus, dorsal view, male; B – rostrum, male, dorsal view; C – rostrum, male, lateral view; D – protibia, male. Scale bar: 1 mm.

***Afromuelleria* gen. n.** Epifrons wide, as wide as space between anterior margins of eyes (Figs 7B, 10B, 11B, 12B). Rostrum continuous with head (Figs 7B, 10B, 11B, 12B). Antennal scrobes in lateral view reach eyes (Figs 7C, 10C, 11C, 12C). Antennae slender, funicle segments 3–7 isodiametric (Figs 7A, 10A, 11A, 12A). Protibiae fringed with equally sized bristles (Figs 7D, 10D, 11D, 12D). Metatibiae without corbel. Ventrites glabrous, ventrite 1 at middle slightly shorter than ventrite 2 (Fig. 1A). Tegmen with tegminal plate lengthened into parameres (Figs 8E–H). Female sternite VIII with apodeme terminating at basal margin of the small oval plate (Figs 9A–C).

***Afrophloeus* Borovec & Oberprieler.** Epifrons narrow, at base distinctly narrower than space between anterior margins of eyes (Fig. 5A). Rostrum separated from the head by transverse sulcus (Fig. 5A). Antennal scrobes in lateral view separated from eyes by squamose stripe (Fig. 5B). Antennae robust, funicle segments 3–7 distinctly wider than long (Fig. 5C). Protibiae armed with 7 sparse spines of different length and shape (Fig. 5D). Metatibiae with wide squamose corbel. Ventrites squamose, ventrite

1 at middle about as long as ventrites 2–4 combined (Fig. 5G). Tegmen without a tegminal plate and parameres (Fig. 5E). Female sternite VIII with apodeme terminating inside large, umbrella-shaped plate (Fig. 5F).

Afromuelleria gen. n. and *Glyptosomus* can be easily distinguished by the following characters:

***Afromuelleria* gen. n.** Rostrum continuous with the head (Figs 7B, 10B, 11B, 12B). Tibiae amucronate. Metatibiae without corbel. Abdominal ventrite 1 in middle slightly shorter than ventrite 2 (Fig. 1A). Suture between ventrites 1 and 2 distinctly sinuate (Fig. 1A). Tegmen incomplete expanded into a large membranous tegminal plate with parameres (Figs 8E–H). Female sternite VIII with long apodeme, 5.8–7.7× longer than plate; plate small, oval, apodeme terminating at the slender basal margin (Figs 9A–C).

***Glyptosomus* Schoenherr.** Rostrum distinctly separated from the head by narrow, well-edged, V-shaped stria (Figs 6A, B). Tibia mucronated (Fig. 6D). Metatibiae with squamose corbel. Abdominal ventrite 1 in middle somewhat longer than ventrites 2–4 combined (Fig. 6G). Suture be-

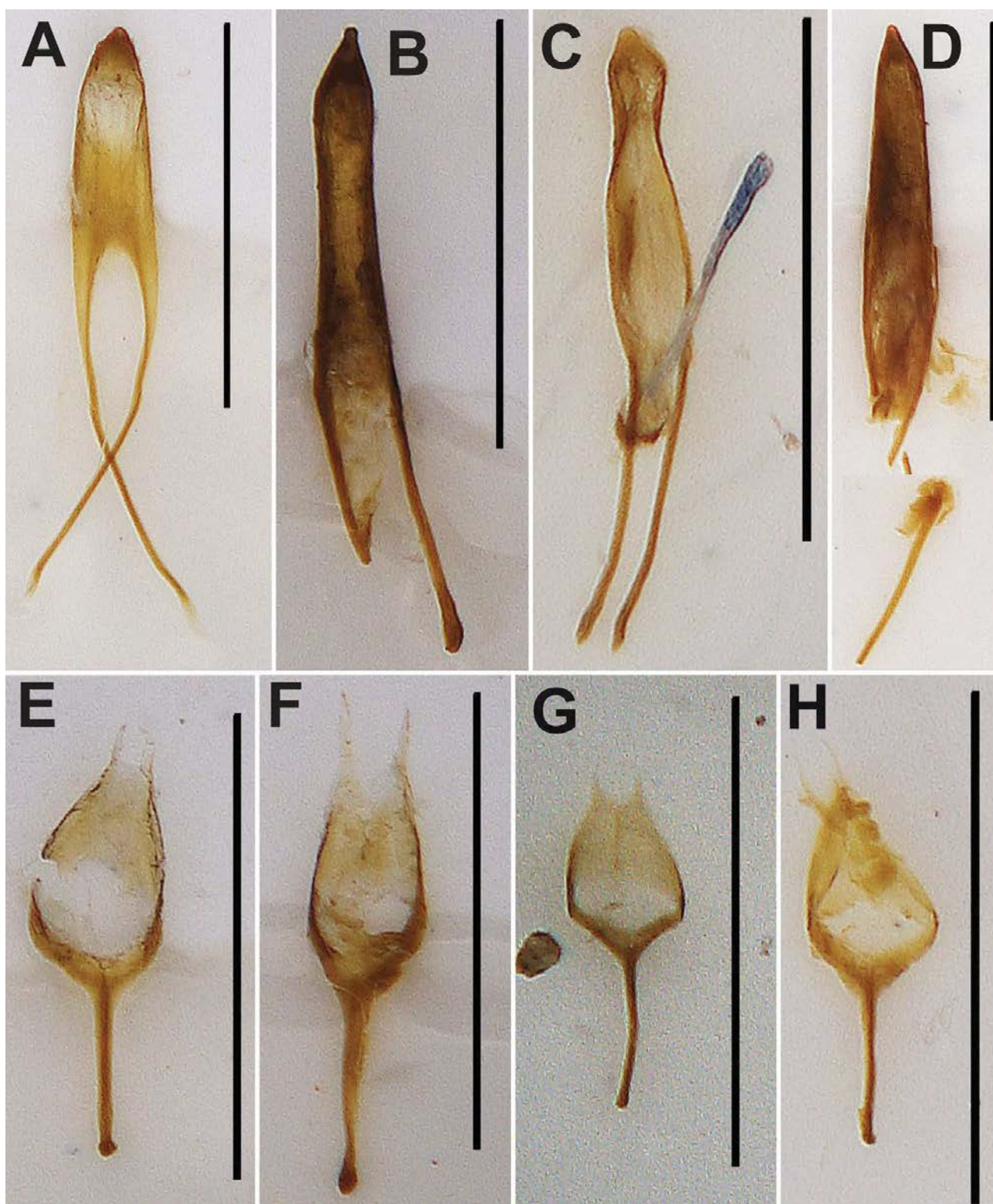


Fig. 8. Males terminalia. Aedeagus: A – *A. awelani* sp. n.; B – *A. baobab* sp. n.; C – *A. limpopo* sp. n.; D – *A. venda* sp. n.; and tegmen: E – *A. awelani* sp. n.; F – *A. baobab* sp. n.; G – *A. limpopo* sp. n.; H – *A. venda* sp. n. Scale bars: 0.5 mm.

tween ventrites 1 and 2 arched (Fig. 6G). Tegmen with a slender complete ring but without parameres (Fig. 6E). Female sternite VIII with apodeme 1.9–2.7× longer than the plate, terminating just inside plate, plate umbrella-shaped, with basal margin ill-defined (Fig. 6F).

***Afromuelleria awelani* sp. n.**

Figs 1A–C, 7A–D, 8A, E, 9A, D, F

ZooBank taxon LSID:

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Differential diagnosis. *A. awelani* sp. n. differs from all other species in this genus by its rostrum being wider

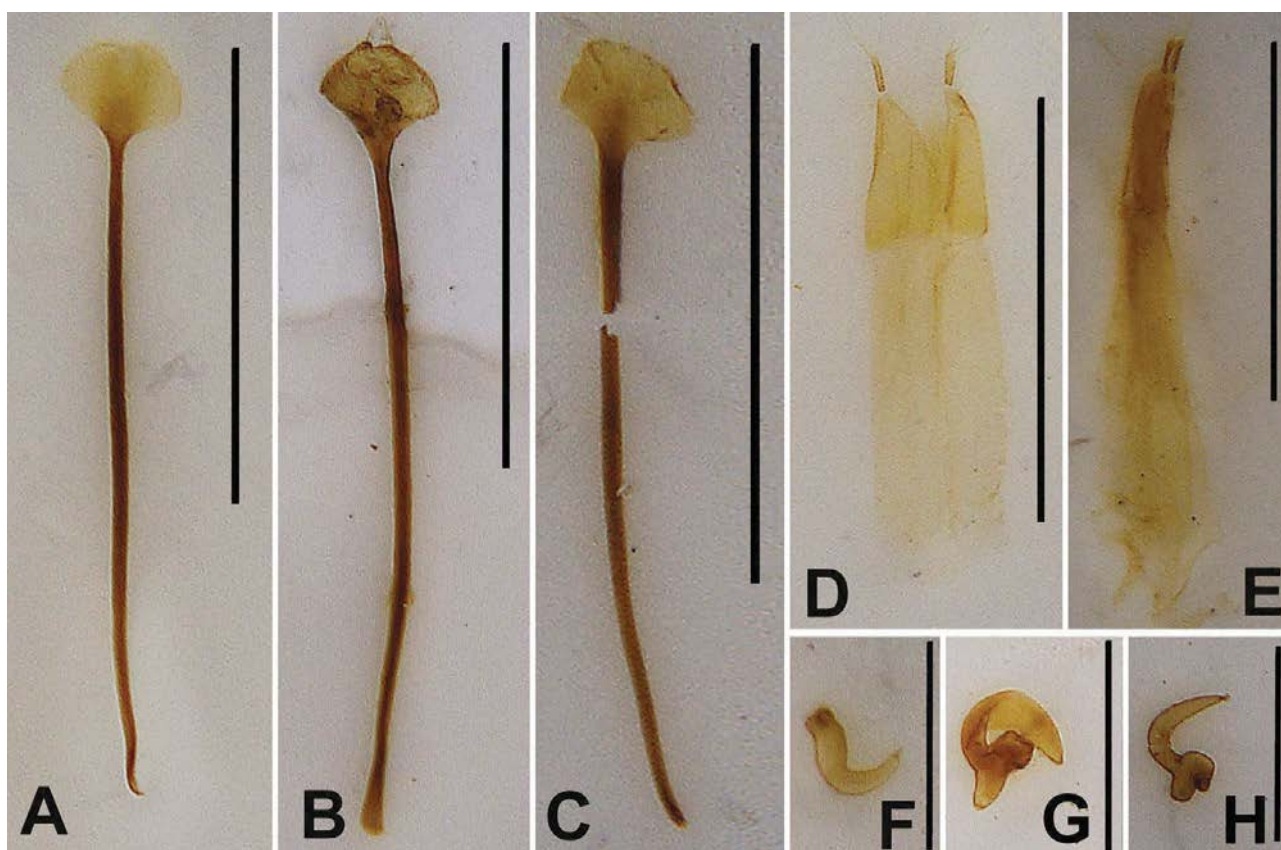


Fig. 9. Females terminalia. Sternite VIII: A – *A. awelani* sp. n.; B – *A. baobab* sp. n.; C – *A. limpopo* sp. n.; gonocoxite: D – *A. awelani* sp. n.; E – *A. baobab* sp. n.; and spermatheca: F – *A. awelani* sp. n.; G – *A. baobab* sp. n.; I – *A. limpopo* sp. n. Scale bars: 0.5 mm (A–E) and 0.25 mm (F–H).

shortly before base. In having a 7-segmented funicle, it is similar only to *A. baobab* sp. n., but is distinguishable from it by having a penis with short pointed tip and spermatheca with equally long and wide ramus and nodulus.

Description. Body length 1.59–1.84 mm, holotype 1.63 mm. Elytra with conspicuous row of spatulate, semierect setae, slightly longer than half the width of one interstria.

Rostrum (Figs 1B, C, 7B, C) 1.88–2.03× wider than long, short basal part enlarged anteriad, then evenly tapered apicad with straight sides, at base wider than head with eyes; eyes hardly projecting beyond outline in dorsal view.

Funicle 7-segmented (Fig. 7A); segment 1, 1.6–1.7× longer than wide, and 1.9–2.0× longer than segment 2, which is 1.5–1.6× longer than wide; segments 3–6 isodiametric; segment 7 1.3–1.4× wider than long; club 1.9× longer than wide, as wide as scape at apex.

Pronotum (Fig. 7A) 1.48–1.58× wider than long, elytra 1.27–1.31× longer than wide.

Tarsi with segment 2 1.2–1.3× wider than long; segment 3 1.2–1.3× wider than long and 1.2–1.3× wider than segment 2; onychium 1.2–1.3× longer than segment 3.

Male terminalia. Penis (Fig. 8A) in basal half subparallel-sided, in apical half evenly tapered apicad with slightly concave sides, tip bluntly pointed. Tegminal plate short, parameres about as long as half of diameter of ring (Fig. 8E).

Female terminalia. Spermatheca (Fig. 9F) with ramus and nodulus equally large and long, parallel-sided, rounded.

Type material. Holotype: ♂, “RSA [South Africa] Limpopo, Awelani lodge E of Masisi, 22°26.047’ S, 30°56.495’ E, 401 m, 9.xii.2017, R. Borovec lgt.” (TMSA). Paratypes: 16♂♀, same data as holotype (RBSC, JSPC, NHMUK, NMPC, MMTI); 1 spec., “S. Afr. [South Africa]; Limpopo Prov., Awelani lodge; E of Masisi; 22.26S–30.56E/10.12.2017; E-Y: 4007, bushveld, leg. Ruth Müller” (TMSA); 14 spec., “S. Afr. [South Africa]; Limpopo Prov., Awelani lodge, 378 m, 22.25S–30.57E/31.1.2017 E-Y: 3992, sifting, leg. Ruth Müller” (TMSA).

Type locality. South Africa, Limpopo, Awelani lodge E of Masisi, 22°26.047’ S, 30°56.495’ E.

Derivation of name. Patronymic, dedicated to the name of the locality, where the species was collected.

***Afromuelleria baobab* sp. n.**

Figs 8B, F, 9B, E, G, 10A–D

ZooBank taxon LSID:

76611AF6-CF15-45A3-BC57-ABFD4E780792

Differential diagnosis. This new species is similar to *A. awelani* sp. n. in its 7-segmented funicle, but distinguishable from it by having a penis with long tip with concave sides and spermatheca with long ramus and short angular nodulus on its opposite side.

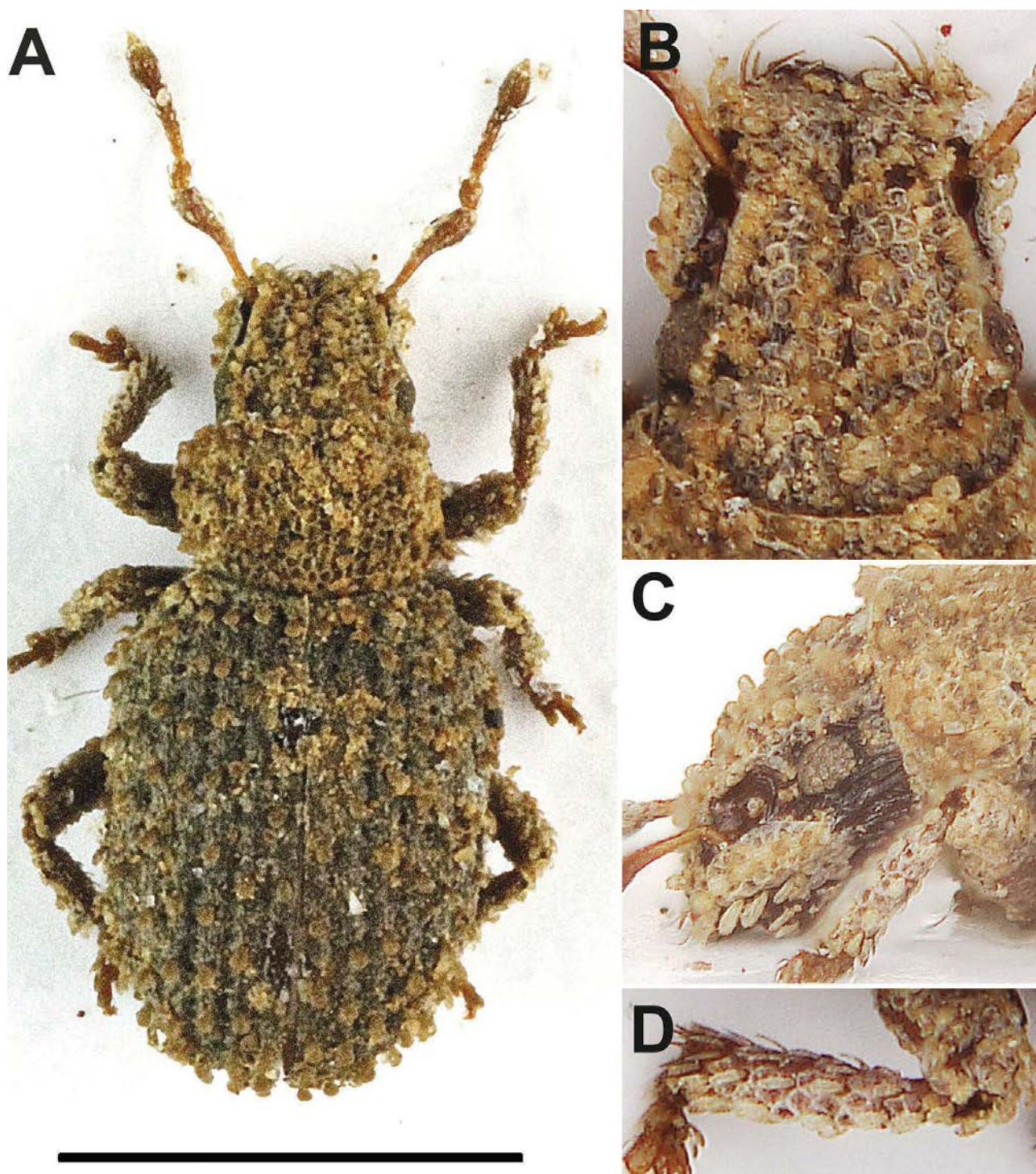


Fig. 10. *Afromuelleria baobab* sp. n. A – habitus, dorsal view, male; B – rostrum, male, dorsal view; C – rostrum, male, lateral view; D – protibia, male. Scale bar: 1 mm.

Description. Body length 1.66–2.14 mm, holotype 1.66 mm. Elytra with conspicuous row of spatulate, semierect setae, slightly longer than half the width of one interstria.

Rostrum (Figs 10B, C) 1.53–1.67× wider than long, widest at base, evenly tapered apicad with straight sides, at base as wide as head with eyes; eyes weakly projecting beyond outline in dorsal view.

Funicle 7-segmented (Fig. 10A); segment 1 1.7–1.8× longer than wide and 1.9–2.0× longer than segment 2, which is 1.5× longer than wide; segments 3–6 isodiamet-

ric; segment 7 1.1–1.2× wider than long; club twice as long as wide, equally wide as scape at apex.

Pronotum (Fig. 10A) 1.46–1.54× wider than long; elytra 1.32–1.40× longer than wide.

Tarsi with segment 2 1.3× wider than long; segment 3 1.3–1.4× wider than long and 1.3× wider than segment 2; onychium 1.4–1.5× longer than segment 3.

Male terminalia. Penis (Fig. 8B) moderately long and slender, widest at base, with slightly concave sides along the whole length, apex distinctly tapered with elongated

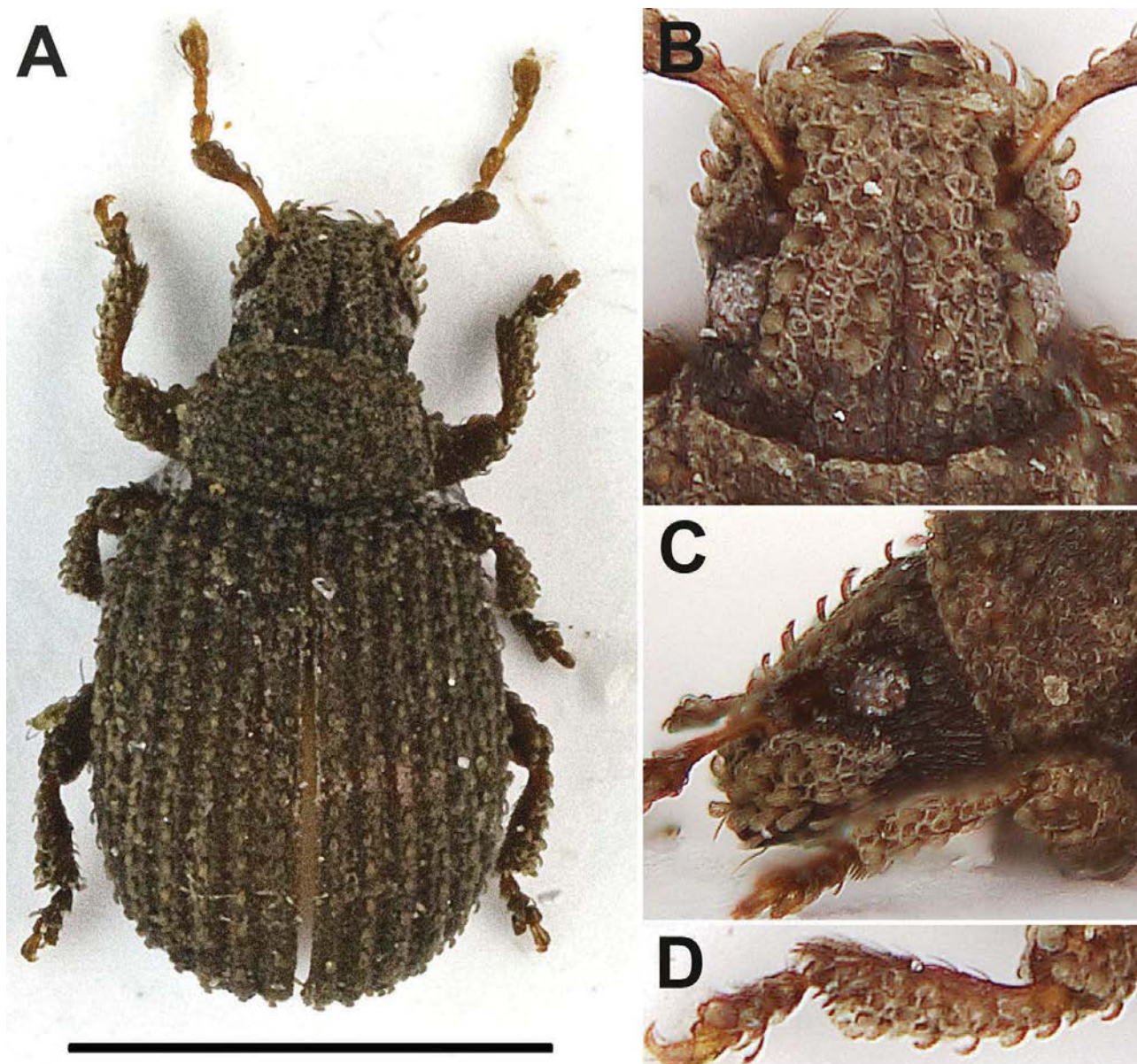


Fig. 11. *Afromuelleria limpopo* sp. n. A – habitus, dorsal view, male; B – rostrum, male, dorsal view; C – rostrum, male, lateral view; D – protibia, male. Scale bar: 1 mm.

tip with concave sides. Ring of tegmen slender (Fig. 8F), tegminal plate and parameres long, almost as long as diameter of ring.

Female terminalia. Spermatheca (Fig. 9G) with ramus longer than wide, tapered apicad and nodulus short, angular, staying on its opposite side.

Type material. Holotype: ♂, “S. Africa, Tvl. [South Africa, Transvaal, Limpopo now], Tshipise, SE 2230 Ca, 3 Aug. 1982, C.M. Engelbrecht/NMBH 11733” (BMSA). Paratypes: 2♂, 1♀, same data as holotype (BMSA).

Additional material examined. 1♀, “S. Africa, TVL [South Africa, Transvaal, Limpopo now], Messina, 35 km on Pontdrift Rd., SE 2229 Bc, 4 Aug. 1982, C.M. Engelbrecht/NMBH 13111” (BMSA).

Type locality. South Africa, Limpopo, Tshipise.

Derivation of name. The name *baobab* is derived from the most typical tree in the northern Limpopo, Baobab (*Adansonia digitata* Linnaeus, 1759, Malvaceae).

Remarks. One female from Messina was not listed among type specimens due to its more slender pronotum and nodulus of spermatheca rounded.

***Afromuelleria limpopo* sp. n.**

Figs 8C, G, 9C, H, 11A–D

ZooBank taxon LSID:

A5815BF2-7B20-4BC5-9000-B62CBAA0C778

Differential diagnosis. 5-segmented funicle and elytra with short, inconspicuous, not very prominent semiappressed setae make this new species easily distinguishable from all other species in the genus.

Description. Body length 1.51–1.81 mm, holotype 1.51 mm. Elytra with inconspicuous row of semiappressed, slender, subspatulate setae, as long as half the width of one interstria.

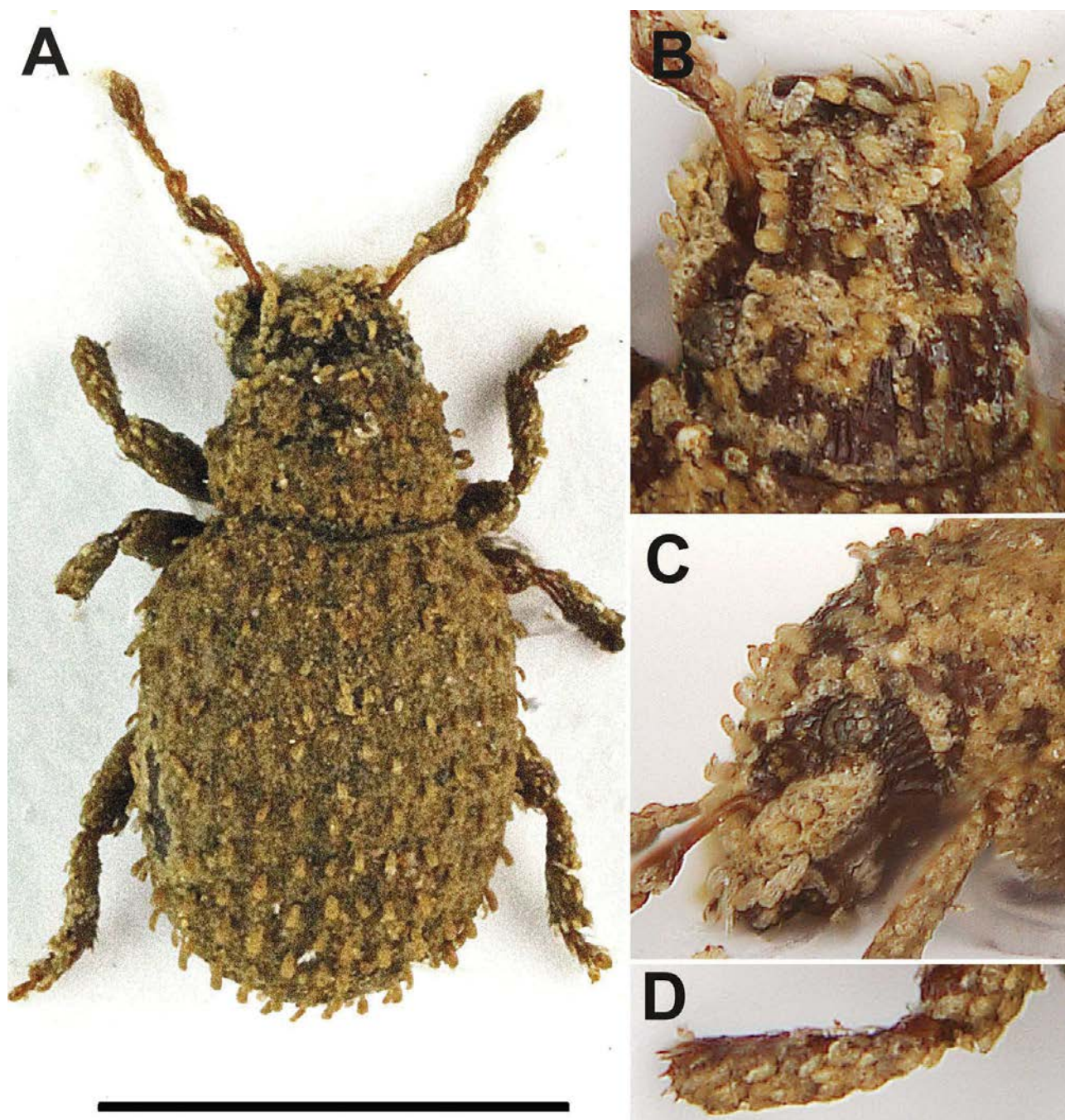


Fig. 12. *Afromuelleria venda* sp. n. A – habitus, dorsal view, male; B – rostrum, male, dorsal view; C – rostrum, male, lateral view; D – protibia, male. Scale bar: 1 mm.

Rostrum (Figs 11B, C) 1.73–1.81× wider than long, short basal part enlarged anteriad, then evenly tapered apicad with straight sides, at base wider than head with eyes; eyes slightly projecting beyond outline in dorsal view.

Funicle 5-segmented (Fig. 11A); segment 1 1.3–1.4× longer than wide and 1.6–1.7× longer than segment 2, which is 1.4–1.5× longer than wide; segments 3 and 4 1.1× wider than long; segment 5 1.4–1.5× wider than long; clubs 1.9–2.0× longer than wide, as wide as scape at apex.

Pronotum (Fig. 11A) 1.61–1.76× wider than long; elytra 1.24–1.33× longer than wide.

Tarsi with segment 2 1.4× wider than long; segment 3 1.2–1.3× wider than long and 1.3× wider than segment 2; onychium 1.2–1.3× longer than segment 3.

Male terminalia. Penis (Fig. 8C) widest at base, at midlength distinctly constricted with concave sides, apex subtriangular, tip narrowly rounded. Parameres about as long as half of diameter of ring (Fig. 8G).

Female terminalia. Spermatheca (Fig. 9I) parallel-sided, ramus twice as long and twice as wide as nodulus.

Type material. Holotype: ♂, “S. Afr. [South Africa, Limpopo]; Northern Prov., Amatola, Scott farm, 22.56S–29.23E/26.1.1998: E-Y: 3312, ground traps, leg. R. Müller / ground traps with farm.

banana bait” (TMSA). Paratypes: 1♂, 1♀, same data as holotype (TMSA).

Type locality. South Africa, Limpopo, Amatola, Scott farm, 22°56'S, 29°23'E.

Derivation of name. Patronymic, dedicated to the province, where this genus and this newly described species were collected.

Afromuelleria venda sp. n.

Figs 8D, H, 12A–D

ZooBank taxon LSID:

B46F17FD-C87C-450D-9DF9-FC70E9BA934D

Differential diagnosis. *A. venda* sp. n. is easily separated and different from all others by having a 6-segmented funicle.

Description. Body length 1.47 mm. Elytra with conspicuous row of slender subspatulate, semierect setae, slightly longer than half the width of one interstria.

Rostrum (Figs 12B, C) 1.86× wider than long, widest at base, evenly tapered apicad with straight sides, at base as wide as head with eyes; eyes slightly projecting beyond outline in dorsal view.

Funicle 6-segmented (Fig. 12A); segment 1 1.8× longer than wide and 2.2× longer than segment 2, which is 1.4× longer than wide; segment 3 1.2× longer than wide; segment 4 1.1× longer than wide; segment 5 isodiametric; segment 6 1.2× wider than long; club 1.9× longer than wide, as wide as scape at apex.

Pronotum (Fig. 12A) 1.57× wider than long; elytra 1.31× longer than wide.

Tarsi with segment 2 1.3–1.4× wider than long; segment 3 1.4–1.5× wider than long and 1.2–1.3× wider than segment 2; onychium 1.2–1.3× longer than segment 3.

Male terminalia. Penis (Fig. 8D) widest at base, evenly tapered apicad, apex subtriangular. Ring of tegmen slender (Fig. 8H), tegminal plate long, almost as long as diameter of ring, parameres shorter than plate.

Female terminalia. Unknown.

Type material. Holotype: 1♂, “S. Africa, Tvl. [South Africa, Transvaal, Limpopo now], Mopane, Se2229 Db, 3 Aug. 1982, C. M. Engelbrecht / NMBH 11725” (BMSA).

Type locality. South Africa, Limpopo, Mopane.

Derivation of name. The name *venda* is dedicated to the Venda people, Southern African people living mostly near South African–Zimbabwean border, in the same region as this genus and newly described species occur.

Key to the species of *Afromuelleria* gen. n.

- 1 Funicle 5-segmented, elytra with inconspicuous row of semi-appressed setae, as long as half width of one interstria (Fig. 11A). Penis distinctly constricted at midlength (Fig. 8C) *A. limpopo* sp. n.
- Funicle 6- or 7-segmented, elytra with conspicuous row of semierect setae, slightly longer than half width of one interstria (Figs 7A, 10A, 12A). Penis not constricted at most with slightly concave sides (Figs 8A, B, D) 2
- 2 Funicle 6-segmented, elytra with raised slender, subspatulate setae (Fig. 12A) *A. venda* sp. n.
- Funicle 7-segmented, elytra with raised wide, spatulate setae (Figs 7A, 10A) 3

- 3 Rostrum widest before base, wider than head with eyes (Fig. 7B). Eyes hardly projecting beyond outline in dorsal view (Fig. 7A). Penis with shortly pointed tip (Fig. 8A). Spermatheca with ramus and nodulus equally large and long, and parallel to each other (Fig. 9F) *A. awelani* sp. n.
- Rostrum widest at base, as wide as head with eyes, latter slightly projecting beyond outline in dorsal view (Fig. 10A). Penis with tip distinctly elongate with concave sides (Fig. 8B). Spermatheca with long ramus and nodulus short, angular, on its opposite side (Fig. 9G) *A. baobab* sp. n.

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Oxymorus (Coleoptera: Curculionidae: Entiminae: Oosomini), a new genus with nine new species from South Africa

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Key words. Coleoptera, Curculionidae, Entiminae, Oosomini, taxonomy, new genus, new species, South Africa

Abstract. A new genus *Oxymorus* Borovec & Meregalli gen. n., belonging to the tribe Oosomini Lacordaire, 1863 of the curculionid subfamily Entiminae, is described. It includes nine new species, all from South Africa: *Oxymorus uitkyk* sp. n., type species, *O. antennalis* sp. n., *O. johnprinei* sp. n., *O. minor* sp. n., *O. obesus* sp. n., *O. oculatus* sp. n., *O. rikaie* sp. n., *O. strictifrons* sp. n. and *O. sulcaticollis* sp. n. All species are illustrated and keyed.

ZooBank Article Registration: <http://zoobank.org/urn:lsid:zoobank.org:pub:FFC0DCCE-5C14-4C68-9F46-A92C11AAFDF4>

INTRODUCTION

The tribe Oosomini was named by Lacordaire (1863), who established nine groups for his “Otiorynchides”. The “Group Oosomides”, with 12 genera, was placed among the “Otiorynchides” with corbels “caverneuses”, that is, having a true corbel. Marshall (1942) used not only the shape of the antennal sockets and the metatibial corbels and claws for classifying the Afrotropical broad-nosed weevil genera, but also the chaetotaxy on the mandibles. He split Entiminae with ‘otiorhynchine’ type of antennal sockets into two groups: (1) tribes with three setae on mandibles and (2) tribes with mandible bearing numerous setae, rarely only four. The 12 genera of Lacordaire’s Oosomides were then split into two tribes: Oosomini, for genera with free claws, and the newly described tribe Embrithini Marshall, 1942, for genera with connate claws (Marshall, 1942). The tribe Embrithini was more precisely re-defined recently by Borovec & Oberprieler (2013). In contrast, no accurate definition of Oosomini is available, since in Marshall’s concept they vary greatly in several of the characters usually applied to delimit a tribe. The tribe, as currently considered (Alonso-Zarazaga & Lyal 1999) and later reduced by transferring six genera to the tribe Embrithini Marshall, 1942 (Borovec & Oberprieler 2013), is composed of several genera from the western and eastern parts of South Africa, but it lacks any modern taxonomic analysis. Therefore, its definition is rather vague and incomplete, and part of the genera now included might

have to be removed when phylogenetically analysed. This paper presents a better knowledge of the tribe, the description of a new genus and nine closely related new species, morphologically sister to the type genus *Oosomus*.

MATERIAL AND METHODS

Some of the specimens examined were found by the authors in South Africa, usually collected by net sweeping or umbrella beating of fynbos vegetation. Other specimens were discovered in large collections of unidentified weevils conserved in museums and institutions in South Africa.

Body length of all specimens was measured in dorsal view from anterior border of eyes to apex of elytra, excluding rostrum. Length/width ratio of rostrum was measured as length between base of rostrum and base of mandibles versus width at base of rostrum. Length/width ratios of pronotum, elytra, antennal and tarsal segments were taken at the maximum length and width of the respective parts in dorsal view. Genitalia were cleared in 10% KOH and carefully dissected; female genitalia were embedded in Solakryl BMX (epoxy resin soluble in toluene; Medika, Prague), male genitalia were mounted dry on the same card as the respective specimen. Terminology of rostrum and genitalia follows Oberprieler et al. (2014). Photographs were taken using a Nikon P 6000 digital camera mounted on a Wild MDG17 microscope, combining images in stacks with Zerene Stacker. All images were cleaned and enhanced as necessary in Adobe Photoshop CS3.

This study was carried out with the following research permits: SANParks. Permit released September 7, 2012, unnumbered, renewed; Cape Nature: AAA007-00085-0056. SANParks. Permit number MERM/AGR/035-2012/2017-2022/V1; Cape Nature: AAA041-00158-0056; Cape Nature: CN44-28-11324.

Labels on the specimens are reported verbatim; additions by the authors are in square brackets.

Specimens are deposited in the following museums and private collections: BMNH – Natural History Museum, London, United Kingdom [formerly British Museum (Natural History)], Maxwell Barclay; MMTI – Massimo Meregalli collection, Torino, Italy; NMBH – National Museum, Bloemfontein, South Africa, Burgert Muller; RBSC – Roman Borovec collection, Sloupno, Czech Republic; SANC – National Collection of Insects, Pretoria, South Africa, Riaan Stals; TMSA – Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa, Ruth Müller.

TAXONOMY

Genus *Oxymorus* gen. n.

Figs 1–11

ZooBank taxon LSID:

3F7257A4-35E7-4263-8AF7-EF4928DBB015

Type species. *Oxymorus uitkyk* Borovec & Meregalli sp. n., here designated.

Diagnosis. Small to medium sized Oosomini, 2.6–6.9 mm long; rostrum long, in majority of species distinctly longer than wide, with usually slightly concave sides, posteriorly separated from head by shallow depression; epifrons short and narrow, distinctly carinate only in middle third of rostrum; frons large, glabrous, posteriorly not separated from epifrons; epistome not developed; antennal sockets dorsally placed, in profile short, reaching dorsal border of rostrum; short basal part of pronotum curved ventrally, not forming a clear margin; protibiae narrowly conspicuously produced externally; metatibiae amucronate; claws free; suture between ventrites 1 and 2 weakly sinuose; sternite VIII with plate with membranous posterior margin; gonocoxites long elliptical, with styli microscopic, subapical.

Description. Body length 2.6–6.9 mm. Body integument brownish to dark brownish, antennae and legs paler, monochromatic. Dorsal and ventral side of body densely covered by appressed rounded squamae (only one species glabrous), only rostrum excepting basal part glabrous, antennal funicles with clubs and tarsi setose. Dorsal side of body with inconspicuous, mostly short semi-appressed to semi-erect piliform setae, forming regular rows on elytral interstriae.

Head wide and short, slightly enlarged posteriorly; vertex flat, as wide as base of rostrum; ventrally smooth, only sparsely squamose. Eyes medium sized, sub dorsal, slightly protruding above outline of head; in profile sub circular, almost reaching dorsal border of head. Rostrum (Figs 1D, E, 2D, F, 3D, E, 4D, E, 5D, E, 6D, E, 7E, G, 8D, F, 9C, E) moderately long, 1.9–2.4× longer than wide, only in some species shorter, 1.3–1.4× longer than wide, in one species as long as wide, widest at base, narrows slightly apically, usually with slightly concave sides, slightly enlarged around antennal insertion; in profile slightly regularly curved, separated from head by shallow, occasionally deep, depression with ill-defined borders. Epifrons short and narrow, distinctly carinate only in middle third of rostrum, carina occupying from one third to one half of

rostrum width, subparallel-sided or triangular and tapered posteriorly. Frons large, glabrous, smooth, only finely punctured, posteriorly not separated from epifrons, with numerous prominent fine setae on lateral parts. Epistome not developed. Antennal sockets dorsally placed, dorsally fully visible, forming elongated fossae or are narrowly reniform; in profile short, dorsal border reaching dorsal border of rostrum, regularly curved, ventral border distinctly shorter than dorsal border, curved, forming a glabrous furrow shortly continuing anteriorly from insertion and further posteriorly, slightly enlarged posteriorly and disappearing well before the eyes. Mandibles small, projecting anteriorly, lacking scales, trisetose. Subgena sparsely setose. Prementum with two short fine setae.

Antennae (Figs 1A, C, 2A, C, 3A, C, 4A, H, 5A, C, 6A, C, 7A, C, 8A, C, 9A, D) slender; scape reaching anterior border of pronotum in repose, longer than funicle; funicle 7-segmented, segments 1 and 2 conical, segments 3–7 as long as wide to slightly transverse, seldom distinctly transverse; club oval.

Pronotum (Figs 1A, F, 2A, E, 3A, E, 4A, E, 5A, G, 6A, H, 7A, F, 8A, E, 9A, F) distinctly domed, widest behind midlength, sides distinctly rounded, base arched; short basal part of pronotum curved ventrally and covered in rest position by basal part of elytra, not forming a clear margin, covered by half-sized scales, different from scales on disc. Anterior border laterally straight without ocular lobes or vibrissae, obliquely directed posteriorly. Procoxal cavities contiguous, round, moderately large, placed nearer to anterior border of pronotum, occupying majority of space on short ventral part of pronotum.

Scutellar shield extremely small, hardly visible.

Elytra (Figs 1A, 2A, 3A, 4A, 5A, 6A, 7A, 8A, 9A) oval to elongate oval, at base slightly wider than base of pronotum, lacking humeral calli; base arched; slope of declivity overhanging apices of elytra in dorsal view. Elytra 10-striate; striae punctate, punctures hidden under vestiture, interstriae wide and flat. Hindwings missing. Mesocoxae semiglobular, mesosternal process extremely slender. Metacoxae transverse, metaventral process obtuse or slightly arrow-shaped, distinctly narrower than transverse diameter of metacoxa. Tergite VII and VIII in females weakly sclerotized, large, subtriangular; in males tergite VIII weakly sclerotized, very short and wide, tergite VIII bowl-shaped, apically rounded, well sclerotized.

Legs (Figs 1A, 2A, 3A, 4A, 5A, 6A, 7A, 8A, 9A) robust. Femora swollen, unarmed. Trochanters with one long seta. Protibiae (Figs 1I, 2H, 3G, 4C, 5F, 6F, 7I, 8G, 9L) short and robust, narrowly conspicuously produced externally in a very narrow long lobe, only in one species almost equally enlarged internally and externally, apically truncated or rounded, fringed with very short bristles or spines, with small unobtrusive mucro, lacking spur; inner side in majority of species slightly denticulate; mesotibiae weakly, metatibiae distinctly enlarged externally, mesotibiae shortly mucronate, metatibiae amucronate; apical surface of metatibiae glabrous, deepened, externally fringed with very short brownish spines. Tarsi (Figs 1G, 2J, 3J, 4C,

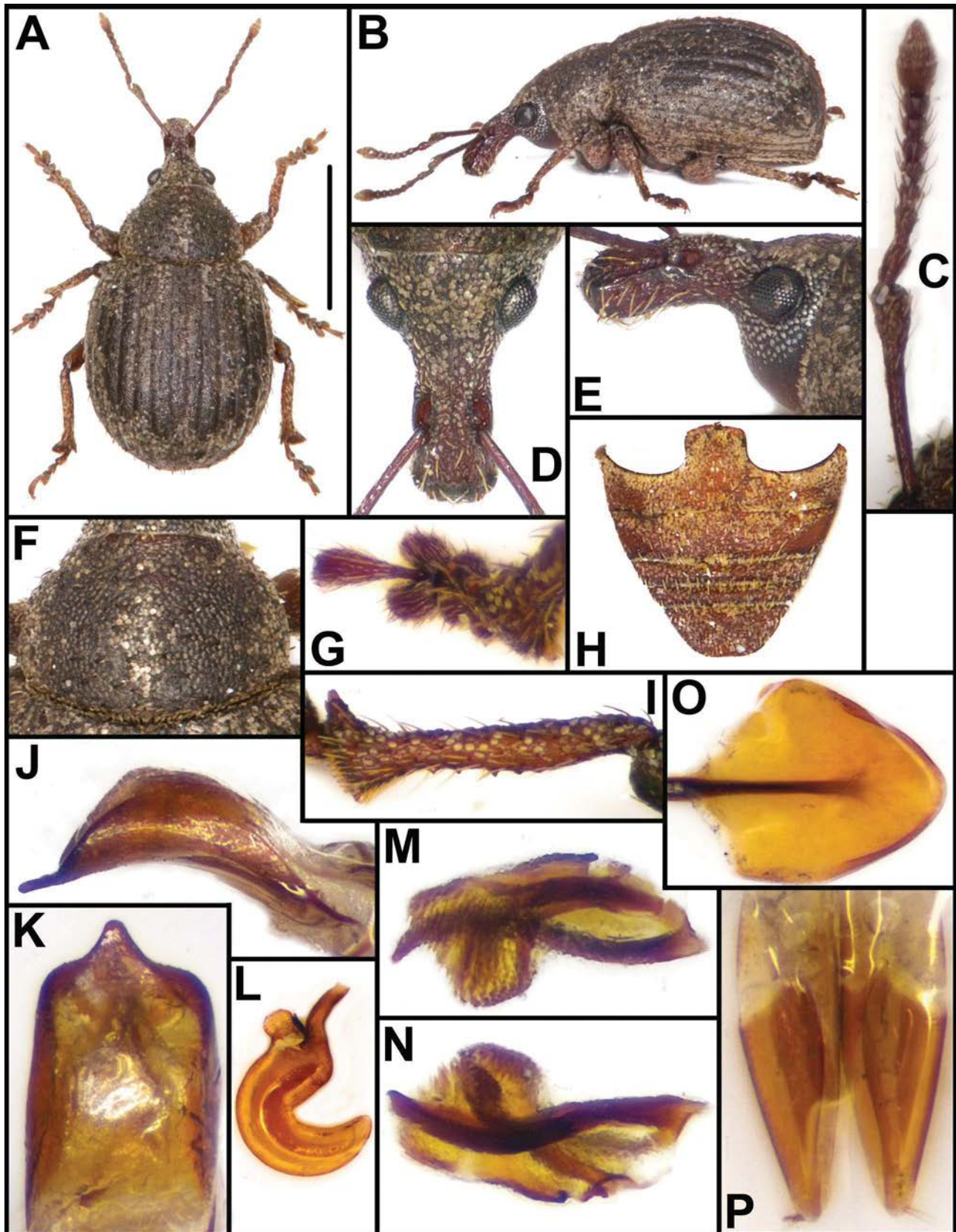


Fig. 1. *Oxymorus uitkyk* sp. n., paratypes, male (A–K, M, N) and female (L, O, P): A – habitus, dorsal view; B – habitus, lateral view; C – antenna; D – head with rostrum, dorsal view; E – head with rostrum, lateral view; F – pronotum; G – tarsus; H – abdominal ventrites; I – right protibia; J – penis, lateral view; K – penis, dorsal view; L – spermatheca; M – sclerites of endophallus, dorsal view; N – sclerites of endophallus, lateral view; O – plate of female sternite VIII; P – gonocoxites.

5F, 6F, 7J, 8H, 9K) slender, with segment 1 slightly shorter than 2+3, segment 3 bilobed, distinctly wider than segment 1 or 2; onychium shorter or longer than segment 3; claws free, somewhat divaricate.

Ventrites (Figs 1H, 2I, 4I, 5H, 6I, 7H, 9G) subtriangular; ventrite 1 at middle slightly longer, behind metacoxa as long as ventrite 2; ventrite 2 as long as ventrites 3 and 4 combined; ventrite 5 in males shorter, apically obtusely truncated, in females longer, apically subtriangular. Suture between ventrites 1 and 2 fine, weakly sinuose, between the other sutures wide, deep and straight.

Male terminalia. Penis (Figs 1J, K, 2K, L, 4J, K, 6J, K, 8J, K) rather short, well sclerotized, telomeres 1.1–1.8× longer than body of penis; endophallus with 1–3 long, slender, pointed, often curved sclerites. Tegmen (Fig. 6M) with slender complete ring with two short parameres, separated at base, manubrium as long as diameter of ring or only slightly longer. Sternite IX moderately elongate, anteriorly curved and tapered, posteriorly with fused short basal arms; hemisternites comma-shaped, curved.

Female terminalia. Sternite VIII (Figs 10, 3H, 5I, 7K, N, 8M, 9I) with short and moderately robust apodeme, widest at midlength and terminating on apical part of plate, with short transverse anterior bar; plate umbrella-shaped, 0.3–0.4× as long as length of entire sternite, with slender anterior margin apically fringed with sparse fine and short setae and ill-defined, membranous posterior margin. Gonocoxites (Figs 1P, 3I, 5J, 7M, 8L, 9H) elongate, elliptical, well sclerotized, narrowly rounded apically, styli microscopic, subapical, not projecting from gonocoxites, with several fine, laterally prominent setae. Spermatheca (Figs 1L, 3K, 5K, 7L, 8I, 9J) with rounded corpus and well developed ramus and collum, with shapes differing among the species.

Sexual dimorphism. Sexes externally indistinguishable except for slight differences in shape of ventrite 5.

Derivation of name. The genus takes its name from the contradiction of being “short-nosed weevils” (the common definition of Entiminae) having a long nose. It is derived from the Greek ὄξυς (oxýs), “sharp, keen, acute” and μωρός (mōros), “dull, stupid, foolish”, a rhetorical figure conjoining words or terms apparently contradictory. Gender masculine.

Distribution. The genus is known only from South Africa, Western Cape province.

Biology. All the species in the new genus seem to inhabit fynbos vegetation, i.e., evergreen, hard-leaved shrub land occurring on nutrient-poor soils, associated with grass-like perennials (Manning, 2018), restricted to a relatively narrow strip along the coast in the south western part of Western Cape, between Vanrhynsdorp in the north and Port Elizabeth in the east. The species that were collected by the authors were sampled in the evening and at night by net sweeping or tree beating in fynbos in which the dominant vegetation is Restionaceae and shrubs. The specimens that were examined in museum collections were collected using pitfall traps (1 specimen, casually), by sweeping in flower meadows (1 specimen), or found in humus under bushes (1 species, 8 specimens).

Taxonomic remarks. The new genus belongs to the tribe Oosomini, based on its free claws (this character distinguishes it from Embrithini Marshall, 1942), trisetose mandibles (distinguishing it from Otorhynchini Schoenherr, 1826), dorsally placed antennal sockets (distinguishing it from Brachyderini Schoenherr, 1826 and Sciaphilini Sharp, 1891), lack of ocular lobes and vibrissae (distinguishing it from Tanyrhynchini Schoenherr, 1826 and Tanymecini Lacordaire, 1863) and lack of a protruding humeral callus (distinguishing it from Polydrusini Schoenherr, 1823). Within the Oosomini, *Oxymorus* shares several characters with the nominotypical genus *Oosomus*: rostrum longer than wide, slightly widened apically and with sides rounded around antennal sockets, posteriorly continuous with head, epifrons very narrow, distinctly carinate only between antennal sockets, carina poorly defined posteriorly, frons large, glabrous, not carinate posteriorly, epistome not developed, antennal sockets dorsally placed, in profile very short, disappearing well before the eyes, metatibiae with apical surface glabrous and wide, suture between ventrites 1 and 2 sinuose. *Oxymorus* differs from *Oosomus* in the following characters: the short basal part of pronotum does not form a clear margin, but it is curved ventrally and covered in resting position by the basal margin of the elytra, the visible part of pronotum is covered by appressed scales similar to those on the elytra, the narrow hidden base is covered by half-sized, reciprocally isolated scales (in *Oosomus* the basal part of pronotum forms a clear sharp margin, lacking a hidden part); the female sternite VIII has a large, longer than wide, umbrella-shaped plate, with poorly delimited posterior border (vs. plate small, with well visible basal margin) and the gonocoxites with short, microscopic, almost invisible, subapical styli and a tuft of setae directed laterally (vs. short but visible apical styli with a tuft of setae directed apically).

Oxymorus uitkyk sp. n.

Figs 1, 10

ZooBank taxon LSID:

996747FC-A019-4813-A10C-20886BBA0A66

Differential diagnosis. *Oxymorus uitkyk* sp. n. resembles *O. johnprinei* sp. n., in having a long rostrum, pronotum without longitudinal ridges, short antennal scapes and funicle segment 2 as long as 1, epifrons not carinate at base of rostrum and elytra with visible raised setae. It differs from *O. johnprinei* sp. n. in the pronotum and elytra densely covered with rounded appressed scales, the rostrum at base 1.2–1.3× wider than at apex, denticulate protibiae and the spermatheca with collum curved at base.

Description. Body length 4.03–5.13 mm, holotype 4.25 mm. Body dark brownish, rostrum, antennae and legs paler, monochromatic, reddish brown. Dorsal and ventral part of body, antennal scapes and legs, except rostrum and tarsi, regularly densely covered with small, regularly rounded, finely longitudinally striate, greyish appressed scales with a pearly sheen, 5–6 across one elytral interstria, on pronotum slightly bigger than on remaining parts of body. Elytra with one regular row of slender, semi-erect, inconspicuous,

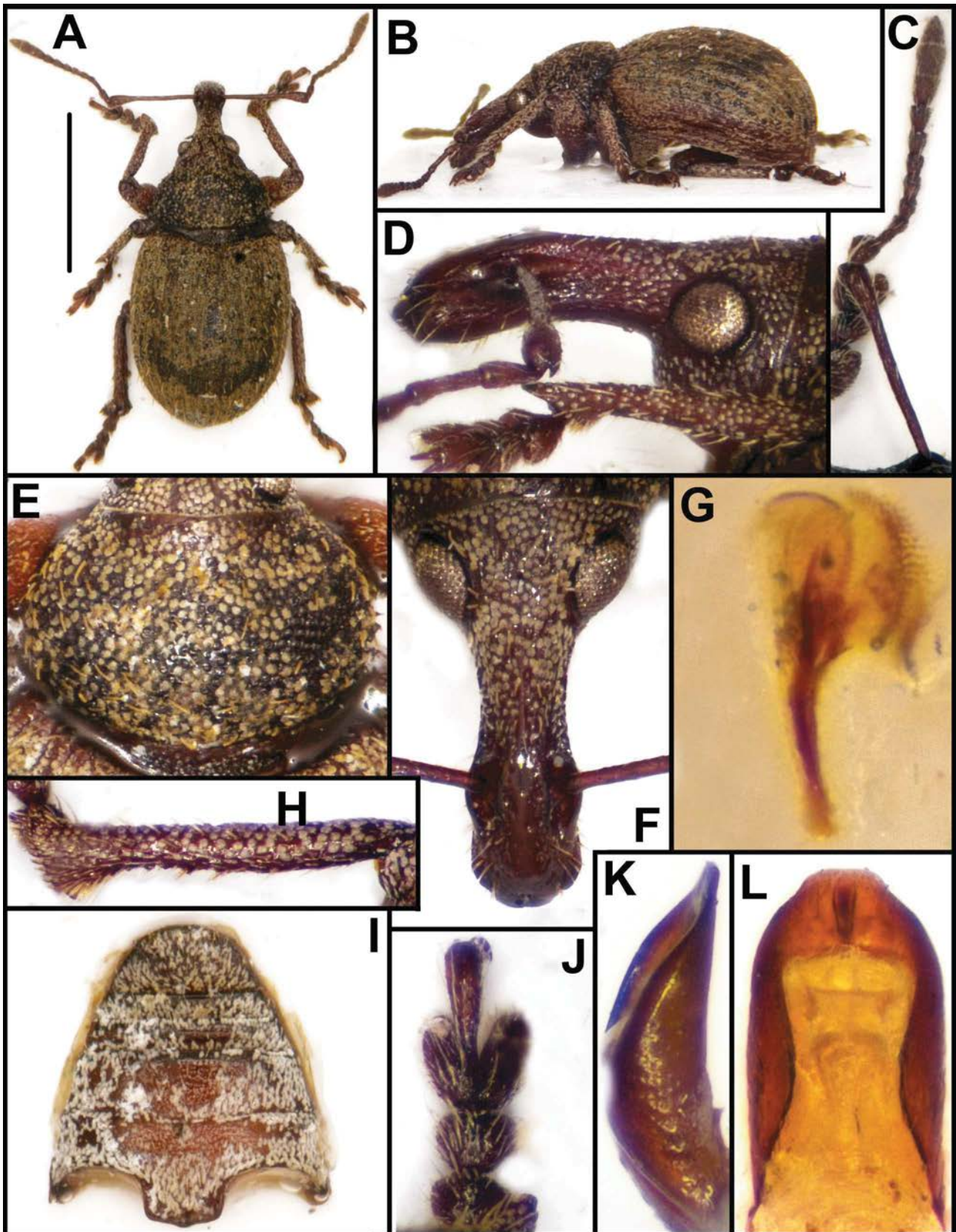


Fig. 2. *Oxymorus antennalis* sp. n., male, holotype: A – habitus, dorsal view; B – habitus, lateral view; C – antenna; D – head with rostrum, lateral view; E – pronotum; F – head with rostrum, dorsal view; G – sclerites of endophallus, dorsal view; H – right protibia; I – abdominal ventrites; J – tarsus; K – penis, lateral view; L – penis, dorsal view.

hair-like setae on each interstria, about as long as half an interstria width.

Rostrum (Figs 1D, E) 1.98–2.13× longer than wide at apex, widest at base, at base 1.2–1.3× wider than at apex, very short base, distinctly tapered anteriorly, majority of the rostral length subparallel-sided with slightly concave sides, slightly enlarged only at midlength around sockets and the short apical part; in profile weakly regularly curved, basally indistinctly, separated from head by a shallow depression. Epifrons small, sub rectangular, creating a slender area between antennal insertions, about as wide as half of the corresponding width of rostrum, finely punctate, glabrous. Frons large, glabrous, smooth, finely sparsely punctate. Antennal insertion before middle of rostrum. Sockets dorsally narrowly reniform, parallel. Head very wide and short; vertex flat, wider than rostrum at apex. Eyes convex, hardly protruding beyond outline of head; in profile not reaching dorsal border of head.

Antennae (Fig. 1C) slender and short, scape 1.2× longer than funicle, 0.7–0.8× as long as protibia, at apex as wide as club; funicle segment 1 1.8–2.0× longer than wide, as long as segment 2, which is 2.1–2.2× longer than wide; segment 3 1.3× longer than wide; segment 4 1.2× longer than wide; segment 5 1.1× longer than wide; segment 6 as long as wide; segment 7 1.1× wider than long; club 1.6–1.7× as long as wide.

Pronotum (Fig. 1F) wide, domed, 1.43–1.48× wider than long, widest at basal third, with distinctly rounded sides, weakly constricted behind anterior border; base weakly arched. Integument under scales finely, densely, regularly granulate.

Elytra (Fig. 1A) oval, robust, 1.09–1.14× longer than wide, widest at midlength with regularly rounded sides, broadly rounded apically, at base slightly wider than base of pronotum; in profile convex. Interstriae wide and flat; striae narrow. Integument under scales finely, densely, regularly granulate.

Protibiae (Fig. 1I) short and robust, 7.2–7.4× longer than wide at midlength, narrowly conspicuously produced externally, creating a narrow long lobe, at apex truncated, apically armed with a dense fringe of short yellowish bristles and several short, stout yellowish spines on slender process, with short mucro; inner side of apical two thirds denticulate with 7–9 brownish small spines. Tarsi (Fig. 1G) moderately slender, segment 2 1.2–1.3× wider than long; segment 3 1.1–1.2× wider than long and 1.3–1.4× wider than segment 2; onychium 1.1–1.2× longer than segment 3.

Penis (Figs 1J, K) short and wide, parallel-sided with only indistinctly rounded sides, apical part bluntly truncate, with distinct subtriangular tip; in profile ventral side almost straight and dorsal side distinctly convex, tip distinctly elongate, slender, straight; endophallus (Figs 1M, N) with one long, black, S-shaped sclerite and two wider irregularly elongate and angular brownish sclerites.

Spematheca (Fig. 1L) with short and wide, regularly curved and pointed cornu; ramus rounded, slightly shorter than wide; collum slender, tube-shaped, about 3× longer than wide, at base distinctly curved.

Type material. Holotype: 1♂, “RSA [South Africa], Western Cape, Cederberg Mts., SE Uitkyk Pass, Rd. to Welbedaght, 32°25.427′S, 19°09.975′E, 914 m, 17.x.2019, night general sweeping (grass netting) of vegetation in fynbos, R. Borovec & M. Meregalli lgg.” (TMSA). Paratypes: 9♀, same data as the holotype (BMNH, MMTI, RBSC, SANC); 2♀, “RSA [South Africa], Western Cape, Cederberg Mts., SE Uitkyk pass, rd. to Welbedaght, 32°25.426′S, 19°09.974′E, 914 m, 11.xi.2018, general sweeping (grass netting) of vegetation in fynbos, R. Borovec & M. Meregalli lgg.” (MMTI, RBSC); 5♀, “RSA [South Africa], Western Cape, Cederberg Mts., 4 km SE Uitkyk pass, 32°25.765′S, 19°08.434′E, 923 m, 11.xi.2018, general sweeping (grass netting) of vegetation in fynbos, R. Borovec & M. Meregalli lgg.” (MMTI, RBSC); 1♀, “RSA [South Africa], Western Cape, Cederberg Mts., Uitkyk pass, 32°24.408′S, 19°06.481′E, 1029 m, 26.x.2011, sweeping, R. Borovec lgt.” (RBSC); 1♂, “S. Afr. [South Africa], Cape Prov. [Western Cape now], Sederhoutkloof, 32°27′S, 19°09′E, 950/1300 m, 1.XI.1988, W. Wittmer [lgt.]” (SANC).

Type locality. South Africa, Western Cape, Cederberg Mts, SE Uitkyk Pass, Rd. to Welbedaght (Fig. 10).

Derivation of the name. The species is named from the type locality, Uitkyk Pass.

Bionomics. All the specimens were collected by evening or late evening sweeping of fynbos where Restionaceae is predominant (Fig. 12).

***Oxymorus antennalis* sp. n.**

Figs 2, 11

ZooBank taxon LSID:

A096CF8D-C23A-48AA-9E40-CD184022D085

Differential diagnosis. *Oxymorus antennalis* sp. n. is similar, and probably closely related, to *O. oculus* sp. n., with which it shares long antennae with scape as long as protibia, funicle segment 2 longer than segment 1 and protibia equally enlarged externally and internally; it has also similarly shaped sclerites of the endophallus. It differs from *O. oculus* sp. n. as its elytra have long, conspicuous, semi-erect, apically pointed setae, longer than half the width of one interstria, basal third of rostrum distinctly narrower than at apex, and rostrum in profile equally wide along the entire length, the eyes only slightly protruding beyond the outline of head, the elytra oval, 1.28× longer than wide, the tarsi narrower, with segment 3 as long as wide and the penis in profile wide, irregularly enlarged, widest at basal third, with tip shortly projecting and in dorsal view with lateral sclerified margins distinctly curved inward at midlength and with apex shorter, slightly prominent medially.

Description. Body length 3.66 mm. Body including antennae and legs reddish brown. Body except antennae and tarsi regularly densely covered with rounded, isolated, appressed scales, 5 across width of one interstria, pronotal scales slightly bigger than those on remaining part of body. Scales light brownish, elytra with slender, crescent-shaped transverse stripe on posterior declivity. Elytra with a single row of semi-erect, distinct, piliform, apically pointed setae, distinctly longer than half the width of one interstria; pronotum with short, erect setae. Head, rostrum and legs with short, semi-appressed setae.

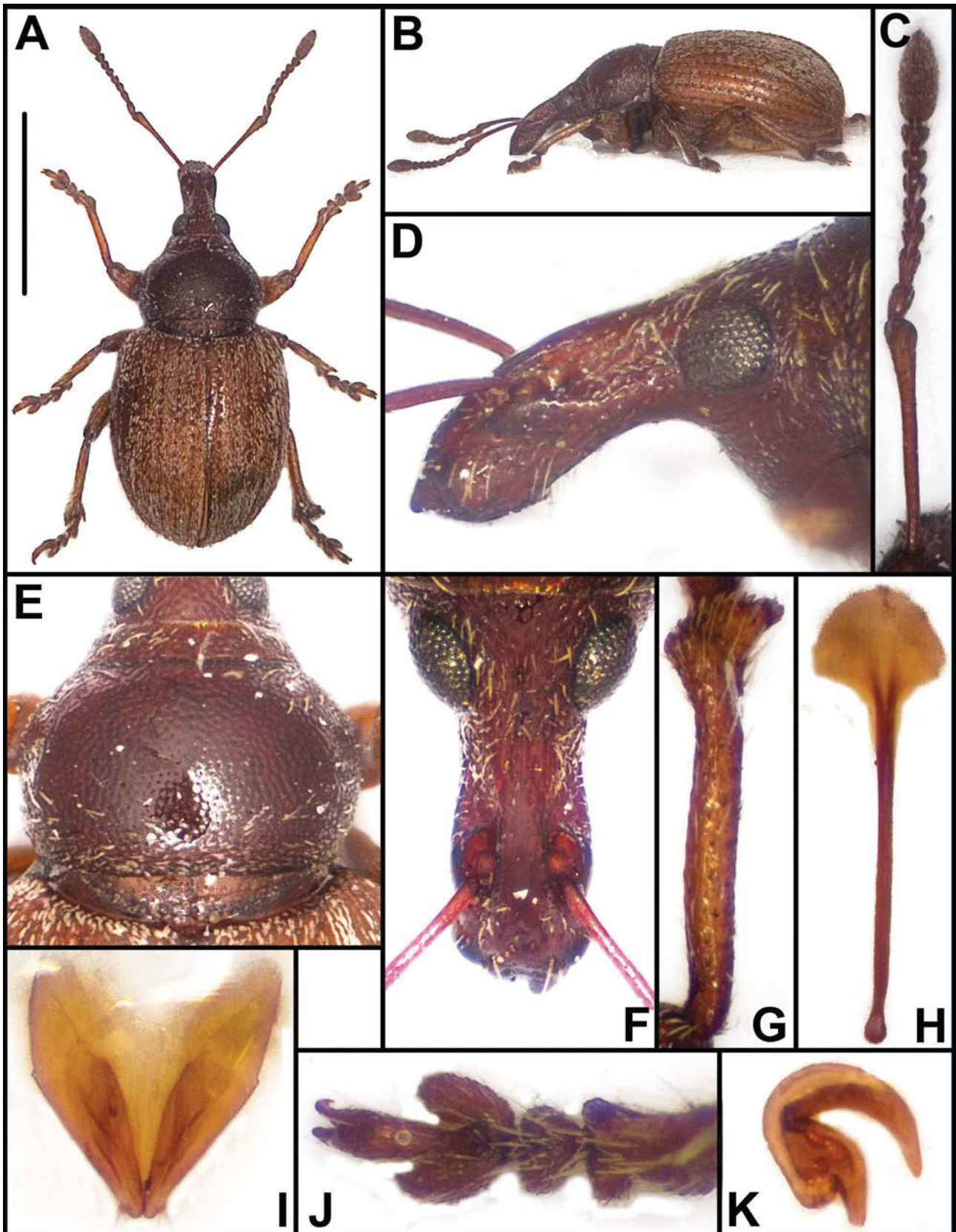


Fig. 3. *Oxymorus johnprinei* sp. n., female, holotype: A – habitus, dorsal view; B – habitus, lateral view; C – antenna; D – head with rostrum, lateral view; E – pronotum; F – head with rostrum, dorsal view; G – right protibia; H – female sternite VIII; I – gonocoxites; J – tarsus; K – spermatheca.

Rostrum (Figs 2D, F) 2.46× longer than wide at apex, widest at base and at place of antennal insertion, at base 1.23× as wide as at apex; between base and antennal insertion distinctly regularly concave, in narrowest point distinctly narrower than at apex; in profile slightly curved, not wider at antennal insertion. Epifrons narrow, with slightly convex sides, smooth, glabrous, sparsely punctate, at antennal insertion as wide as one third of corresponding width of rostrum, occupying less than half the rostral length. Frons large, glabrous, in middle part unpunctuated, posteriorly not separated from epifrons. Epistome not developed. Antennal sockets dorsally placed, reniform. Antennal insertion on apical third of rostrum. Head very short; vertex flat, as wide as rostrum at base. Eyes slightly protruding beyond outline of head; in profile near to dorsal border of head.

Antennae (Fig. 2C) slender and very long, scape almost as long as funicle or protibia, significantly exceeding anterior border of pronotum in repose, straight, slightly enlarged short apical portion, here as wide as club; funicle segment 2 very long, 3.4× longer than wide, 1.4× longer than segment 1, which is 2.1× longer than wide; segments 3 and 4 1.7× longer than wide; segments 5 and 6 1.4× longer than wide; segment 7 1.2× longer than wide; club slender, 3.0× longer than wide; club very slender, 3.1× longer than wide.

Pronotum (Fig. 2E) 1.48× wider than long, transverse oval, with rounded sides, widest in posterior part, significantly constricted behind anterior border, at base distinctly wider than anteriorly; base arched; disc distinctly, regularly domed, finely, densely, regularly granulated, granules with small puncture on top.

Elytra (Fig. 2A) oval, 1.28× longer than wide; widest at midlength, with regularly rounded sides, apically broadly rounded. Base as wide as base of pronotum. Interstriae wide, almost flat; striae narrow, finely punctate. Integument under vestiture weakly mat, finely punctate.

Protibiae (Fig. 2H) straight, 7.4× longer than wide, at apex slightly more widened laterally than medially, apically slightly rounded, fringed with short, sparse, yellowish spines, shortly mucronate with brush of yellowish setae; inner side of apical half of protibiae denticulate with 8 small blackish spines. Tarsi (Fig. 2J) medium sized, segment 2 1.2× wider than long; segment 3 as long as wide and 1.4× wider than segment 2; onychium 0.6× as long as segment 3.

Penis (Figs 2K, L) short, subparallel-sided, apically narrowly obtuse, constricted before tip, lateral sclerified margins distinctly curved inwards; in profile wide, irregularly enlarged, basal third widest, tip shortly projecting; endophallus (Fig. 2G) with one long and slender dark sclerite and two basal flat, light brownish, rounded plates.

Type material. Holotype: 1♂ “S. Africa, C.P. [Cape Province, Western Cape now] Wiedouw 309, Vanrhynsdorp, 31°44′S, 18°47′E, 20–24 Sept. 1985, Louw, v. Rensburg, NMBH, 20853” (NMBH).

Type locality. South Africa, Western Cape, Vanrhynsdorp (Fig. 11).

Derivation of the name. One of the main characters of this species are the very long antennae, hence the specific epithet.

Bionomics. Unknown.

Oxymorus johnprinei sp. n.

Figs 3, 11

ZooBank taxon LSID:

57AC2B4A-237B-448E-911F-BB6E0D51F254

Differential diagnosis. *Oxymorus johnprinei* sp. n. is similar to *O. uitkyk* sp. n. in its long rostrum, pronotum without longitudinal ridges, short antennal scapes and funicle segment 2 as long as 1, epifrons not carinate to base of rostrum and elytra with distinct semi-erect setae. It differs from *O. uitkyk* sp. n. in that the pronotum and elytra are sparsely covered by long oval appressed scales, rostrum at base as wide as at apex, protibiae not denticulate and colulum of the spermatheca is straight.

Description. Body length of holotype 3.63 mm. Body brownish, pronotum and head with rostrum darker, dark brownish. Dorsal and ventral part of body sparsely covered by slender, long oval appressed scales, not covering integument, 5–6 across one elytral interstria, legs and antennae sparsely covered by semi-appressed slender, hair-like setae, lacking scales. Elytra with one regular row of semi-erect hair-like setae, about as long as half an interstria width, bent backwards, visible mainly in profile.

Rostrum (Figs 3D, F) 1.88× longer than wide at apex, at base as wide as at apex, in basal half with slightly concave sides, distinctly broadened around sockets, then slightly enlarged apically; in profile regularly curved, basally barely distinct from head by a shallow depression. Epifrons less than half of corresponding width of rostrum, impunctate, smooth. Frons short, smooth, impunctate. Antennal insertion slightly before midlength of rostrum. Sockets dorsally forming elongate fossae. Vertex narrow with a small median fovea. Eyes convex, slightly protruding above outline of head; in profile reaching dorsal border of head.

Antennae (Fig. 3C) slender and moderately long, scape 1.2× longer than funicle, 0.9× as long as protibia, at apex 0.8× as wide as club; funicle segment 1 1.7× longer than wide and as long as segment 2, which is 1.9× longer than wide; segment 3 1.2× longer than wide; segment 4 1.1× longer than wide; segments 5 and 6 as long as wide; segment 7 1.1× wider than long; club slender and long, 2.1× longer than wide.

Pronotum (Fig. 3E) 1.31× wider than long, distinctly domed, basal third widest, with distinctly rounded sides, weakly constricted behind anterior border; integument smooth, shiny, very finely, densely punctate.

Elytra (Fig. 3A) long oval, 1.24× longer than wide, widest at midlength, sides distinctly rounded, narrowly rounded apically, at base slightly wider than base of pronotum. Interstriae wide and flat; striae punctate. Integument smooth, shiny.

Protibiae (Fig. 3G) slender, 8.6× longer than wide at midlength, narrowly conspicuously produced externally in a narrow elongate lobe, at apex slightly rounded, apically armed with a dense fringe of short yellowish bristles and several short, stout yellowish spines on process, with short mucro; inner side not denticulate. Tarsi (Fig. 3J) slender,

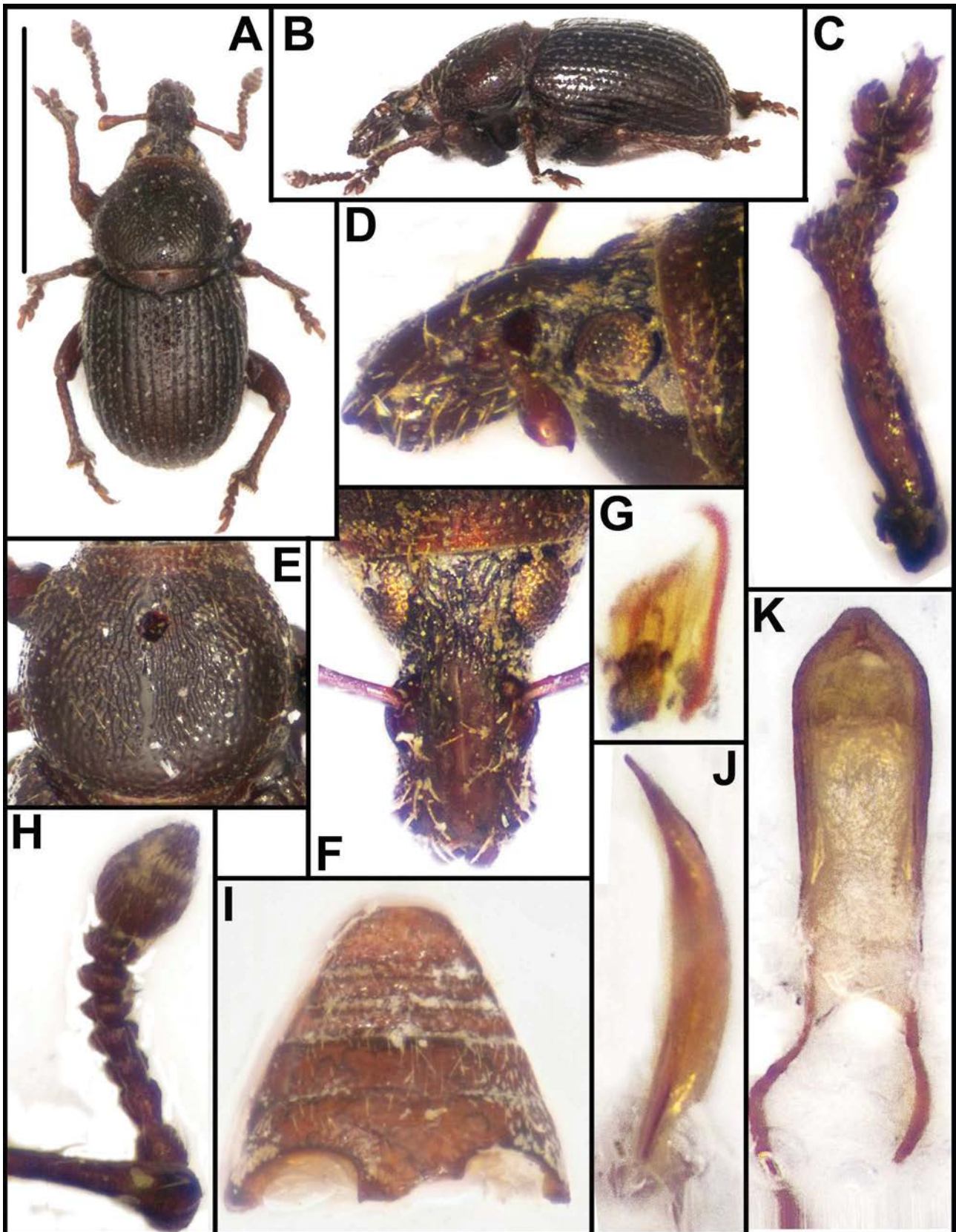


Fig. 4. *Oxymorus minor* sp. n., male, holotype: A – habitus, dorsal view; B – habitus, lateral view; C – right protibia with tarsus; D – head with rostrum, lateral view; E – pronotum; F – head with rostrum, dorsal view; G – sclerites of endophallus, dorsal view; H – antenna; I – abdominal ventrites; J – penis, lateral view; K – penis, dorsal view.

segment 2 1.1× longer than wide; segment 3 1.1× wider than long and 1.6× wider than segment 2; onychium 0.8× as long as segment 3.

Spermatheca (Fig. 3K) with long and slender, regularly curved cornu; corpus rounded; ramus short and wide, wider than long, tapered apically; collum straight, twice as long as wide, distinctly evenly tapered apically.

Type material. Holotype: 1♀ “S. Afr. [South Africa], S. W. Cape [Western Cape now], Swellendam – Heidelbg., 34.06S–20.46E [= 34°06′S 20°46′E], 21.9.1985; E-Y: 2257, flowering meadows, leg. Endrödy-Younga” (TMSA).

Type locality. South Africa, Western Cape, Swellendam (Fig. 11).

Derivation of the name. This species is named in memory of the late John Prine (1946–2020), American folk singer and songwriter who sadly passed away due to Coronavirus while we were completing this paper.

Bionomics. According to the label, the type specimen was collected in flowering meadow.

Oxymorus minor sp. n.

Figs 4, 11

ZooBank taxon LSID:

47AC8716-1A7D-4909-8400-ADD9ABA01932

Differential diagnosis. *Oxymorus minor* sp. n., the smallest species in the genus, is mainly characterized by its glabrous body lacking appressed scales, the vertex narrower than the base of rostrum, the funicle segments 4–7 distinctly transverse, about twice as wide as long, the pronotum with punctures merged into narrow longitudinal furrows and the long and slender penis with a single sclerite.

Description. Body length, holotype 2.56 mm. Body dark brownish, antennae and legs monochromatic, reddish brown. Body dorsally and ventrally glabrous, lacking appressed squamae; interstriae with a single row of semi-appressed hair-like setae, setae slightly longer than half the width of one interstria, pronotum with similar setae directed posteriorly.

Rostrum (Figs 4D, F) 1.33× longer than wide at apex, at base as wide as at apex, at middle conspicuously enlarged around antennal insertion; in profile almost flat, curved only in short basal part, separated from head by shallow depression. Epifrons short and wide, as wide as club, parallel-sided, shiny, laterally finely punctate, with indistinct longitudinal median keel. Frons smooth, not punctate, almost as long as a third of rostral length. Sockets dorsally fully visible, forming elongated fossae. Antennal insertion behind middle of rostrum. Head wide; vertex narrower than base of rostrum. Eyes moderately large, hardly protruding above outline of head; in profile almost reaching dorsal border of head.

Antennae (Fig. 4H) short and robust, scape as long as funicle, 0.6× as long as protibia, at apex 0.7× as wide as club; funicle segment 1 1.1× longer than wide and as long as segment 2, which is 1.5× longer than wide; segment 3 as long as wide; segments 4 and 5 1.9× wider than long; segment 6 twice as wide as long; segment 7 2.1× wider than long; club short and wide, 1.2× longer than wide.

Pronotum (Fig. 4E) 1.17× wider than long, almost as wide as elytra, widest shortly behind midlength with distinctly rounded sides, domed, but on disc somewhat flattened, just behind anterior border slightly constricted; disc finely densely punctate, punctures merged into irregular, narrow longitudinal furrows, with inconspicuous, narrow, impunctate, longitudinal median line.

Elytra (Fig. 4A) elongate-oval, 1.25× longer than wide, widest slightly before midlength, with regularly rounded sides, apically narrowly rounded; disc glossy; interstriae flat, with a single row of sparse, very fine punctures; striae deep, shallowly punctate.

Protibiae (Fig. 4C) straight, 5.9× longer than wide at midlength, constricted before apex, conspicuously enlarged externally, expanded to a narrow long lateral lobe, apically armed with short, minute, sparse, yellowish spines, with small, unobtrusive mucro; on inner side not denticulate. Tarsi (Fig. 4C) short and robust, segment 2 1.3× wider than long; segment 3 1.5× wider than long and 1.4× wider than segment 2; onychium as long as segment 3.

Penis (Figs 4J, K) long, with straight sides, indistinctly evenly enlarged apically, apex subtriangular with slightly concave sides, tip narrowly rounded; in profile weakly regularly curved, apex evenly pointed; endophallus (Fig. 4G) with a single, slender, long, apically U-shaped curved sclerite.

Type material. Holotype: 1♂ “S. Afr. [South Africa], S. Cape Mt. [Western Cape], Matjiesfontein Mt., 33.16S–20.30E [= 33°16′S 20°30′E], 25.10.1978; E-Y: 1478, ground traps set for 39 days with meat bait, leg. Endrödy-Younga” (TMSA).

Type locality. South Africa, Western Cape, Matjiesfontein Mt. (Fig. 11).

Derivation of the name. This is the smallest species so far known, hence its specific epithet.

Bionomics. The type specimen was collected in pitfall trap baited with meat.

Oxymorus obesus sp. n.

Figs 5, 11

ZooBank taxon LSID:

86185630-4F6A-4E2F-9188-2D805B2E287F

Differential diagnosis. *Oxymorus obesus* sp. n. is characterized by rostrum short, 1.3–1.4× longer than wide at apex, separated from head by a distinct, deep, transverse furrow, epifrons subtriangular, clearly tapered posteriorly, the pronotum widest at base and the shape of the spermatheca. *Oxymorus obesus* sp. n., because of its short oval, robust, distinctly convex body with a short rostrum, resembles weevils of the genus *Mimaulus* Schoenherr, 1847 (Cneorhinini), from which it is easily distinguished by the “otiorhynchine” type, dorsally placed antennal sockets.

Description. Body length 4.13–5.44 mm, holotype 4.13 mm. Body dark brownish, antennae and legs paler, monochromatic, reddish brown. Dorsal and ventral part of body, antennal scapes and legs excepting tarsi regularly densely covered with small, greyish appressed scales, on pronotum slightly larger than on other parts, 7–8 across one elytral interstria, scales densely finely striolate. Underside of head

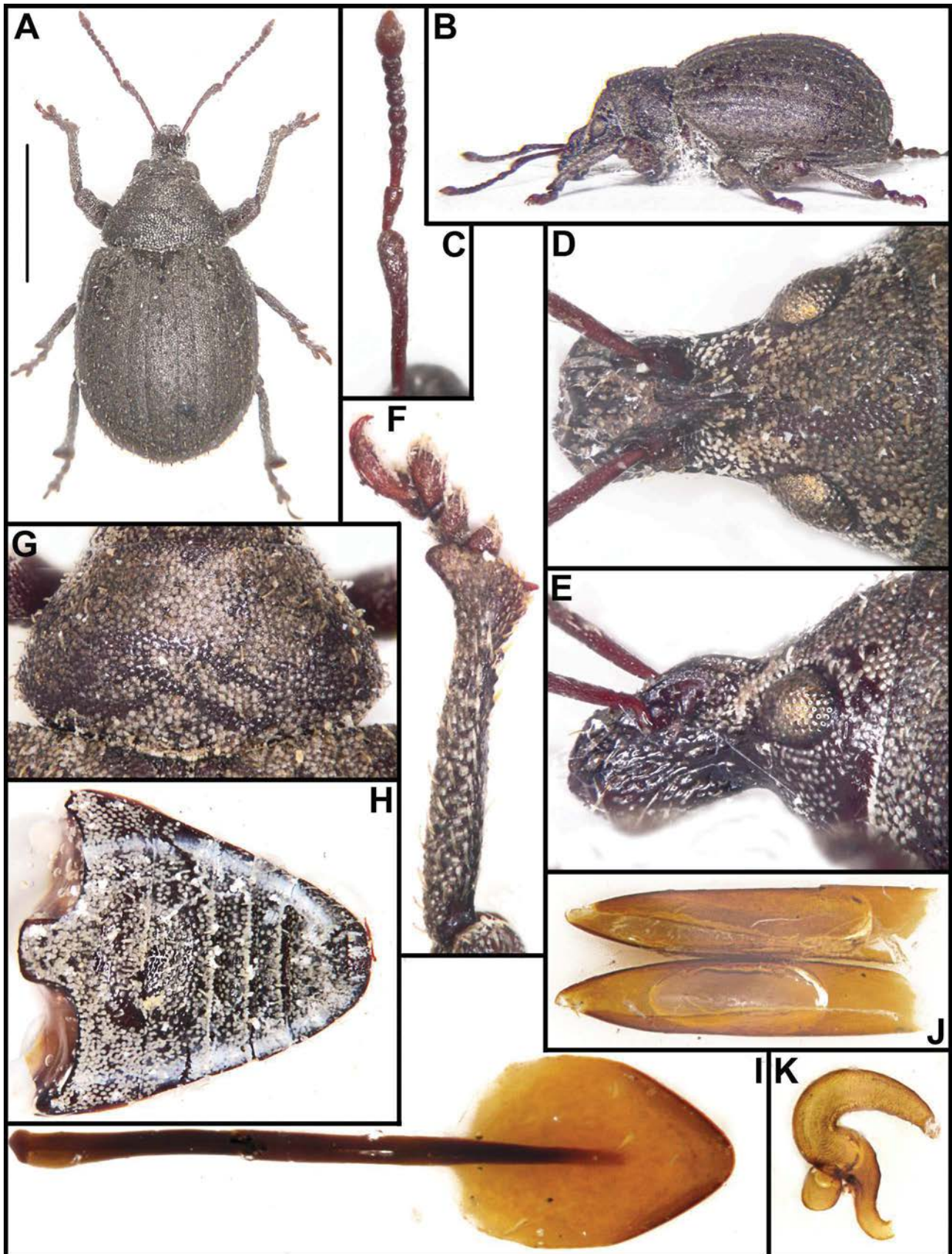


Fig. 5. *Oxymorus obesus* sp. n., female, paratype: A – habitus, dorsal view; B – habitus, lateral view; C – antenna; D – head with rostrum, dorsal view; E – head with rostrum, lateral view; F – left protibia with tarsus; G – pronotum; H – abdominal ventrites; I – female sternite VIII; J – gonocoxites; K – spermatheca.

sparingly scaled, lateral parts of rostrum with only short, sparse, hair-like appressed setae. Elytra with one regular row of slender hair-like setae on each interstria, setae on disc semi-appressed, curved posteriorly, on declivity semi-erect, inconspicuous, almost as long as half the width of an interstria.

Rostrum (Figs 5D, E) 1.32–1.39× longer than width at apex, widest at base, with evenly and distinctly concave sides, narrowest at midlength, at base 1.27–1.33× as wide as at apex; in profile flat, at base abruptly bevelled, distinctly separated from head by a deep transverse furrow. Epifrons small and narrow, subtriangular, evenly tapered posteriorly with straight sides, at apex as wide as one third, at base as one fifth, of corresponding width of rostrum; epifrons shallowly deepened, laterally carinate with very slender median longitudinal carina. Frons finely punctate, posteriorly not separated from epifrons. Sockets dorsally fully visible, reniform, posteriorly become closer, their distance on posterior border equal to width of club. Antennal insertion before middle of rostrum. Head wide, distinctly enlarged posteriorly; vertex flat, about as wide as rostrum at midlength. Eyes moderately large, almost flat, barely protruding above outline of head; in profile very near to dorsal border of head.

Antennae (Fig. 5C) slender and short, scape 1.1× longer than funicle, 0.8–0.9× as long as protibia, reaching anterior border of pronotum in repose, at apex as wide as club, straight, apical quarter weakly evenly enlarged; funicle segments 1 and 2 equally long, segment 1 2.3–2.4× longer than wide; segment 2 2.0–2.2× longer than wide; segment 3 1.1–1.2× longer than wide; segment 4 1.1× longer than wide; segments 5 and 6 as long as wide; segment 7 as long as wide to 1.1× wider than long; club spindle-shaped, 1.8× as long as wide.

Pronotum (Fig. 5G) wide, 1.68–1.74× wider than long, sub trapezoidal, widest at base, evenly tapered anteriorly with slightly rounded sides, behind anterior border indistinctly constricted, disc regularly convex, scales inserted on small round granules, with some sparse punctate granules bearing a short seta; base weakly arched.

Elytra (Fig. 5A) oval, robust, 1.09–1.15× longer than wide, widest at midlength, at base slightly wider than base of pronotum, with regularly rounded sides, apically broadly rounded; in profile convex. Interstriae wide and flat, below scales finely, regularly sparsely punctate; striae finely punctate, punctures covered by vestiture.

Protibiae (Fig. 5F) straight, moderately robust, 6.6–6.8× longer than wide at midlength, constricted before apex, expanded externally in a narrow long lateral lobe, armed apically with short minute yellowish spines, at inner angle shortly mucronate; inner side of protibiae indistinctly denticulate on apical half. Tarsi (Fig. 5F) with segment 2 1.3–1.4× wider than long; segment 3 1.3–1.4× wider than long and 1.4–1.5× as wide as segment 2; onychium 0.9× as long as segment 3.

Spermatheca (Fig. 5K) with regularly curved and apically tapered cornu; weakly elongate corpus; ramus oval,

slightly longer than wide; collum tube-shaped, S-shaped, curved upwards.

Type material. Holotype: 1♀, “[South Africa, Eastern Cape] Table Mt., Cape of G. Hope [approximately 33°58′S 18°25′E], W. Bevins., 1906–1967.” (BMNH). Paratypes: 5♀, same data as the holotype (BMNH).

Type locality. South Africa, Eastern Cape, Table Mountain (Fig. 11).

Derivation of the name. The dumpy, robust, distinctly convex body suggested the specific epithet.

Bionomics. Unknown.

Oxymorus oculatus sp. n.

Figs 6, 11

ZooBank taxon LSID:

85E34774-4B55-414A-AFD4-3FEB08118975

Differential diagnosis. *Oxymorus oculatus* sp. n. is distinguished from most other species in the genus by its long antennae with scape as long as protibia, the funicle segment 2 1.4–1.5× longer than segment 1 and shape of penis, including the form of the sclerites. In all these characters it is similar only to *O. antennalis* sp. n., from which it can be distinguished mainly by the elytra with short, inconspicuous, semi-appressed, apically rounded setae, shorter than half the width of an interstria, rostrum in basal third slightly narrower than at apex and in profile widest at antennal insertion, eyes conspicuously protruding beyond the outline of head, elytra long oval, 1.13–1.19× longer than wide, tarsi robust, with segment 3 1.2–1.3× wider than long and penis narrow in profile and with obtuse apex.

Description. Body length 3.84–5.06 mm, holotype 4.52 mm. Body including antennae and legs dark brownish to dark reddish brown. Dorsal and ventral part of body excepting antennae and tarsi densely covered with rounded, finely striate appressed scales, 5–6 across width of one interstria, on elytra imbricate, on remaining part of body isolated, scales on pronotum twice as large as those on other parts of body. Scales greyish, elytra with two ill-defined, light or dark brownish U-shaped spots longitudinally placed on interstriae 5 and 7–8, connected by transverse stripe of dark brownish scales of irregular width on posterior declivity. Elytra with one regular row of short, inconspicuous, semi-appressed, narrowly subspatulate setae, apically rounded, bent posteriorly, barely shorter than half the width of an interstria. Pronotum with similar setae as on elytra, but shorter, semi-appressed, directed posteriorly, inserted on small punctate granules. Head with rostrum and legs with very short, hardly visible semi-appressed setae.

Rostrum (Figs 6D, E) 2.35–2.39× longer than wide at apex, widest at base and where the antennae are inserted, between base and antennal insertion slightly regularly concave, at narrowest point only slightly narrower than apex of rostrum, from antennal insertion weakly evenly tapered apically, at base 1.22–1.25× as wide as at apex; in profile weakly curved, widest at place of antennal insertion, separated from head by shallow depression. Epifrons narrow, at place of antennal insertion about as wide as one third

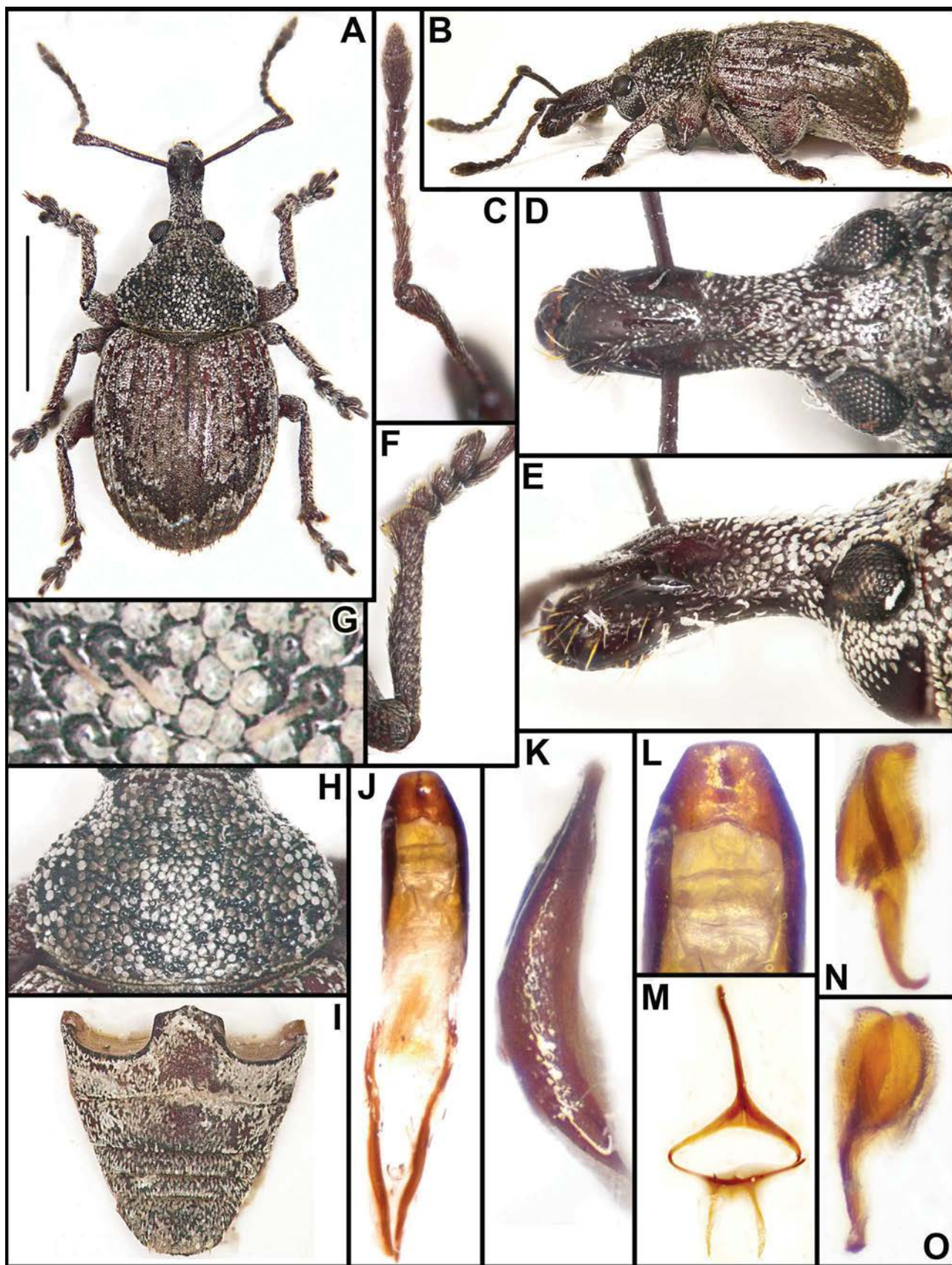


Fig. 6. *Oxymorus oculatus* sp. n., male, paratype: A – habitus, dorsal view; B – habitus, lateral view; C – antenna; D – head with rostrum, dorsal view; E – head with rostrum, lateral view; F – right protibia with tarsus; G – detail of appressed scales on pronotal disc; H – pronotum; I – abdominal ventrites; J – penis, dorsal view; K – penis, lateral view; L – apex of penis, dorsal view; M – tegmen; N – sclerites of endophallus, lateral view; O – sclerites of endophallus, dorsal view.

of corresponding width of rostrum, occupying less than half the rostral length, weakly tapering posteriorly, weakly convex, glabrous, finely punctate with slender longitudinal median unpunctured keel. Frons large, glabrous, finely and sparsely punctate, posteriorly not separated from epifrons. Epistome not developed. Sockets dorsally reniform. Antennal insertion on apical third of rostrum. Head very short and wide; vertex flat, about as wide as rostrum at apex. Eyes large, conspicuously protruding beyond outline of head but not distinctly more so posteriorly; in profile very near to dorsal border of head.

Antennae (Fig. 6C) slender and very long, scape as long as funicle and protibia, distinctly exceeding anterior border of pronotum in repose, straight, weakly enlarged apically, at apex as wide as club; funicle segment 2 very long, 2.7–2.8× longer than wide, 1.4–1.5× longer than segment 1, which is 1.8–1.9× longer than wide; segment 3 1.5× longer than wide; segments 4 and 5 1.2–1.3× longer than wide; segments 6 and 7 1.2× longer than wide; club slender, 2.5–2.7× longer than wide.

Pronotum (Fig. 6H) 1.30–1.35× wider than long, transverse oval, with distinctly rounded sides and basal third widest, significantly constricted behind anterior border, posterior border twice as wide as anterior one; base weakly arched; disc regularly domed, under vestiture finely densely granulated, granules lacking scales, punctate on top, bearing a slender brownish seta.

Elytra (Fig. 6A) elongate-oval, 1.13–1.19× longer than wide, widest at midlength, with regularly rounded sides, apically broadly rounded. Base as wide as base of pronotum. Interstriae wide and slightly convex; striae narrow, punctate. Integument under vestiture glabrous, shiny, sparsely and finely punctate.

Protibiae (Fig. 6F) straight, robust, 6.6–7.2× longer than wide, equally enlarged laterally and medially, apically distinctly rounded with numerous, very short and fine, yellowish to brownish spines, at inner angle shortly mucronate with short brush of setae; inner side of protibiae denticulate on apical half with 6–7 small blackish spines. Tarsi (Fig. 6F) robust, segment 2 1.3–1.4× wider than long; segment 3 1.2–1.3× wider than long and 1.3–1.4× wider than segment 2; onychium 0.5–0.6× as long as segment 3.

Penis (Figs 6J, K, L) short, with strongly sclerotized sides, dorsum membranous, subparallel-sided along whole length, apical part evenly rounded, apically broadly obtuse, weakly constricted before tip; in profile weakly regularly curved, widest at midlength, tip shortly projecting; endophallus with one long and slender, dark brownish sclerite and basal flat, light brownish, rounded sclerite.

Type material. Holotype: 1♂ “RSA, Western Cape, Aurora Mts., 32°41.638′S, 18°32.350′E, 9.ix.2013, 715 m, beating fynbos, R. Borovec lgt.” (TMSA). Paratypes: 2♂, the same data as holotype (RBSC); 1♂, same data as the holotype, M. Meregalli lgt. (MMTI).

Type locality. South Africa, Western Cape, Aurora Mts (Fig. 11).

Derivation of the name. The peculiar, strongly posteriorly prominent eyes suggested the specific epithet.

Bionomics. All the specimens were collected umbrella beating various shrubs in fynbos.

Oxymorus rikae sp. n.

Figs 7, 10

ZooBank taxon LSID:

B81DC678-14FD-4782-87A3-7AF41842F773

Differential diagnosis. This is the biggest species in the genus, mainly characterized by the epifrons distinctly carinate just at the base of rostrum, tricarinate along entire length, elytra lacking erect or semi-erect setae in profile and shape of spermatheca.

Description. Body length 6.44–6.86 mm, holotype 6.51 mm. Body blackish, antennae and legs paler, monochromatic, reddish brown. Entire body excepting rostrum, antennal funicle, clubs and tarsi densely covered with small, regularly rounded appressed scales, 9–10 across one elytral interstria, greyish; elytra with horseshoe-shaped dark brownish spot on posterior declivity, reaching middle of elytra on interstriae 4 and 5 and with a dark stripe on sutural interstria on apical half. Elytra with one regular row of very short, appressed, long oval setae, as long as diameter of two appressed scales, invisible in profile.

Rostrum (Figs 7E, G) 1.95–2.11× longer than wide at apex, at base 1.28–1.35× wider than at apex, only the short basal part tapers anteriorly, then parallel-sided with straight sides, except for broadening around sockets; in profile only slightly curved, basally slightly separated from head by shallow depression. Epifrons narrow, more slender in basal third, distinctly wider basally and evenly gradually widens apically, with narrow longitudinal median keel and distinctly carinate borders reaching almost to base of rostrum, here distinctly more slender than space between anterior margins of eyes. Frons large, smooth, finely sparsely punctate, convex. Sockets dorsally narrowly reniform; antennal insertion on middle of rostrum. Antennal insertion before middle of rostrum. Vertex slightly wider than rostrum at apex. Eyes convex and protruding well above the outline of head; in profile not reaching dorsal border of head.

Antennae (Fig. 7C) slender and short, scape 1.2–1.3× longer than funicle, 0.8× as long as protibia, at apex 0.9× as wide as club; funicle segment 1 1.7–1.8× longer than wide and as long as segment 2, which is 1.9–2.0× longer than wide; segments 3–6 as long as wide; segment 7 1.2–1.3× wider than long; club 1.8–1.9× longer than wide.

Pronotum (Fig. 7F) 1.39–1.45× wider than long, widest at basal third, with distinctly rounded sides, weakly constricted behind anterior border, distinctly domed.

Elytra (Fig. 7A) long oval, 1.27–1.31× longer than wide, widest at midlength with slightly rounded sides, at base slightly wider than base of pronotum; in profile convex. Interstriae wide and flat; striae narrow.

Protibiae (Fig. 7I) short, 7.0–7.1× longer than wide at midlength, strongly produced externally in a narrow expansion, apically slightly rounded, with dense fringe of very short, yellowish bristles, outer part stouter and with short mucro; inner side of apical half indistinctly denticu-

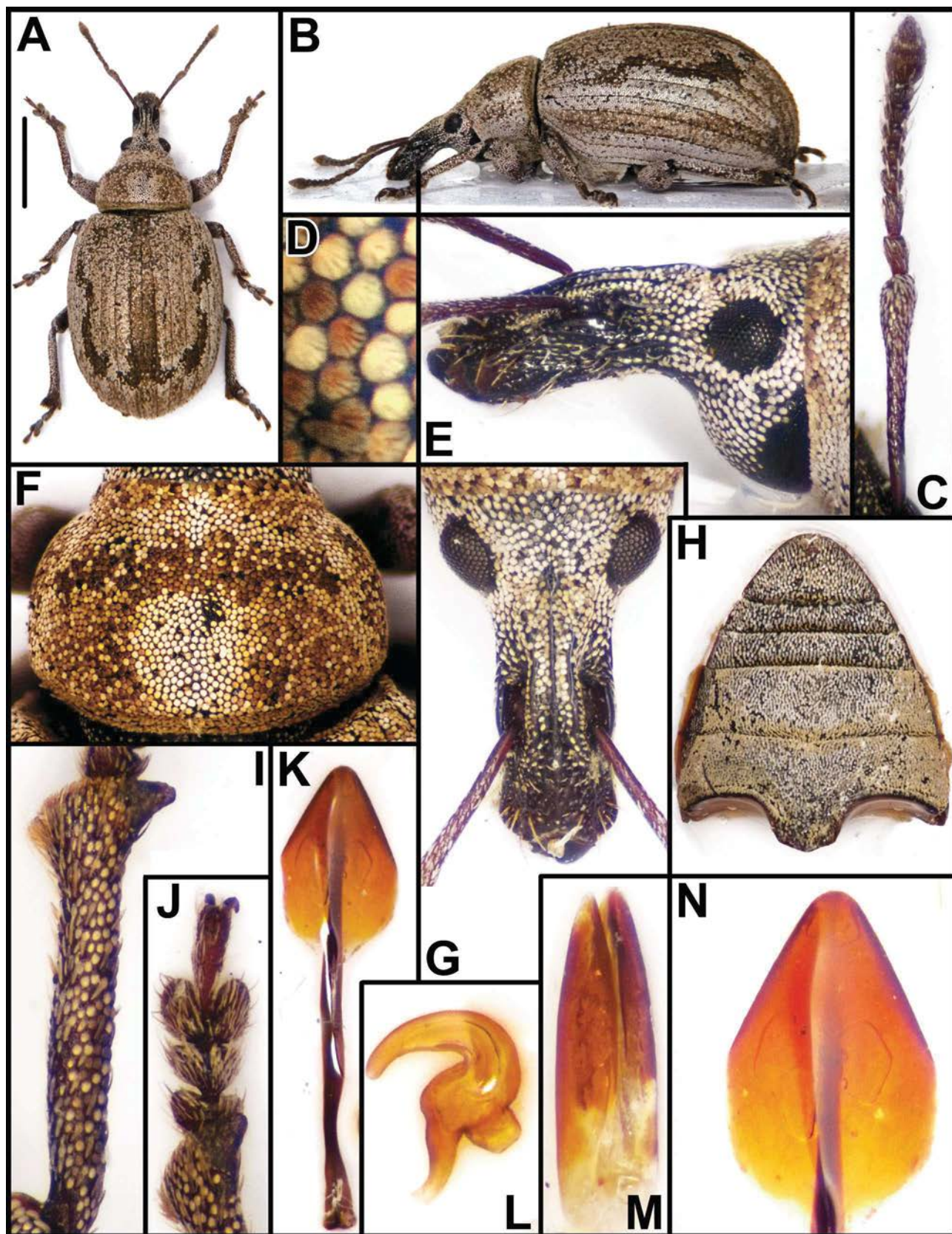


Fig. 7. *Oxymorus rikae* sp. n., female, paratype: A – habitus, dorsal view; B – habitus, lateral view; C – antenna; D – detail of appressed scales on pronotal disc; E – head with rostrum, lateral view; F – pronotum; G – head with rostrum, dorsal view; H – abdominal ventrites; I – right protibia; J – tarsus; K – sternite VIII; L – spermatheca; M – gonocoxites; N – plate of sternite VIII.

late with 5–6 brownish very small spines. Tarsi (Fig. 7J) slender, segment 2 1.2–1.3× wider than long; segment 3 1.4× wider than long and 1.8× wider than segment 2; onychium 1.2–1.3× longer than segment 3.

Spermatheca (Fig. 7L) with moderately slender, regularly curved and pointed cornu; corpus large, slightly angular; ramus as long as wide, slightly tapering apically; collum slender, about 3× longer than wide at base, evenly tapering apically, before tip distinctly curved.

Type material. Holotype: 1♀, “RSA [South Africa], Western Cape, Cederberg Mts., 4 km SE Uitkyk pass, 32°25.765′S, 19°08.434′E, 923 m, 11.xi.2018, general sweeping (grass netting) of vegetation in fynbos, R. Borovec & M. Meregalli lgg.” (TMSA). Paratypes: 2♀, same data as the holotype (MMTI, RBSC).

Type locality. South Africa, Western Cape, Cederberg Mts., 4 km SE Uitkyk pass (Fig. 10).

Derivation of the name. We name this species after Rika du Plessis, Conservation Manager of the Cederberg Complex, Cape Nature.

Bionomics. The type specimens were collected by sweeping in fynbos, together with *O. uitkyk*.

***Oxymorus strictifrons* sp. n.**

Figs 8, 10

ZooBank taxon LSID:

14C1ADD3-53F6-4B81-A613-36DF4FCBFE9B

Differential diagnosis. *Oxymorus strictifrons* sp. n. differs from all other species as its rostrum is as long as wide, evenly tapering apically, with straight sides, epifrons with significantly convex sides, protibiae equally enlarged externally and internally, whole rostrum, except the frons, densely squamose, elytra with 1–2 irregular rows of wide, subspatulate setae and the peculiar shape of its penis and sclerites on the endophallus.

Description. Body length 4.84–5.38 mm, holotype 5.13 mm. Body dark brownish, funicles with clubs and tarsi paler, reddish brown. Dorsal and ventral part of body including rostrum, antennal scapes and legs except tarsi regularly densely covered with small, rounded, distinctly longitudinally striolate appressed scales, 6–8 across interstria width. Elytra with 1–2 irregular rows of wide, subspatulate setae, appressed on basal half, semi-appressed on posterior declivity, setae as long as half the width of interstria; pronotum and head with rostrum with the same semi-appressed spatulate setae irregularly densely scattered, shorter than those on elytra. Elytra light brownish, with dark brownish longitudinal stripes on interstriae 1 and 5 and transverse stripes on posterior declivity and at apex; pronotum dark brownish with slender longitudinal stripes on middle and lateral parts; head and rostrum light brownish.

Rostrum (Figs 8D, F) as long as wide at apex, widest at base, evenly tapering apically with straight sides, at base 1.13–1.19× as wide as at apex; in profile vaulted, distinctly separated from head by a deep transverse furrow. Epifrons flat, small, short and narrow, apical half parallel-sided,

basal half distinctly tapering posteriorly, with significantly convex sides, at apex as wide as half, at base a quarter of corresponding width of rostrum. Frons short, glabrous, punctate. Sockets dorsally fully visible, reniform, their distance on posterior border equal to width of protibia at midlength. Antennal insertion before middle of rostrum. Head wide, distinctly enlarged posteriorly; vertex flat, slightly wider than rostrum at apex. Eyes small, slightly protruding above outline of head; in profile very near to dorsal border of head.

Antennae (Fig. 8C) slender and short, scape 1.2–1.3× as long as funicle, 0.8× as long as protibia, at apex as wide as club, regularly curved, apical quarter inflated; funicle segments 1 and 2 conical, equally long, segment 1 1.5–1.6× longer than wide, segment 2 1.5–1.7× longer than wide; segments 3 and 4 as long as wide; segment 5 1.1× wider than long; segments 6 and 7 1.2× wider than long; club 1.6–1.7× longer than wide.

Pronotum (Fig. 8E) 1.29–1.36× wider than long, basal third widest, with distinctly rounded sides, somewhat constricted behind anterior border, conspicuously regularly domed.

Elytra (Fig. 8A) long oval, robust, 1.25–1.31× longer than wide, widest posteriorly, with prominent shoulders and somewhat straight sides, broadly rounded apically; in profile flattened on disc. Interstriae slightly vaulted, wide; striae finely punctate, punctures covered by vestiture.

Protibiae (Fig. 8G) straight, robust, 6.1–6.3× longer than wide at middle, equally enlarged externally and internally, apically rounded, armed with 15–20 very short, yellowish spines, with small, unobtrusive mucro; inner side of apical half indistinctly denticulate with 4–6 microscopic blackish spines. Tarsi (Fig. 8H) slender, segment 2 1.3–1.4× wider than long; segment 3 1.2–1.3× wider than long and 1.4–1.5× wider than segment 2; onychium 1.2–1.3× longer than segment 3.

Penis (Figs 8J, K) short, widest at base, slightly evenly tapering apically to a conspicuously long tip with distinct concave sides; in profile distinctly curved with long straight tip; endophallus (Figs 8N, O, P) with 3 long, pointed and 1 U-shaped sclerite.

Spermatheca (Fig. 8I) with regularly curved, somewhat wide cornu; corpus elongated; ramus rounded, small, slightly wider than long, with oblique to longitudinal axis; collum slender and long, almost straight, evenly tapering apically, about 3× longer than wide at base.

Type material. Holotype: 1♂ “ZA [South Africa, Western Cape], 100, Sederberg [Cederberg Mts.]: Middelberg (Elskloofrivier) [approx. 32°22′S 19°04′E], 1400 m, VII.1962, Humus under bushes, N. Leleup [lgt.]” (TMSA). Paratypes: 7 spec., same data as the holotype (TMSA).

Type locality. South Africa, Western Cape, Cederberg (Fig. 10).

Derivation of the name. The very narrow frons where the antennae are inserted suggested the specific epithet.

Bionomics. According to the locality label, it was found in humus under bushes.

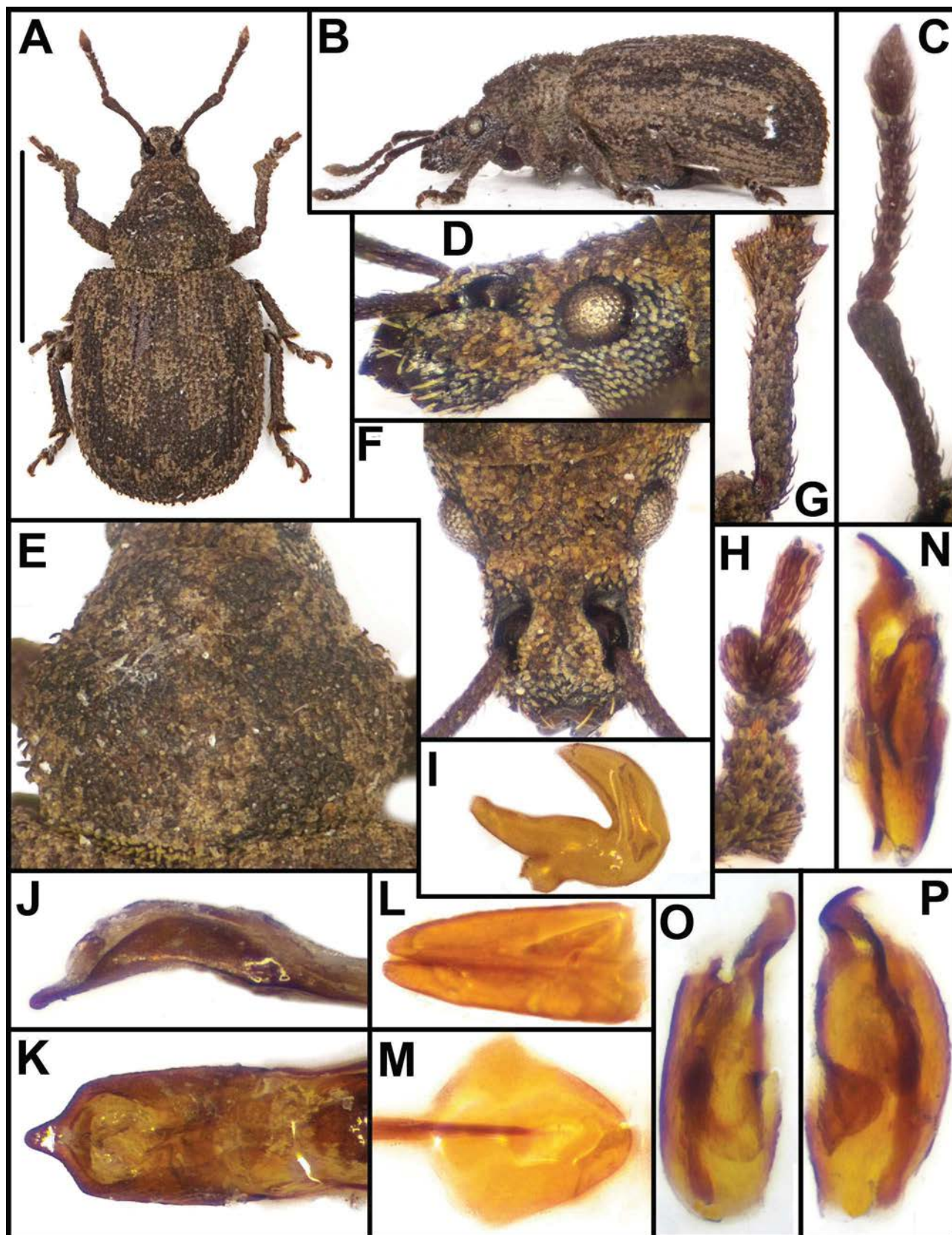


Fig. 8. *Oxymorus strictifrons* sp. n., paratypes, male (A–H, J, K, N–P) and female (I, L, M): A – habitus, dorsal view; B – habitus, lateral view; C – antenna; D – head with rostrum, lateral view; E – pronotum; F – head with rostrum, dorsal view; G – right protibia; H – tarsus; I – spermatheca; J – penis, lateral view; K – penis, dorsal view; L – gonocoxites; M – plate of female sternite VIII; N – sclerites of endophallus, lateral view; O – sclerites of endophallus, dorsolateral view; P – sclerites of endophallus, dorsal view.

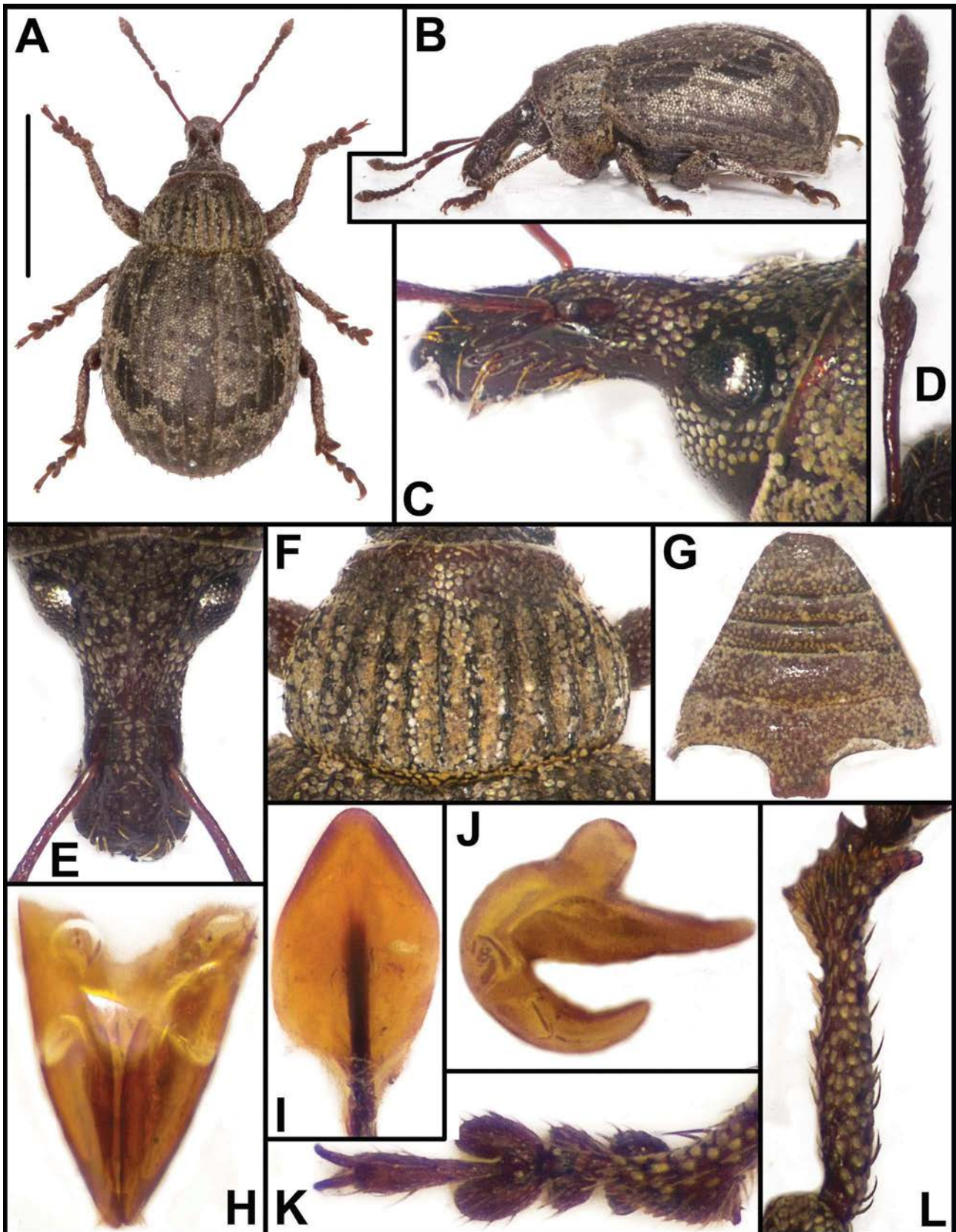


Fig. 9. *Oxymorus sulcaticollis* sp. n., female, paratype: A – habitus, dorsal view; B – habitus, lateral view; C – head with rostrum, lateral view; D – antenna; E – head with rostrum, dorsal view; F – pronotum; G – abdominal ventrites; H – gonocoxites; I – plate of sternite VIII; J – spermatheca; K – tarsus; L – right protibia.



Fig. 10. Map showing the distributions of *Oxymorus uitkyk* sp. n., *O. strictifrons* sp. n. and *O. rika* sp. n. Map data: Google Earth, Maxar Technologies, used according to Google Earth Terms of Service.

Oxymorus sulcaticollis sp. n.

Figs 9, 11

ZooBank taxon LSID:

EFB6CE41-02DD-4FE1-BC67-B0A51AA7E8F2

Differential diagnosis. *Oxymorus sulcaticollis* sp. n. differs from all other species in the genus by the dorsal part of pronotum bearing distinct and regular longitudinal ridges separated by deep narrow grooves.

Description. Body length 3.63–4.25 mm, holotype 3.81 mm. Body dark brownish, rostrum, anterior border of pronotum, antennae and legs paler, reddish brown. Dorsal and ventral part of body, antennal scapes and legs, except rostrum and tarsi, regularly densely covered with small, regularly rounded, greyish appressed scales with a slight cupreous sheen, 6–7 across one elytral interstria. Elytra with one regular row of slender, semi-appressed, inconspicuous, hair-like setae on each interstria, shorter than half the width of an interstria, well visible in profile.

Rostrum (Figs 9C, E) 1.74–1.89× as long as wide at apex, at base 1.19–1.24× wider than at apex, with slightly concave sides, indistinctly enlarged around sockets; in profile weakly regularly curved, short apical part declined, basally indistinctly separated from head by shallow depression. Epifrons elongate, angular, creating slender area between antennal insertions, about as wide as half of corresponding width of rostrum, with weakly concave sides, finely punctate, glabrous. Frons large, glabrous, smooth, indistinctly finely sparsely punctate. Sockets dorsally narrowly reniform, parallel; in profile very short, extended posteriorly. Antennal insertion before middle of rostrum. Head very wide and short; vertex flat, as wide as rostrum at apex. Eyes convex, barely protruding above the outline of head; in profile not reaching dorsal border of head.

Antennae (Fig. 9D) slender and short, scape 1.2× longer than funicle, 0.8× as long as protibia, at apex 0.8× as wide as club; funicle segment 1, 1.7–1.8× longer than wide, as long as segment 2, which is 2.2–2.4× longer than wide;

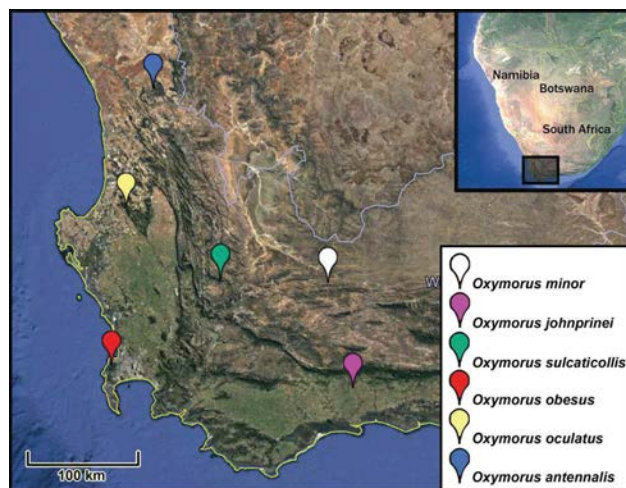


Fig. 11. Map showing the distributions of *Oxymorus antennalis* sp. n., *O. johnprinei* sp. n., *O. minor* sp. n., *O. obesus* sp. n., *O. oculatus* sp. n. and *O. sulcaticollis* sp. n. Map data: Google Earth, Maxar Technologies, used according to Google Earth Terms of Service.

segments 3 and 4 1.3× longer than wide; segment 5 as long as wide; segment 6 1.1× wider than long; segment 7 1.2× wider than long; club 1.6× longer than wide.

Pronotum (Fig. 9F) 1.40–1.44× wider than long, basal third widest and distinctly tapering anteriorly. Disc with very conspicuous, regular longitudinal ridges separated by deep narrow grooves along the whole length, only a short strip just behind anterior border smooth.

Elytra (Fig. 9A) short oval, 1.11–1.15× longer than wide, widest in middle with regularly rounded sides, broadly rounded apically, at base distinctly wider than base of pronotum; interstriae wide and flat; striae narrow. Integument under scales finely, densely, regularly granulate.

Protibiae (Fig. 9L) short and robust, 6.1–6.5× longer than wide in middle, at apex produced externally into a long slender process, apically truncated, inner part with dense row of short yellowish setae, on outer third very short and stout yellowish spines; inner side on apical half denticulate, with 6–8 small blackish spines. Tarsi (Fig. 9K) moderately long, segment 2 1.3× wider than long; segment 3 1.2–1.3× wider than long and 1.3–1.4× wider than segment 2; onychium 1.4–1.5× longer than segment 3.

Spermatheca (Fig. 9J) with short and wide, evenly curved and pointed cornu; ramus sub quadrate, as long as wide; collum about as long as cornu, 3× as long as width at base, straight, evenly distinctly tapering apically.

Type material. Holotype: 1♀ “RSA, Western Cape, Ceres, Waboonberg Mts., 33°15.541’S, 19°28.129’E, 15.x.2019, 1602 m, night time sweeping of fynbos, R. Borovec & M. Meregalli lgt.” (TMSA). Paratypes: 5♀, the same data as holotype (BMNH, MMTI, RBSC).

Type locality. South Africa, Western Cape, Ceres, Waboonberg Mts (Fig. 11).

Derivation of the name. This species takes its name from the conspicuous longitudinal ridges on pronotum.

Bionomics. The type specimens were collected early at night sweeping shrubby vegetation in fynbos.



Fig. 12. Photograph of habitat of *Oxymorus*, locality of *O. uitkyk* sp. n. and *O. rikae* sp. n. Fynbos vegetation near Uitkyk Pass in Cederberg mountains, where specimens were collected by net sweeping in the evening.

Key to the species of *Oxymorus* gen. n.

- 1 Body dorsally glabrous (Fig. 4A). Pronotum almost as wide as elytra (Fig. 4A). Funicle segments 4–7 conspicuously transverse, 1.9–2.1× wider than long (Fig. 4H). Antennae inserted on basal third of rostrum (Fig. 4F). Rostrum distinctly enlarged around antennal insertions (Fig. 4F). Small, 2.6 mm long *O. minor* sp. n.
- Body dorsally densely covered with appressed scales (Figs 5A, 6A, 7A). Pronotum distinctly narrower than elytra (Figs 5A, 6A, 7A). Funicle segments 4–7 at most 1.3× wider than long (Figs 5C, 6C, 7C). Antennae inserted on middle of rostrum or before (Figs 5D, 6D, 7G). Rostrum not or only slightly enlarged around antennal insertions (Figs 5D, 6D, 7G). Big, at least 3.6 mm long 2
- 2 Rostrum as long as wide to 1.4× longer than wide at apex (Figs 5D, 8F). Epifrons subtriangular, distinctly tapering posteriorly (Figs 5D, 8F) 3
- Rostrum 1.9–2.4× longer than wide at apex (Figs 6D, 7G). Epifrons subparallel-sided (Figs 6D, 7G) 4
- 3 Rostrum 1.3–1.4× longer than wide, glabrous, with concave sides, not tapering anteriorly (Fig. 5D). Sides of epifrons straight (Fig. 5D). Pronotum widest at base (Fig. 5G). Elytra with one regular row of slender piliform setae. Protibiae conspicuously enlarged externally and weakly internally (Fig. 5F). Onychium as long as tarsal segment 3 (Fig. 5F). Length 4.1–5.4 mm *O. obesus* sp. n.
- Rostrum as wide as long, densely squamose, with straight sides, tapering anteriorly (Fig. 8F). Sides of epifrons convex (Fig. 8F). Pronotum widest at basal third (Fig. 8E). Elytra with 1–2 irregular rows of wide, subspatulate setae. Protibiae equally enlarged externally and internally (Fig. 8G). Onychium 1.2–1.3× longer than tarsal segment 3 (Fig. 8H). Length 4.8–5.4 mm *O. strictifrons* sp. n.
- 4 Pronotum with very distinct and regular longitudinal ridges separated by deep narrow grooves (Fig. 9F). Base of elytra distinctly wider than base of pronotum (Fig. 9A). Spermatheca with straight collum as long as cornu (Fig. 9J). Length 3.6–4.3 mm *O. sulcaticollis* sp. n.
- Pronotum finely punctuate and without longitudinal ridges (Figs 6H, 2E). Base of elytra slightly wider than base of pronotum (Figs 6A, 2A). Spermatheca with collum distinctly shorter than cornu or conspicuously curved (Figs 3K, 7L) .. 5
- 5 Antennal scape as long as protibia (Figs 2A, 6A). Funicle segment 2 distinctly longer than segment 1 (Figs 2C, 6C). Eyes conspicuously protruding from head (Figs 2F, 6D). Protibiae equally wide outside and inside (Figs 2H, 6F) 6
- Antennal scape distinctly shorter than protibia (Figs 7A, 1A). Funicle segment 2 as long as segment 1 (Figs 1C, 7C). Eyes slightly protruding from head (Figs 1D, 7G). Protibiae produced externally into a long slender process (Figs 1I, 7I) 7
- 6 Elytra with short, inconspicuous, semi-appressed, apically rounded setae, shorter than half the width of an interstria. Rostrum in profile widest where antennae are inserted (Fig.

- 6E). Eyes more prominent in posterior part (Fig. 6D). Penis in profile scarcely and uniformly thickens (Fig. 6K), in dorsal view with lateral sclerified margins narrow, not curved inwards, apex subtruncate (Fig. 6L). Length 3.8–5.1 mm.....
..... *O. oculus* sp. n.
- Elytra with long, conspicuous, semi-erect, apically pointed setae, longer than half the width of an interstria. Rostrum in profile equally wide along its length (Fig. 2D). Eyes regularly convex (Fig. 2F). Penis in profile wide, irregularly enlarged, widest at basal third (Fig. 2K), in dorsal view with lateral margins distinctly curved inwards, apex slightly prominent medially (Fig. 2L). Length 3.7 mm *O. antennalis* sp. n.
 - 7 Larger, 6.4–6.9 mm long. Rostrum black (Figs 7E, G). Epifrons tricarinate, with slender and sharp keels in middle and on borders, distinctly carinate also at base of rostrum (Fig. 7G). Elytra in profile without any prominent setae. Spermatheca with collum distinctly curved before tip (Fig. 7L) ...
..... *O. rikae* sp. n.
 - Smaller, at most 5.1 mm long. Rostrum reddish brown (Figs 1D, 1E). Epifrons at most with slender and indistinct median keel, evanescent on posterior border of sockets (Figs 1D, 3F). Elytra in profile with distinct semi-appressed or semi-erect setae. Spermatheca with apical half of collum straight (Figs 1L, 3K)..... 8
 - 8 Elytra with dense, regularly rounded appressed scales, completely hiding integument (Fig. 1A). Pronotum densely scaly (Figs 1A, 1F). Rostrum at base 1.2–1.3× wider than at apex (Fig. 1D). Protibiae robust, denticulate (Fig. 1I). Epifrons at antennal insertion wider than club (Fig. 1A). Basal part of collum of spermatheca curved (Fig. 1L). Length 4.0–5.1 mm
..... *O. uitkyk* sp. n.
 - Elytra with sparse, slender, long oval appressed scales, not hiding integument (Fig. 3A). Pronotum glabrous (Figs 3A, 3E). Rostrum at base as wide as at apex (Fig. 3F). Protibiae slender, not denticulate (Fig. 3G). Epifrons at antennal insertion as wide as club (Fig. 3A). Collum of spermatheca entirely straight (Fig. 3K). Length 3.6 mm . *O. johnprinei* sp. n.

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***Coniophloeus*, a new genus of Embrithini from South Africa, with description of four new species (Coleoptera: Curculionidae: Entiminae)**

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Key words. Curculionidae, Entiminae, Embrithini, *Coniophloeus*, new genus, new species, South Africa

Abstract. A new genus, *Coniophloeus* gen. n., is described for five species of South African weevils known from the Western and Eastern Cape and assigned to the tribe Embrithini Marshall, 1942: *Coniophloeus squalidus* (Boheman, 1842) comb. n. (type species, transferred from the genus *Trachyphloeus* Germar, 1817 and tribe Trachyphloeini Lacordaire, 1863), *C. alternans* sp. n., *C. oberprieleri* sp. n., *C. robustus* sp. n. and *C. obrieni* sp. n. All five species are illustrated and keyed.

ZooBank Article LSID: F6DEACAD-1127-4A2D-8E9C-6923069EF96F

INTRODUCTION

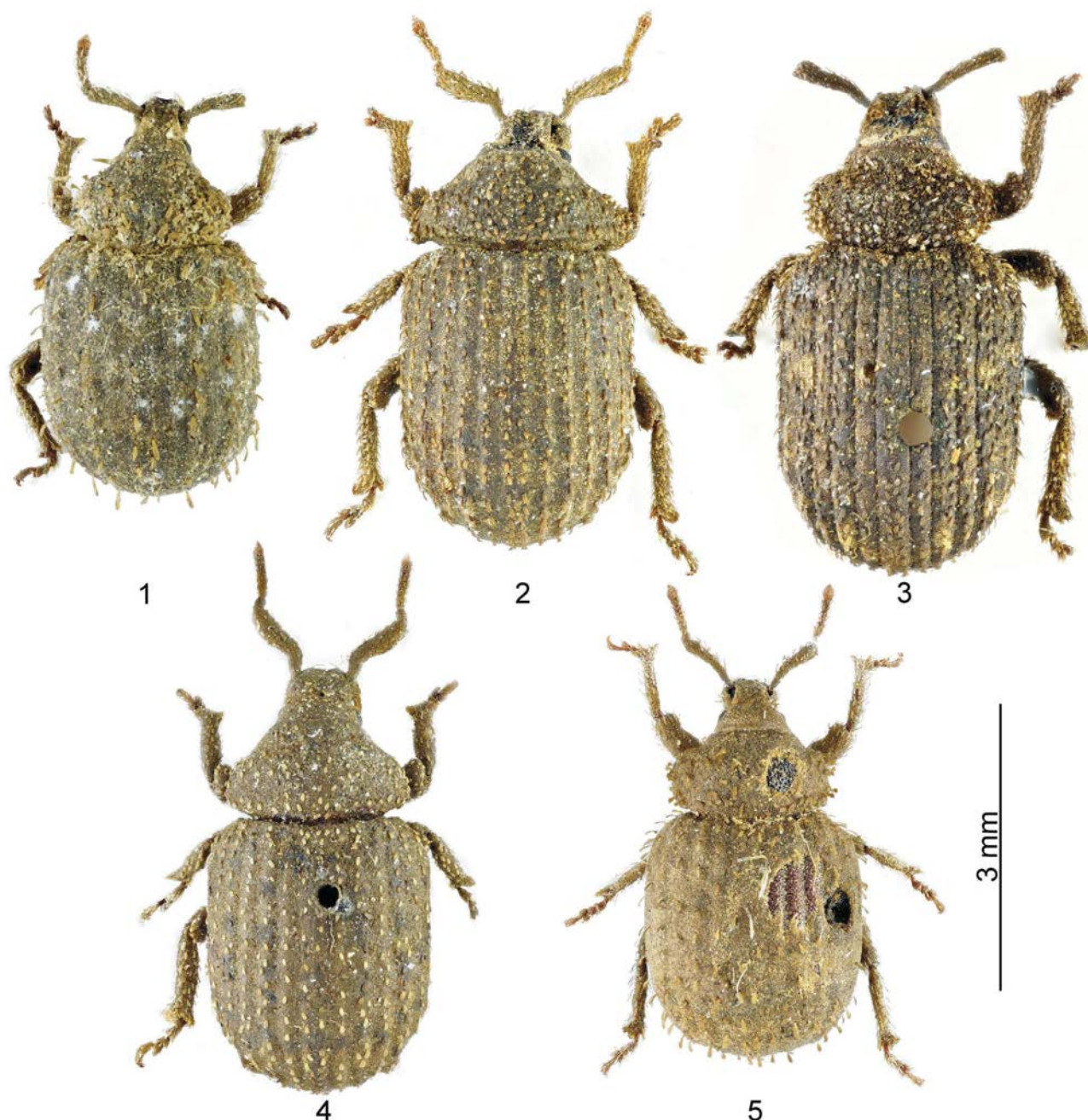
The tribe Embrithini Marshall, 1942, as redefined by Borovec & Oberprieler (2013), currently comprises 67 genera. Almost all known species of Embrithini are arboricolous or floricolous, active during the day on plants, shrubs or trees. There are some exceptions only in several South African embrithine genera, whose species live among litter under plants, such as some undescribed species of *Cycliscus* Schoenherr, 1842 and *Glyptosomus* Schoenherr, 1847 as well as *Ellimenistes humeralis* Marshall, 1947 and three similar undescribed species. The only described genus in which all the species are terricolous is *Afrophloeus* Borovec & Oberprieler, 2013, which comprises three South African species, one of them introduced to Australia. However, there are several other terricolous species among as yet unidentified material, which are also assignable to Embrithini but can not be accommodated in any described genus, for example those described from the Afrotropical region in the Palaearctic tribe Trachyphloeini (Borovec & Skuhrovec, 2017). One such species is *Trachyphloeus squalidus* Boheman, 1842, which is here removed from *Trachyphloeus* Germar, 1817 and Trachyphloeini Lacordaire, 1863. The description of a new genus and discussion of its taxonomic position are the aims of the present paper.

The change in lifestyle from floricolous or arboricolous to living in soil or litter have to include also some morphological changes to the body, mainly shortening of extremities, which can be also more robust, diminution in

their eyes and others. These changes are very apparent if one compares the floricolous genus *Lalagetes* Schoenherr, 1842, with the strictly terricolous genus *Afrophloeus*, both belonging to Embrithini. *Lalagetes* species have slender antennae and legs, scapes 4.6–6.1 × and protibiae 5.5–6.6 × longer than wide at widest point, and eyes in lateral view large, with the diameter distinctly longer than the part of head below them, while *Afrophloeus* species have short and robust antennae, scapes 2.4–3.7 × and protibiae 3.3–3.7 × longer than wide at widest point, and eyes in lateral view small, with the diameter distinctly shorter than the part of head below them. Moreover, terricolous species of *Afrophloeus* have an apical portion of protibiae lobed and armed with distinct, stout spines and dorsal body vestiture formed by short erect spatulate setae, while the species of *Lalagetes* have the apex of protibiae rounded and fringed by fine setae and body dorsally covered by long and slender erect setae.

MATERIAL AND METHODS

Body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of the elytra, excluding the rostrum. Width/length ratio of the rostrum was measured as the maximum width at the base versus the maximum length to the base of the mandibles. Width/length ratios of pronotum, elytra, antennal and tarsal segments were taken at the maximum width and length of the respective parts in dorsal view; length of the onychium was taken as the part exceeding the outline of tarsal segment 3. Dissected male and female genitalia were studied in glycerine. Female genitalia were afterwards embedded in



Figs 1–5. Habitus of *Coniophloeus* species: 1 – *Coniophloeus alternans* sp. n., holotype male; 2 – *C. oberprieleri* sp. n., holotype female; 3 – *C. obrieni* sp. n., holotype male; 4 – *C. robustus* sp. n., paratype female; 5 – *C. squalidus* (Boheman), female.

Solakryl BMX (epoxy resin soluble in toluene; Medika, Prague) and male genitalia were mounted dry on the same card as the respective specimen, with tegmen and sternite IX embedded in Solakryl BMX. Habitus images were taken with a Canon EOS 5D Mark II camera fitted with a Canon MP-E65 1–5× macro lens. Images were stacked using the program Zerene Stacker and edited in Adobe Photoshop CC 2015.

The terminology used to describe the rostrum and the genitalia follows Oberprieler et al. (2014).

Exact label data of type material are cited; with different labels indicated by a slash (/). Author's remarks and comments are given in square brackets.

Specimens are deposited in the following museums and private collections: BMNH – Natural History Museum, London, United Kingdom (British Museum of Natural History), Max Bar-

clay; MNBG – Museum für Naturkunde der Humboldt Universität, Berlin, Germany, Manfred Uhlig; NHRS – Naturhistoriska Riksmuseet, Stockholm, Sweden, Johannes Bergsten; SANC – National Collection of Insects, Pretoria, South Africa, Riaan Stals; SDEI – Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany, Lutz Behne; TMSA – Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa, Ruth Müller.

TAXONOMY

Genus *Coniophloeus* gen. n.

(Figs 1–38)

ZooBank taxon LSID:

8D5D314D-3A3B-43AB-BCC7-CACD2D62778D

Type species. *Trachyphloeus squalidus* Boheman in Schoenherr, 1842: 110, here designated.

Diagnosis. Small to medium-sized Embrithini, 3.2–5.6 mm long, with head and rostrum separated by shallow to deep, transverse furrow and rostrum weakly rounded around antennal sockets at apical half; head in lateral view obliquely declivous to base of epifrons; scapes robust; clubs small, not clearly separated from funicle; pronotum conspicuously transverse, 1.7–2.2× wider than long, creating dorso-ventrally flattened, laterally prominent longitudinal ridges; protibiae short and robust, at apex laterally enlarged with variable number of spines, spines on outer portion connected; metatibiae with well developed, squamous corbels; claws connate basally; ventrite 2 in middle about as long as ventrites 3 and 4 combined; tegmen with parameres; plate of sternite VIII of female umbrella-shaped with membranous basal margin and apodeme terminating inside it.

Description (Figs 1–38). Body length 3.2–5.6 mm. Body (Figs 1–5) dark brownish to blackish, in some species tarsi or only spines at apex of tibiae, claws and antennal club brownish. Dorsal and ventral part of body densely covered with oval to rounded, small, appressed scales, 6–8 scales across width of one interstria, scales longitudinally finely striate, dense, hiding integument or partly isolated. Scapes, funicles, femora, tibiae and tarsi densely covered by identical appressed scales, only clubs shortly and densely setose. Elytra with each interstria having 1–2 dense rows of subspatulate, conspicuous, appressed to semi-erect setae; pronotum, head with rostrum, antennae except club and legs with similar but more slender and shorter, densely irregularly scattered setae, semi-appressed to semi-erect.

Rostrum (Figs 6, 7, 12, 13, 18, 19, 22, 23, 31, 32) 1.1–1.8× wider than long, apical half rounded; in lateral view distinctly convex. Epifrons at base as wide as or narrower than distance between eyes, tapering anteriorly with concave and somewhat swollen edges, longitudinally deepened, posteriorly separated from head by transverse shallow to deep sulcus, often covered by vestiture. Epifrons beneath scales longitudinally distinctly and regularly impressed, in transverse profile V-shaped, its posterior corners in dorso-lateral view distinctly prominent, creating blunt notches; base of epifrons arched or straight, sharply, tooth-like constricted to form transverse and sometimes a very deep furrow separating it from head. Frons short, squamous, bearing 3–4 pairs of stout setae. Epistome moderately large, V-shaped, posteriorly sharply and narrowly carinate, not reaching anterior border of scrobes, not squamous. Antennal scrobes in dorsal view scarcely or partly visible, if visible then reniform; in lateral view short, weakly curved, directed just towards eyes, separated from anterior margin of eye by slender or wide squamous stripe. Vertex flat and wide, beneath scales with numerous, sometimes ill-defined longitudinal striae radiating from middle of base of epifrons. Head in lateral view flat, distinctly obliquely declivous to transverse furrow separating head from epifrons. Eyes small, circular in outline, convex, weakly prominent from outline of head, in lateral

view placed at middle of head height. Mandibles small, not squamous, trisetose but most of specimens without setae, which were possibly abraded; in two specimens with setal remnants. Submentum with two long setae.

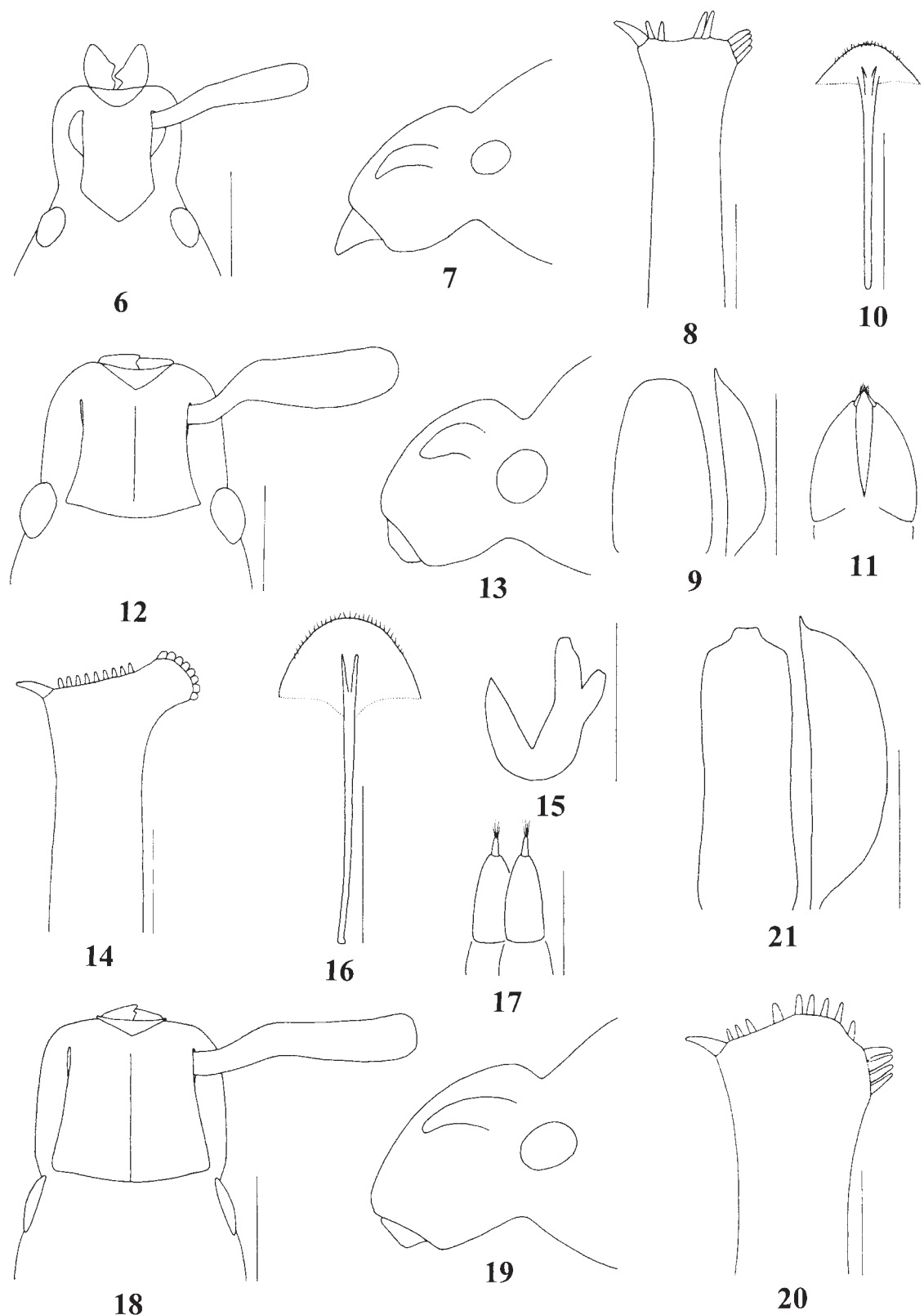
Antennae robust, with scape (Figs 6, 12, 18, 22, 31) moderately to very robust, wide, slightly exceeding anterior margin of pronotum when at rest, longer than funicle, in some species strongly S-shaped at base, enlarged apically, widest at apex or at anterior third, at apex wider than club and equally as wide as protibiae at midlength; funicle 7-segmented, funicular segments wide and short, segments 1 and 2 conical, the others transverse; club small, in some species barely wider than last funicular segments.

Pronotum (Figs 1–5) conspicuously transverse, 1.68–2.24× wider than long, only slightly narrower than elytra, widest in posterior half where it is dorso-laterally flattened, laterally weakly prominent longitudinal flattened tubercles; sides rounded; anterior margin distinctly narrower than posterior one, pronotum behind anterior margin with significant constriction. Disc regularly convex, without tubercles, furrows or depressions, beneath scales finely, densely and regularly granulate, moderately shiny. Base weakly arched. Anterior border in lateral view straight, without ocular lobes or setae. Procoxal cavities contiguous, rounded, nearer to anterior border of prosternum; procoxae subglobular. Scutellum not visible.

Elytra (Figs 1–5) subparallel-sided, 1.16–1.31× longer than wide, base weakly arched, humeral calli regularly rounded, post humeral calli absent, apex widely rounded, 10-striate, striae narrow, punctate with punctures hidden below scales, interstriae vaulted, wide, beneath scales finely and densely granulate. Mesocoxae semiglobular, mesosternal process narrower than quarter of diameter of mesocoxa. Metacoxae transverse, separated by shorter distance than transverse diameter of metacoxa.

Femora unarmed, distinctly inflated. Tibiae short and robust; protibiae (Figs 8, 14, 20, 24, 33) at apex enlarged laterally, mesally rounded or slightly lobed, with different number of differently coloured short spines, lateral widened part armed with 3–4 connected, laterally prominent spines, inner corner with short mucro; mesotibiae densely fringed with numerous short yellowish spines and with one inner curved mucro; metatibiae with large, subtriangular apical surface glabrous or squamous, with mucro; metatibial corbels wide and well distinct, densely squamous, fringed outside and inside by dense and very short yellowish to brownish setae. Tarsi wide to slender, segment 3 wider than segment 2, bilobed, onychium long; claws long, fused in basal third, then divaricate. Underside of tarsi densely finely setose.

Abdomen (Fig. 34) ventrally subtriangular, 1.03–1.12× longer than wide; ventrite 1 large, in middle about equally long as ventrites 2–4 combined, behind metacoxae equally long as ventrite 2; ventrite 2 in middle about as long as ventrites 3 and 4 combined; ventrite 5 in males shorter, subtrapezoidal, in females longer, subtriangular. Suture between ventrites 1 and 2 slightly sinuate to straight, finer and narrower than the others; suture between ventrites 3 and 4



Figs 6–21. Structural details of *Coniophloeus* gen. n. Figs 6–11: *Coniophloeus alternans* sp. n. 6 – head with rostrum, dorsal view, scale = 1 mm; 7 – head with rostrum, lateral view, scale as in dorsal view; 8 – apex of right protibia, scale = 0.50 mm; 9 – penis in ventral and lateral view, scale = 0.50 mm; 10 – sternite VIII of female, dorsal view, scale = 0.50 mm; 11 – ovipositor, dorsal view, scale = 0.25 mm. Figs 12–17: *C. oberprieleri* sp. n. 12 – head with rostrum, dorsal view, scale = 1 mm; 13 – head with rostrum, lateral view, scale as in dorsal view; 14 – apex of right protibia, scale = 0.50 mm; 15 – spermatheca, scale = 0.50 mm; 16 – sternite VIII of female, dorsal view, scale = 0.50 mm; 17 – ovipositor, dorsal view, scale = 0.25 mm. Figs 18–21: *C. obrieni* sp. n. 18 – head with rostrum, dorsal view, scale = 1 mm; 19 – head with rostrum, lateral view, scale as in dorsal view; 20 – apex of right protibia, scale = 0.50 mm; 21 – penis in ventral and lateral view, scale = 0.50 mm.

slightly arched, between ventrites 4 and 5 distinctly arched. Ventrites with dense oval appressed scales and with semi-erect short to long subspatulate setae. Metaventral process obtuse, narrower than transverse diameter of metacoxa.

Male genitalia. Penis (Fig. 25) short to long, well sclerotized, temones 1.8–2.2× longer than body of penis and 2.5–2.8× longer than tegminal manubrium; endophallus with complex of long and branched sclerites, because of limited material of most species, sclerites described only in *O. robustus* sp. n. Tegmen (Fig. 26) with slender ring with long parameres connected at base, manubrium 1.1–1.4× longer than diameter of ring, slightly enlarged apically. Sternite IX (Fig. 27) with spiculum gastrale moderately long, anteriorly curved and tapered, posteriorly with fused basal arms; hemisternites slender, comma-shaped.

Female genitalia. Gonocoxites (Figs 11, 17, 30, 38) short, flat, subtriangular, regularly tapered apically, with apical short or long styli, with tuft of 3–4 setae. Sternite VIII (Figs 10, 16, 29, 37) with moderately long apodeme, 2.3–2.9× longer than plate, terminating just inside plate; plate wide, umbrella-shaped, with basal margin ill-defined and apical margin slender, but developed, with short setae. Spermatheca (Figs 15, 28, 36) C-shaped, with irregularly curved cornu and developed ramus and nodulus, differently shaped between the species.

Etymology. The genus name is derived from the Greek nouns *kónis* (dust), referring to the dusty appearance of the body, and the Greek word *phloio* (bark) as used in the compound name of the morphologically superficially similar genus *Trachyphloeus*, the name under which most of the specimens considered here were originally deposited in collections. The name is masculine in gender.

Biology. Unknown, there are no data where collected except for *O. robustus* sp. n., which was sifted from forest litter.

Distribution. The genus is known only from South Africa (the Western and Eastern Cape provinces).

Remarks. This genus includes five species, four of them newly described below. The species of *Coniophloeus* resemble large species of *Trachyphloeus* or other Trachyphloeini, but are easily distinguishable mainly by the wide, squamous metatibial corbels and from *Trachyphloeus* by the distinct transverse sulcus between head and rostrum (rostrum continuous with head in *Trachyphloeus*), connate tarsal claws (free claws), tegmen with parameres (lacking parameres) and sternite VIII with apodeme terminating inside plate with ill-defined posterior border (apodeme creating distinct basal margins of plate). The first three characters (presence of corbel, sulcus between head and rostrum and tarsal claws connate in basal third), combined with the trisetose mandibles and dorso-laterally placed scrobes, indicate that the newly described genus belongs to the tribe Embrithini.

Within the Embrithini *Coniophloeus* gen. n. and *Afrophloeus* are the only Embrithini with short and robust antennae and very wide and short scapes, short and robust tibiae and laterally enlarged protibiae with apices armed with moderately long spines. *Coniophloeus* gen. n. can be

distinguished from *Afrophloeus* by the following characters:

***Afrophloeus*:** Apex of protibiae rounded with single laterally prominent spine. Elytra with small subhumeral tubercles visible in dorso-lateral view. Eyes flat. Metaventral process 1.5× as wide as transverse diameter of metacoxa. Suture between ventrite 3, 4 and 5 straight. Tegmen lacking parameres. 2.3–3.3 mm.

***Coniophloeus* gen. n.:** Outer surface of apex of protibiae distinctly enlarged and with 3–4 connected, laterally prominent spines. Elytra without subhumeral tubercles. Eyes protruding. Metaventral process narrower than transverse diameter of metacoxa. Suture between ventrite 3, 4 and 5 arched. Tegmen with long parameres. 3.2–5.6 mm.

Coniophloeus is similar to embrithine genera with small species, such as *Glyptosomus* Schoenherr, 1847, *Heisonyx* Marshall, 1947, *Lalagetes* Schoenherr, 1842 and *Phaylomerinthus* Schoenherr, 1842. From *Glyptosomus* it differs by the following characters:

***Glyptosomus*:** Head and rostrum in profile at the same level. Sulcus between head and rostrum in dorsal view clearly defined. Eyes with supraocular longitudinal tubercles. Protibiae laterally straight, apically fringed with short, inconspicuous, regularly spaced spines. Ventrite 1 at least 5× as long as ventrite 2; ventrite 2 as long as ventrite 3 or 4. 2.7–5.4 mm.

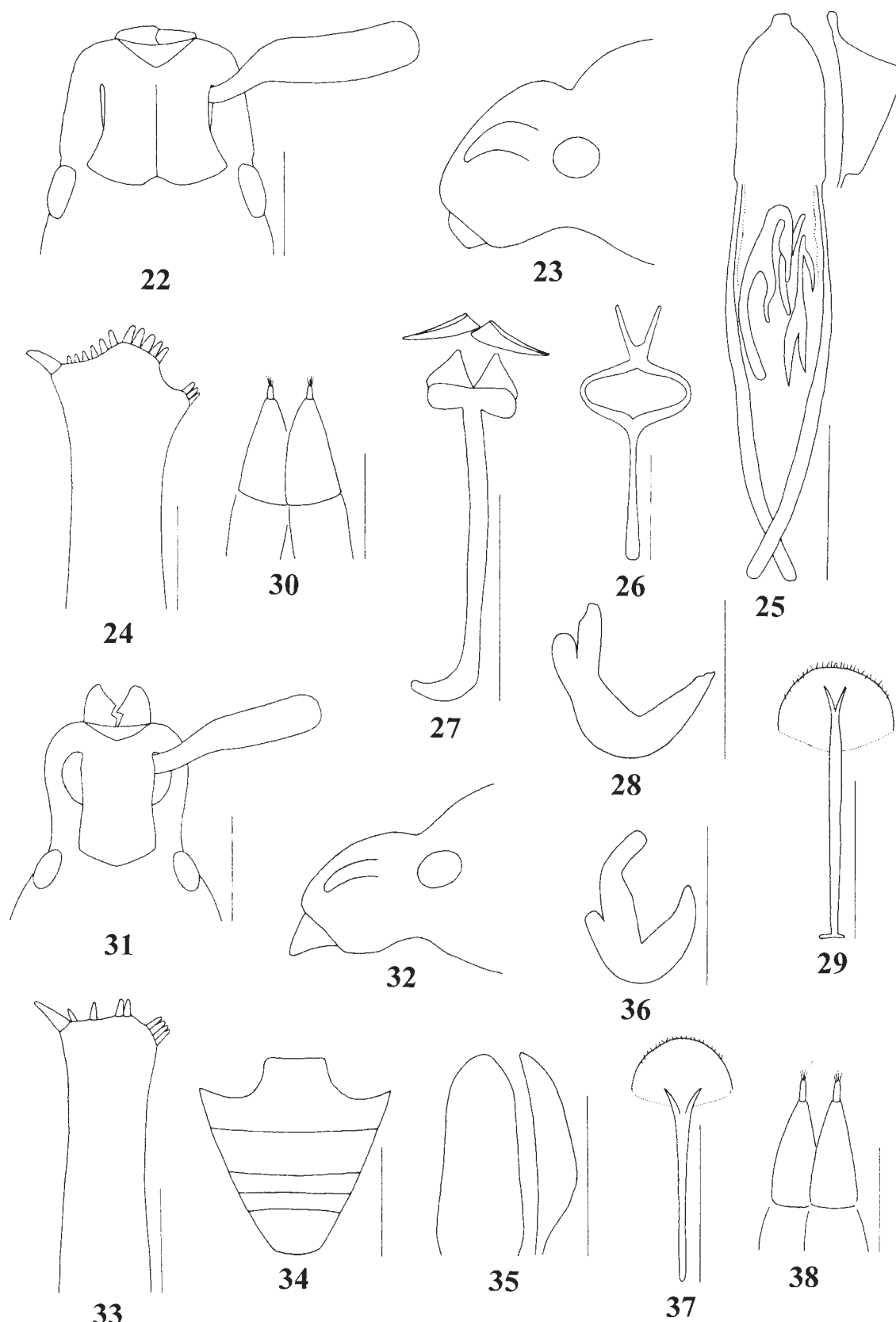
***Coniophloeus* gen. n.:** Head and rostrum in profile clearly separated by transverse furrow. Sulcus between head and rostrum in dorsal view with ill-defined margins. Eyes without supraocular tubercles. Protibiae laterally enlarged, apically armed with conspicuous spines, united with inner, middle and outer groups, outer spines connected. Ventrite 1 twice as long as ventrite 2; ventrite 2 as long as ventrite 3 and 4 combined. 3.2–5.6 mm.

Coniophloeus differs from *Heisonyx*, *Lalagetes* and *Phaylomerinthus* by the following characters: epifrons posteriorly separated from head by a wide transverse sulcus with ill-defined borders (clearly defined narrow sulcus in *Heisonyx*, *Lalagetes* and *Phaylomerinthus*); frons densely squamous (glabrous); scapes short and robust (long and slender); funicular segments 3–7 short and transverse (long and slender); clubs barely wider and hardly separated from last funicular segments (distinctly wider and well separated from last funicular segments); pronotum short and wide, at least 1.7× wider than long (narrower, at most 1.5× wider than long); apex of protibiae widened laterally, apically with distinct spines (straight laterally, apically with fringe of setae or short spines) and metatibiae with broad, distinct corbels (corbels slender, sometimes barely visible).

***Coniophloeus squalidus* (Boheman, 1842), comb. n.** (Figs 5, 31–38)

Trachyphloeus squalidus Boheman in Schoenherr, 1842: 110 (original description); Seidlitz 1868: 97 (monograph of Otiorhynchinae); Lona 1937: 332 (catalogue); Borovec & Meregalli, 2013: 501 (note); Borovec & Skuhrovec, 2017: 539 (lectotype designation).

Type locality. Terra Caffrorum [South Africa, Eastern Cape].



Figs 22–38. Structural details of *Coniophloeus* gen. n. Figs 22–30: *Coniophloeus robustus* sp. n. 22 – head with rostrum, dorsal view, scale = 1 mm; 23 – head with rostrum, lateral view, scale as in dorsal view; 24 – apex of right protibia, scale = 0.50 mm; 25 – penis in ventral and lateral view, scale = 0.50 mm; 26 – tegmen in dorsal view, scale = 0.50 mm; 27 – sternite IX of male including hemisternites in dorsal view, scale = 1.00 mm; 28 – spermatheca, scale = 0.50 mm; 29 – sternite VIII of female, dorsal view, scale = 0.50 mm; 30 – ovipositor, dorsal view, scale = 0.25 mm. Figs 31–38: *C. squalidus* (Boheman). 31 – head with rostrum, dorsal view, scale = 1 mm; 32 – head with rostrum, lateral view, scale as in dorsal view; 33 – apex of right protibia, scale = 0.50 mm; 34 – abdominal ventrites, scale = 1 mm; 35 – penis in ventral and lateral view, scale = 0.50 mm; 36 – spermatheca, scale = 0.50 mm; 37 – sternite VIII of female, dorsal view, scale = 0.50 mm; 38 – ovipositor, dorsal view, scale = 0.25 mm.

Type material. Lectotype (sex unknown): “Typus [red label, p] / Terra Caffrar. Eckl. et Zeyh. [hw] / LECTOTYPUS Trachyphloeus squalidus Boheman, Borovec, Skuhrovec des. 2017 [red label, p] / Gen. nov. squalidus (Boheman) Borovec, Skuhrovec det. 2017” (NHRS, Schoenherr’s coll.).

Additional material examined. 2♀, S. Af. [South Africa] (BMNH); 1♂, [South Africa] Cap [Cape, probably Cape Peninsula in Western Cape], Drège [lgt.] (SDEI); 1♂, Afr. m. [South Africa] (MNBG).

Redescription. Body length 3.66–4.19 mm. Body (Fig. 5) dark brownish to blackish, only clubs and tarsi paler, brownish; incrustate with indistinct appressed vestiture of oval scales except clubs and tarsi, 5–6 scales across width of one elytral interstria; setae on elytra semi-erect, conspicuous, long, moderately slender, subspatulate, in regular row on interstriae, slightly longer than half width of one interstria, intervals between setae slightly larger than setal length; setae on pronotum similar but densely irregularly scattered, semi-appressed and slightly broader; on head and rostrum similar but semi-appressed and distinctly shorter; femora, tibiae, scapes and funicles with very slender, long, semi-erect setae.

Rostrum (Figs 31, 32) 1.11–1.14× wider than long, in basal half with sides concave, then widely rounded around antennal insertions, at apical third equally wide as at base. Epifrons narrow, 0.6× as wide as rostrum in middle, with sides slightly concave, at base distinctly narrower than space between eyes, weakly longitudinally depressed; posteriorly V-shaped, separated from head by deep transverse furrow; beneath scales weakly shiny, finely sparsely granulate. Vertex irregularly and finely longitudinally striate, striae radiating from middle of base of epifrons. Scrobes dorsally reniform, distinctly visible in anterior half; laterally slender and short, narrow, weakly curved, directed to middle of eye, separated from it by wide squamous stripe. Eyes small, weakly convex, dorsally scarcely prominent from outline of head; laterally circular, placed in middle of head. Head wide, widest at base, distinctly tapering anteriorly with slightly convex sides, interocular space very wide.

Antennae moderately robust; scapes weakly curved before middle, gradually thicken apically, at apex 1.2× wider than clubs and as wide as middle of protibiae; funicles with segments 1 and 2 obconical, the others transverse; segment 1 1.5× longer than wide and 1.3× longer than segment 2, which is 1.5× longer than wide, segments 3–6 1.6× wider than long, segment 7 1.7–1.8× wider than long; clubs short, 1.4× longer than wide, only slightly wider than last funicular segments.

Pronotum (Fig. 5) 1.72–1.75× wider than long; lateral margins weakly rounded in basal two thirds, at apical third conspicuously constricted; disc regularly convex; base weakly arched; in lateral view weakly convex; beneath scales moderately shiny, finely and regularly granulate.

Elytra (Fig. 5) oval, 1.16–1.22× longer than wide with weakly rounded sides, laterally convex.

Protibiae (Fig. 33) at apex outer side enlarged, armed with 4 connected spines on outer corner, 2 connected spines in middle and 2 smaller isolated spines on inner

side, plus mucro; spines yellowish, mucro brownish. Apical surface of metatibiae glabrous. Tarsi with segment 2 1.3× wider than long; segment 3 1.4× wider than long and 1.2–1.3× wider than segment 2; onychium long, 1.8–1.9× longer than segment 3; claws shortly fused at base, distinctly divergent, brownish.

Penis (Fig. 35) ventrally moderately long and slender, widest at base, weakly evenly tapering apically, apex rounded; laterally slightly curved, widest at base, evenly tapering apically, tip not extended.

Spermatheca (Fig. 36) with cornu short and wide, almost straight, evenly tapering apically; corpus long; ramus small, about as wide as long; nodulus extremely long, about as long as cornu, tubular, distinctly curved in middle. Gonocoxites (Fig. 38) subtriangular with moderately long apical styli. Sternite VIII (Fig. 37) with plate 1.5× wider than long, with apodeme terminating in basal half.

Remarks. This species is distinguishable from all others except *C. alternans* sp. n. by its long semi-erect elytral setae, dorsally clearly visible scrobes, long rostrum, basally straight scapes and glabrous apical surface of the metatibiae, and from *C. alternans* sp. n. by elytral setae on all intervals.

***Coniophloeus alternans* sp. n.**

(Figs 1, 6–11)

ZooBank taxon LSID:

97AB340D-F618-4922-9FB8-CAD2541CB30F

Type locality. South Africa, Eastern Cape, Port Elizabeth.

Type material. Holotype: ♂, Süd Afrika [South Africa, Eastern Cape] / Algoa Bay [Port Elizabeth now] / 22.10.[18]95 / Dr. Brauns [lgt.] // G.A.K. Marshall / Coll. / B.M. 1950-255 (BMNH). Paratypes: 3♀, Capland [South Africa, Eastern Cape] / Algoa Bay [Port Elizabeth now] / Dr. Brauns [lgt.] // G.A.K. Marshall / Coll. / B.M. 1950-255 (BMNH).

Description. Body length 3.25–3.78, holotype 3.25 mm. Body (Fig. 1) dark brownish to blackish, only clubs somewhat paler, brownish; incrustate with indistinct appressed vestiture. Setae on elytra semi-erect, conspicuous, long, moderately slender, subspatulate, in regular row only on odd interstriae, each seta slightly longer than half width of one interstria, intervals between setae somewhat larger than setal length; setae on pronotum similar but semi-appressed and slightly wider, densely irregularly scattered; on head and rostrum similar, but semi-appressed and distinctly shorter; on femora, tibiae, scapes and funicles very slender, long, semi-erect.

Rostrum (Figs 6, 7) 1.05–1.08× wider than long, basal half with concave sides, then widely rounded around antennal insertions, in apical third equally wide as at base to 1.05× wider. Epifrons narrow, 0.6× wider than rostrum in the middle, with sides slightly concave, at base distinctly narrower than space between eyes, weakly longitudinally depressed; posteriorly U-shaped, separated from head by deep transverse furrow, beneath scales weakly shiny, indistinctly sparsely granulated; vertex irregularly and finely longitudinally striate, striae radiating from middle of base of epifrons. Scrobes dorsally reniform, clearly visible on

anterior half; laterally slender and short, weakly curved, directed to ventral border of eye, separated from it by wide squamous stripe. Eyes small, weakly convex, dorsally scarcely prominent from outline of head; laterally circular, placed in middle of head. Head wide, widest at base, distinctly tapering anteriorly with sides slightly convex, vertex very wide.

Antennae moderately robust; scapes (Fig. 6) weakly curved before middle, gradually thickened apically, at apex $1.1\times$ wider than clubs and as wide as middle of protibiae; funicles with segments 1 and 2 obconical, the others transverse; segment 1 $1.2\text{--}1.3\times$ longer than wide and $1.3\text{--}1.4\times$ longer than segment 2, which is $1.2\text{--}1.3\times$ longer than wide, segments 3–5 $1.5\text{--}1.6\times$ wider than long, segment 6 $1.7\times$ wider than long, segment 7 $1.8\times$ wider than long; clubs short, $1.3\times$ longer than wide, only slightly wider than last funicular segments.

Pronotum (Fig. 1) $1.68\text{--}1.77\times$ wider than long, at basal two thirds widest and slightly tapering anteriorly, with weakly rounded sides, apical third conspicuously constricted; disc regularly convex; base weakly arched; in lateral view weakly convex; beneath scales moderately shiny, finely and regularly granulate.

Elytra (Fig. 1) oval, $1.16\text{--}1.19\times$ longer than wide, with weakly rounded sides, laterally convex.

Protibiae (Fig. 8) with outer side at apex enlarged, armed with 4 connected spines on outer corner, 2 connected spines in middle and 2 smaller isolated spines on inner side, plus mucro; spines yellowish, mucro brownish. Apical surface of metatibiae glabrous. Tarsi with segment 2 $1.4\times$ wider than long; segment 3 $1.4\text{--}1.5\times$ wider than long and $1.2\text{--}1.3\times$ wider than segment 2; onychium long, $1.7\times$ longer than segment 3; claws fused at base, distinctly divergent, brownish.

Penis (Fig. 9) ventrally short and wide, widest at base, with weakly rounded sides, apex widely rounded; laterally almost straight, widest at base, apex tapers apically with shortly extended tip.

Spermatheca not examined. Gonocoxites (Fig. 11) short and wide, subtriangular, with short, slender apical styli. Sternite VIII (Fig. 10) with plate $2.5\times$ wider than long, apodeme terminating on basal half of plate.

Etymology. The Latin name refers to the raised elytral setae, forming rows only on alternate odd interstriae.

Remarks. The holotype lacks the right funicle with club, left mesotarsus and the whole right hind-leg. This species differs from all others except *C. squalidus* by the long semi-erect elytral setae, the dorsally clearly visible scrobes, a longer rostrum, the basally straight scapes and the glabrous apical surface of the metatibiae, and from *C. squalidus* by having semi-erect elytral setae only on the odd interstriae.

***Coniophloeus oberprieleri* sp. n.**

(Figs 2, 12–17)

ZooBank taxon LSID:

CD09D5B6-2410-4AC0-8C32-9E3D07CB041F

Type locality. South Africa, Eastern Cape, Humansdorp.

Type material. Holotype: ♀, South Africa, C. P. [Cape Province, Eastern Cape now] / Humansdorp. 34.02S / 24.46E. 27.xi.1983 / R. Oberprieler [lgt.] // National Coll. / of Insects / Pretoria, S. Afr. (SANC).

Description. Body length 4.19 mm. Body (Fig. 2) dark brownish, only clubs slightly paler brownish, except clubs and tarsi with appressed small rounded scales, leaving distinct interspaces, 6–8 scales across width of one interstria; on elytra semi-appressed, in dense regular row on each interstria, subspatulate, widest before tip, finely longitudinally striate, about as long as half the width of one interstria, intervals between setae slightly larger than setal length; on pronotum similar but wider, densely irregularly scattered; on head and rostrum similar but distinctly shorter; on scapes, femora and tibiae very dense, semi-appressed, as long as setae on head with rostrum; on funicles more slender.

Rostrum (Figs 12, 13) wide and short, $1.79\times$ wider than long, widest at base, here $1.09\times$ as wide as at apex, basal half regularly tapering anteriorly, apical half regularly rounded. Epifrons moderately narrow, at base slightly narrower than space between eyes, with sides concave, in middle $0.6\times$ wider than the base of the rostrum; beneath scales moderately shiny and roughly irregularly punctate, with posterior border almost straight, separated from head by deep transverse furrow; head longitudinally striate, striae radiating from middle of base of epifrons. Scrobes not visible dorsally; laterally short and wide, curved, directed towards eyes and separated from them by narrow squamous stripe. Eyes small, convex, dorsally clearly visible, prominent from outline of head; laterally circular, placed at middle of head. Head short and wide, weakly tapering anteriorly, laterally distinctly obliquely declivous to base of rostrum. Vertex wide.

Antennae robust; basal quarter of scapes (Fig. 12) distinctly S-shaped, apical three quarters weakly curved, widest at apical third, here $1.7\text{--}1.8\times$ wider than clubs and about as wide as middle of protibiae; funicle with segments 1 and 2 obconical, the others transverse; segment 1 $1.4\times$ longer than wide and $1.1\times$ longer than segment 2, which is $1.4\times$ longer than wide, segments 3–5 $1.5\times$ wider than long, segment 6 $1.7\times$ wider than long, segment 7 $1.9\times$ wider than long; clubs short, $1.6\times$ longer than wide, visibly wider than last funicular segments.

Pronotum (Fig. 2) very wide, $2.24\times$ wider than long, widest at base, basal half weakly tapering anteriorly with slightly rounded sides, apical half conspicuously tapering anteriorly, distinctly constricted behind anterior border; disc regularly domed; base bisinuate; hind corners pointed; in lateral view weakly convex.

Elytra (Fig. 2) long-oval, $1.28\times$ longer than wide, lateral margins subparallel, straight, disc convex in lateral view. Seven inner intervals with small, indistinct tubercles on posterior declivity.

Apical part of protibiae (Fig. 14) conspicuously widened laterally to significant, rounded projection, armed by fringe of connected, very short, brownish 8 spines, inner part of

protibiae armed with 9 short, brownish, isolated spines and short brownish mucro. Apical surface of metatibiae densely squamous. Tarsi with segment 2 1.3–1.4× wider than long; segment 3 1.5–1.6× wider than long and 1.2–1.3× wider than segment 2; onychium moderately long, 1.6× longer than segment 3; claws shortly fused basally, moderately divergent, dark brownish.

Male genitalia unknown.

Female genitalia. Spermatheca (Fig. 15) with straight cornu; corpus robust, long; ramus straight, about twice as long as wide, obliquely placed; nodulus also straight, longer and wider than ramus. Gonocoxites (Fig. 17) subtriangular, evenly tapering apically, with long apical styli. Sternite VIII (Fig. 16) with plate 1.8× wider than long, with apodeme terminating on apical half of plate.

Etymology. This newly described species is dedicated to my friend and colleague Rolf Oberprieler (CSIRO, Australia), collector of the holotype and outstanding expert on South African weevils.

Remarks. *C. oberprieleri* sp. n. is easily distinguishable from all other species of the genus mainly by having the outer protibial margin enlarged to form a laterally prominent rounded projection, the pronotum 2.2× wider than long, as wide as the elytra, widest at the base and with the posterior corners pointed, elongate posteriorly.

***Coniophloeus obrieni* sp. n.**

(Figs 3, 18–21)

ZooBank taxon LSID:

28AE5A53-BD63-4B1B-86CA-C8FEA13EAEFB

Type locality. South Africa, Western Cape, Hex River Valley.

Type material. Holotype: ♂, [South Africa, Western Cape] Hex Riv.[er] / Jan[uary] [18]85 (SANC).

Description. Body length 4.63 mm. Body (Fig. 3) dark brownish; except for the tarsi covered with small, irregularly angular appressed scales leaving slender interspaces, 7–8 scales across width of one elytral interstria; on elytra semi-appressed, subspatulate, widest before tip, finely longitudinally striate, slightly shorter than half width of one interstria, in 1–2 irregular dense row(s), intervals between setae slightly longer than setal length; on pronotum similar but slightly wider, very densely irregularly scattered; on head and rostrum similar, but shorter; on scapes, femora and tibiae slender, dense, subspatulate, semi-appressed.

Rostrum (Figs 18, 19) 1.35× wider than long, widest at base, regularly tapering anteriorly with sides straight, at base 1.08× as wide as at apex. Epifrons widest at base, here as wide as space between eyes, regularly tapering anteriorly with sides slightly concave, in middle 0.7× wider than the width of the middle of the rostrum; beneath scales roughly punctate, longitudinally deepened with narrow median longitudinal stria, with base weakly arched, separated from head by deep transverse furrow; head shiny, distinctly longitudinally striate, striae radiating from middle of base of epifrons. Scrobes not visible dorsally; laterally curved, moderately short, distinctly enlarged posteriorly, posterior part as wide as diameter of eye, directed towards

eyes and separated from them by narrow squamous stripe. Eyes small, flat, dorsally scarcely visible; laterally placed at middle of head. Head short and wide, tapering anteriorly; laterally declivous to base of epifrons; interocular space wide.

Antennae moderately robust; basal third of scapes (Fig. 18) weakly S-shaped, gradually thickening apically, at apex widest, slightly narrower than middle of protibiae. Funicles and clubs missing in holotype.

Pronotum (Fig. 3) very wide, 1.79× wider than long, widest at middle, with distinctly rounded sides, weakly tapering posteriorly and conspicuously tapering anteriorly, constricted behind anterior margin; disc regularly convex; base slightly arched; laterally weakly convex.

Elytra (Fig. 3) long-oval, 1.30× longer than wide, lateral margins subparallel, straight, disc flat in lateral view.

Outside and inside of the apex of protibiae (Fig. 20) enlarged, armed with 4 connected yellowish brown spines on outer lobe and 9 isolated spines of different sizes on anterior border, plus brownish curved short mucro. Apical surface of metatibiae densely squamous. Tarsi with segment 2 1.3× wider than long; segment 3 1.4× wider than long and 1.4× wider than segment 2; onychium short, 1.2× longer than segment 3; claws shortly fused at base, moderately divergent, brownish.

Penis (Fig. 21) ventrally long and slender, with base and apex similarly wide with weakly concave sides, apically rounded with short, subtrapezoidal tip; laterally wide with ventral surface straight and dorsal surface curved, regularly tapering apically with tip pointed.

Female genitalia unknown.

Etymology. The new species is named in honour of the eminent entomologist Charles W. O'Brien (Phoenix, Arizona, USA).

Remark. The holotype lacks both funicles and clubs, the complete left anterior and posterior legs and tarsus of the right middle leg. Its locality was explained to me by Riaan Stals and Elisabeth Globbelaar (SANC), as: "The Hex River Valley in the current Cape Winelands District Municipality, Western Cape Province; in 1885 located in the colony of the Cape of Good Hope. The only settlement in the Hex River Valley is the small town of De Doorns [33°28'39"S, 19°40'01"E], which already existed in 1885." *Coniophloeus obrieni* sp. n. is easily distinguishable from all other species of the genus mainly by the pronotum being widest in the middle, the laterally flat elytra with straight sides and the eyes barely visible dorsally.

***Coniophloeus robustus* sp. n.**

(Figs 4, 22–30)

ZooBank taxon LSID:

643DF653-9135-41DE-BEB0-05AAAD1A1795

Type locality. South Africa, Eastern Cape, Baviaanskloof, Geelhoutbos.

Type material. Holotype: ♂, S. Afr. [South Africa, Eastern Cape]; Baviaanskloof / Geelhoutbos; 300 m / 33.38S–24.14E // 11.11.2015; E-Y: 3977 / sifting forest litter / leg. Ruth Müller (TMSA). Paratype: 5♂, 4♀, the same data as holotype (TMSA); 1♂, 1♀, [South Africa, Eastern Cape], Algoa Bay [Port Elizabeth

now] / Capland / [18]98.5.1 / Dr. Brauns [Igt.] // G.A.K. Marshall / Coll. / B.M. 1950-255 (BMNH).

Description. Body length 3.78–5.56 mm, holotype 4.63 mm. The whole body (Fig. 4) dark brownish to blackish, only clubs slightly paler, brownish, except for clubs and tarsi covered with small, irregularly angular appressed scales, leaving very slender interspaces, 7–8 scales across width of one interstria; setae on elytra semi-appressed, finely longitudinally striate, widest at apex, slightly shorter than half width of one interstria, in one regular row on each interstria, intervals between setae about twice the setal length, on disc slender, subspatulate, in posterior declivity twice as wide as those on disc, spatulate; on pronotum, head and rostrum similar, but densely irregularly scattered, on pronotum as long as on elytra, on head and rostrum shorter; on scapes, femora and tibiae similar, on funicles appressed, more slender.

Rostrum (Figs 22, 23) very wide and short, 1.53–1.67× wider than long, weakly regularly tapering anteriorly. Epifrons wide, at base almost as wide as space between eyes, in basal half distinctly tapering anteriorly, in apical half subparallel-sided, with sides distinctly concave; beneath scales moderately shiny, irregularly roughly punctate, longitudinally shallowly deepened with posterior border arched with short concavity at middle, separated from head by deep transverse furrow. Head irregularly longitudinally roughly striate, at middle of anterior part with small and deep triangular incision. Scrobes dorsally almost not visible; laterally short and wide, subtriangular, distinctly curved, posteriorly about as wide as diameter of eye, directed towards eye, separated from them by wide squamous stripe. Eyes small, weakly convex and weakly prominent from outline of head; laterally circular, in middle of head. Head wide and short, weakly tapering anteriorly, interocular space very wide.

Antennae extremely robust; basal third of scapes (Fig. 22) conspicuously S-shaped, apical two thirds weakly curved, widest at apical third and here twice as wide as clubs and about as wide as middle of protibiae; funicle with segments 1 and 2 obconical, the others transverse; segment 1 1.6–1.7× longer than wide and 1.1× longer than segment 2, which is 1.4–1.5× longer than wide, segments 3–4 1.5× wider than long, segments 5–7 1.7–1.8× wider than long; clubs short, 1.3× longer than wide, about as wide as last funicular segments.

Pronotum (Fig. 4) 1.64–1.83× wider than long, basal half the widest, here subparallel-sided with slightly rounded sides, apical half conspicuously constricted; disc regularly convex; base weakly arched; in lateral view weakly convex.

Elytra (Fig. 4) long-oval, 1.20–1.31× longer than wide, with sides weakly rounded, laterally convex; at posterior declivity with small, sometimes indistinct tubercles, in some specimens bigger on odd intervals than on inner ones.

Wide outer and inner sides of apices of protibiae (Fig. 24) armed with 15–20 yellowish short spines, on outer and middle part aggregated in two groups, on inner part isolated, with short brownish mucro at inner corner. Apical sur-

face of metatibiae densely squamous. Tarsi with segment 2 1.7–1.8× wider than long; segment 3 1.5× wider than long and 1.2–1.3× wider than segment 2; onychium moderately long, 1.5× longer than segment 3; claws shortly fused at base, moderately divergent, brownish.

Penis (Fig. 25) ventrally short, widest at base, tapering apically with slightly concave sides, apex rounded with very short, obtuse tip; laterally wide, ventral surface straight, dorsal surface of anterior third distinctly enlarged, tip distinctly extended.

Female genitalia. Spermatheca (Fig. 28) with cornu almost straight; corpus long; ramus about 1.5× longer than wide, apically rounded; nodulus twice as long as ramus, straight. Gonocoxites (Fig. 30) subtriangular, evenly tapering apically, with short apical styli. Sternite VIII (Fig. 29) with plate 1.4× wider than long; apodeme terminating on apical half.

Etymology. The dumpy, robust body suggested the Latin name of this new species.

Remarks. This is the largest species in this genus, similar only to *C. obrieni* sp. n. in its epifrons being basally as wide as the space between the eyes. Distinguishing characters between these two species are cited in the key to species.

Key to the species of *Coniophloeus* gen. n.

- 1 Elytra with short semi-appressed subspatulate setae, setae at most as long as half the width of one interstria (Figs 2–4). Dorsally the scrobes are almost invisible (Figs 12, 18, 22). Rostrum 1.3–1.8× wider than long (Figs 12, 18, 22). Scapes at base weakly or distinctly S-shaped (Figs 12, 18, 22). Apex of protibiae armed with at least 6 spines (Figs 14, 20, 24). Apical surface of metatibiae densely squamous..... 2
- Elytra with long semi-erect subspatulate setae, slightly longer than half width of one interstria (Figs 1, 5). Scrobes dorsally clearly visible (Figs 6, 31). Rostrum 1.1× wider than long (Figs 6, 31). Scapes at base straight (Figs 6, 31). Apex of protibiae armed with at most 6 spines, not including mucro (Figs 8, 33). Apical surface of metatibiae glabrous..... 4
- 2 Protibiae at apex enlarged into laterally prominent rounded projection (Fig. 14). Pronotum 2.2× wider than long, as wide as elytra, widest just at base, with posterior corners pointed, elongated posteriorly (Fig. 2). Epifrons at base narrower than space between eyes (Fig. 12). Length 4.2 mm. *C. oberprieleri* sp. n.
- Protibiae at apex laterally slightly enlarged (Figs 20, 24). Pronotum 1.6–1.8× wider than long, slightly narrower than elytra, widest before base, with posterior corners rounded, not elongated posteriorly (Figs 3, 4). Epifrons at base as wide as space between eyes (Figs 18, 22) 3
- 3 Rostrum shorter and wider, 1.5–1.7× wider than long (Fig. 22). Scapes extremely robust, at base distinctly S-shaped, with apical third the widest (Fig. 22). Pronotum widest at basal third (Fig. 4). Elytra with slightly rounded sides, laterally convex (Fig. 4). Eyes dorsally clearly visible (Fig. 22). Length 3.8–5.6 mm..... *C. robustus* sp. n.
- Rostrum longer and slenderer, 1.35× wider than long (Fig. 18). Scapes moderately robust, at base weakly S-shaped, widest at apex (Fig. 18). Pronotum widest in middle (Fig. 3). Elytra with sides straight, laterally flat (Fig. 3). Eyes dorsally scarcely visible (Fig. 18). Length 4.6 mm..... *C. obrieni* sp. n.

- 4 Elytral setae uniformly semi-erect on all interstriae (Fig. 5). Penis ventrally longer, apex narrowly rounded (Fig. 35). Length 3.6–4.2 mm..... *C. squalidus* (Boheman)
- Elytral setae semi-erect only on odd interstriae (Fig. 1). Penis ventrally shorter, apex widely rounded (Fig. 9). Length 3.2–3.8 mm..... *C. alternans* sp. n.

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SHORT COMMUNICATION

Lyalinus, a new genus of Cneorhinini from Burkina Faso (Coleoptera: Curculionidae)

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Abstract. A new genus, *Lyalinus* gen. nov. (Coleoptera: Curculionidae: Entiminae: Cneorhinini) with one new species, *Lyalinus bimaculatus* sp. nov. from Burkina Faso, is described, illustrated and compared with other related genera.

Key words. Coleoptera, Curculionidae, Entiminae, new genus, new species, taxonomy, Afrotropical Region

Zoobank: <http://zoobank.org/urn:lsid:zoobank.org:pub:40D36274-5C7E-4ADC-A987-D41115C9556E>

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Introduction

The appropriate systematic position of entimines with an elongate rostrum has remained unresolved for a long time. They were listed in the tribe Tanyrhynchini Schoenherr, 1826 (for example MARSHALL 1908, SCHENKLING & MARSHALL 1931) until OBERPRIELER (1995). OBERPRIELER (1988) revised Tanyrhynchini and later (OBERPRIELER 1995) clarified the situation by transferring some genera to several different tribes, for the most part to Myorhinini Marseul, 1863, but also to Cneorhinini Lacordaire, 1863, Tanymecini Lacordaire, 1863, and to some others. His analyses and conclusions were based on external characters and he hypothesized that the long rostrum, in many cases also laterally flattened, and laterally and ventrally lacking scales ‘is an adaptation for a highly specialized way of feeding and is therefore likely to have originated independently in many different stocks of adelognathous weevils’ (OBERPRIELER 1995). BOROVEC & OBERPRIELER (2013) subsequently transferred seven genera assigned to Myorhinini to the tribe Embrithini Marshall, 1842. The genera with an elongate rostrum now placed in Cneorhinini, Embrithini, and Myorhinini do not include a great number of species, and are irregularly distributed through the whole of the Afrotropical Region (SCHENKLING & MARSHALL 1931) with a limited number of species of Myorhinini also in the southern part of the Palaearctic and the Oriental Regions (BOROVEC 2013). Myorhinini were revised by MARSHALL (1908), and subsequently several

new taxa were added (AURIVILLIUS 1912; HUSTACHE 1921; MARSHALL 1926, 1938, 1944, 1958; and VOSS 1959, 1960, 1962). Cneorhinini and Embrithini with an elongate rostrum have not been revised since MARSHALL’s (1908) revision, except for the genus *Fleurops* Hustache, 1931 (KANIA & STOJCZEW 1999). One very exceptional undescribed genus of Cneorhinini has been collected recently in Burkina Faso and its description and position among the other genera is the topic of the present contribution.

Material and methods

Body length of all specimens was measured in dorsal view from the anterior border of eyes to the apex of the elytra, excluding the rostrum. The rostrum width/length ratio was measured as the maximum width at base versus the maximum length to the base of the mandibles. Width/length ratios of pronotum, elytra, antennomeres and tarsomeres were taken at the maximum width and length of the respective parts in dorsal view. Female genitalia were embedded in Solakryl BMX (Medika, Prague); male genitalia were mounted dry on the same card as the respective specimen. The terminology of the rostrum and the genitalia follows OBERPRIELER et al. (2014).

The material is deposited in the Natural History Museum, London, United Kingdom (BMNH) and private collection of Roman Borovec, Sloupno, Czech Republic (RBSC).



Systematics

Lyalinus gen. nov.

Type species. *Lyalinus bimaculatus* sp. nov. by present designation.

Diagnosis. Small genus belonging to Entiminae. Rostrum more than twice as long as wide, equally wide at base and at apex; epifrons separated posteriorly from head by transverse sulcus; frons not separated posteriorly; epistome not differentiated; mandibles multisetose; scrobes laterally placed, furrow-shaped, glabrous, clearly edged, directed to ventral border of eye; eyes subdorsal, vertex slender, vaulted, separated from head behind eyes by transverse sulcus; scape short, slightly exceeding anterior border of eye, as long as funicle; tergite VII in both sexes with concave anterior border; metatibia with wide, densely squamose corbel; ventrites subtriangular with ventrite 2 only slightly longer than ventrite 3 or 4, ventrite 5 narrowly tapered; tegmen lacking parameres; female sternite VIII with plate large, arrow-shaped with ill-defined posterior border and extending along apodeme.

Description. Body length 3.9–5.2 mm.

Body dark brownish to blackish. Dorsal part of body densely covered with regularly rounded appressed isolated scales, greyish with distinct pearly sheen. Ventral part of body covered by the same vestiture, appressed scales on ventrites smaller, denser and oval. Each elytral interval with inconspicuous row of very short subspatulate setae, semiappressed on disc and apical declivity, barely visible in lateral view. Antennal club densely setose; funicle and scape with very small, long oval appressed scales; femora with appressed scales identical to those on dorsal part of body; tibiae and tarsi with appressed oval scales and short, semierect bristle-shaped yellowish setae.

Rostrum 2.4–2.6× as long as basal width, base and apex of equal width, 0.9× as long as pronotum in lateral view, equally wide and shaped in both sexes. Epifrons widest at base, wider than rostrum in dorsal view, evenly tapered apicad from base with straight sides, distinctly carinate laterally, extending apically to level of anterior border of scrobes, flat, with median longitudinal slender carina along whole length, posteriorly separated from head by arched carina creating edge of sulcus separating rostrum from head, laterally reaching below middle of eye. Rostrum dorsally slightly widened before antennal insertion, then subparallel-sided; laterally with ventral border regularly weakly curved and dorsal border in basal two thirds flat to slightly concave and in apical third weakly declined at level of antennal insertion, straight apically. Frons large, glabrous, moderately shiny, not separated posteriorly from epifrons, with 7–8 pairs of long, stout setae prominent laterally and 6–8 pairs of similar setae placed dorsally. Epistome not differentiated. Mandibles small, slender, projecting anteriorly, armed with one small blunt inner tooth, lacking scales, with 6–8 laterally prominent fine setae; deciduous mandibular processes moderately long, straight, unarmed, narrowest at base, sharply carinate along entire external margin, situated at outer part of mandibles; in lateral view evenly triangularly tapered anteriorly with sharp tip. Scrobes placed laterally,



Fig. 1. *Lyalinus bimaculatus* sp. nov., dorsal habitus, male. Scale bar: 1.0 mm.

in dorsal view visible as narrow parallel furrows before the middle; laterally clearly visible along whole length as narrow, straight glabrous furrow directed from dorsal part of rostrum to ventral part of eye, with conspicuous dorsal edge and visible, but less prominent ventral edge. Rostrum ventrally glabrous, with several sparse slender appressed scales. Head wide and short, distinctly enlarged posteriorly, behind eyes smooth, vaulted, separated from vertex by transverse double arched sulcus. Vertex evenly enlarged posteriorly, at base as wide as dorsal width of eyes, distinctly convex with narrow median longitudinal glabrous stria. Eyes large, subdorsal, convex, distinctly prominent from outline of head; laterally a little higher than base of rostrum and much higher than rest of head.

Antennae moderately short. Scape slender, a little exceeding anterior border of eye when held against rostrum, as long as 7-segmented funicle; funicle segments 1–3 long and conical with segment 1 longest, the others isodiametric to slightly wider than long; club with segment 1 subconical, narrow at base and evenly enlarged apicad, comprising half of club length.

Pronotum 1.3–1.4× wider than its width at posterior border; disc regularly convex without any furrow, keel or depression; base slightly arched. Laterally anterior border of pronotum straight without ocular lobes or setae. Procoxal cavities contiguous, round, placed at midlength of pronotum; procoxae subglobular.

Table 1. Comparison of genera of the tribes Cneorhinini and Embrithini with an elongate rostrum.

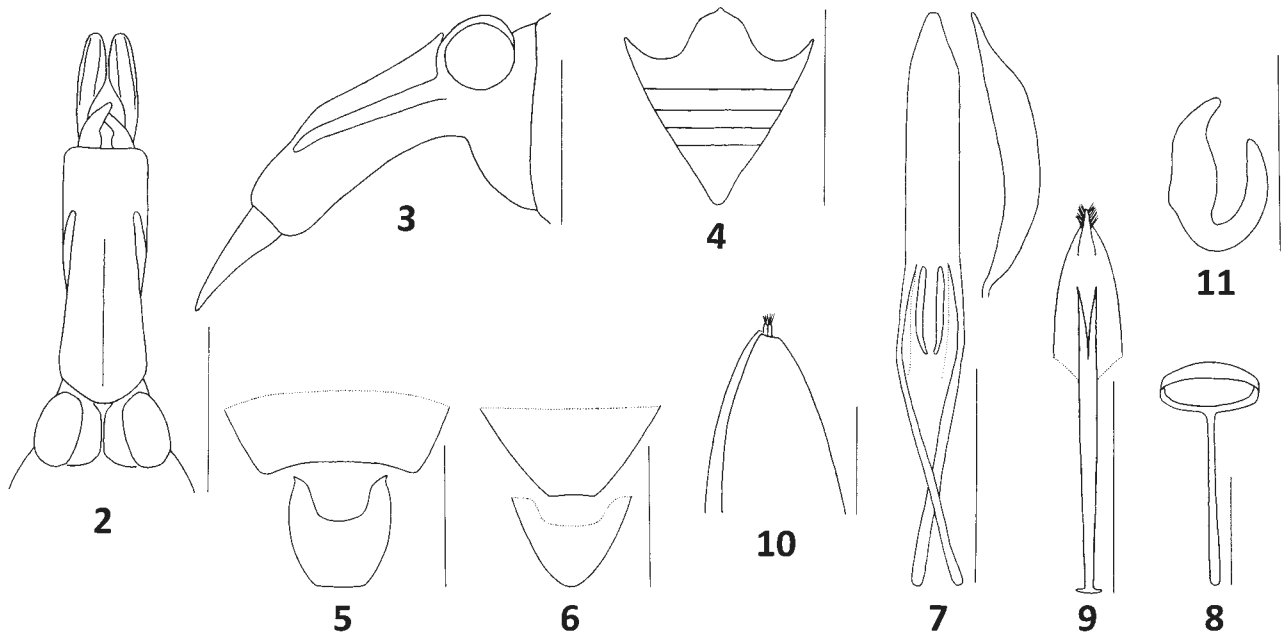
<i>Lyalinus</i> gen. nov.	<i>Euonychus</i> Marshall, 1923	<i>Fleurops</i> Hustache, 1931	<i>Synaptocephalus</i> Faust, 1891	Embrithini genera
rostrum 2.4–2.6× as long as basal width	rostrum 1.6–2.4× as long as basal width	rostrum 1.5× as long as basal width	rostrum 2.2–3.1× as long as basal width	rostrum from 1.6× as wide as long to 3.8× as long as basal width
rostrum with base and apex equally wide	rostrum at base 1.3–1.4× as wide as at apex	rostrum at base 1.9–2.3× as wide as at apex	rostrum with base and apex equally wide to base 1.3× as wide as apex	rostrum with base and apex equally wide to base 1.2× as wide as apex
rostrum separated from head by slender transverse sulcus	rostrum continuous with head	rostrum continuous with head	rostrum continuous with head	rostrum separated from head by slender transverse sulcus or wide depression
antennal insertions in apical third	antennal insertions between apical quarter and midlength of rostrum	antennal insertions at midlength of rostrum	antennal insertions between apical third and midlength of rostrum	antennal insertions between apical third and quarter
scrobes narrow laterally, furrow-shaped, directed below eyes	scrobes narrow laterally, furrow-shaped, directed below eyes	scrobes narrow laterally, furrow-shaped, directed below eyes	scrobes wide or narrow laterally, directed towards or below eyes	scrobes dorsal to subdorsal, dorsally pit-shaped to narrowly reniform
eyes subdorsally placed	eyes laterally placed	eyes laterally placed	eyes dorsally placed	eyes laterally placed
vertex separated from glabrous head capsule behind posterior border of eyes by distinct line	vertex posteriorly continuous with squamose space behind eyes	vertex posteriorly continuous with squamose space behind eyes	vertex posteriorly continuous with squamose space behind eyes	vertex posteriorly continuous with squamose space behind eyes
vertex as wide as club	vertex 4× wider than club	vertex 4–5× wider than club	vertex slenderer than club	vertex at least 3× wider than club
antennal scape shorter than funicle	antennal scape slightly shorter to equally long as funicle	antennal scape shorter than funicle	antennal scape shorter than funicle	antennal scape equally long as funicle or longer
metatibiae with wide, distinct corbel	metatibial corbel wide to narrow	metatibiae with wide corbel	metatibiae lacking corbel	metatibiae with narrow or wide corbel
claws of unequal length	claws of equal length	claws of equal length	claws of equal length	claws of equal length, occasionally single
ventrite 2 equally long as ventrite 3 or 4	ventrite 2 slightly longer than ventrite 3 or 4	ventrite 2 slightly longer than ventrite 3 or 4	ventrite 2 as long as ventrites 3 and 4 combined	ventrite 2 slightly to distinctly longer than ventrite 3 or 4
ventrite 5 subtriangular, sharply pointed in females	ventrite 5 apically narrowly rounded in females	ventrite 5 apically narrowly rounded in females	ventrite 5 apically narrowly rounded in females	ventrite 5 apically narrowly rounded in females
metaventral process narrow, rounded	metaventral process narrow, rounded	metaventral process narrow, arrow-shaped	metaventral process very narrow, arrow-shaped	metaventral process wide or narrow, obtuse
tergite VII in both sexes with apical side concave	tergite VII in both sexes with apical side convex	tergite VII in both sexes with apical side convex	tergite VII in both sexes with apical side convex	tergite VII in both sexes with apical side convex
penis without apical setae	penis with two tufts of subapical setae	penis without apical setae	penis with two subapical setae	penis without apical setae
endophallus with long sclerites	endophallus without sclerites	endophallus with sclerites	endophallus with long sclerites	endophallus with short or long sclerites
tegmen with complete ring, lacking parameres	tegmen with complete ring, lacking parameres	tegmen with incomplete ring, lacking parameres	tegmen with complete ring and with parameres	tegmen with complete ring, with or without parameres
gonocoxites with short styli	gonocoxites without styli	gonocoxites with long styli	gonocoxites with short styli	gonocoxites with short or long styli
spermatheca with differentiated ramus and nodulus and with wide cornu	spermatheca with differentiated ramus and nodulus and with short cornu	spermatheca with differentiated ramus and nodulus and with short cornu	spermatheca with extremely slender cornu and dominant rounded corpus, without differentiated ramus and nodulus	spermatheca with differentiated ramus and nodulus and with mostly long and slender cornu

Scutellum very small, triangular.

Elytra long oval, 1.2–1.3× as long as wide, at base weakly constricted, without humeral calli, at base equally wide as base of pronotum with slightly arched base, widest at midlength, apically evenly tapered; laterally convex, slope only just overhanging weakly elongate apex. Elytra 10-striate, striae punctate, intervals flat and wide. Mesocoxae semiglobular, mesosternal process very narrow, about as wide as one tenth of mesocoxal width, not reaching posterior margin of mesocoxae. Metacoxae semiglobular,

metaventral process weakly rounded, a little wider than half of transverse diameter of metacoxa. Tergite VII in males short and broad, translucent, with sclerotised very narrow margins, apically concave; tergite VIII in males well sclerotised, bowl-shaped, apically truncate. Tergite VII and VIII in females larger than those in males, weakly sclerotised; tergite VII subtrapezoidal, apically shortly concave; tergite VIII subtriangular, apically rounded.

Legs moderately robust. Femora faintly swollen, unarmed. Protibiae laterally straight, inside sinuate, denticulate



Figs 2–11. *Lyalinus bimaculatus* sp. nov. 2 – head with rostrum, male, dorsal view; 3 – head with rostrum, male, lateral view; 4 – abdominal ventrites, female; 5 – tergite VII and VIII, male; 6 – tergite VII and VIII, female; 7 – penis, ventral and lateral view; 8 – tegmen, dorsal view; 9 – sternite VIII of female, dorsal view; 10 – ovipositor, dorsal view; 11 – spermatheca. Scale bars 1.0 mm for 2, 3, 5–7, 0.5 mm for 4, 8–11.

at apical half with 6–7 well visible brownish teeth, apically rounded and distinctly enlarged inside, densely fringed by yellowish short fine setae, mucronate. Metatibiae with apical surface large, oval, glabrous and with wide, conspicuous, densely squamose corbel fringed externally and internally with long and dense yellowish setae. Tarsi moderately robust, with segment 3 distinctly wider than segment 1 and 2; onychium short; claws solidly fused in basal half, unequally long.

Abdomen ventrally subtriangular, distinctly tapered apicad with almost straight sides, $1.1\times$ as wide as long; ventrite 1 in middle more than $3\times$ as long as ventrite 2, behind metacoxa slightly longer than ventrite 2; ventrite 2 slightly longer than ventrite 3 or 4 and shorter than ventrites 3 and 4 combined; ventrite 5 in males subtrapezoidal, short, obtuse at apex, in females subtriangular, longer, pointed at apex, with weakly concave sides. All sutures straight, deep and moderately wide.

Sexual dimorphism. Sexes externally indistinguishable except for slight difference in shape of ventrite 5.

Male terminalia. Penis slender, long, well sclerotised, temones $1.5\times$ as long as body of penis; endophallus short with two long sclerites. Tegmen with wide small ring lacking parameres, manubrium almost three times as long as diameter of ring, one third as long as penis temones. Sternite IX with spiculum gastrale long, anteriorly curved and enlarged to narrow translucent plate, posteriorly with fused basal arms; sternite VIII with hemisternites slender, curved.

Female terminalia. Sternite VIII with apodeme widest at midlength with transverse anterior bar, apodeme Y-shaped posteriorly, terminating just within basal plate; basal plate arrow-shaped, longer than wide, about third of length of sternite, pointed with apical margin developed and basal margin ill-defined, apex carrying two separate, antepical tufts of setae. Gonocoxites simple, wide and flat, regularly

tapered apicad, with short apical styli bearing apical setae. Spermatheca with regularly curved slender cornu, elongate corpus, short and hardly visible ramus and long nodulus.

Etymology. The new genus is cordially dedicated to Christopher H. C. Lyal, an eminent British curculionologist, and the name is of male gender.

Distribution. Known only from Burkina Faso.

Species included. The genus is described as monotypic.

Remarks. The newly described genus has multisetose mandibles, short antennal scapes, laterally placed scrobes of the 'brachyderinae' type, lateral pronotal border lacking vibrissae, developed metatibial corbels and connate claws, which is a complex of characters typical for the tribe Cneorhinini. In this tribe only three other genera have a rostrum longer than wide as seen in *Lyalinus* gen. nov. – *Euonychus* Marshall, 1923, *Fleuropis* Hustache, 1931, and *Synaptocephalus* Faust, 1891. These three genera are rather different and apparently do not form a monophyletic group. The genus *Euonychus* includes two known and another two undescribed species, all restricted to South Africa and Namibia (Borovec, unpublished data).

Fleuropis is a monotypic genus known from Uganda, the Democratic Republic of Congo, Burundi and Tanzania (KANIA & STOJCZEWSKI 1999). *Lyalinus* gen. nov. shares the moderately similar body shape and legs, and also the pear-shaped antennal clubs, but differs most clearly in the rostrum and head structure.

Its long rostrum and the subdorsal eyes with slender vertex make *Synaptocephalus* the most similar genus to *Lyalinus* gen. nov. *Synaptocephalus* includes four species known from the eastern part of Africa: Zimbabwe, Zambia, Tanzania, and Sudan (Borovec, unpublished data). It is possible to recognize all four genera based on the characters stated in the Table 1.

Except for the multisetose mandibles, laterally placed scrobes and short antennal scapes, *Lyalinus* gen. nov.

resembles in its general appearance some Embrithini genera with an elongate rostrum, namely the genera *Bicodes* Marshall, 1908, *Goniorhinus* Faust, 1889, *Holorygma* Marshall, 1927, *Lecanophora* Aurivillius, 1912, *Neobicodes* Hustache, 1929, *Sympiezorhynchus* Schoenherr, 1842, and *Zeugorygma* Marshall, 1906. From all these genera *Lyalinus* gen. nov. can also be distinguished by characters stated in the Table 1.

Lyalinus bimaculatus sp. nov.

Type material. HOLOTYPE: ♂, 'Ober Volta [Burkina Faso], Bobo Dioulassa [Bobo-Dioulasso], 9. [19]76, Politzar [Igt.]' (BMNH). PARATYPES: 17 spec., the same data as holotype (16 spec. BMNH, 1 ♀ RBSC).

Description. Body length 3.89–5.25 mm, holotype 3.89 mm.

Appressed scales on elytra and pronotum separated by very narrow spaces, not completely hiding integument. Elytra with distinct small long oval spot from very dense scales behind base on intervals 7–9 and subtriangular small spot at apex of intervals 3–9. Pronotum with longitudinal wide stripes of a bit denser appressed scales surrounding median longitudinal glabrous space. Vertex densely squamose with very slender longitudinal glabrous stria.

Antennal scape weakly regularly curved along its whole length, weakly enlarged in apical quarter, at apex 0.6–0.7× as wide as club. Segment 1 1.8–1.9× as long as wide, 1.5× as long as segment 2 which is 1.5× as long as wide; segment 3 1.3–1.4× as wide as long; segment 4 isodiametric; segments 5–7 1.1× as wide as long; club 2.1–2.2× as long as wide.

Pronotum 1.33–1.41× as wide as long, widest at base, in apical half distinctly more tapered anteriorly than in basal half. Disc shiny, regularly punctate, spaces between punctures shorter than diameter of one puncture.

Elytra 1.24–1.32× as long as wide, with regularly rounded sides. Striae distinctly punctate, space between punctures not deepened; intervals somewhat shiny, with very small, almost indistinct granules. Sutural interval on apical declivity slightly elevated.

Tarsi with segment 1 curved in basal half, 1.6–1.7× as long as wide; segment 2 conical, 1.1–1.2× as wide as long; segment 3 1.3–1.4× as wide as long and 1.4× as wide as segment 2; onychium 0.5–0.6× as long as segment 3.

Penis slightly wider at base, indistinctly tapered anteriorly with straight sides, apex subtriangular with indistinctly concave sides and shortly obtuse tip; laterally almost straight, tip slender, elongate.

Spermatheca with ramus only indicated in corpus; nodulus in basal half parallel-sided, straight, in apical half curved backwards, regularly tapered apicad.

Etymology. The two subhumeral spots created by densely placed scales suggested the Latin name of this new species, the adjective *bimaculatus* (-a, -um).

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***Basothorhynchus*, a new Oosomini genus from the highland plateau of Lesotho (Coleoptera: Curculionidae: Entiminae)**

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Abstract

A new genus, *Basothorhynchus* **gen. n.** (Coleoptera: Curculionidae: Entiminae: Oosomini) is described with one new species from Lesotho, *Basothorhynchus endroedyi* **sp. n.** The new genus is well defined by its small glabrous body, the rostrum continuous with the head, all femora with a distinct tooth, the tibiae abruptly enlarged on the inside, the metatibiae lacking a corbel and the free claws.

Key words: Coleoptera, Curculionidae, Entiminae, Oosomini, *Basothorhynchus*, new genus, new species, taxonomy, Afrotropical region

Introduction

Lesotho is a land-locked country in southern Africa. It lies entirely above 1000 metres in elevation, and more than 80% of the country is above 1800 metres. The Lesotho flora and fauna is alpine due to the high and mountainous terrain, and has many endemic species (Gardner *et al.* 1999). Our knowledge of the weevil fauna is minimal, and knowledge of the entimine fauna is almost entirely lacking due to a lack of available material. Until the present, the only Entiminae known from Lesotho were *Afrophloeus squamifer* (Boheman, 1843) (Borovec & Oberprieler 2013), one undescribed species of *Pentatrachyphloeus* Voss, 1974 and one undescribed species of *Eudraces* Marshall, 1926 (Borovec, unpublished data). In this paper I describe a new genus and species of the tribe Oosomini Lacordaire, 1863, collected from above 3400 m on the highland plateau, which suggests that a fauna of small entimines occurs in Lesotho, as has been similarly discovered from high elevation areas of equatorial Africa (Hustache 1939).

Material and methods

The body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of the elytra, excluding the rostrum. The rostrum width/length ratio was measured as the maximum width at the base relative to the maximum length from the posterior junction with the head to the most anterior part of the rostrum, the base of the mandibles. Width/length ratios of the pronotum, elytra, antennal segments and tarsal segments were taken at the maximum width and length of the respective parts, in dorsal view. Female genitalia were embedded in Solakryl BMX (Medika, Prague, toluen-soluble); male genitalia were mounted dry on the same card as the respective specimen. The terminology for the description of the rostrum and genitalia follows Oberprieler *et al.* (2014). The habitus image was taken with a Canon EOS 5D mark II camera in combination with a Canon MP-E65 1-5x macro lens. Images were stacked by Zerene Stacker and edited in Adobe Photoshop CC 2015.

The material is deposited in the Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa (TMSA) and in the private collection of Roman Borovec, Sloupno, Czech Republic (RBSC).

Systematics

Basothorhynchus gen. nov.

Type species. *Basothorhynchus endroedyi* sp. nov., by present designation.

Diagnosis. Small-sized genus with dorsal surface of body glabrous; rostrum evenly tapered apicad with straight sides, posteriorly continuous with head; base of epifrons as wide as space between anterior margins of eyes, apex narrower than half width of rostrum; frons glabrous, smooth; epistome slightly carinate; scrobes placed dorsally; scape short, not reaching anterior border of pronotum in repose; elytron without humeral callus; all femora with distinct tooth; tibiae slender at basal third and here abruptly enlarged inside, apical two thirds of tibiae subparallel-sided, outer edge straight; metatibiae lacking corbel; claws free; tegmen bearing two parameres; female sternite VIII with plate about as long as apodeme; plate narrowly subtriangular, apically pointed, with two longitudinal sclerites at distal three quarters, apical margin sclerotised, and basal margin ill-defined.

Description. Body length 2.3–3.0 mm.

Body integument dark brownish to blackish (Fig. 1). Antennae and legs paler, rusty brownish, covered with short, fine, semi-erect setae; only clubs slightly darker, finely and densely setose. Dorsal side of body glabrous, lacking appressed scales or setae, with inconspicuous fine, slender erect setae on elytra and shorter semi-erect setae on pronotum and head plus rostrum. Head and rostrum glabrous on ventral side; sternum densely covered by oval greyish appressed scales; abdominal ventrites covered with short, fine, sparse, semi-appressed setae and several individual appressed scales in lateral parts of ventrites 1 and 2. .

Head wide and short, slightly enlarged posteriad, vertex flat, shorter than half length of eye; ventrally unpunctured, smooth. Eyes moderately large, subdorsal, hardly prominent from outline of head; laterally subcircular, not reaching dorsal border of head. Rostrum (Figs 2, 3) short, $1.1\text{--}1.2 \times$ as wide as long, evenly tapered apicad, at base $1.1 \times$ as wide as at apex; dorsal border convex and ventral border straight in profile. Epifrons widest at base, conspicuously tapered apicad, with faintly concave sides, distinctly carinate laterally, at base as wide as space between anterior margins of eyes, at apical half slightly narrower than half width of rostrum in the same place, extending apically to level of anterior border of scrobes, median carina present along apical half; rostrum posteriorly continuous with head. Frons glabrous, smooth, yellowish-brown, moderately shiny, not separated posteriorly from epifrons, with five to six prominent pairs of stout setae apically. Epistome emarginate at apex, carinate, separated from frons by a keel. Scrobes placed dorsally, in dorsal view fully visible in apical third of rostrum as deep, oval fossae, broadly reniform; furrow-shaped, with conspicuous dorsal and ventral edges, and directed towards eye in lateral view, ventral margin terminated slightly above ventral margin of eye. Venter of rostrum shallowly depressed on the whole surface, covered with semi-appressed sparse setae. Mandibles small, projecting anteriorly, lacking scales, with three laterally placed setae.

Antennae (Fig. 1) moderately short and robust. Scape not reaching anterior border of pronotum in repose, $1.1 \times$ longer than funicle; funicle 7-segmented, segment 1 long and conical (the longest), segments 3–7 isodiametric to wider than long; club broadly oval.

Pronotum (Fig. 1) $1.1 \times$ wider than long, with distinctly rounded sides; disc regularly convex without any keel, furrow or depression; base slightly arched. Anterior border of pronotum laterally straight without ocular lobes or setae. Procoxal cavities contiguous, round, placed at midlength of pronotum.

Scutellum triangular, very small, hardly visible.

Elytra (Fig. 1) oval, $1.3\text{--}1.5 \times$ longer than wide; humeri weakly rounded, lacking a distinct callus; base slightly wider than base of pronotum, distinctly arched, widest at midlength; apex broadly rounded; sides slightly convex, slope of declivity hardly overhanging apices of elytra in dorsal view. Elytra 10-striate; striae punctate, intervals flat. Mesocoxae semiglobular, mesosternal process narrow, about as wide as $1/5$ of mesocoxal width. Metacoxae semiglobular, metaventral process obtuse, narrower than transverse diameter of metacoxa. Tergite VII (Fig. 4) of males short and wide, apically V-shaped concave with straight sides; tergite VIII (Fig. 4) of males well sclerotised, bowl-shaped, apically weakly rounded. Tergite VII and VIII of females larger than those in males, weakly sclerotised, apically rounded.

Legs moderately robust. Femora (Fig. 5) swollen, all femora with distinct tooth equal in both sexes, almost as large as half the width of femora at this level, concave at inner edge. Procoxae subglobular, protibiae (Fig. 5) short and robust, laterally straight, slender at basal third and abruptly enlarged distad, inside with inner edge slightly

concave and with three to six small brownish teeth, apex rounded and densely fringed by brown bristles, mucronate. Meso- and metatibiae weakly enlarged outside. Metatibial apex oval, glabrous fringed externally and internally with dense brown bristles. Tarsi with segment 3 bilobed, distinctly wider than segment 1 and 2; onychium long; claws free, weakly divaricate.

Abdomen (Fig. 6) 1.2–1.3 × longer than wide, with rounded sides; ventrite 1 twice as long as ventrite 2, behind metacoxa equally long as ventrite 2; ventrite 2 slightly shorter than ventrites 3 and 4 combined; ventrite 5 of males subtrapezoidal, short, shallowly concave at apex, ventrite 5 of females subtriangular, longer than in males, convex, apically rounded. Suture between ventrites 1 and 2 indistinctly sinuose, fine and narrow; all other sutures straight, deep and moderately wide.

Sexual dimorphism. Males distinguishable from females by the more slender elytra, the wider and shorter tarsi, and the shape and concavity of ventrite 5.

Male terminalia. Penis (Fig. 7) short, well sclerotised, temones 1.4–1.5 × longer than body of penis; endophallus long, with two moderately long, basally connected sclerites and one short transverse arched sclerite placed distally. Tegmen (Fig. 8) slender, parameres distinct, fused at base and distinctly shorter than diameter of ring, manubrium 1.4 × as long as diameter of ring, 0.8 × as long as temones. Spiculum gastrale moderately short, anteriorly curved and enlarged to form a narrow plate, posteriorly with fused basal arms; hemisternites very slender, curved.

Female terminalia. Sternite VIII (Fig. 9) with plate subtriangular, widest near base, 2.4–2.6 × as long as wide, apically sharply pointed and bearing two separate tufts of setae, with two longitudinal sclerites at apical three quarters; apodeme longer than sternite VIII, widest at midlength, terminating just at midlength of plate, at base enlarged to small, triangular translucent plate. Gonocoxites (Fig. 10) flat, long, tapered apically, with long apical styli bearing apical setae. Spermatheca (Fig. 11) U-shaped with regularly curved wide cornu, elongated corpus, short ramus (= gland entrance) and indistinct collum (= duct entrance).

Etymology. The new genus is derived from the word Basotho and Latin *rhynchus*. Basotho is a Bantu ethnic group whose ancestors have lived in southern Africa since around the fifth century. Most Basotho people today live in South Africa and Lesotho (Gardner *et al.* 1999). *Rhynchus* is the Latin form of the Greek word *rhynchos*, having a snout, bill, beak. The name is of male gender.

Distribution. Known only from Lesotho.

Species included. The genus is described as monotypic, including only the species *B. endroedyi*.

Taxonomic position. The newly described genus belongs to the subfamily Entiminae, as defined by Marvaldi *et al.* (2014), and here to the Oosomini, based on its free claws (this character distinguishes it from the Embrithini Marshall, 1942), trisetose mandibles (distinguishing it from the Otiorthynchini Schoenherr, 1826), dorsally placed scrobes (distinguishing it from the Brachyderini Schoenherr, 1826 and Sciaphilini Sharp, 1891), lack of ocular lobes and vibrissae (distinguishing it from the Tanyrhynchini Schoenherr, 1826 and Tanymecini Lacordaire, 1863), and lack of a protruding humeral callus (distinguishing it from the Polydrusini Schoenherr, 1823).

Oosomini were never redefined after Marshall (1942) split them into Oosomini with free claws and Embrithini with fused claws. This tribe does not seem to be monophyletic and a further study is much needed. Oosomini contains fewer genera than is listed in Alonso-Zarazaga & Lyal (1999) because some genera were later transferred to other tribes (for example Borovec & Oberprieler (2013)).

Endemic to South Africa, *Basothorhynchus* **gen. n.** can be easily distinguished from genera of Oosomini comprising large-sized species by the following characters: small size (maximum length 3.0 mm), rostrum posteriorly continuous with head, base of epifrons as wide as space width between anterior margins of eyes, epistome slightly emarginate, scape not reaching anterior border of pronotum in repose, dentate femora, tibiae short and robust, abruptly enlarged to inner side at basal third and body glabrous lacking appressed vestiture. Other genera of Oosomini have larger species (over 5.8 mm long), covered by appressed scales, rostrum posteriorly separated from head by a transverse sulcus or shallow groove, base of epifrons distinctly narrower than width between anterior margins of eyes, epistome conspicuous (except in *Phlyctinus*), scape in repose exceeding anterior border of pronotum, adentate femora, tibiae long, slender, slightly sinuose on inner edge.

By its small size, *Basothorhynchus* can be compared only with three Oosomini genera: *Holcolaccus* Marshall, 1953, *Oosomus* Schoenherr, 1826 and *Periderces* Marshall, 1926. From all these three genera *Basothorhynchus* **gen. n.** may be distinguished according to the following key:

1. Rostrum at least $1.5 \times$ as long as wide, widest at apical portion with sides rounded around scrobes. Metatibial apex with wide, sparsely squamose corbels. Sternite VIII of females with plate wider than long, apodeme $3.3\text{--}6.2 \times$ longer than plate. Size 2.3–5.1 mm. *Oosomus* Schoenherr
- Rostrum wider than long or at most $1.2 \times$ as long as wide, widest at base and tapered anteriorly, not rounded around scrobes. Metatibial apex simple (= without corbels). Sternite VIII of females with plate distinctly longer than wide, apodeme short, about same length as plate. 2
2. Body dorsally and ventrally glabrous. Scrobes dorsally conspicuous, pit-shaped, laterally directed towards eyes. Antennal scape short and robust, $4.9\text{--}5.3 \times$ as long as wide at apex. Tibiae slender at basal third and then abruptly enlarged. Size 2.3–3.0 mm. *Basothorhynchus* **gen. n.**
- Body dorsally and ventrally squamose. Scrobes not visible from above, laterally not continuing behind antennal insertion or curved downwards. Antennal scape long and slender, $9.1\text{--}10.7 \times$ as long as wide at apex. Tibiae slender and long, slightly sinuate at inner side 3
3. Scrobes very narrow and not continuing backwards. Antennal scape shortly exceeding anterior border of pronotum. Epifrons narrow (about as wide as half rostral width). Femora adentate. Size 2.5–3.8 mm *Holcolaccus* Marshall
- Scrobes continuing backwards and curved downwards. Antennal scapes not reaching posterior margin of eyes. Epifrons wide (occupying most rostral surface). Femora with large tooth. Size 4.0–4.8 mm *Periderces* Marshall

By its general appearance, small size and glabrous, cylindrical body, *Basothorhynchus* **gen. n.** resembles a group of genera known from high elevation mountains of Kenya, such as *Abarypeithes* Hustache, 1939, *Afrotroglorrhynchus* Hustache, 1939, *Hobarypeithes* Hustache, 1939, *Opseobarypeithes* Hustache, 1939 and *Palaepus* Hustache, 1939. The first genus is listed in Sciaphilini Sharp, 1891, the others in Peritelini Lacordaire, 1863. From all these genera *Basothorhynchus* **gen. n.** can be easily distinguished not only by the free claws (it must be pointed out that some of these Kenyan genera have claws connected at their short bases), but mainly by the rostrum lacking laterally prominent pterygiae, the short scape, femora with a distinct tooth, the inner side of the tibiae sinuose and denticulate, and tibiae mucronate. In contrast, all genera from equatorial mountains have a rostrum with laterally prominent pterygiae, long scapes, adentate femora, inner sides of tibiae straight and not denticulate and tibiae amucronate. *Basothorhynchus* **gen. n.** is most similar to the genus *Neomias* Hustache, 1939, known from the mountains of Ethiopia, Kenya, Uganda and Tanzania. This genus also has a rostrum with straight sides in dorsal view, without distinct pterygiae. But in all other characters *Neomias* shares the same distinguishing characters as *Abarypeithes* and similar genera.

***Basothorhynchus endroedyi* sp. nov.**

Type material. Holotype: ♂, ‘S. Afr., Lesotho, Drakensbg. Black Mt., 29.31 S – 29.12 E, 9.3.1976; E-Y: 1060, from under stones, leg. Endrödy-Younga’ (TMSA). Paratypes: 1 ♂, 3 ♀♀, 7 spec., the same data as holotype (1 ♂ 2 ♀♀, 7 spec. TMSA, 1 ♀ RBSC).

Description. Body length males 2.31–2.59 mm, females 2.61–2.98 mm, holotype 2.59 mm.

Elytra with sparse regular rows of setae on odd intervals, setae fine, slightly bent backward, about equally long as width of one interval, 8–10 on the length of one interval, at apical part some setae placed also on even intervals. Pronotum, head and rostrum with similar fine setae, half as long as elytral ones and semi-appressed, those setae on pronotum directed transversely, on head with rostrum directed longitudinally.

Rostrum (Fig. 2) $1.09\text{--}1.15 \times$ as wide as long, base $1.11\text{--}1.15 \times$ wider than apex; rostrum and head moderately shiny, irregularly punctured, distance of punctures smaller than their diameter, basal part of vertex and space behind eyes without punctures, smooth.

Antennal scape (Fig. 1) regularly curved at midlength, evenly enlarged at apical third, at apex $0.7\text{--}0.8 \times$ as wide as club. Funicle segment 1 conical, $2.1\text{--}2.2 \times$ as long as wide and $2.2\text{--}2.5 \times$ as long as segment 2, which is $1.2\text{--}1.3 \times$ as long as wide; segment 3 isodiametric; segment 4 $1.1 \times$ as wide as long; segment 5 $1.2 \times$ as wide as long; segment 6 $1.3 \times$ as wide as long; segment 7 $1.4\text{--}1.5 \times$ as wide as long; club $1.5 \times$ as long as wide.

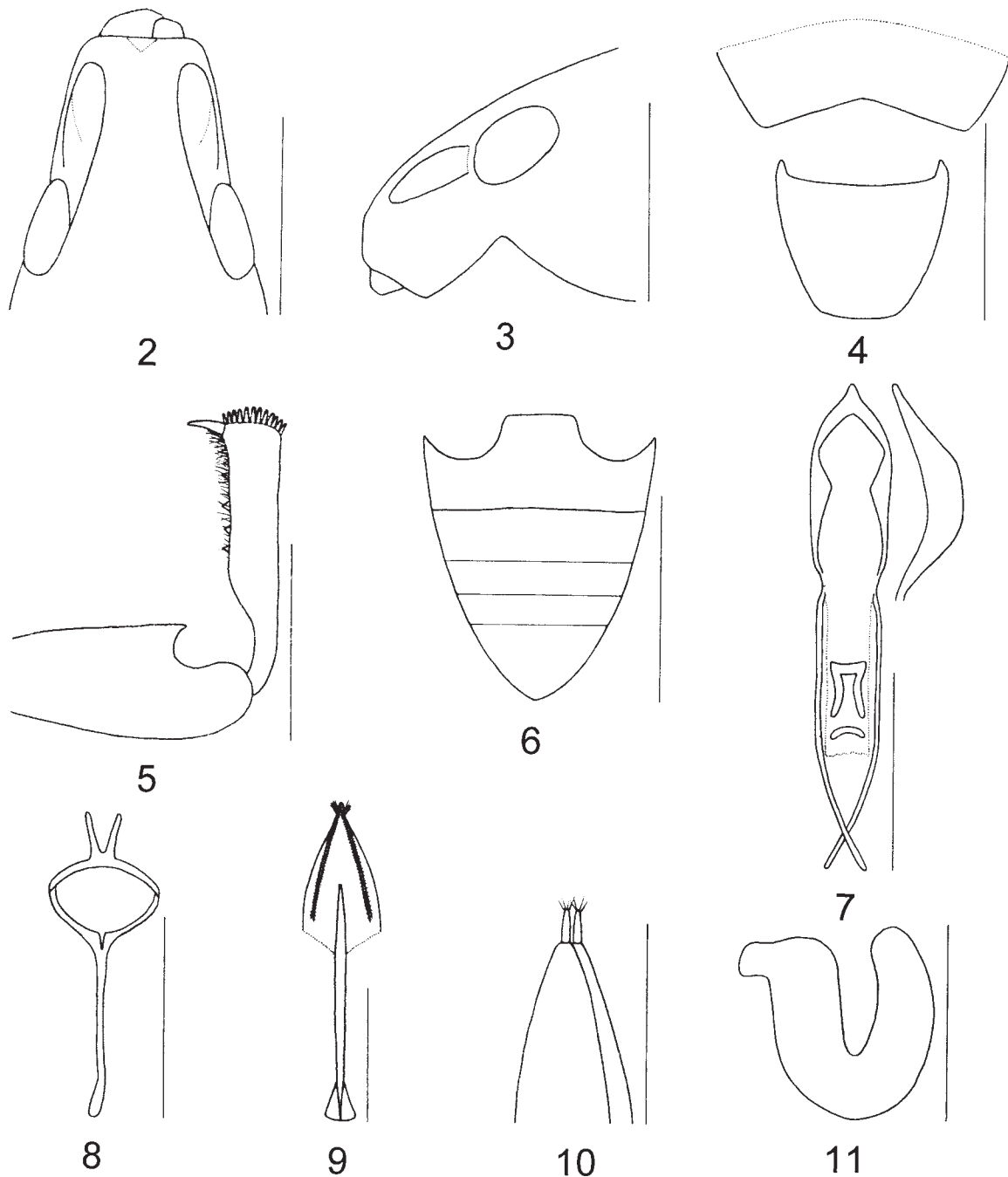
Pronotum (Fig. 1) $1.07\text{--}1.11 \times$ as wide as long, widest at midlength or before midlength, with strongly regularly rounded sides, anterior border narrower than posterior border. Disc strongly shiny, punctured, smooth between punctures; punctation variable, punctures ranging from very small, fine and deeper with long interspaces (longer than puncture diameter) to larger, shallower and with interspaces shorter than puncture diameter. Punctures on disc mostly variably-sized.



FIGURE 1. Dorsal habitus of the male holotype of *Basothorhynchus endroedyi* sp. n.

Elytra (Fig. 1) in males 1.48–1.53 ×, in females 1.34–1.43 × as long as wide. Striae constituted by slender punctures, space between punctures not deepened; intervals matt, rough.

Protarsi in both sexes shorter and broader than meso- and metatarsi; all tarsi in males shorter and more robust than those in females. Male protarsi with segment 2 twice as wide as long; segment 3 1.2–1.3 × as wide as long and onychium equally long as segment 3; meso- and metatarsi with segment 2 1.7–1.8 × as wide as long; segment 3 1.3 × as wide as long and onychium 1.3 × as long as segment 3. Female protarsi with segment 2 1.7–1.8 × as wide as long; segment 3 1.3 × as wide as long and onychium 1.3 × as long as segment 3; meso- and metatarsi with segment 2 1.5–1.6 × as wide as long; segment 3 1.1–1.2 × as wide as long and onychium 1.4 × as long as segment 3.



FIGURES 2–11. Structural details of *Basothorhynchus endroedyi* sp. n. 2. head with rostrum, dorsal view; 3. head with rostrum, lateral view; 4. tergite VII and VIII in male; 5. femur and tibia of anterior right leg; 6. abdominal ventrites of female; 7. penis, dorsal and lateral view; 8. tegmen, dorsal view; 9. Sternite VIII of female, dorsal view; 10. ovipositor, dorsal view; 11. spermatheca. Scale bars: 1 mm (6), 0.5 mm (2–5, 7–11).

Penis (Fig. 7) dorsally widest at apical third, basally evenly tapered with sides basally straight; apically tapered distinctly with sides of apical part rounded, tip small, subtriangular; in profile slender, distinctly irregularly curved, tip elongated, evenly pointed.

Spermatheca (Fig. 11) with cornu wide, robust, regularly curved; ramus perpendicular to body of spermatheca, globular, isodiametric; collum not differentiated; tip of spermatheca truncated.

Etymology. The newly described species is named in memory of the late Sebastian Endrödy-Younga (1934–1999), (Sebestyén Endrödy in his original name and surname), an originally Hungarian coleopterist who spent the majority of his life in South Africa and who collected important and extensive material of different Coleoptera in South Africa, and also from less visited parts, like the high altitude areas of Lesotho. Material collected by him constitutes a major foundation for our knowledge of the mainly terricolous beetles of South Africa.

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Article

The Enigmatic Weevil Genus *Philetaerobius* from Southern Africa: Definition, Affinities and Description of Three New Species (Coleoptera: Curculionidae: Entiminae)

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Abstract: The small entimine genus *Philetaerobius* Marshall, 1923 is revised, entailing a redescription of the genus and the only hitherto described species, *P. nidicola* Marshall, as well as the description of three new species, *P. endroedyi* sp. n., *P. garibebi* sp. n. and *P. louwi* sp. n. A lectotype is designated for *P. nidicola* Marshall. The habitus and taxonomically important structures of all species are illustrated, including the previously unrecorded male and female genitalia. A key to the four species is provided, as well as a map of their known distributions in southern Namibia and the Northern and Western Cape provinces of South Africa. The habits of the genus, as known, are summarized, and its taxonomic position and indicated relationship with the taxonomically equally isolated genus *Spartecerus* are discussed. The habitus and genitalia of some *Spartecerus* species are also illustrated, and the available information on the life-history of the genus is summarized.

Keywords: taxonomy; South Africa; Namibia; weevils; new taxa; spermatheca; *Mimaulus*; *Spartecerus*

1. Introduction

Philetaerobius Marshall, 1923 is a very unusual genus of Entiminae, as its flat body and rostrum distinguish it from all other Entiminae in southern Africa. It was described by Marshall [1] for a single species, *P. nidicola* Marshall, which was found in a communal nest of the Sociable Weaver, *Philetairus socius* (Latham, 1790), in South Africa. In the literature, *Philetaerobius* remained known from only the five type specimens of *P. nidicola* for more than 60 years, until Louw [2] recorded collecting 150 specimens during a 1976 ecological study in southern Namibia. Oberprieler [3] later reported finding an undescribed species on grasses in central Namibia in 1987. However, substantial additional material of the genus was also collected in the 1970s and 1980s by the late Sebastian Endrödy-Younga, a coleopterist at the former Transvaal Museum in Pretoria, and some more specimens had accumulated in other collections in South Africa. Field work in 2011, 2013 and 2016 by two of the authors of the present paper (R.B., M.M.) in the Namaqualand and Richtersveld regions of the Northern Cape province of South Africa yielded a large number of further specimens and localities, which prompted us to revise the genus and describe the new species represented among the material collected after Marshall's description of *P. nidicola*.

Marshall [1] assigned *Philetaerobius* to the then subfamily Rhythirrininae as a “very aberrant form allied to *Gronops*”, and it was also listed in this group by Schenkling & Marshall [4] and by

Louw [5] (classified as Brachycerinae: Rhythirrinini), whereas Alonso-Zarazaga & Lyal [6] placed it as *incertae sedis* in the subfamily Cyclominae, which includes Rhythirrinini as a tribe. Oberprieler [3] noted that *Philetaerobius* has adelognathous mouthparts and the scars of deciduous mandibular cusps, and he consequently transferred the genus to the subfamily Entiminae, suggesting an affinity with the South African genera *Mimaulus* Schoenherr, 1847 and *Protostrongylus* Jekel, 1875, which are currently classified in the tribe Cneorhinini. However, the taxonomic affinities of the genus have never been properly investigated. With much more material in hand now, we discuss its significant characters and taxonomic position in more detail, as far as is possible in the context of the present (unsatisfactory) tribal classification of the Entiminae, globally and specifically in southern Africa.

2. Materials and Methods

Body length was measured in profile, from the anterior border of the eyes to the apex of the elytra. Ratios of the width and length of the rostrum, pronotum and elytra are between the maximum width and length of the respective parts in dorsal view. Dissected genitalia are preserved in glycerol in microvials pinned with the specimens or embedded in Solakryl BMX mounted on the same card as the respective specimen. The photographs were taken using a Leica DFC500 digital camera mounted on a Leica M205C microscope, combining (“montaging”) image stacks in Leica Application Suite 4.4.0., and using a Nikon P 6000 digital camera mounted on a Wild MDG17 microscope, combining image stacks with the software program Zerene Stacker. All images were slightly enhanced for contrast and brightness, as necessary, in Adobe Photoshop CS3.

Sequences of the mitochondrial gene *COX1* were obtained for *P. nidicola* using the method described by Meregalli et al. [7] but using the primers of Folmer et al. [8] as modified by Astrin & Stüben [9].

Label data were generally recorded *verbatim*, with a slash (/) indicating separate lines on a label and a double slash (//) indicating different labels on a pin, except for those wrong coordinates of localities that were corrected where needed. This applied in particular to labels of specimens collected by Endrödy-Younga, which use a decimal-degree format but actually indicate minutes (and seconds). We checked and verified all given coordinates during compilation of the distribution map. Additional data were inserted where relevant and placed in square brackets.

The material examined (175 specimens) is housed in the following collections, identified by the following codens:

ANIC	Australian National Insect Collection, Canberra, Australia
BMNH	The Natural History Museum, London, United Kingdom
MMTI	Collection Massimo Meregalli, Torino, Italy
RBSC	Collection Roman Borovec, Sloupno, Czech Republic
SAMC	Iziko Museums of South Africa (formerly South African Museum), Cape Town, South Africa
SANC	South African National Insect Collection, Pretoria, South Africa
TMSA	Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa

3. Descriptions

Genus *Philetaerobius* Marshall, 1923

Philetaerobius Marshall, 1923: 546 [1]; Schenkling & Marshall, 1929: 20 [4]; Louw, 1998: 24 [5]; Alonso-Zarazaga & Lyal, 1999: 144 [6]; Oberprieler, 2010: 11 [3].

Type species: *Philetaerobius nidicola* Marshall, 1923, by original designation.

Diagnosis. Small Entiminae, with rostrum distinctly enlarged apicad, at apex broader than at base; frons large, indistinctly triangular, apically tectate, with 6–8 pairs of long setae; mandibles with spoon-shaped, vertical deciduous cusps; antennal scrobes narrow, straight, usually confluent on venter of rostrum; eyes in lateral view subtriangular to flatly reniform; antennal scapes significantly shorter than funicles; procoxal cavities nearer to posterior than anterior border of prothorax; metatibiae

without corbels; tarsal claws single or inner one (outer one on protibiae) reduced to minute tooth at the base of other; tergite VII in both sexes with sclerotised margin, deeply V-shaped concave with straight sides and a row of coarse punctures; ventrite 1 in middle about as long as ventrite 2, ventrite 2 slightly shorter than 3–5 combined; gonocoxites small, flat, placed at angle to each other, without styli; sternite VIII of female with basal plate broadly triangular, its basal margin sclerotised, apodeme with apex transformed into a long transverse bar; spermatheca with collum longer than cornu, irregularly distorted, apically usually bulbous and curled over.

Redescription. Body length 2.7–4.2 mm. Integument of body black, legs and antennae blackish or reddish brown with apical parts of femora, basal parts of tibiae and clubs blackish, claws black, apical tibial spines yellowish brown. Vestiture of body consisting of very dense, tessellate, appressed scales, completely hiding integument; scales on elytra large and flat, 3 across one elytral interstria, irregularly angular, leaving only very slender spaces between them, sometimes concave and with irregular puncture in centre; scales on pronotum, head and rostrum, legs, antennae except clubs and underside slightly smaller than elytral ones, imbricate, with a distinct puncture in centre. Raised setae on whole body inconspicuous, very sparse and very short, pale to dark brownish, hardly visible in lateral view, shorter than diameter of one adherent scale; pronotum dorsally with anterior fringe of short semi-erect setae; antennal funicle, tibiae and tarsi with short, suberect to recumbent, subspatulate greyish setae. Color pattern of body various, in fresh specimens basic colour of pronotum and elytra brown, often with small irregular blackish spots on dorsal part of elytra and greyish on outer interstriae and two slender blackish longitudinal stripes on pronotum; in some specimens predominant color of pronotum and elytra dark brown to blackish, with irregular small spots of pale brownish and whitish scales, in others creamy with few scattered white scales; head and rostrum blackish, frons greyish, sometimes with pearly sheen; antennae and legs greyish; only vestiture of *P. garibebi* paler, grey with admixed blackish and greenish or bronze scales; underside white greyish, legs and underside in some specimens opalescent.

Rostrum 1.13× broader than long to 1.14× longer than broad, ventral part in dorsal view not visible below epifrons, in apical half to two-thirds distinctly widened apicad, at apex broader than at base and slightly narrower than head including eyes; in lateral view flat, at same level as head, anteriorly more or less abruptly declivous beyond antennal insertions. Epifrons broad, flat or longitudinally depressed, tapering anteriorly with straight or weakly concave sides, at base as wide as interocular space, with slender median longitudinal stria along the whole length. Frons (Figures 1d, 2d, 4d, 6d, 8d) large, vaguely triangular to trapezoidal but not raised, reaching antennal insertions, squamose, border with epifrons indicated by lines between 2–4 pairs of long, stout setae; epistome distinctly tectate, squamose, border with frons indicated by 2–3 pairs of setae, one anteriorly and more widely spaced and the others further back. Mandibles very small, not projecting, base squamose; deciduous mandibular processes (Figure 4e,f) vertical, flatly, bluntly asymmetrically spoon-shaped, with concavity on the outside and base, there thickened and strongly protruding, situated just inside of squamose base of mandible and leaving a narrow, vertical, subtriangular scar when broken off. Prementum with two setae. Antennal scrobes (Figures 1e, 2e, 4e, 6e, 8e) in dorsal view invisible; in lateral view slender, sharp, curved obliquely downwards in front of eyes, mostly (except in *P. garibebi*) shallowly to deeply confluent at back of venter of rostrum, creating a small flat median projection of venter (Figure 6e). Head broad, flat to slightly concave, with slender longitudinal stria continuing into median stria on epifrons; laterally with prominent, rounded projection partly covering eyes in dorsal view. Eyes moderately large, kidney-shaped to subtriangular in outline, flat to slightly convex, placed in about middle of head height in lateral view, in dorsal view hardly to distinctly prominent from outline of head. Antennal scapes short, hardly reaching anterior border of eyes when folded back, at apex distinctly narrower than clubs, weakly curved, faintly regularly enlarged apicad. Funicles 7-segmented, 1.2–1.3× longer than scape, with segment 1 longer than broad, 2 isodiametric to transverse and 3–7 cupular to transverse, progressively shorter and broader towards club. Clubs oval with segment 1 conspicuously largest.

Pronotum flat, narrow, $1.08\times$ longer than broad to $1.10\times$ broader than long, sides strongly rounded, broadest near the midlength, strongly tapered anteriorly and more gradually posteriorly, anteriorly slightly broader than posteriorly, anteriorly constricted. Disc finely and densely punctate, flat or slightly vaulted with faint, shallow, curved depressions next to faint median longitudinal elevation, sometimes concealed below appressed scales. Base faintly to strongly arched. Anterior border in lateral view straight, without ocular lobes or setae. Procoxal cavities contiguous, round, nearer to posterior than to anterior border but not reaching it; procoxae subglobular. Scutellar shield indistinct.

Elytra very flat or slightly convex, subrectangular, together $1.48\text{--}1.71\times$ longer than wide, subparallel-sided or weakly and regularly curved, bases jointly strongly arched and embracing posterior part of pronotum, sides straight or moderately curved, at apex shortly elongated and rounded, with regularly rounded shoulders; 9-striate, striae distinctly narrowly punctate; interstriae flat to slightly convex, with single row of sparse, short, blunt, semi-erect setae but these often largely or totally absent on even interstriae, in all species except *P. garibebi* interstriae 1 and 3 raised at base and transversely connected, 5–8 also raised at base into shallow humeral callus, in *P. garibebi* all interstriae equally wide and even ones also with complete row of sparse but small, translucent setae. Mesocoxae semiglobular, mesoventral process narrow, about as wide as third of mesocoxal width, not reaching posterior margin of mesocoxae, prominently raised in *P. garibebi* but not in other species. Metacoxae semiglobular, not reaching elytra (cavities laterally closed by metaventrite), metaventral process arched, about twice as wide as metacoxa. Tergite VII short and broad, translucent, with well sclerotised narrow margins, deeply V-shaped concave with straight sides and row of coarse punctures; tergite VIII rounded, well sclerotised, coarsely punctate. Tergite VII and VIII identical in both sexes. Femora faintly swollen, unarmed. Tibiae moderately long and slender, straight, apical surface (surrounding tarsal socket) densely squamose; protibiae apically rounded, mucronate, with 6–7 short, fine, yellowish, sparse, well separate spines, with lateral margin straight and mesal margin faintly bisinuate, at apex enlarged; mesotibiae apically with 6, metatibiae with 8 subequal spines, mesotibiae also mucronate but metatibiae amucronate; metatibiae without corbels. Tarsi slender and long, underside with several sparse long setae, with segment 2 slightly broader than long, 3 faintly broader than 2, bilobed, segment 5 slightly shorter than 3; claws single or with minute remnant of second claw (on outside in protibiae, on inside in meso- and metatibiae), about $0.3\times$ as long as major claw.

Abdomen ventrally stretched subtriangular, about $1.3\text{--}1.4\times$ longer than broad; ventrite 1 in middle about as long as 2, 2 slightly longer than 3 + 4 combined, 5 short, apically rounded; suture between 1 and 2 faintly sinuate, very fine and inconspicuous, other sutures somewhat arched towards apex, fine and narrow; all ventrites regularly, finely and densely punctate but obscured by dense cover of scales; ventrites 1, 2 and 5 with irregularly scattered, semierect to recumbent, moderately long, subspatulate setae, ventrites 3 and 4 each with single transverse row of the same setae; ventrites 1 and 2 in male longitudinally shallowly concave, in female convex.

Genitalia. Penis moderately short, well sclerotised, tubular, curved, apex ventrally attenuate, dorsally below ostium with a tuft of two or more long subapical setae; inside in basal half with thick, single but complex sclerite about $0.5\times$ as long as body (Figures 3a, 5a, 7a), in *P. garibebi* with tubular sclerite as long as body and protruding from base of penis (Figure 9a); temones $1.4\text{--}1.7\times$ longer than body of penis and $4\times$ longer than tegminal manubrium. Tegmen with slender ring without parameres, manubrium slightly shorter than diameter of ring. Sternite IX of male with spiculum gastrale moderately long, anteriorly curved and tapered, posteriorly with short, transverse basal plate; sternite VIII consisting of two sickle-shaped, sclerotised hemisternites. Gonocoxites lightly sclerotised, flat, short and broad, roundly subtriangular (in *P. garibebi* longer and laterally curved outwards), at about right angle to each other, apex with a row of 3–7 stout setae, stylus absent. Sternite VIII of female (Figures 3c, 5c, 7c, 9d) short and broad, basal plate broadly triangular, wider than long, in centre weakly sclerotised, often forming a round fenestra, basal margin thickened and sclerotised, apical margin thin, arcuate, medially usually with 1 pair of long stiff setae (sometimes 2 pairs, and 4 in *P. garibebi*) and some smaller setae, sometimes medially notched; apodeme about as long as basal plate,

conspicuously T-shaped, caput forming a slender transverse rod as long as or longer than stem of apodeme. Spermatheca (Figures 3d, 5d, 7d, 9c) extraordinarily large and conspicuous, well sclerotised; cornu long, variously curved or bent, apically pointed or bluntly inflated; ramus short, subglobular, faintly longer than wide, sessile or on short stem, gland stalked, globular or elongate (in *P. garibebi*); nodulus not differentiated; collum distinctly longer than cornu, variously curved and twisted, apex usually bulbous and curled so that duct arises next to collum (in *P. garibebi* not curled and duct arising apically); spermathecal duct stiff, more or less straight, about as long as or shorter than spermatheca, inserted in middle of underside of bursa.

Distribution. *Philetaerobius* as known is endemic to the southern half of Namibia (the Erongo, Hardap and Karas regions) and the north-western parts of South Africa (the Northern and Western Cape provinces) (Figure 10).

Habitat and life-history. Marshall described *P. nidicola* from specimens found in a nest of the Sociable Weaver, a bird species endemic to southern Africa and occurring from central and south-eastern Namibia southwards through south-western Botswana into the Northern, North-West and Free State provinces of South Africa [10]. Two additional short series of specimens have been collected from such nests, at least one evidently representing the same collecting event (see under *P. nidicola* below). However, all newer specimens have been collected in pitfall traps [2,11], sifted from plant debris beneath shrubs or collected from grasses [3]. Given also that the adults are wingless, it seems that the specimens collected from Sociable Weaver nests were carried into the nests with plant material collected by the birds to construct their nests. The flat body and cryptic coloration of all species except *P. garibebi* suggest a specialized lifestyle on the ground, under leaf litter or stones or in crevices in the soil, but *P. garibebi* appears to lead a more exposed way of life on plants, as other entomines generally do. The weevils have invariably been collected in xeric habitats, such as dry grassy plains adjacent to dunes [11], but little further is known about their habitats and nothing about the larvae and their hostplants and feeding sites. The deciduous mandibular cusps of teneral adults indicate that the weevils pupate in the ground and have soil-dwelling, root-feeding larvae like other entomines do. The peculiar, shovel-like shape of the deciduous cusps suggests a specialized mode of pupation, perhaps in loose sand rather than in firm soil as it occurs in other entomines, and possibly the larvae of *Philetaerobius* also lead a specialized way of life. Closer observation of the weevils in their habitats is required to properly assess their habits and life-history.

Remarks. *Philetaerobius* is a unique genus among the entomine fauna of southern Africa, differing most significantly from all other genera in the unusual shape of its spermatheca and sternite VIII of the female and, as far as known, of its deciduous mandibular cusps. Other characteristic features are the flat body shape, squamose epistome and frons, ventrally confluent or almost confluent scrobes, single or almost single tarsal claws, tubular internal sclerite of the penis, apical tuft of setae on the penis and tessellate scales arranged on the elytra in rosettes around the interstitial setae. The only entomine genus in southern Africa with a similar spermatheca is *Spartecerus* Schoenherr, 1834, to which *Philetaerobius* appears to be related on this account, although *Spartecerus* is very different in shape and other external features. A tubular internal sclerite of the penis also occurs in *Spartecerus* and, to a lesser degree, in *Mimaulus*, which furthermore has a similar rosette-like arrangement of scales on its pronotum and elytra. The likely relationships of *Philetaerobius* to these genera are explored in more detail below (see Discussion).

Philetaerobius can be regarded as a monophyletic taxon mainly on the shape of the apodeme of sternite VIII of the female, featuring a conspicuous transverse bar at its apex, and, as far as known, on the shovel-like mandibular processes, the squamose epistome and the apical tuft of setae on the penis. The structure of its spermatheca is also rather unique, differing from the similar one of *Spartecerus* in not having a nodulus differentiated at all. In *Philetaerobius*, *P. garibebi* occupies an isolated position, differing in several characters from all the other species (see description and key). Some of these characters appear to be more derived, e.g., the single claws and absence of humeri, whereas others seem more plesiomorphic, e.g., the shape of the elytra (especially at the base) and eyes, the long tubular

penis sclerite and the development and setation of the gonocoxites and sternite VIII of the female. While these numerous differences may warrant placing *P. garibebi* in a separate genus, we prefer to assign it to *Philetaerobius* as it shares all the critical genital characters of the other species and evidently belongs to the same monophyletic taxon. When or if additional species of *Philetaerobius* are discovered and perhaps accentuate these differences, the taxonomic position of *P. garibebi* may be revised.

Key to the species of *Philetaerobius*

1. Body in lateral view dorsally gently convex, elytral declivity in apical third; eyes vertically aligned on head in lateral view; scrobes not confluent on underside of rostrum; body dorsally covered with greyish-white scales, partly with a pearl to coppery sheen; tarsal claws single; penis with long, thick, straight, simple, cylindrical internal sclerite.....*P. garibebi* sp. n.
- Body in lateral view dorsally flat, elytral declivity in apical fifth; eyes obliquely to horizontally aligned on head in lateral view; scrobes confluent on underside of rostrum; body dorsally covered with mainly brown scales, admixed with some black and white scales arranged in rosettes; tarsal claws unequal, tiny remnant of second one present; penis with short, thick, dorsally open, apically double internal sclerite.....2
2. Eyes in lateral view subtriangular, regularly tapered posteriad, with ventroposterior margin straight, in dorsal view almost flat, hardly protruding from outline of head; epifrons flat; pronotum slightly longer than broad; internal sclerite of penis with dorsal apical arm as long and about as thick as ventral arm; spermatheca with cornu thickened apicad, apex globular.....*P. endroedyi* sp. n.
- Eyes in lateral view kidney-shaped, in posterior half abruptly tapered posteriad, with ventroposterior margin distinctly concave, in dorsal view faintly vaulted, protruding from outline of head; epifrons longitudinally depressed; pronotum slightly broader than long; internal sclerite of penis with dorsal apical arm shorter and thinner than ventral arm; spermatheca with cornu tapered apicad, apex acute.....3
3. Rostrum shorter, 1.1× broader than long; elytra broader, 1.45–1.55× longer than broad, laterally at apex beak-shaped elongate; odd elytral interstriae more elevated than even ones on disc; funicle segments moniliform, well separated; internal sclerite of penis broad, dorsal arm divided into two laterally projecting teeth.....*P. nidicola* Marshall
- Rostrum longer, 1.05× longer than broad; elytra slender, 1.6–1.7× longer than broad, laterally at apex regularly convex; elytral interstriae flat on disc; funicle segments cylindrical, closely approximated; internal sclerite of penis narrow, dorsal arm not divided into laterally projecting prongs.....*P. louwi* sp. n.

Philetaerobius nidicola Marshall, 1923 (Figures 1–3)

Philetaerobius nidicola Marshall, 1923: 547 [1]; Schenkling & Marshall, 1929: 20 [4]; Alonso-Zarazaga & Lyal, 1999: 144 [6]; Oberprieler, 2010: 11 [3].

Redescription. Body length 3.16–4.25 mm, lectotype 4.06 mm. Color pale brownish, elytra with only several dark brownish or blackish and whitish spots, whitish spots sometimes forming irregular lateral stripes on interstriae 6 and 7, blackish spots dominant sometimes in posterior declivity. Pronotum with two irregular dark brownish longitudinal stripes. Rostrum 1.05–1.13× broader than long, in basal half faintly tapering anteriorly, in apical half distinctly enlarged anteriorly, with straight sides; in lateral view short and robust. Epifrons evenly tapered anteriorly along whole length, with straight to slightly convex sides, longitudinally shallowly regularly deepened along the median longitudinal stria. Scrobes shallowly confluent at back of venter of rostrum. Eyes in dorsal view vaulted, weakly prominent from outline of head; in lateral view slender, horizontal, kidney-shaped,

tapered posteriad, with ventral margin concave. Antennae with funicle with segments well separated, bead-shaped; segment 1 conical, 1.1–1.2× longer than broad and 1.1–1.2× longer than segment 2; segment 2 1.1–1.3× broader than long to isodiametric; segments 3–5 1.1–1.5× broader than long; segment 6 1.2–1.6× broader than long; segment 7 1.4–1.7× broader than long. Clubs 1.6–2.1× longer than broad. Pronotum 1.07–1.18× broader than long, broadest at midlength, in lateral view flat to slightly convex, with swollen anterior margin. Elytra 1.45–1.57× longer than broad, parallel-sided, apically broadly rounded, evenly tapered posteriad; interstriae flat, only 1, 3 and 6 behind base more elevated than others, 1 also on declivity slightly elevated. Tarsi with segment 2 isodiametric to 1.3× broader than long, segment 3 1.1–1.3× broader than long and 1.1–1.2× broader than segment 2, onychium 1.1–1.2× longer than segment 3. Genitalia. Penis parallel-sided, in apical fifth regularly tapered with slightly convex sides, with apex truncate, in lateral view regularly curved, equal in width, in apical third regularly tapered with lengthened apex; internal sclerite with dorsal arm apically divided into 2 stout short teeth directed lateroposteriad but not reaching apex of ventral part (giving the appearance of a clove), ventral part dorsoapically raised into narrow spout. Gonocoxites flat to shallowly convex, spatulate, broader in apical half; apex broadly rounded, with 1–2 stiff setae; orientated at about 90–135° to each other. Spermatheca with cornu abruptly bent at basal third of its length, apically slightly narrowed and bluntly pointed, often slightly bent; ramus globular, shortly stalked; gland ovoid, ca. 2× broader than ramus, on narrow stalk of same length; collum long, more or less straight but with slight irregular bends along the length, apex bulbous and curled over; duct stiff, straight to faintly twisted, shorter than spermatheca.

Material examined (60 exx.). Types. Lectotype (here designated), ♂: Type [printed, rounded with red margin] / *Philetaerobius nidicola*, Mshl. TYPE [handwritten] / S. Africa [printed] / In nest of Social Weaver Bird (*Philetaerus socius*) [handwritten] / Pres. by Imp. Bur. Ent. Brit. Mus. 1923-253. [printed] / LECTOTYPUS *Philetaerobius nidicola* Marshall // Borovec, Oberprieler & Meregalli desig. 2018 [printed, red] (BMNH). Paralectotypes: 1 ♀: SYNTYPE [printed, rounded with blue margin] / *Philetaerobius nidicola*, Mshl. COTYPE [handwritten] / S. Africa, fr. nest of Sociable Weaver bird [handwritten] / G.A.K. Marshall Coll. B.M. 1950-255 [printed] / PARALECTOTYPUS *Philetaerobius nidicola* Marshall // Borovec, Oberprieler & Meregalli desig. 2018 [printed, red] (BMNH); 1 ♂, 1 ♀?: from nest of / Social Weaver / bird [handwritten] // *Philetaerobius* / *nidicola*, Mshl. / COTYPES. [in Marshall's hand] // Type / SAM/Ent / 3706 [on green card] / PARALECTOTYPUS *Philetaerobius nidicola* Marshall // Borovec, Oberprieler & Meregalli desig. 2018 [printed, red] (SAMC). Other specimens: 1 ♂, 8 exx.: TransKei / A. L. du Toit / 1910 [handwritten] // from nest of / Social Weaver / bird [handwritten] // *Philetaerobius* / *nidicola* Mshl [handwritten] // SAM-COL- / A048230 (SAMC); 6 exx.: [no locality], from thorn tree / bearing nest of / social weaver / bird [handwritten] // *Philetaerobius* / *nidicola* Mshl [handwritten] // SAM-COL- / A048229 (SAMC); 1 ♂: Hanover [31°4.100' S 24°26.383' E] / C. C. / Cronr. Schrein. / 1901 [handwritten] // *Philetaerobius nidicola* Mshl // SAM-COL- / A048227 (SAMC); 1 ♀, 5 exx.: Kenhardt [29°22.909' S 21°11.211' E] / 1911 // *Philetaerobius* / *nidicola* Mshl [handwritten] // SAM-COL- / A063585 (SAMC); 1 ♂: Kakamas [28°47.339' S 20°38.214' E] / Kenhardt Div. [typed] // R. F. Lawrence / May 1934 [underside of label] // SAM-COL- / A048228 (SAMC); 1 ♀: S. Afr. [Northern Cape], Richtersveld / Buffelsriv. Valley / 29°33' S 17°27' E // 31.8.1976, E-Y: 1193 / groundtraps, 35 days / leg. Endrödy-Younga // groundtraps with / banana bait (TMSA); 1 ♂: [South Africa, Northern Cape], S.Afr., Namaqualand / Onseepkans–Kakamas / 28°52' S 19°37' E // 9.9.1976; E-Y:1244 / groundtraps, 24days / leg. Endrödy-Younga // groundtrap / with faeces bait (TMSA); 2 ♂, 5 exx.: [South Africa, Northern Cape], S.Afr., Namaqualand / Onseepkans–Kakamas / 28°52' S 19°37' E // 2.10.1976; E-Y:1280 / groundtraps, 12days / leg. Endrödy & Breyten. (TMSA, ANIC); 1 ♀: [South Africa, Northern Cape], S. Afr., Richtersveld / farm Haramoep / 29°06' S 18°40' E // 13.10.1976, E-Y: 1276 / cattle dung / Endrödy & Breytenb. (TMSA); 1 ♀: S. Afr. Cape [Northern Cape], Karroo / Struisputs farm / 30°02' S 20°55' E // 1.5.1985, E-Y: 2202 / under stones, plants / leg. M.-L. Penrith (TMSA); 1 ♀: SOUTH AFRICA, C. P. / 24 km W Springbok / 29°42' S 17°44' E / 10.ix.1986 / R. Oberprieler // collected off / *Zygophyllum* / *morgsana* (SANCI); 1 ♂, 1 ♀: Gannapo[ort] farm /

29°16' S, 19°39' E / 17.iii.[1988] // S. Afr. Cape // W. Wittmer (SANC); 1 ♀: RSA, Western Cape, 811 m / R 358 12 km S Kliprand / 30°40.169' S, 18°42.597' E / 30.x.2011, R. Borovec lgt. // sifted detritus and dead / leaves below / *Euphorbia dregeana* shrubs (RBSC); 1 ♂: RSA, Northern Cape, 541 m / 40 km S Springbok, Die Drif / 1 km from Koringhuis, sifting / 29°59.139' S 17°51.875' E / 31.x.2011, R. Borovec lgt. (MMTI); 1 ♂, 2 ♀, 4 exx.: **RSA Northern Cape** 757 m / Ca 2 km NE Nigramoep / 29°27.147' S 17°37.968' E / R. Borovec lgt. 15.xi.2016 / Sifting below *Euphorbia dregeana* (TMSA, RBSC, ANIC); 1 ♀, 1 ex.: **RSA Northern Cape** 545 m / W Anenous Pass / 29°14.475' S 17°35.922' E / R. Borovec lgt. 16.xi.2016 // Sifting of detritus died / leaves and branches / below shrubby *Euphorbia dregeana* (RBSC, ANIC); 2 ♀, 7 exx.: **RSA Northern Cape** 908 m / R355 SE Springbok / 29°43.641' S 18°01.413' E / Sifting below *Euphorbia dregeana* / R. Borovec lgt. 20.xi.2016 (RBSC, ANIC).

Distribution (Figure 10). The species occurs in the Northern Cape province of South Africa, from Namaqualand eastwards into the Great Karoo, apparently as far east as Hanover (near De Aar). It does not seem to occur north of the Orange River and also not in the Richtersveld; the two localities so-labelled (Buffelsrivier Valley and Haramoep) lie further south, the former west of Springbok and the latter near Goodhouse in the Riemvasmaak Community Conservancy. The distribution range of *P. nidicola* thus apparently does not overlap with those of *P. endroedyi* and *P. louwi*. The implied type locality of the species (“Transkei”, see below) is evidently erroneous as the Sociable Weaver does not occur in this region.

Habitat and life-history. The type and two other series of specimens in the SAMC were found in the communal nest of the Sociable Weaver (*Philetairus socius*, Ploceidae), but the species also occurs outside the range of this bird and more recently collected specimens have been taken on the ground in pitfall traps, among detritus under plants and under stones. A single specimen was beaten off a *Zygophyllum* bush, but this plant is unlikely to represent a host for the species. It remains to be seen whether *P. nidicola* may occur in Sociable Weaver nests (or other bird nests) more regularly and how the flightless specimens end up in such nests.

Derivation of name. Marshall [1] did not state how he derived the name of the species, but it is obviously formed from the Latin noun *nidus*, a nest, and the verb *colere*, to live or inhabit. A *nidicola* is a nest-dweller, and the species name is a masculine noun in apposition.

Remarks. Marshall [1] based his description of *P. nidicola* on five specimens. Two are housed in the BMNH, a male labelled “TYPE” and a female labelled “COTYPE”, and another two specimens are in the SAMC, glued in the top corners of a large card and labelled “COTYPES”. The space between these two specimens, with the remains of a ring of glue there, indicates that the card originally held a third specimen between the outer two, thus accounting for Marshall’s remaining fifth syntype. Although Marshall labelled the male in the BMNH as type, he did not designate a holotype in his description of *P. nidicola*, and we therefore here designate the male in the BMNH as lectotype and the other three existing syntypes as paralectotypes.

The lectotype is glued on a triangular card and lacks the protarsi and several segments of the other tarsi. It was dissected by someone (not by Marshall or us) as its ventrites are glued on a card, and a second triangular card holds a blob of glue but without any genitalia. A search by one of us (M.M.) in the drawer in which the specimen is housed failed to find the aedeagus, which is apparently lost. The paralectotype female in the BMNH, glued on a rectangular card, is missing the entire right front leg. It has also been dissected and the ventrites, tergites VII and VIII, spermatheca and slightly damaged sternite VIII are glued on another rectangular card placed beneath it. The two paralectotypes in the SAMC were not dissected; the one on the right of the card, glued on its back, appears to be a male and the other is possibly a female. Although study of the genitalia of at least one type specimen is desirable for unequivocal assignment of other specimens to *P. nidicola*, we chose not to attempt dissection of the only two remaining intact types due to the insufficient dissecting facilities in the SAMC during our (R.G.O.) visit there, instead dissecting a male from the longer series of specimens (SAM-COL-A048230) bearing the same host label as the paralectotypes and evidently representing the same collecting event and a female from the series of six specimens from Kenhardt (SAM-COL-A048229). The internal sclerite

of the dissected male has the characteristic clove-type shape and the spermatheca of the dissected female is consistent with that of other specimens assigned to *P. nidicola* here.

Marshall (1923) provided no locality for *P. nidicola* in his description, and none of the types have such attached to their pins. However, a series of nine specimens in the SAMC (SAM-COL-A048230) with an identical host label (handwritten “from nest of Social Weaver bird”), thus apparently representing the same collecting event, is labelled as being from the Transkei, the former region in the Eastern Cape province of South Africa lying northeast of the Great Kei River. This region is far removed from the Northern Cape province as well as from the range of the Sociable Weaver and therefore cannot be regarded as representing a conceivable type locality for *P. nidicola*. The date on the label, 1910, is plausible, but it appears that a wrong locality label has been attached to this series.

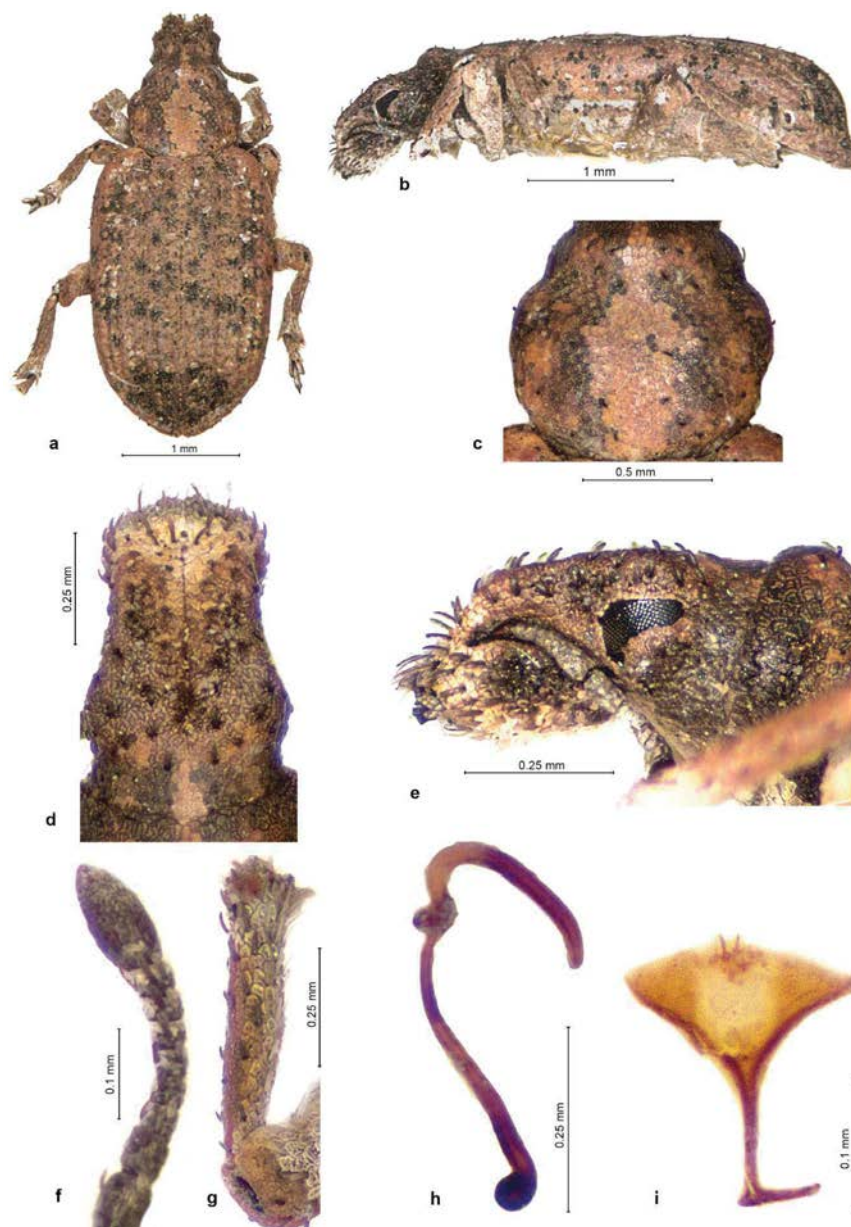


Figure 1. *Philetaerobius nidicola* Marshall. Lectotype ♂—dorsal habitus (a); left lateral habitus (b); pronotum, dorsal view (c); head, dorsal view (d); head, lateral view (e); right antenna, dorsal view (f); left protibia, dorsal view (g). Paralectotype ♀—spermatheca (h); sternite VIII (i).

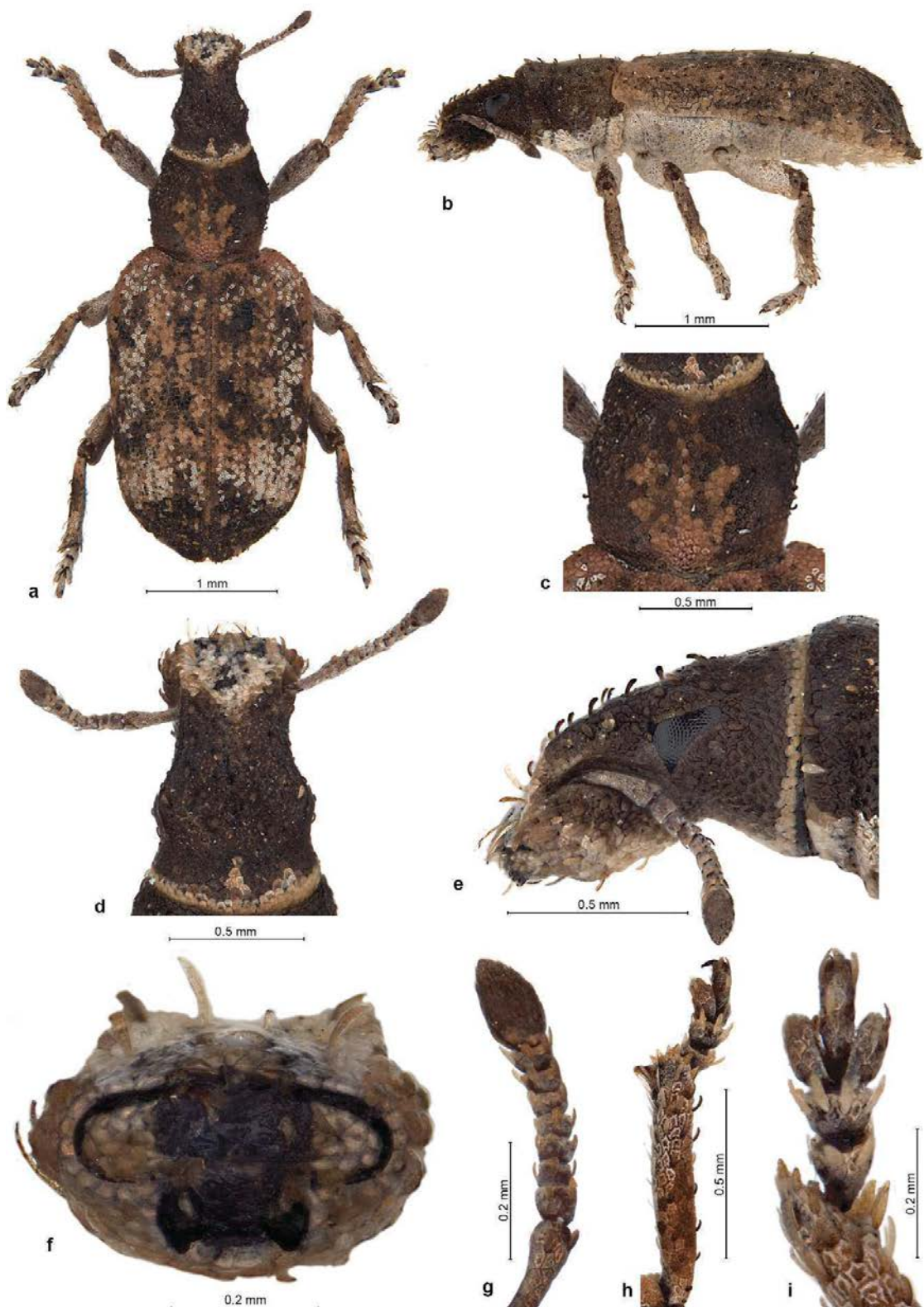


Figure 2. *Philetaerobius nidicola* Marshall (Gannapoort), ♂—dorsal habitus (a); left lateral habitus (b); pronotum, dorsal view (c); head, dorsal view (d); head, lateral view (e); rostrum, frontal view (f); right antenna, dorsal view (g); right protibia and -tarsus, dorsal view (h); right protarsus, dorsal view (i).

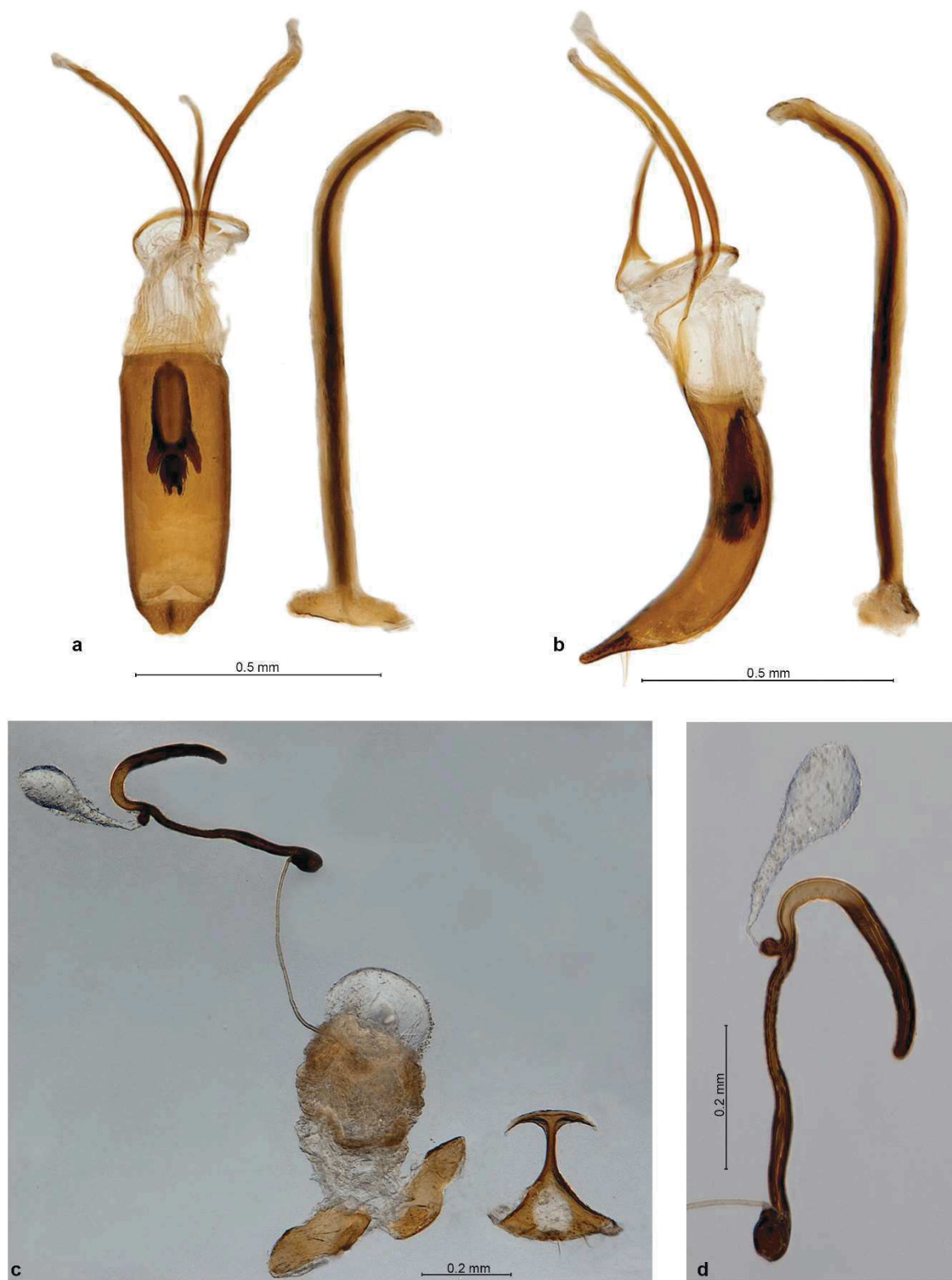


Figure 3. *Philetaerobius nidicola* Marshall, genitalia. ♂ (Gannapoort), aedeagus and sternite IX, dorsal view (a); ditto, left lateral view (b); ♀ (Springbok), ovipositor and sternite VIII, dorsal view (c); spermatheca, dorsal view (d).

Philetaerobius nidicola differs from the other species most conspicuously in the characteristic clove-type internal sclerite of its penis. Its spermatheca differs from that of *P. endroedyi* in having

an acute cornu and from those of *P. louwi* and *P. garibebi* in having the collum more or less straight, not widely curved. Externally *P. nidicola* differs from the former two species (the other flat ones of the genus) mainly by its shorter and more robust rostrum, which is broader than long in dorsal view. In other characters it is somewhat variable. The elytra and pronotum vary from being slender to broader and in lateral view from flat to slightly convex, and the range of the length-width ratio of the antennal clubs is larger than in the other species, the shape varying from slender and spindle-shaped to oval.

The COX1 sequence of a male from Nigramoep has been deposited on GenBank.

***Philetaerobius louwi* sp. n.** (Figures 4 and 5)

Philetaerobius nidicola: Louw, 1986: 310 [2].

Description. Body length 3.16–4.50 mm, holotype 4.05 mm. Integument black but densely covered with tessellate scales, these mostly pale orange-brown or greyish in color but on pronotum and elytra also irregularly scattered black and whitish scales, arranged in partial or complete rosettes around stria punctures on lateral and posterior parts of elytra, and white scales sometimes forming a large drop-shaped macula on pronotal disc. Rostrum 1.04–1.06× longer than broad, in basal half faintly narrowing anteriorly, in apical half distinctly widening anteriorly; in lateral view moderately short and robust, abruptly declivous in front of antennal insertions. Epifrons inflated, sides straight but slightly converging anteriorly, disc longitudinally deeply trough-shaped impressed towards a narrow median stria. Scrobes shallowly confluent at back of venter of rostrum. Eyes flat but slightly curved, in dorsal view barely visible below broad and raised forehead; in lateral view narrowly elongate, horizontal, anteroventrally extended into acute angle, ventral margin concave and raised on blunt canthus from posterior and ventral part of head. Antennae with funicle segments cupular, closely approximated; segment 1 more cylindrical, 1.1–1.2× longer than broad and 1.1–1.2× longer than segment 2, segment 2 1.1× broader than long, segments 3–5 1.2–1.3× broader than long, segment 6 1.4–1.5× broader than long, segment 7 1.6–1.7× broader than long. Clubs 1.6–1.7× longer than broad, very compact. Pronotum 1.06–1.16× broader than long, broadest at midlength, sides rounded; in lateral view flat with swollen anterior margin. Elytra long and slender, together 1.61–1.71× longer than broad, broadest at basal part and slightly, regularly tapered posteriorly, base deeply emarginate and embracing base of pronotum, broadly rounded at apex; interstriae mostly flat, 3, 5 and 7 slightly roundly raised, 1 also raised on declivity, only just behind basal margin odd interstriae more elevated than even ones. Tarsi with segment 2 1.2× broader than long, segment 3 1.2–1.3× broader than long and 1.1–1.2× broader than segment 2, onychium 1.1× longer than segment 3. Genitalia. Penis parallel-sided, posteriorly abruptly truncate with narrow, attenuated, truncate apex, in lateral view regularly curved, basally slightly thicker than apically, posteriorly sharply tapered to narrow, flat ventral apex; internal sclerite narrowly navicular in dorsal view, in lateral view cleft in apical third, with dorsal arm shorter than ventral one and only about half as thick. Gonocoxites flat to shallowly convex, sublenticular, about equally broad throughout or slightly broader in apical half; apex broadly rounded, with 2–3 stiff setae; orientated at about 90–120° to each other. Spermatheca with cornu sharply curved into right angle at basal third of its length, nearly straight, apically usually shortly bent, blunt but not inflated; ramus small, globular, sessile or shortly stalked; gland elongate, without distinct stalk; collum very long (longer than spermathecal duct), strongly variously bent and coiled, often faintly hook-shaped, apex bulbous but not curled (insertion of duct rotated at most 90°); duct stiff, straight to slightly twisted, only about half as long as spermatheca.

Material examined (54 exx.). Types. Holotype, ♂: [Namibia, Erongo], S.W.Afr., Namib / Us Pass, Park Gate / 23°04' S 15°35' E // 15.11.1974, E-Y: 468 / groundtraps 70 days / leg. Endrödy-Younga // ground traps with / ferm.banana bait (TMSA). Paratypes. 3 ♀, 13 exx.: same data as holotype (TMSA, ANIC); 1 ♂, 1 ♀: South West Africa / ??? [obtained in 1973 from old school collection in Windhoek, probably collected on the Khomas Hochland] (ANIC); 2 exx.: [Namibia, Hardap], Bullspoort S.W.A. [24°8.943' S 16°21.783' E] / R. G. Strey (TMSA); 2 exx.: [Namibia, Hardap], S.W.Afr., Naukluft / Felseneck farm / 24°21' S 16°00' E // 25.10.1974, E-Y: 417 / groundtraps, 136 day / leg.

Endrödy-Younga (TMSA); 1 ♀: [Namibia, Hardap], S.W.Afr., Nauwkluft / Nauwkluft Park / 24°16' S 16°15' E // 26.10.1974, E-Y: 425 / groundtraps, 88 day / leg. Endrödy-Younga // groundtrap with / banana bait (TMSA); 1 ex.: [Namibia, Hardap], S.W.Afr., Nauwkluft / Nauwkluft Park / 24°16' S 16°15' E // 26.10.1974, E-Y: 428 / groundtraps, 88 day / leg. Endrödy-Younga // ground traps / unbaited (TMSA); 3 exx.: [Namibia, Erongo], S.W.Afr., Namib / Ganab water / 23°06' S 15°32' E // 1.11.1974, E-Y: 437 / groundtraps, 17 day / leg. Endrödy-Younga // ground traps with / ferm. banana bait (TMSA); 1 ex.: [Namibia, Erongo], S.W.Afr., Namib / Ganab NE range / 23°08' S 15°36' E // 18.11.1974, E-Y: 483 / groundtraps, 65 day / leg. Endrödy-Younga // ground traps with / ferm. banana bait (TMSA); 1 ♂: [Namibia, Hardap], S.Afr., Kalah. Park / Farm Mara / 25°25' S 19°30' E // 19.12.1974, E-Y: 513 / ground traps, 73 d / leg. Endrödy-Younga // ground traps / with meat bait (TMSA); 3 exx.: [Namibia, Erongo], S.W.Afr., Namib / Ganab NE range / 23°08' S 15°36' E // 1.3.1975, E-Y: 711 / groundtrap: 90 day / leg. Endrödy-Younga (TMSA); 2 exx.: [Namibia, Erongo], S.W.Afr., Namib / Us Pass, 10 km Park / 23°03' S 15°40' E // 5.6.1975, E-Y: 852 / groundtraps 88 days / leg. Endrödy-Younga // ground traps / with faeces bait (TMSA); 1 ♂, 2 ♀, 1 exx.: [Namibia, Erongo], S.W.Afr., Namib / Us Pass, 10 km Park / 23°03' S 15°40' E // 1.9.1975, E-Y: 900 / groundtraps, 75 day / leg. Endrödy-Younga (TMSA); 1 ♂, 2 ♀, 8 exx.: [Namibia, Erongo], S.W.Afr. KhomasHl. / Us Pass, 10 km Park / 23°03' S 15°40' E // 7.7.1978; E-Y:1472 / groundtraps, 3years / leg. Endrödy-Younga (TMSA); 3 exx.: [Namibia, Erongo], S.W.Afr., c. Namib / Ganab, N. E. Hillgap / 23°08' S 15°35' E // 7.7.1978, E-Y: 1470 / groundtraps, 3 years / leg. Endrödy-Younga (TMSA); 1 ♀: [Namibia], Wildheim Ost 384 / SE 2619 Bc [26°28' S 19°34' E] / KEETMANSHOOP / 26–29 October 1976 / S. Louw, M.-L. Penrith // H33608 (SANC).

Distribution (Figure 10). The species as known occurs in south-central Namibia, in the west along the edge of the Namib Desert from the Khomas-Hochland west of Windhoek southwards to the Nauwkluft, but also in the east along the western edge of the Kalahari Desert. It is probably distributed throughout south-central Namibia and may also occur in south-western Botswana and the Northern Cape province along the eastern border of Namibia, but its distribution range does not seem to overlap with that of *P. endroedyi* in the south-west and with that of *P. nidicola* in the south-east.

Habitat and life-history. Most specimens examined were collected in pitfall traps, some of which had been baited with fermented bananas or faeces, but it is unlikely that the weevils were attracted by the bait. Louw [2] recorded the species (as *P. nidicola*) to be common in the Kalahari in spring, occurring in large numbers on plains dominated by grasses and *Rhigozum trichotomum* (in 1976 at Wildheim Ost) [11]. It appears that the species is associated with grasses, but its larva and life-history remain unknown.

Derivation of name. *Philetaerobius louwi* is cordially named after the late Schalk van der Merwe Louw, Professor of Zoology and Entomology at the University of the Free State in Bloemfontein, South Africa, who collected 150 specimens of this species during an ecological study of ground-living Coleoptera in the Namib and Kalahari Deserts and who also made significant contributions to the taxonomy of other taxa of terricolous weevils in southern Africa. Schalk sadly and unexpectedly passed away while this paper was in the proof stage.

Remarks. This species is distinguishable from *P. nidicola* by its slender rostrum and elytra and from *P. endroedyi* by its kidney-shaped and vaulted eyes and longitudinally depressed epifrons. Its internal penis sclerite is also distinctive, being deeply cleft and with the dorsal arm shorter and narrower than the ventral one, and its spermatheca is characteristic in having a long, curved to twisted collum. It is one of three *Philetaerobius* species known from Namibia and apparently the most widespread and common one, *P. garibebi* and *P. endroedyi* being known from only a few specimens and occurring to the north and south of it, respectively.

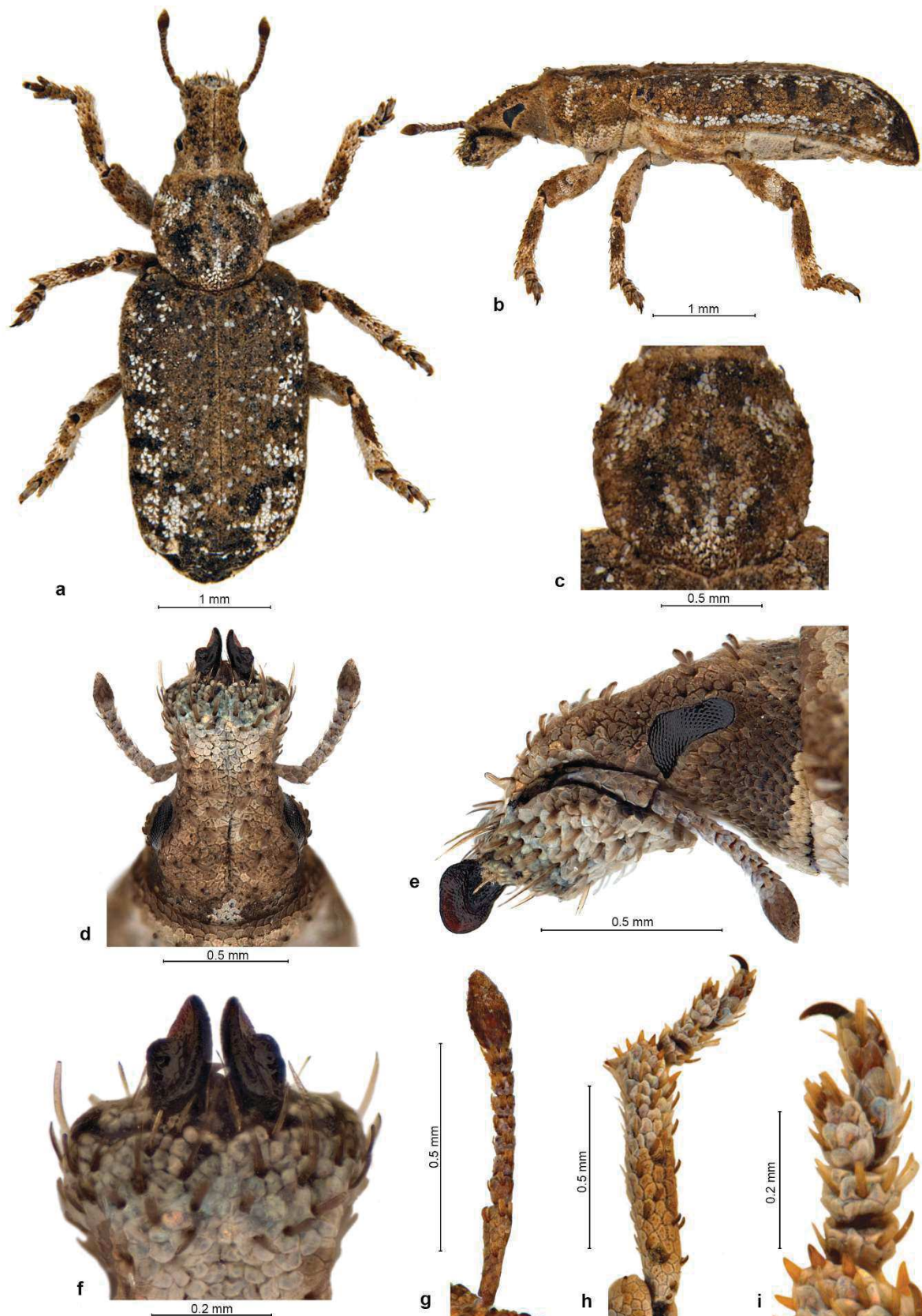


Figure 4. *Philetaerobius louwi* sp. n. (Us Pass), ♂—dorsal habitus (a); left lateral habitus (b); pronotum, dorsal view (c); head, dorsal view (d); head, lateral view (e); rostrum and mandibular cusps, dorsal view (f); right antenna, dorsal view (g); right protibia and -tarsus, dorsal view (h); right protarsus, lateral view (i).



Figure 5. *Philetaerobius louwi* sp. n., genitalia. ♂ (SWA [Namibia]), aedeagus and sternite IX, dorsal view (a); ditto, left lateral view (b); ♀ (Us Pass), ovipositor and sternite VIII, dorsal view (c); ♀ (Us Pass), spermatheca, dorsal view (d).

***Philetaerobius endroedyi* sp. n.** (Figures 6 and 7)

Description. Body length 2.66–4.38 mm, holotype 4.38 mm. Integument black on body, dark testaceous on antennae and tarsi, densely covered with tessellate variegated golden brown and black scales, laterally and posteriorly on elytra admixed with a few white scales arranged in complete

or partial rosettes around strial punctures. Rostrum 1.09–1.14× longer than broad, in basal third slightly tapering anteriorly, in apical two-thirds widening anteriorly; in lateral view moderately long and slender, abruptly declivous in front of antennal insertions. Epifrons dorsally tapering anteriorly, sides almost straight, at declivity widening again, with faintly concave sides; disc flat, not impressed but with thin median stria along whole length. Scrobes deeply confluent at back of venter of rostrum. Eyes flat, in dorsal view narrowly visible below broad and raised forehead; in lateral view obliquely subtriangular, with ventroposterior margin straight, slightly raised on weak canthus from posterior and ventral part of head. Antennae with funicle segments subcylindrical to frustocone-shaped, closely approximated; segment 1 almost parallel-sided, 1.2× longer than broad and 1.5–1.6× longer than segment 2; segment 2 isodiametric to 1.1× longer than broad; segments 3–5 1.1–1.2× broader than long; segment 6 1.3–1.4× broader than long; segment 7 1.5× broader than long. Clubs oval, 1.4–1.6× longer than broad. Pronotum 1.03–1.08× longer than broad, broadest before midlength to anterior third, distinctly constricted behind anterior margin, in dorso-lateral view flat or faintly depressed on disc. Elytra together 1.56–1.67× longer than wide, parallel-sided, base deeply emarginate and embracing base of pronotum, broadly rounded at apex; interstriae flat to faintly convex, odd ones only in very short basal part somewhat more elevated than even ones and sutural ones elevated on declivity. Tarsi with segment 2 1.1× broader than long, segment 3 1.3–1.4× broader than long and 1.3–1.4× broader than previous segment, onychium 0.9× as long as segment 3. Genitalia. Penis subparallel-sided, posteriorly weakly attenuate, apex truncate, in lateral view regularly curved, equal in width, in apical third regularly tapered to ventrally placed apex; internal sclerite narrowly to broadly navicular in dorsal view, in lateral view cleft in apical quarter, with dorsal arm as long as ventral one and almost as thick. Gonocoxites flat to shallowly convex, subspatulate, broader in apical half; apex subrectangular, with 1–2 stiff setae; orientated at about 90–135° to each other. Spermatheca with cornu abruptly curved at basal third of its length, then evenly weakly C-shaped, apically inflated (twice thicker than at base) and broadly globular; ramus globular, broadly sessile to shortly stalked; gland elongate, medially constricted, not stalked; collum long but shorter than spermathecal duct, more or less straight but with slight irregular bends along the length, apex bulbous and tightly curled over (insertion of duct rotated 180°); duct stiff, straight to slightly twisted, shorter than spermatheca.

Material examined (59 exx.). Types. Holotype, ♂: **RSA Northern Cape** / Richtersveld 19.ix.2013 / rd to Akkedis pass 450 m / 28°09.880' S 17°01.497' E // Sifting of detritus, died / leaves and branches / below shrubby *Euphorbia* sp. / R. Borovec, M. Meregalli lgt. (TMSA). Paratypes: 1 ♂, 1 ♀, 7 exx.: same data as holotype (RBSC, MMTI, ANIC); 1 ♂, 1 ♀, 6 exx.: S. Afr. Richtersveld / Rooiberg Valley / 28°12' S 17°07' E // 4. 9. 1976; E-Y: 1217 / groundtraps, 30day / leg. Endrödy-Younga // ground traps with banana bait (TMSA); 3 ♀, 7 exx.: S. Afr., Richtersveld / Ganakom Riv. Valley / 28°15' S 17°07' E // 5.9.1976; E-Y: 1223 / groundtraps, 35 days / leg. Endrödy-Younga // groundtrap / with banana bait (TMSA); 1 ♂, 8 exx.: **RSA Northern Cape** / Richtersveld 465 m / Koeroegab 19.ix.2013 / 28°17.298' S 17°02.606' E // Sifting of detritus, died / leaves and branches / below shrubby *Euphorbia* sp. / R. Borovec, M. Meregalli lgt. (RBSC, MMTI, ANIC); 1 ♀, **RSA, Northern Cape** / NE Eksteenfontein, 640 m // Pass E Jenkinskopf, 17.ix.2013 // 28°41.612' S 17°16.559' E (RBSC); 1 ♀, 3 exx., **RSA, Northern Cape** / S Eksteenfontein, 612 m / dir. Vioolsdrift, 23.ix.2013 / 28°51.957' S 17°21.503' E // Sifting of detritus, died / leaves and branches / below shrubby *Euphorbia* / R. Borovec, M. Meregalli lgt. (RBSC, MMTI); 1 ♂: **RSA Northern Cape** 463 m / Richtersveld NP 18.xi.2016 / Pass 2km S X RT 14 / 28°17.309' S, 17°02.657' E [R. Borovec lgt.] (ANIC); 1 ♂, 2 exx.: **RSA Northern Cape** 359 m / Richtersveld NP 19.xi.2016 / Gannakouriep / 28°23.558' S 17°09.285' E / R. Borovec lgt. sifting *Euphorbia* sp. (RBSC, ANIC); 1 ♀, 11 exx.: **South Namibia Karas** / 7 km N Rosh Pinah / 22.ix.2013 470 m / 27°53.711' S 16°42.627' E // Sifting of detritus, died / leaves and branches / below shrubby *Euphorbia dregeana* / R. Borovec, M. Meregalli lgt. (RBSC, MMTI, ANIC).

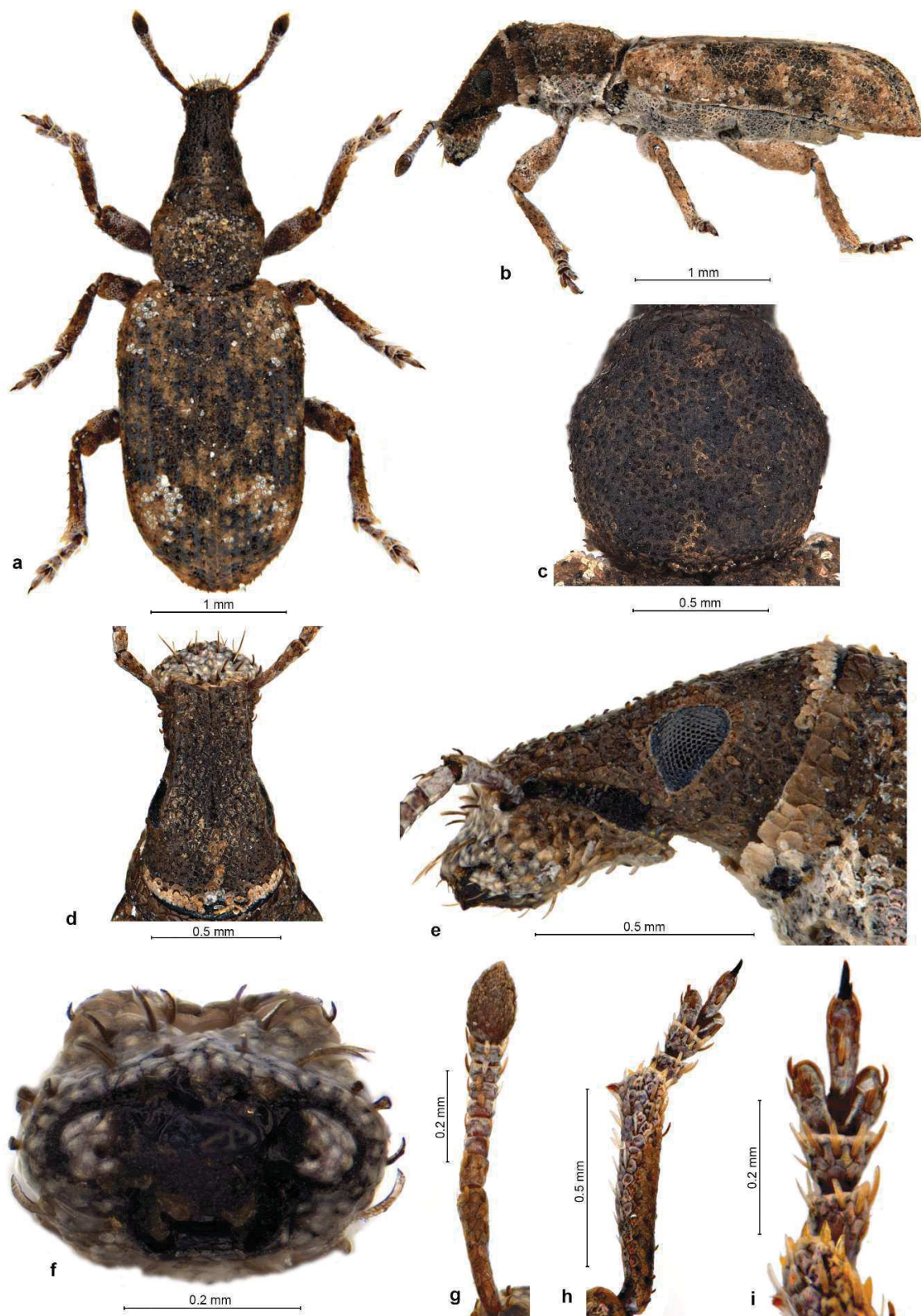


Figure 6. *Philetaerobius endroedyi* sp. n. (Koeroegap), ♂—dorsal habitus (a); left lateral habitus (b); pronotum, dorsal view (c); head, dorsal view (d); head, lateral view (e); rostrum and mandibles, frontal view (f); right antenna, dorsal view (g); right protibia and -tarsus, dorsal view (h); right protarsus, lateral view (i).

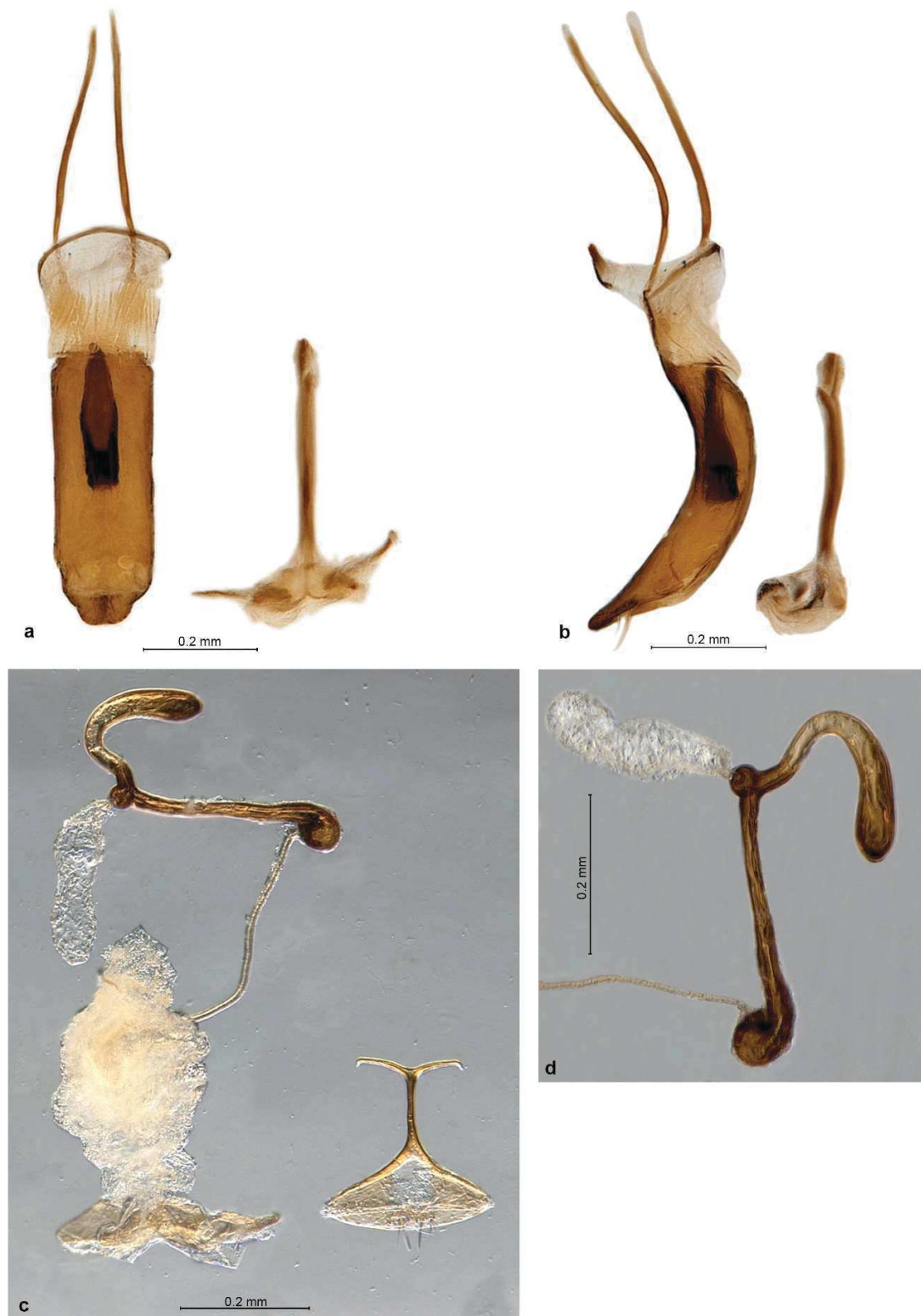


Figure 7. *Philetaerobius endroedyi* sp. n., genitalia. ♂ (Rooiberg), aedeagus and sternite IX, dorsal view (a); ditto, left lateral view (b); ♀ (Ganakom), ovipositor and sternite VIII, dorsal view (c); ♀ (Ganakom), spermatheca, dorsal view (d).

Distribution (Figure 10). The species is known only from the Richtersveld area, from Eksteenfontein in the north-western part of the Northern Cape province of South Africa northwards across the Orange River to Rosh Pinah in the south-western part of Namibia. It appears not to overlap in distribution with *P. nidicola*, which occurs in Namaqualand slightly further south, nor with *P. louwi*, which occurs further north in Namibia.

Habitat and life-history. Most of the recently collected specimens were obtained by sifting detritus and dead branches under shrubby *Euphorbia* plants, *E. dregeana* and other species of similar appearance. This suggests that the weevils live among plant debris and walk around on the ground (perhaps at night). This probably accounts for them having been collected in pitfall traps, rather than being attracted to any bait placed in these.

Derivation of name. *Philetaerobius endroedyi* is named in memory of the late Sebestyén (Sebastian) Endrödy-Younga (1934–1999), erstwhile coleopterist at the former Transvaal Museum in Pretoria (now Ditsong Museum), who extensively collected beetles throughout South Africa and Namibia, mainly terricolous taxa such as Tenebrionidae but also many weevils, including several *Philetaerobius* specimens. In the formation of the species name *endroedyi*, we adopt the spelling of his surname as he used it in South Africa both in his publications and on his specimen labels, Endrödi-Younga, and as used in the names of many other species named after him.

Remarks. This species is readily distinguishable from the other three flat species by its subtriangular, dorsally flat eyes, flat epifrons, longer pronotum and spermatheca with an apically enlarged, blunt cornu. The sclerite in the penis is also characteristic, similar to that of *P. louwi* but posteriorly only cleft in the apical quarter, and the dorsal arm as long and about as thick as the ventral one.

***Philetaerobius garibebi* sp. n.** (Figures 8 and 9)

Philetaerobius undescribed species: Oberprieler, 2010: 11 [3].

Description. Body length 3.52–4.36 mm. Integument black on body, testaceous on antennae and tarsi, uniformly covered with tessellate scales, scales on dorsum, venter and legs pale grey with slight greenish (in males) or stronger bronze to coppery (in females) tinge, admixed with white scales and sparser black ones, these not forming distinct pattern but white scales often clustered around interstitial setae. Rostrum slightly ($1.1\times$) longer than wide at base and apex, narrower in middle of length (at antennal insertions); in lateral view dorsal outline mostly flat, continuous with that of head, but more or less abruptly but only slightly declivous in anterior third. Epifrons broadly shallowly impressed in middle, with deep broad median sulcus from base to frons but largely obscured (closed) by scales. Scrobes not confluent at back of venter of rostrum. Eyes in dorsal view flat, not raised from outline of head, barely visible; in lateral view inversely ovate, with sharp ventral point. Funicle with all 7 segments distinct, segments 1 and 5–7 obconical, 2–4 subcylindrical; segment 1 $1.4\times$ longer than broad and $1.4\times$ longer than segment 2, segment 2 $1.4\times$ longer than broad, segments 3–7 about as long as broad. Clubs $1.8\times$ longer than broad. Pronotum $1.1\times$ broader than long, broadest at midlength, in lateral view flat (males) to slightly convex (females), with swollen anterior margin. Elytra together $1.57\times$ (males)– $1.42\times$ (females) longer than broad, laterally gently rounded, widest in apical third (males) to middle (females), base straight (male) to slightly emarginate (female) but not embracing base of pronotum. All interstriae very slightly convex, none raised above others, all with single row of sparse, short, translucent, recumbent setae. Tarsi with segment 2 $1.18\times$ broader than long, segment 3 about as long but broader ($1.4\times$), onychium $1.16\times$ longer than segment 3; claws single, without remnant of second claw. Genitalia. Penis stout, cylindrical, in dorsal view broadest at base, then narrowing fairly abruptly, middle portion subparallel-sided, apical part slightly flaring out, apex ventrally shortly, roundedly attenuate; in lateral view slightly arcuate, with base curved up and apex curved down, subparallel-sided except tapering down at apex and ending in narrow tip; internal sclerite thickly tubular, straight, longer than body of penis; temones very slender, about as long as body of penis. Tegmen very slender, without parameres, apodeme about half as long as temones. Gonocoxites longer, sinuately sclerotised with proximal end curved outwards, placed at >90 angle

to each other, apex blunt, with a row of 7 stout setae. Spermatheca very long and slender, S-shaped; cornu sharply bent into acute angle just after junction with ramus, then straight before gently bent in apical third and tapering to blunt point; ramus small, globular, sessile, gland as long as cornu, with narrow stalk and elongate body; collum evenly curved, thicker near duct insertion, apex narrow, not bulbous or curled; duct stiff, straight, shorter than collum.

Material examined (2 exx.). Types. Holotype, ♂: “S.W.Africa/Namibia / 10 km E Karibib / 21°57' S 15°57' E / 10.iii.1987 / R. Oberprieler // collected / on grass” (SANC). Paratype, 1 ♀: same data as holotype (SANC).

Distribution (Figure 10). The species is thus far known from a single locality in the western part of central Namibia.

Habitat and life-history. The only known specimens were collected clinging to the stems of green grasses.

Derivation of name. This species is named after its type locality, Karibib, in central Namibia, but using the original Nama name †*garibeb*, which apparently means a place of preparing an edible plant (seemingly the fruits of the nara, *Acanthosicyos horridus*). The epithet *garibebi* is a latinized genitive singular noun derived from the Nama name.

Remarks. This species is quite different from all other *Philetaerobius* species, most obviously in its convex body, vertically aligned eyes, and predominantly greyish scales. It also differs in many additional features from the other three species (see description), but it shares the distinctive female genitalia and several other characters with these and we therefore place it in the same genus. In many of its features, such as the shape of its elytra, eyes, scrobes, spermatheca and internal sclerite of the penis, it appears to be less derived than the other species, but its single claws and total absence of humeri are evidently more apomorphic characters.

4. Discussion

Philetaerobius is a very unusual and enigmatic entimine genus. Its original placement in Rhythirrinini (as “Rhytirrhinae”) as “allied to *Gronops*” [1] is evidently incorrect, not only because of its adelognathous mouthparts and deciduous mandibular cusps but also because its ovipositor does not conform with the “clawed” type (with large, curved, pointed styli) characteristic of the tribe Hipporhinini, in which *Gronops* is now placed [3]. Oberprieler [3] suggested an affinity of *Philetaerobius* with the southern African genera *Mimaulus* and *Protostrophus*, which have similarly squamose mandibles, connate tarsal claws and, at least in some species (e.g., *P. memorabilis* van Schalkwyk, 1968), also similarly flat and asymmetrical eyes. *Mimaulus* and *Protostrophus* are currently placed in the tribe Cneorhinini due to possessing metatibial corbels but no elytral humeri [12], but some *Protostrophus* species have only very faint or no corbels and this character alone is unsuitable both to determine the placement of a genus and to define a tribe in Entiminae, as it varies widely in the subfamily. The development of elytral humeri is an equally problematical character, in all weevils, as the reduction or absence of humeri is associated with the loss of wings, which has evolved many times in weevils. In *Philetaerobius* this character furthermore varies among the species, *P. garibebi* having no humeri but the other species broadly rounded ones (Figure 8a vs. Figures 1a, 2a, 4a, 6a). In van Emden’s [12] key to the tribes of “Brachyderinae”, *P. garibebi* therefore runs to Brachyderini but the other species run to Polydrusini. Both these tribes, however, differ in numerous other features from *Philetaerobius* and cannot feasibly accommodate it. The concepts of these and most other “brachyderine” tribes (as encapsulated in van Emden’s key) are largely based on Palaearctic genera and generally compromised by the suites of characters exhibited by genera of other regions, such as southern Africa. In addition, no other “brachyderine” genus with a similar ovipositor and spermatheca is known to us. Comparison of *mt* cytochrome-oxidase-I sequences of *Philetaerobius nidicola* with those of genera from several entimine tribes from the Palaearctic region (retrieved from GenBank and BOLD) showed no supported relationships. Sequences of South African Entiminae were only available for a few as yet

undescribed species of *Oosomus*, *Cycliscus*, *Phylomerinthus* and *Nama* (Meregalli, unpublished data); also in analyses with these genera *Philetaerobius* clustered in a separate lineage.

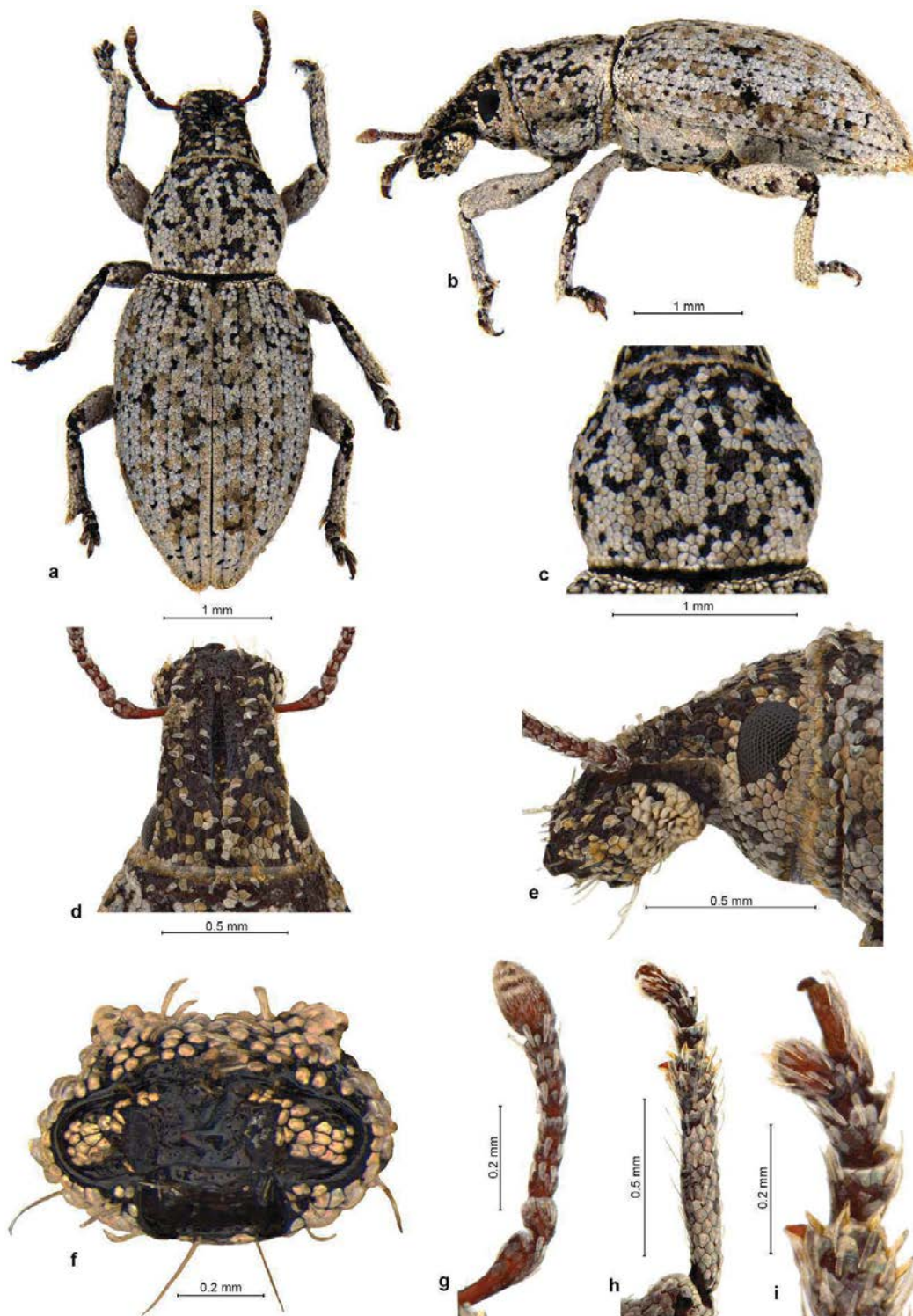


Figure 8. *Philetaerobius garibebi* sp. n. (Karibib), ♂—dorsal habitus (a); left lateral habitus (b); pronotum, dorsal view (c); head, dorsal view (d); head, lateral view (e); rostrum and mandibles, frontal view (f); right antenna, dorsal view (g); right protibia and -tarsus, dorsal view (h); right protarsus, lateral view (i).



Figure 9. *Philetaerobius garibebi* sp. n. (Karibib), genitalia. ♂, aedeagus and sternite IX, dorsal view (a); ditto, left lateral view (b); ♀, ovipositor and spermatheca, dorsal view (c); ♀, sternite VIII, dorsal view (d).

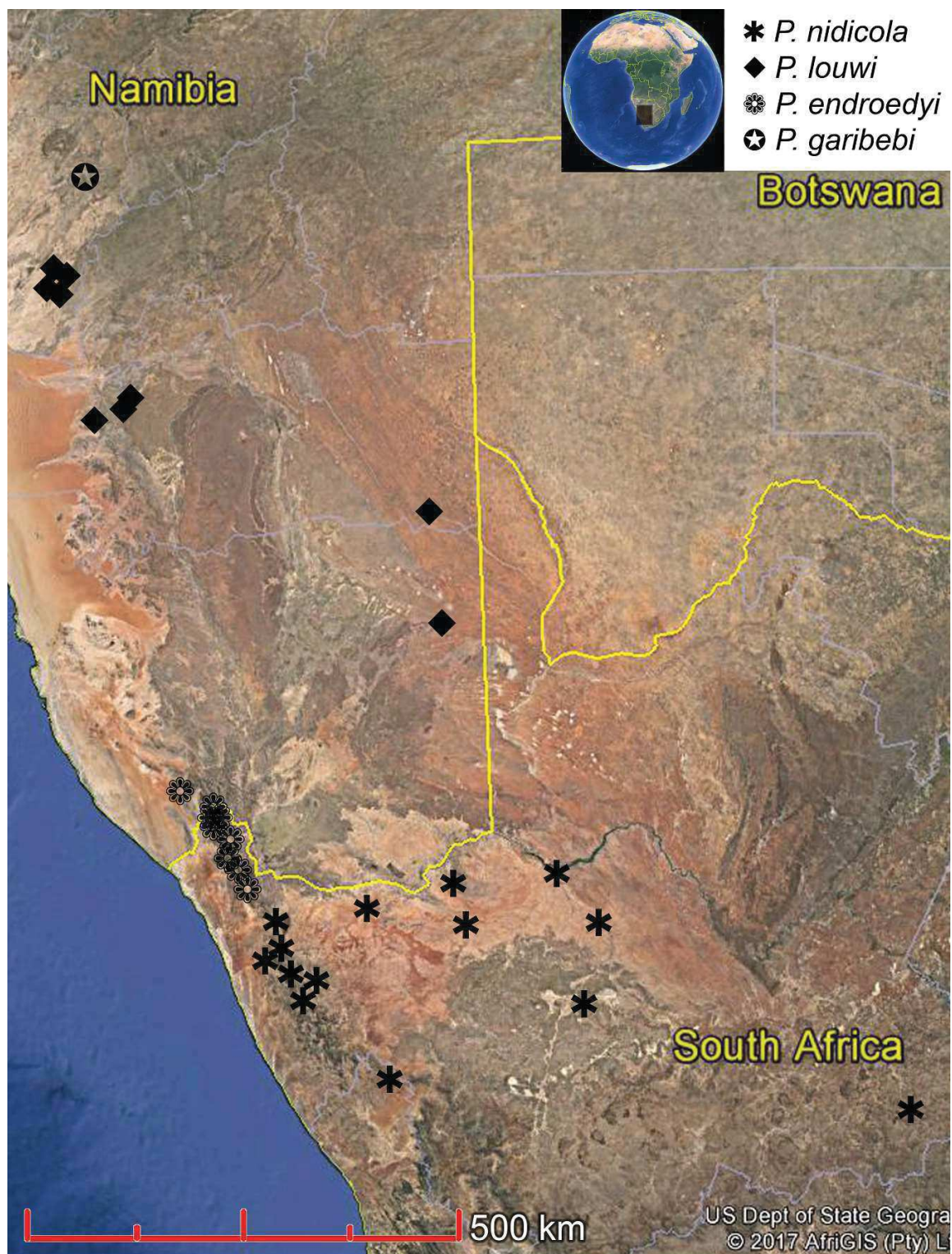


Figure 10. Recorded distribution of *Philetaerobius* in southern Namibia and north-western South Africa.

Of the southern African genera currently classified in Cneorhinini, *Mimaulus* (*M. papulosus* Fähræus, 1871) shares the most characters with *Philetaerobius*. It also has squamose, paucisetose mandibles, the rostrum dorsally separated from the head by a transverse sulcus, flat eyes situated under a distinct ridge (“eyebrow”) and posteriorly raised on a canthus protruding from the head, white tessellate scales arranged in rosettes around short setae (on the pronotum), the apical surface of

the tibiae (around the tarsal socket) squamose, a short thick penis with a large, strongly sclerotised, bow-shaped, tubular internal sclerite and the basal plate of sternite VIII of the female with a distinct basal margin. However, it differs from *Philetaerobius* foremost in having long, slender, pointed gonocoxites, a normal spermatheca, the basal plate of sternite VIII of the female without a central fenestra, a glabrous epistome and frons, narrow squamose metatibial corbels, basally connate claws, the penis without an apical tuft of setae and the temones short (third of penis body length), broad and flatly compressed. The similarities of the rostrum, mandibles and eyes between these two genera occur in other entimine genera too, whereas the differences in the genitalia, especially the different structures of the ovipositor and spermatheca, argue against a close relationship between *Mimaulus* and *Philetaerobius*.

To our knowledge, there is only one entimine genus in southern Africa that shares the peculiar genital structures of *Philetaerobius*, namely *Spartecerus*. This flightless, terricolous genus (Figures 11 and 12) has been classified in Leptopiinae in the past [13,14] and more recently in Tropiphorini [6], but it shares no significant characters either with the northern-hemisphere Tropiphorini (in the narrow sense; “Alophini”) or with the mainly southern-hemisphere Leptopiini (though these are currently not properly delimited and defined), and its relationships among the Entiminae remain obscure. *Spartecerus* has never been properly studied, apart from a review of the 19 described species by Marshall [13] and a later description of another species from Namibia [14].

The most important character agreements between *Spartecerus* and *Philetaerobius* occur in the female genitalia. The spermatheca of *Spartecerus* is similarly slender and elongate, the collum up to ca. $4 \times$ longer than the cornu and strongly S-shaped (Figure 12d) to doubly folded (Figure 11f) to compactly coiled (Figure 12g,i), the ramus large, broad and sessile with an elongated or bulbous gland, and a slight nodulus is differentiated. The gonocoxites (Figures 11e, 12c, 12e, 12f) are short and broad, jointly triangular, internally open, well to poorly differentiated into a proximal and a distal part and apically with a fringe of setae along the outside of the socket of the stylus (Figure 12c). The styli are large and broad, situated apically or ventro-apically, with an apical field or tuft of setae (numerous, short and dense to three long ones), and sometimes with a number of short, stout pegs laterally (Figure 12h), and their sockets are internally open. Sternite VIII of the female (Figures 11e, 12c, 12e, 12f) is short and broadly triangular, the basal plate with a large median fenestra and the short apodeme straight and symmetrical with an unmodified apex. The extremely elongate and twisted collum of the spermatheca and the fenestra of sternite VIII are clear character agreements with *Philetaerobius*, and the simpler gonocoxites of *Philetaerobius* are readily derivable from those of *Spartecerus* by a reduction of the sclerites and styli.

In the male genitalia, the penis of *Spartecerus* (Figures 11d, 12a,b) is short and thick, dorsally open (membranous) or not, apically extended into a flat ventral point without a median tuft of setae, the temones are slightly longer or shorter than the body of the penis, and inside there is a long, thick, straight, tubular sclerite. The tegmen has a pair of long, slim dorsal parameres. The character agreement with *Philetaerobius* lies foremost in the shape of the internal sclerite, which is near-identical to that of *P. garibebi*.

Agreement in external characters between *Spartecerus* and *Philetaerobius* occurs in the apically broadened rostrum (Figure 11c), squamose mandibles, dorsal sulcus separating rostrum from head, flattened eyes situated under a distinct “eyebrow”, tessellate scales, squamose tibial apices and absence of metatibial corbels, but *Spartecerus* differs from *Philetaerobius* in a more globose shape, tuberculate sculpture, the frons elevated and posteriorly sharply carinate, often glabrous, the prementum squamose, the pronotum with ocular lobes and the prosternum impressed before the procoxae, and the claws long and free. While these differences suggest that the two genera are not very closely related and/or have evolved separately for some time, the similarity in especially the spermatheca indicates that a closer relationship exists between them than with any other southern African entimine genus.

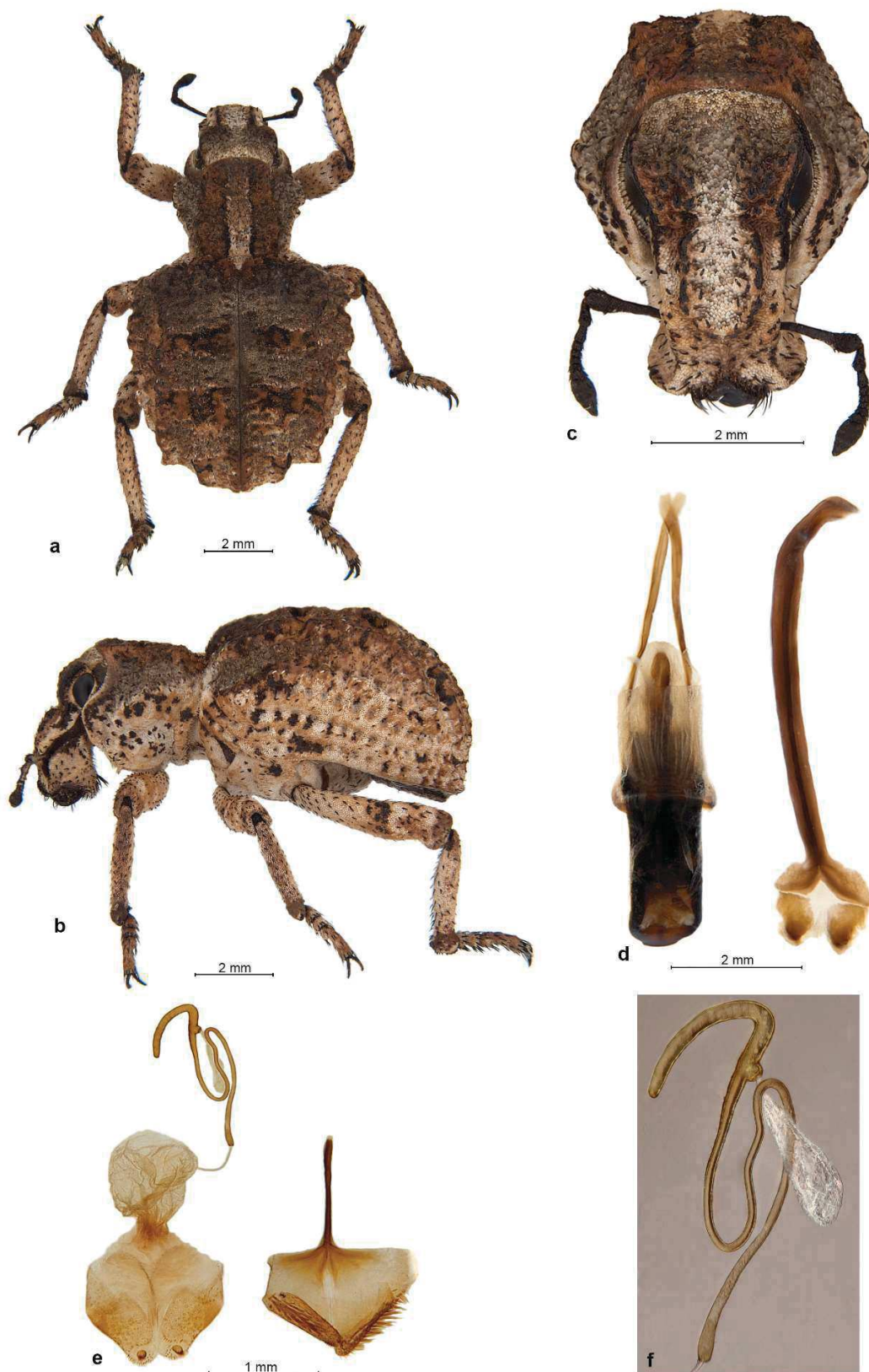


Figure 11. *Spartecerus umbrinus* Fåhraeus (South Africa, 5 km S Barkley West, 02.ii.1985, *ab larva* feeding on underground stem of *Bulbine* cf. *narcissifolia*, R. Oberprieler), habitus and genitalia. ♀, dorsal habitus (a); ♀, lateral habitus (b); ♀, head, frontal view (c); ♂, aedeagus and sternite IX, dorsal view (d); ♀, terminalia, dorsal view (e); spermatheca with gland, ventral view (f).

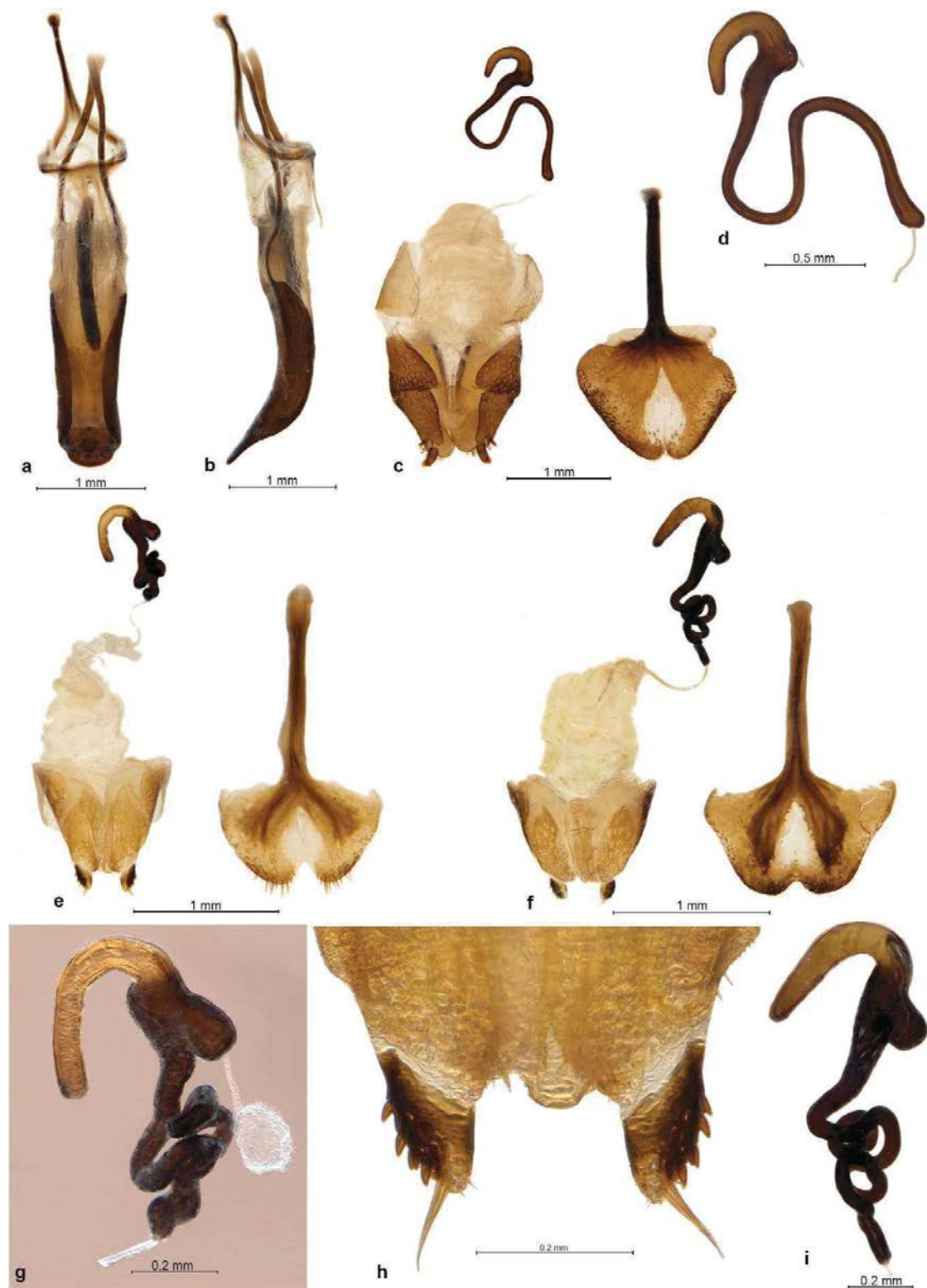


Figure 12. *Spartecerus* species, genitalia. *Spartecerus rudis* Fåhraeus (South Africa, Krugersdrift Dam, xii.1984, R. Oberprieler) (a–d). ♂, aedeagus, dorsal view (a), ditto, left lateral view (b); ♀, terminalia, dorsal view (c), spermatheca (d). *Spartecerus mendax* Péringuey (South Africa, Stanspruitfontein, 05.viii.1948, C. Koch) (e,g,h). ♀, terminalia, dorsal view (e); spermatheca (g); apex of gonocoxites with styli, dorsal view (h). *Spartecerus* sp. (Namibia, Etosha N. P., Okaukuejo, 20.xii.1977, R. Oberprieler) (f,i). ♀, terminalia, dorsal view (f); spermatheca (i).

Spartecerus is a taxonomically equally isolated genus in Africa as *Philetaerobius*. The only other somewhat similar genera (with traditional “leptopiine” characters, namely lateral scrobes and ocular lobes) are *Leptostethus* Waterhouse, 1853 and *Afroleptops* Oberprieler, 1988. The former was comprehensively revised by Thompson [15] and not regarded as particularly closely related to *Spartecerus*, differing especially in its female genitalia, and it is generally classified in its own tribe, Leptostethini [6]. *Afroleptops*, although described in the tribe Tanyrhynchini [16], differs from *Tanyrhynchus* Schoenherr and allies in numerous features, again particularly in the female genitalia, and appears more closely related to Australian leptopiines such as *Prypnius* Schoenherr, 1823 [16,17]. It shares no significant characters with *Spartecerus*. *Spartecerus* further differs from most other Entiminae in its larva having a subglobular antennal sensorium [18], not the flat, cushion-like one typical of the subfamily [19]. Neither *Spartecerus* nor *Philetaerobius* can thus be related to any other entimine genus in southern Africa or be satisfactorily accommodated in any entimine tribe as presently constituted, and we therefore treat them both as *incertae sedis* in the subfamily.

The life-history and hosts of *Spartecerus* are poorly known, but it appears that the larvae consistently feed on the underground bulbs of small geophytic monocotyledons. Voss [14] recorded *S. mendax* Péringuey, 1888 having been collected on bulbs (*an Zwiebeln*) in Namibia, and Louw [18] mentioned that the larvae feed semi-endophytically on bulbs of smaller monocotyledons. One of the authors of the present paper (R.G.O.) reared *S. umbrinus* (Fåhraeus, 1871) in 1984 from larvae found feeding on bulbs of *Bulbine* cf. *narcissifolia* (Asphodelaceae) just below the soil surface. The antenna of this larva was illustrated by Louw [18]. The adults are long-lived and overwinter under selected stones [20], but it is not known for how many years they may live. The association of *Spartecerus* with monocotyledonous hosts further supports the presumed association of *Philetaerobius* with this plant group, although it appears unlikely that the latter genus is also associated with geophytic Asparagales or similar monocotyledan orders rather than with grasses.

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Communication

Validation of the Names of Three Weevil Species Described by Borovec et al., The Enigmatic Weevil Genus *Philetaerobius* from Southern Africa: Definition, Affinities and Description of Three New Species (Coleoptera: Curculionidae: Entiminae); *Diversity*, 2018, 10, 30

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Abstract: Three new species of the small entimine genus *Philetaerobius* Marshall, 1923 from southern Africa are described, *P. endroedyi* sp. n., *P. garibebi* sp. n. and *P. louwi* sp. n., with bibliographic reference to fuller descriptions and illustrations in the recent paper by Borovec et al. (2018) published in the journal *Diversity* 10 (2), 30, in which the names were not made available under the rules of the International Code of Zoological Nomenclature dealing with electronic publication. A lectotype is also here designated for *P. nidicola* Marshall, 1923.

Keywords: taxonomy; South Africa; Namibia; weevils; new taxa

1. Introduction

The recent paper by Borovec et al. published in *Diversity* 10 (2) [1] was not in full compliance with the International Code of Zoological Nomenclature [2] regarding publication of online taxonomic papers. Article 8.5. states that, to be considered published [within the meaning of the code], “a work issued and distributed electronically must be registered in the Official Register of Zoological Nomenclature (ZooBank) (see Article 78.2.4) and contain evidence in the work itself that such registration has occurred” (Article 8.5.3.). Because the paper by Borovec et al. (2018) was not registered in ZooBank prior to publication and therefore evidence of registration was not included in it, the new taxonomic names proposed in the paper are not available under the code [3]. The purpose of this paper is to make those names available.

To fulfill the requirements of Article 8.5. of the code, this paper has been registered in ZooBank, with the LSID above, and the names of the species described below have also been registered, following recommendation 10B of the Code. Their LSIDs are given under each name. Nomenclatural acts other than new taxon names cannot presently be registered in ZooBank, but we also here validate the lectotype designation of *Philetaerobius nidicola* that was proposed by Borovec et al. [1].

To meet the requirements of Article 13.1.2. of the Code, the names listed below are accompanied by a bibliographic reference to their full descriptions and are thereby made available from the publication of this paper. The wording of Article 13.1.2. is somewhat ambiguous as to the status of descriptions based on bibliographic reference, so to avoid any further problems we have added below a brief description differentiating each taxon and a holotype designation with the repository identified; these are repeated from the original paper [1].

All label data are recorded *verbatim*, with a slash (/) indicating separate lines on a label and a double slash (//) indicating different labels on a pin.

2. New Nomenclatural Acts

Philetaerobius nidicola Marshall, 1923

Lectotype designation. Lectotype (here designated), ♂: “Type [printed on circular label with red border] // *Philetaerobius nidicola*, Mshl. / TYPE [handwritten] // S. Africa [printed] // from nest of / Social Weaver / bird / (*Philetaerus socius*) [handwritten] // Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923–253. [printed] // L E C T O T Y P U S / *Philetaerobius nidicola* Marshall / Borovec, Oberprieler & Meregalli / desig. 2018 [printed, red]” (Repository: The Natural History Museum, London, United Kingdom). See Borovec, Oberprieler & Meregalli, 2018: 7 [1] for further details of the specimen.

Philetaerobius louwi Borovec, Oberprieler & Meregalli, *sp. n.*

Philetaerobius louwi Borovec, Oberprieler & Meregalli, 2018: 12 [1] (not available)

<http://zoobank.org/urn:lsid:zoobank.org:act:38D7D44A-4B8D-4ACC-8D85-608F3D749936>

Description. This species is distinguishable from *P. nidicola* by its slender rostrum and elytra, from *P. endroedyi* *sp. n.* by its kidney-shaped, vaulted eyes and longitudinally depressed epifrons and from *P. garibebi* *sp. n.* by its flat shape, horizontal eyes and variegated brown, black and white scales. Its internal penis sclerite is also distinctive, being deeply cleft and with the dorsal arm shorter and narrower than the ventral one, and its spermatheca is characteristic in having a long, curved to twisted collum. See Borovec, Oberprieler & Meregalli, 2018: 12, Figures 4, 5 and 10 [1] for full description.

Holotype, ♂: “[Namibia, Erongo], S.W.Afr., Namib / Us Pass, Park Gate / 23 040 S 15 350 E // 15.11.1974, E-Y: 468 / groundtraps 70 days / leg. Endrödy-Younga // ground traps with / ferm.banana bait // H O L O T Y P E / *Philetaerobius louwi* / *sp. nov.* Borovec, / Oberprieler, Meregalli / 2018 [on red card]” (Repository: Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa). Paratypes listed in [1].

Distribution. Namibia.

Philetaerobius endroedyi Borovec, Oberprieler & Meregalli, *sp. n.*

Philetaerobius endroedyi Borovec, Oberprieler & Meregalli, 2018: 15 [1] (not available)

<http://zoobank.org/urn:lsid:zoobank.org:act:AE538A19-DD3C-4AC9-BB21-AEA3E1357824>

Description. This species is distinguishable from *P. nidicola*, *P. louwi* and *P. garibebi* by its subtriangular, dorsally flat eyes, flat epifrons, longer pronotum and spermatheca with an apically enlarged, blunt cornu. From *P. garibebi* it also differs in its flat shape and variegated colour pattern. The sclerite in the penis is characteristic, similar to that of *P. louwi* but posteriorly only cleft in the apical quarter and the dorsal arm as long and about as thick as the ventral one. See Borovec, Oberprieler & Meregalli, 2018: 15–16, Figures 6, 7 and 10 [1] for full description.

Holotype, ♂: “RSA Northern Cape / Richtersveld 19.ix.2013 / rd to Akkedis pass 450 m / 28°09.880' S 17°01.497' E // Sifting of detritus, died / leaves and branches / below shrubby *Euphorbia* *sp.* / R. Borovec, M. Meregalli lgt. // H O L O T Y P E / *Philetaerobius endroedyi* / *sp. nov.* Borovec, / Oberprieler, Meregalli / 2018 [on red card]” (Repository: Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa). Paratypes listed in [1].

Distribution. South Africa, Namibia.

Philetaerobius garibebi Borovec, Oberprieler & Meregalli, **sp. n.**

Philetaerobius garibebi Borovec, Oberprieler & Meregalli, 2018: 19 [1] (not available)

<http://zoobank.org/urn:lsid:zoobank.org:act:8D5B9A05-D033-4CED-8DFC-7E3CADA92D94>

Description. This species differs from all other *Philetaerobius* species most obviously in its convex body, vertically aligned eyes, predominantly greyish scales, single claws and genitalia, especially in the long tubular internal sclerite of the penis and the S-shaped spermatheca. See Borovec, Oberprieler & Meregalli, 2018: 19–20, Figures 8, 9 and 10 [1] for full description.

Holotype, ♂: “S.W.Africa/Namibia / 10 km E Karibib / 21°57' S 15°57' E / 10.iii.1987 / R. Oberprieler // collected / on grass // H O L O T Y P E / *Philetaerobius garibebi* / sp. nov. Borovec, / Oberprieler, Meregalli / 2018 [on red card]” (Repository: South African National Insect Collection, Pretoria, South Africa). Paratype listed in [1].

Distribution. Namibia.

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**A taxonomic study of the South African terricolous
weevil genus *Pentatrachyphloeus* Voss
(Coleoptera: Curculionidae: Entiminae: Trachyphloeini)**

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Abstract

The genus *Pentatrachyphloeus* Voss, 1974, with two known species, is redefined and compared with related genera. An additional thirty seven new species are described here: *P. andersoni* sp. nov. (South Africa, Mpumalanga); *P. baumi* sp. nov. (South Africa, Gauteng); *P. brevithorax* sp. nov. (South Africa, KwaZulu-Natal); *P. bufo* sp. nov. (South Africa, Mpumalanga); *P. endroedyi* sp. nov. (South Africa, Mpumalanga); *P. exiguus* sp. nov. (South Africa, Mpumalanga); *P. frici* sp. nov. (South Africa, Limpopo); *P. grobelaarae* sp. nov. (South Africa, KwaZulu-Natal); *P. hanzelkai* sp. nov. (South Africa, KwaZulu-Natal); *P. holubi* sp. nov. (South Africa, Mpumalanga); *P. howdenae* sp. nov. (South Africa, Mpumalanga); *P. hystrix* sp. nov. (South Africa, Mpumalanga); *P. insignicornis* sp. nov. (South Africa, KwaZulu-Natal); *P. kalalovae* sp. nov. (South Africa, Gauteng); *P. kuscheli* sp. nov. (South Africa, KwaZulu-Natal); *P. laevis* sp. nov. (South Africa, Mpumalanga); *P. lajumensis* sp. nov. (South Africa, Limpopo); *P. leleupi* sp. nov. (Zimbabwe, Manica); *P. lesothoensis* sp. nov. (Lesotho, Qacha's Nek); *P. machulkai* sp. nov. (South Africa, Free State); *P. marshalli* sp. nov. (South Africa, KwaZulu-Natal); *P. muelleriae* sp. nov. (South Africa, Mpumalanga); *P. musili* sp. nov. (South Africa, Limpopo); *P. ntinini* sp. nov. (South Africa, KwaZulu-Natal); *P. oberprieleri* sp. nov. (South Africa, Gauteng, North West); *P. pavlicai* sp. nov. (South Africa, Free State); *P. rudyardi* sp. nov. (South Africa, Limpopo); *P. schoemani* sp. nov. (South Africa, Limpopo); *P. soutpansbergensis* sp. nov. (South Africa, Limpopo); *P. spinimanus* sp. nov. (South Africa, Mpumalanga); *P. stingli* sp. nov. (South Africa, Limpopo); *P. tenuicollis* sp. nov. (South Africa, Mpumalanga); *P. tuberculatus* sp. nov. (South Africa, Mpumalanga); *P. vavrai* sp. nov. (South Africa, Eastern Cape); *P. vossi* sp. nov. (South Africa, Mpumalanga); *P. vrazi* sp. nov. (South Africa, Limpopo) and *P. zikmundi* sp. nov. (South Africa, Free State). All of the species are keyed and illustrated; ecological information is presented only where available. All species seem to be very localised, being known only from one or only a very limited number of localities. Immature stages or host plants are not known for any of the species. The species are distributed as follows: South Africa: Mpumalanga (13), Limpopo (8), KwaZulu-Natal (7), Free State (3), Gauteng (3), Eastern Cape (3), North West (1); Lesotho: Qacha's Nek (1) and Zimbabwe: Manica (1).

Key words: Coleoptera, Curculionidae, Entiminae, Trachyphloeini, taxonomy, new species, South Africa

Introduction

The genus *Pentatrachyphloeus* Voss, 1974 was described by Voss as monotypic, based only on *P. patruelis* Voss, 1974 from South Africa, Eastern Cape. Subsequently, Borovec & Skuhrovec (2017a) transferred *Trachyphloeus nanus* Fähræus, 1871 to this genus. Redefinition of the genus is based on selected list of characters which separate genera in the tribe Trachyphloeini Lacordaire, 1863—sulcus between rostrum and head absent/present, frons squamose/glabrous, epistome developed/undeveloped, antennal scapes robust/slender, elytra with/without posthumeral calli, protibiae robust/slender, apex of protibiae lobed/rounded, metatibiae with/without corbels, tegmen with/without parameres, sternite VIII in females with plate with posterior margin developed/membraneous and apodeme terminated inside of plate/at base of plate.

The present revision of the genus *Pentatrachyphloeus* is the fifth part of a revision of small terricolous entimines belonging to Trachyphloeini Lacordaire, 1863 and Embrithini Marshall, 1943 with connate claws from South Africa, following taxonomic placement of already described Afrotropical species under the Palearctic genera *Trachyphloeus* Germar, 1817, *Trachyphloeosoma* Wollaston, 1869 and *Cathormiocerus* Schoenherr, 1842 (Borovec & Skuhrovec 2017a) and also revisions of the genera *Epistomius* Borovec & Skuhrovec 2017 (Borovec & Skuhrovec 2017b, *Lalagetes* Schoenherr, 1842 (Borovec & Skuhrovec 2018a) and *Afromuelleria* Borovec & Skuhrovec 2018 (Borovec & Skuhrovec 2018b). Following the list of characters from the previous paragraph, the first author found many undescribed *Pentatrachyphloeus* species coming mainly from unidentified specimens deposited in different museums, but also from new, recently collected specimens. The genus *Pentatrachyphloeus*, with 37 newly described species, is thus the most speciose genus of Trachyphloeini from the Afrotropical region, with species living mainly in the eastern part of South Africa. In the sixth part of this revision, we plan to complete the study of this group by descriptions of two new monotypic genera and to give a comprehensive overview with analysis of this group.

Material and methods

Width/length ratio of the rostrum was measured in dorsal view at its width at base versus length from the rostrum base to the base of the mandibles. Width/length ratios of pronotum, elytra, antennal segments and tarsomeres were taken at the maximum width and length of the respective parts in dorsal view. Dissected male and female genitalia were studied in glycerine. Female genitalia were afterwards embedded in Solakryl BMX (Medika, Prague); male genitalia were mounted dry on the same card as the respective specimen. Photos of adults were taken with Canon EOS 550D cameras with an MP-E 65 mm macro lens and combined using CombineZM and GIMP2 softwares. Details of adults (rostrum—dorsal and lateral view, protibia, ventrites) and genitalia were taken and corrected with HIROX (RH-2000, digital microscope). The terminology of the rostrum and the genitalia follows Oberprieler *et al.* (2014).

Exact label data of type material are cited: separate labels are indicated by a slash (/). Author's remarks and comments are in square brackets.

Specimens are deposited in the following museums and private collections:

BMNH	Natural History Museum, London, United Kingdom (formerly British Museum of Natural History), Maxwell Barclay;
CMNC	Canadian Museum of Nature Collection, Ottawa, Canada, Robert Anderson;
JSPC	Jiří Skuhrovec, Prague, Czech Republic;
MFNB	Museum für Naturkunde, Berlin, Germany, Manfred Uhlig;
NHRS	Naturhistoriska Riksmuseet, Stockholm, Sweden, Johannes Bergsten;
RBSC	Roman Borovec collection, Sloupno, Czech Republic;
RMCA	Royal Museum of Central Africa, Tervuren, Belgium, Marc de Meyer;
SANC	National Collection of Insects, Pretoria, South Africa, Riaan Stals;
TMSA	Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa, Ruth Müller.

Taxonomy

Genus *Pentatrachyphloeus* Voss, 1974

Pentatrachyphloeus Voss, 1974: 417 (original description).

Pentatrachyphlaeus: Vevers, 1979: 243 (lapsus).

Pentatrachyphloeus: Alonso-Zarazaga & Lyal 1999: 183 (catalogue); Borovec & Meregalli 2013: 504 (note); Borovec & Skuhrovec 2017a: 526 (taxonomic comment); Borovec & Skuhrovec 2017b: 647 (note); Borovec & Skuhrovec 2018a: 72 (note); Borovec & Skuhrovec 2018b: 673 (note).

Type species: *Pentatrachyphloeus patruelis* Voss, 1974, by original description.

Diagnosis. Small Trachyphloeini 1.6 to 2.6 mm; epifrons at base as wide as space between anterior border of eyes, separated from head by narrow, V-shaped sulcus, often concealed by scales; frons densely squamose; epistome small, dorsally hardly visible; antennal scrobes dorsally almost invisible or visible at anterior part as narrow furrows, laterally furrow-shaped, directed towards eyes but separated by wide squamose stripe; antennae and legs robust, short; elytra with posthumeral calli visible mainly in dorso-lateral view; protibiae with sparse, short and fine spines; all tibiae with one mucro; metatibiae with apical surface squamose lacking corbels; claws connate at base; abdominal ventrites densely squamose, ventrite 2 longer than ventrite 3 or 4; suture between ventrite 1 and 2 straight or sinuose; tegmen without parameres; female sternite VIII with umbrella-shaped plate lacking pointed tip or arms, with ill-defined posterior border.

Redescription. Body length 1.6–2.6 mm. Entire body brownish to blackish, antennae and legs usually paler, reddish brown (Figs 3–41A). Vestiture of body formed by very dense appressed scales of various shapes, completely hiding integument, regularly covering dorsal and ventral part of body including gena and subgena, scapes, femora and tibiae (Fig. 1A); clubs finely moderately densely setose. Scale-like semiappressed to semierect

setae on elytra, pronotum and head with rostrum inconspicuous to conspicuous, in majority of species creating one dense or sparse row only on odd intervals. Body vestiture greyish to dark brownish, in some species irregularly spotted.

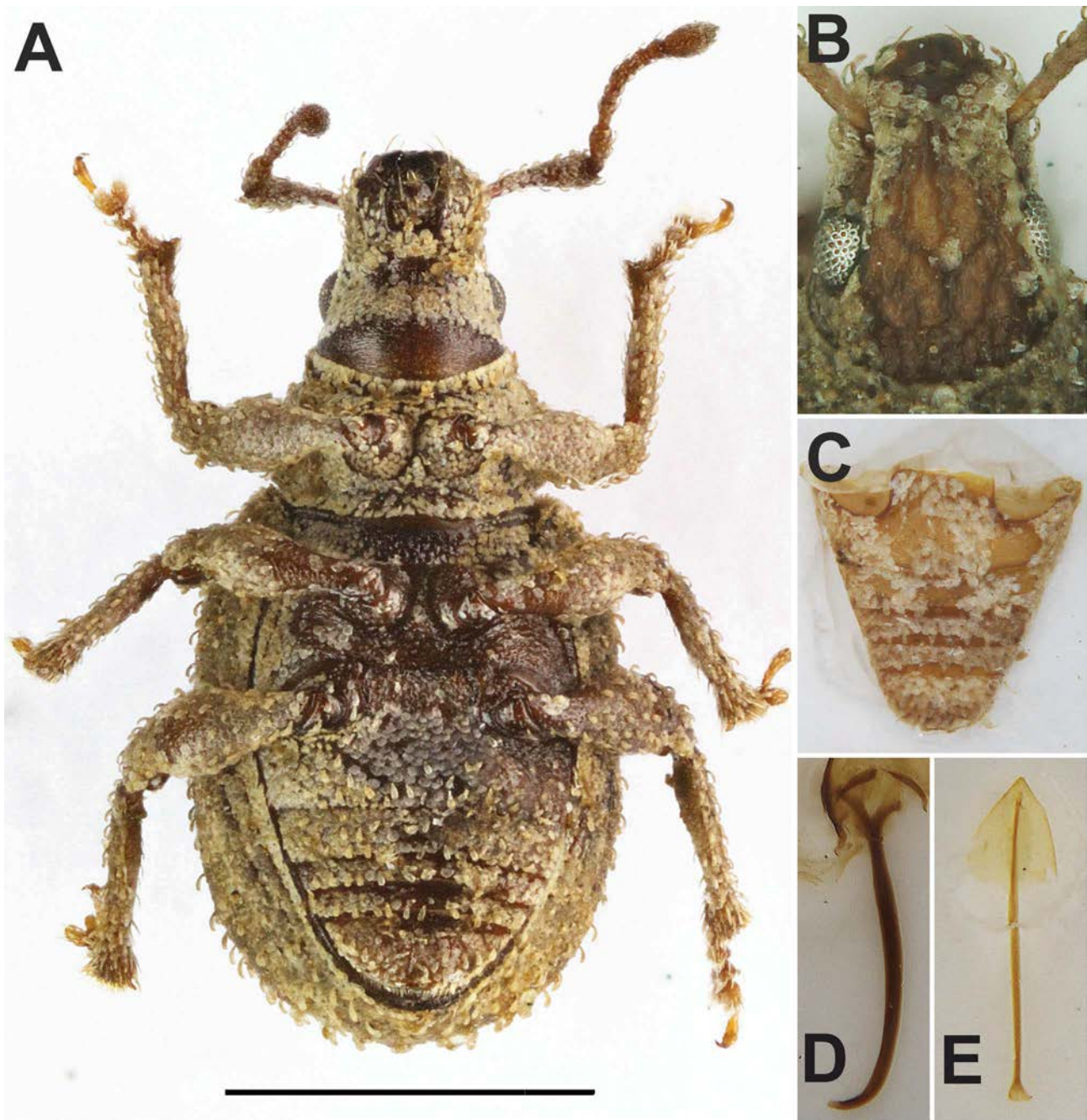


FIGURE 1. Genus *Pentatrachyphloeus*: **A**—habitus, ventral view; **B**—rostrum without scales, dorsal view; **C**—ventrites, male; **D**—sternite IX, male; **E**—sternite VIII, female. Scale bar 1 mm.

Rostrum (Figs 1B, 3–41B) short and wide in dorsal view, 1.2–1.7 × wider than long, mostly tapered anteriorly with straight or concave sides, only in some species parallel-sided or enlarged anteriorly; in lateral view (Figs 3–41C) convex, not separated from vertex. Epifrons very wide and short, mostly occupying majority of dorsal part of rostrum, tapered anteriorly with straight or concave sides, flat, at base equally wide as distance between eyes; when cleared of scales (Fig. 1B) shiny, regularly and finely punctate or granulate, mostly with median longitudinal narrow stria along the whole length, separated from head by very narrow V-shaped sulcus, in some species also partly depressed, usually concealed by appressed scales. Frons short, densely squamose. Epistome small, almost invisible, V-shaped, extremely slender, indistinctly posteriorly carinate, in some species densely covered with

appressed, long and wide, spatulate setae, transversally placed. Antennal scrobes dorsally almost invisible or visible at anterior part as narrow furrows; laterally furrow-shaped, slender, short, glabrous, separated from eyes by wide squamose stripe, directed towards eyes, in some species dorsal margin forming a short longitudinal keel above eyes. Eyes small to moderately large; laterally placed at dorsal third or at middle of head. Head large and wide, flat; when cleared of scales finely punctate or granulate, sometimes with slender median longitudinal stria; laterally densely squamose; ventrally gena and subgena completely densely squamose. Mandibles trisetose, without scales, small. Submentum with two setae.

Antennae (Figs 3–41A) short and robust, in two species monstrously robust; scapes short, $1.2\text{--}1.8 \times$ longer than funicles, $3.1\text{--}6.1 \times$ longer than wide, gradually or abruptly enlarged apicad, except of two species at apex wider than clubs; funicles 5-, 6- or 7-segmented, with segment 1 enlarged, in several species longer than segments 2 and 3 combined, segments progressively wider towards clubs, transverse; clubs with segment 1 conspicuously largest.

Pronotum (Figs 3–41A) $1.1\text{--}1.9 \times$ wider than long, distinctly tapered anteriorly with anterior margin distinctly narrower than posterior one, behind anterior margin constricted. Disc in majority of species with three shallow, wide, ill-defined, longitudinal depressions at basal half. Base arched. Anterior margin laterally straight, without lobe or setae, distinctly oblique subtruncate posteriorly. Procoxal cavities contiguous, placed in midlength; procoxae subglobular. Scutellum dorsally not visible.

Elytra (Figs 3–41A) oval to subquadrate, slightly longer than wide to $1.4 \times$ longer than wide, apically broadly rounded, humeral calli regularly rounded or obliquely subtruncate; base arched; posthumeral calli developed, visible mainly in dorsolateral view, except for two species not visible dorsally; elytra 10-striate, striae narrow, punctate, intervals flat or odd intervals more elevated, in several species with small protuberances; in lateral view posterior declivity overhanging apex. Mesocoxae semiglobular, separate, mesosternal process wider than quarter to half of diameter of mesocoxa, not reaching posterior margin of metacoxae. Metacoxae shortly transverse, separated by their width or more.

Legs (Figs 3–41A). Femora unarmed, medially inflated, flattened. Tibiae short and robust, $3.6\text{--}4.9 \times$ longer than wide; protibiae (Figs 3–41D) laterally straight or weakly enlarged at apex, at apex rounded without indentations or with short indentations, armed with 4–6 small, short and fine, sparse spines and curved inner mucro covered with 2–3 long, inside prominent bristle-shaped setae; apical surface of meso- and metatibiae densely squamose with small glabrous area around tarsal insertion, only in one species from Zimbabwe glabrous, laterally fringed by sparse or dense spines of different colour, in some species bristle-shaped, and one inside curved mucro; spines reaching to about one sixth of its length; metatibiae without corbels. Tarsi long and slender or short and robust; segment 2 transverse; segment 3 distinctly wider than segment 2 and bilobed; onychium distinctly longer than segment 3, widened apicad. Claws short, at short basal part to at basal half connate, divergent.

Abdomen ventrally subtriangular (Figs 1A, E), $1.1\text{--}1.4 \times$ longer than wide, exceptionally as long as wide; ventrite 1 at middle $2\text{--}4 \times$ longer than ventrite 2, behind metacoxa equally long to twice as long as ventrite 2; ventrite 2 shorter than ventrites 3 and 4 together; ventrites 3 and 4 short or long, equally long; ventrite 5 in males apically more rounded than in females; suture between all ventrites straight, between ventrites 1 and 2 finer than between the others. Metaventral process truncate, obtuse, wider than transverse diameter of metacoxa. All ventrites densely squamose; ventrite 2–4 with single transverse row of subspatulate to spatulate semiappressed setae.

Sexual dimorphism. Morphologically visible only in several species with enlarged protibiae, in males more slender, less enlarged and with finer, yellowish spines. In all species, ventrite 5 in males shorter and apically more obtuse than in females.

Male genitalia. Penis varying in length, moderately sclerotised, tementes $1.2\text{--}2.0 \times$ longer than penis and $1.6\text{--}2.8 \times$ longer than tegminal manubrium; endophallus short with short sclerites. Tegmen with slender ring without parameres, manubrium $1.1\text{--}1.6 \times$ longer than diameter of ring. Sternite IX (Fig. 1D) long and slender, anteriorly curved and tapered, posteriorly with fused basal arms with two slender and weakly curved hemisternites, apical plate absent.

Female genitalia. Gonocoxites of two different types: 1) gonocoxites flat, weakly sclerotised, regularly tapered apicad and apically narrowly to broadly rounded, with short or long apical styli bearing tuft of fine setae; 2) gonocoxites articulated, at apical part abruptly tapered and elongated to long and slender, well sclerotised, sabre-shaped tips, lacking styli or with styli subapical. Sternite VIII (Fig. 1E) with long and slender apodeme, terminated just inside of plate, which is translucent, without arms or fenestra, umbrella-shaped, with ill-defined basal and

slender but developed apical margin bearing fringe of short and fine setae; plate usually moderately large, wider than long to isodiametric. Spermatheca with developed ramus and nodulus differs in species.

Biology. All species are amphigonic. Specimens were generally collected either in ground traps with different baits, by a sifting of forest litter or under short grass in savanna grassland, directly from grass tussocks or by sweeping of grass.

Distribution. Species are known from South Africa, except for one species known also from Lesotho and another one from Zimbabwe. In South Africa the genus is native in the north-western part, mainly in the provinces of Mpumalanga (13 species), Limpopo (8 species) and KwaZulu-Natal (7 species), with three species known also from Eastern Cape, Free State and Gauteng, and one species from North West (Fig. 2).

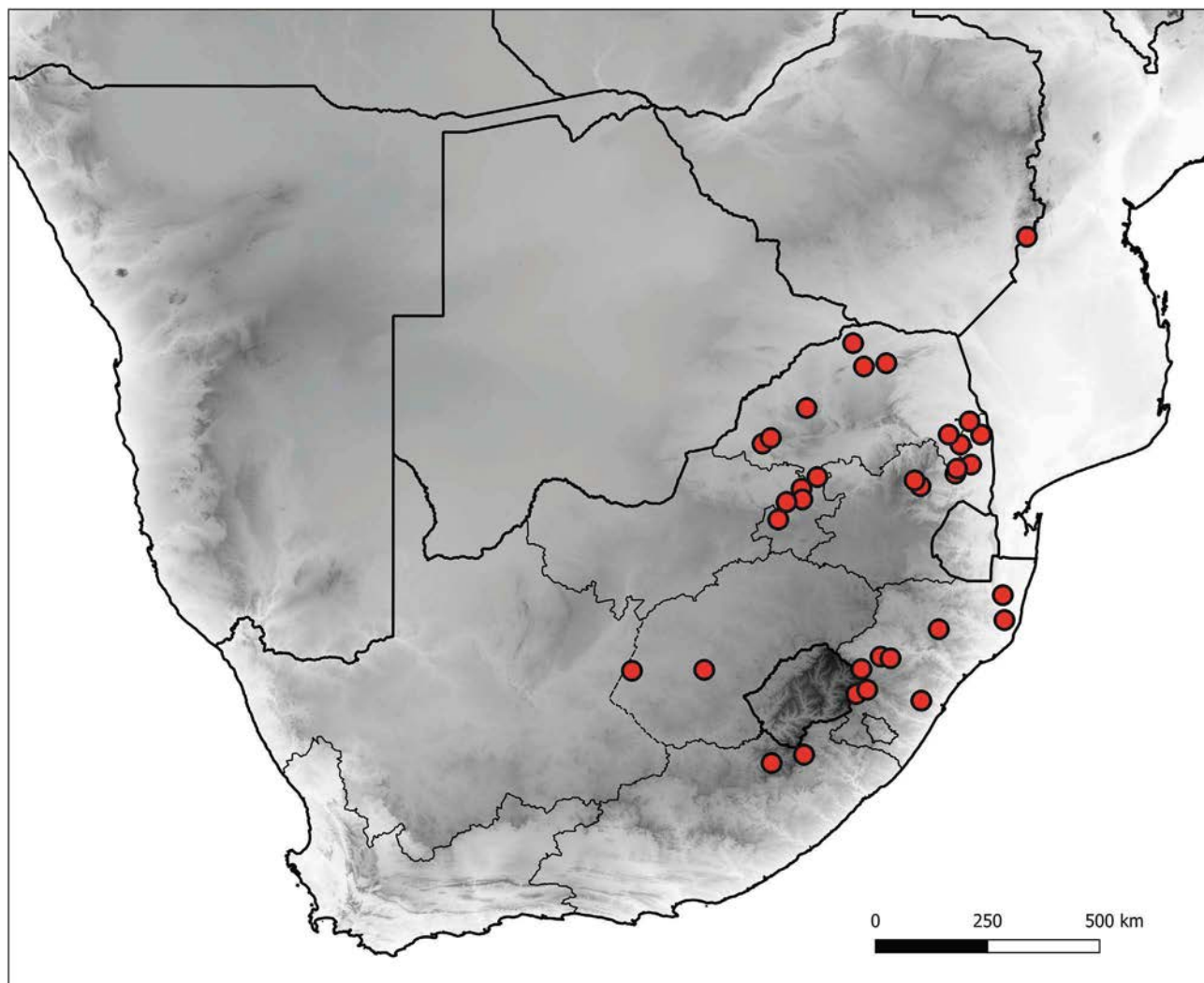


FIGURE 2. Distribution of *Pentatrachyphloeus* species in the southern Africa (red rounds).

Included species. The genus contains one originally listed species by Voss (1974), one species recently transferred by Borovec & Skuhrovec (2017a) and 37 newly described species herein.

Intragenetic variability. *Pentatrachyphloeus* is not a morphologically uniform group of species. We can recognize two different species groups within the genus: 1) species with slender oval elytra and slender, regularly convex pronotum; rostrum with antennal scrobes visible along the whole length and transverse sulcus in flat space, as for example in *P. patruelis* Voss, 1974 or *P. lesothoensis* **sp. nov.** (Figs 21A, 29A), and 2) species with very short and wide elytra and pronotum, moreover elytra with ill-defined and low protuberances and pronotum with depressions; rostrum with lower part dorsally visible at the middle of eyes, with antennal scrobes dorsally invisible, and with a transverse sulcus between rostrum and head in depression as for example *P. ntinini* **sp. nov.** or *P. bufo* **sp. nov.** (Figs 6A, 27A). The main pattern of characters, such as the structure of rostrum, metatibiae, ventrites, female terminalia, place all these species under one generic name, *Pentatrachyphloeus*. The second species group

seems to be more specialised in the terricolous way of life than the first one. Moreover, the second species group resembles unclassified species “*Trachyphloeus*” *brevis* Boheman, 1843 (Borovec & Skuhrovec 2017a), but it is easily possible to distinguish it from this species by connate claws, while “*T.*” *brevis* and two similar undescribed species, which will be later described as a new genus, have claws free.

Pentatrachyphloeus species also have two different shapes of gonocoxites: the majority of species have the usual type of gonocoxites, long-oval, weakly sclerotised, apically rounded with short to long styli (Figs 3F, 6–8F, 11E, 18E, 19F, 20–21E, 25F, 27–28F, 30F, 31E, 33E, 38E, 40–41F), but 9 species have gonocoxites articulated, with distal portion with well-sclerotised apical toothed plate, with short styli subapically placed at inner borders of coxite (Figs 15E, 23F), whereas in 7 species the styli are not visible (Figs 4F, 9F, 10F, 12E, 24F, 34E, 37F). These two forms of gonocoxites are adapted to different modes of oviposition. Howden (1995) described the dependence of shape of gonocoxites on a different way of oviposition, and she even described the similar shape of gonocoxites from the anthribid species *Trigonorhinus limbatus* (Say, 1827). Oviposition on the flower heads of *Helenium amarum* Rafinesque (Asteraceae) of this species was observed and described in Howden’s paper. This type of articulated coxite moved ventro-laterally and the teeth spread the florets of the plant apart so that the ovipositor could get access to the receptacle (Howden 1995). Assuming that *Pentatrachyphloeus* are terricolous and their development could be related to subterranean or at most ground-level part of plants, females of *Pentatrachyphloeus* could use gonocoxites for making a space for oviposition between roots of plants, or between basal parts of stems of plants. A similar situation with two different shapes of gonocoxites is known also from *Cathormiocerus* Schoenherr, 1842 (Borovec & Bahr 2006), where only a small number of species have similar articulated gonocoxites with subapical styli at the inner side of coxites.

Intergeneric remarks. The genus *Pentatrachyphloeus* meets the characters defined for the tribe Trachyphloeini (Borovec 2009), and are completed here for characters distinguishing Trachyphloeini also from other Afrotropical tribes, as follows: rostral epifrons with well-defined and visible borders along the whole length, at base as wide as the space between anterior borders of eyes, scrobes placed dorsally, trisetose mandibles, laterally straight anterior margin of pronotum not forming ocular lobes, elytra without laterally protruding humeral calli in dorsal view, the whole dorsal and ventral part of body densely squamose, all femora unarmed, tibiae with short mucro, without spurs, metatibiae lacking corbels and all species wingless. On the other hand, Trachyphloeini can be separated from the Afrotropical tribe Embrithini Marshall, 1942 only by the lack of true metatibial corbels. If this single character is enough for distinguishing these two tribes or if South African Trachyphloeini, represented mainly by the speciose genus *Pentatrachyphloeus*, represent a highly specialised form of Embrithini, it is not possible to decide only by analysis of morphological characters and it must be solved in future mainly on results of molecular study of both groups of genera.

Due to the shape of rostral epifrons and antennal scrobes, squamose frons, short and robust antennae and protibiae, general habitus of pronotum and elytra and densely squamose abdominal ventrites, *Pentatrachyphloeus* is similar to the Palearctic genus *Trachyphloeus* Germar, 1817, but it is distinguishable from it by slender sulcus between rostrum and head, elytral posthumeral calli, protibiae without distinct spines and indentations, claws connate at basal part, short abdominal ventrite 2, suture between ventrites 1 and 2 straight and sternite VIII in females with plate with membranous posterior margin and with apodeme terminated inside of plate. This set of characters not only distinguishes *Pentatrachyphloeus* from *Trachyphloeus*, but also from other Palearctic Trachyphloeini genera, although it has similar female sternite VIII or apex of protibiae with the majority of them.

In Afrotropical region, namely South Africa, *Pentatrachyphloeus* is most similar to the Trachyphloeini genus *Epistomius* Borovec & Skuhrovec, 2017 in following characters: epifrons at base wider than space between anterior margin of eyes, metatibiae lacking corbels and claws connate. *Pentatrachyphloeus* is easily distinguishable from the genus *Epistomius* by the following characters: rostrum with slender transverse sulcus (vs. continuous with the head, without any transverse sulcus); protibiae short and robust, 3.6–4.9 × longer than wide, armed with 4–6 small, short and fine, sparse spines (vs. slender and long, 5.5–6.4 × longer than wide, with fringe of yellowish setae only at apex); frons squamose (vs. glabrous); ventrites densely squamose (vs. glabrous); epistome small, dorsally hardly visible (vs. prominent anteriorly and laterally creating sharp teeth directed dorsally); elytra not constricted behind base (vs. constricted behind base); and plate of female sternite VIII umbrella-shaped, apically broadly rounded (vs. tipped with distinct Y-shaped process, prominent anteriorly).

By having claws fused, *Pentatrachyphloeus*, especially the smallest species, could be confused also with another South African Trachyphloeini genus known from Limpopo, *Afromuelleria* Borovec & Skuhrovec, 2018

(Borovec & Skuhrovec 2018b). Both genera are distinguished by following set of characters (characters state of *Afromuelleria* in parentheses): rostrum separated from head by transverse sulcus (vs. continuous with head); antennal scrobes separated from eyes by wide squamose stripe (vs. reaching eyes); tibiae mucronate (vs. without mucro); ventrites squamose (vs. glabrous); tegmen without tegminal plate and parameres (vs. with membranous, not diversified tegminal plate with parameres); female sternite VIII with apodeme terminating inside of umbrella-shaped plate (vs. terminating at basal margin of small oval plate).

The genus *Pentatrachyphloeus* is also similar to the genus *Nama* Borovec & Meregalli, 2013 known from the western part of South Africa, which will be revised and complemented by many new taxa in the near future, but is easily distinguishable from this complex by its solidly fused claws, while all species of the *Nama* complex have free claws.

The genus *Pentatrachyphloeus* is similar to the Embrithini genus *Glyptosomus* Schoenherr, 1847, although its type species *P. patruelis* is very different from the type species of the latter genus, *G. costipennis* Schoenherr, 1847. The genus *Glyptosomus* includes two recently described species, but also 39 undescribed species, 9 species recently transferred from the genus *Trachyphloeus* (Borovec & Skuhrovec 2017a) and 7 species from the genus *Lalagetes* (Borovec & Skuhrovec 2018a). Both genera share these states of characters: epifrons at base wide, separated from remaining part of head by slender V-shaped sulcus; frons densely squamose; epistome posteriorly carinated, V-shaped; apical surface of metatibiae very oblique, lying on inner face of tibiae; tegmen lacking parameres; and sternite VIII in females with apodeme terminated inside of umbrella-shaped plate with ill-defined basal margin. These two genera are distinguishable by following set of characters (characters state of *Glyptosomus* in parentheses): metatibial corbels lacking (vs. wide or narrow corbels); ventrite 2 longer than ventrite 3 or 4 (vs. as long as); suture between ventrite 1 and 2 straight or sinuose (vs. distinctly arched); elytra lacking laterally prominent subhumeral calli in dorsal view (vs. with subhumeral calli visible either dorsally or in dorsolateral view); and rostrum in males identical to those in females (vs. in some species in apical part abruptly enlarged).

Pentatrachyphloeus species are also similar to species of the very speciose *Phaylomerinthus* currently with 10 described and 68 undescribed species (Borovec & Skuhrovec 2017a, 2018a). It is possible to separate this genus from *Phaylomerinthus* by following characters (characters of *Phaylomerinthus* in parentheses): epifrons at base wider than space between eyes (vs. epifrons at base much narrower than space between eyes); frons very short and densely squamose (vs. frons longer and glabrous); epistome small, dorsally hardly visible (vs. epistome large and distinct, well visible in dorsal view); antennal scapes and tibiae short and robust (vs. scapes and tibiae long and slender); apical surface of metatibiae squamose (vs. apical surface of metatibiae glabrous); ventrites densely squamose (vs. ventrites sparsely squamose in lateral part and glabrous at middle); sternite VIII in females with plate wider than long or equally wide as long, translucent, without sclerificated tip and arms inside (vs. sternite VIII in females longer than wide, distinctly pointed, with well sclerotised tip and with sclerotised arms).

Description of species

Pentatrachyphloeus andersoni sp. nov.

(Figs 3A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:BFA7175D-ECF3-40EB-A448-6D0C22CE7B69>

Type locality. Trans. Guernsey Farm, 15 km east of Klaserie (Mpumalanga, South Africa).

Type material. Holotype: ♂, ‘S. A. E. [South Africa, Mpumalanga] Trans. Guernsey Farm, 15km E Klaserie, XII-19-31-1985, M. Sanborne [lgt.]’ (SANC). Paratypes: 2 ♂♂ 3 ♀♀, the same data as holotype (CMNC); 1 ♂, ‘S. [South] AFRICA, Tvl. [Mpumalanga], Guernsey Farm, 15km E Klaserie, 25.XII.1985, 500m, H. & A. Howden [lgt.]’ (CMNC).

Description (Figs 3A–G). Body length 1.81–2.56 mm, holotype 1.81 mm. Body (Fig. 3A) brownish. Appressed scales on dorsal part of body irregularly angular, leaving slender but distinct spaces between them, 5–6 across width of one interval; scales light brownish to whitish with weak pearly sheen. Elytra on odd intervals with sparse row of semiappressed, spatulate setae, widest apicad, about longer than half width of one interval, 7–9 along whole length of interval 3 or 5. Setae on pronotum and head with rostrum similar in shape to those on elytra but distinctly shorter, sparsely irregularly scattered. Scapes, femora and tibiae with short, slender, subspatulate, semiappressed setae, hardly prominent from their outline.

Rostrum (Figs 3A–C) 1.30–1.36 × wider than long, with base visible distinctly behind anterior border of eyes in dorsal view, evenly tapered apicad with straight sides, at base 1.11–1.17 × wider than at apex; laterally distinctly convex, indistinctly shallowly separated from head. Epifrons indistinctly tapered anteriorly, with slightly concave to almost straight sides, wide and flat. When cleared of scales matt, longitudinally shallowly depressed, finely and densely punctate, separated from head by slender V-shaped sulcus, sulcus in transversally shallowly depressed area. Epistome small, V-shaped, densely covered with appressed, long and wide, spatulate setae, transversally placed. Antennal scrobes dorsally invisible; in lateral view short, almost straight, well edged, slightly enlarged posteriorly, directed to ventral half of eyes, separated from them by wide squamose stripe. Eyes small, subcircular, almost flat, hardly visible in dorsal view; laterally placed just above middle of head. Head wide and flat, with low tubercles above eyes.

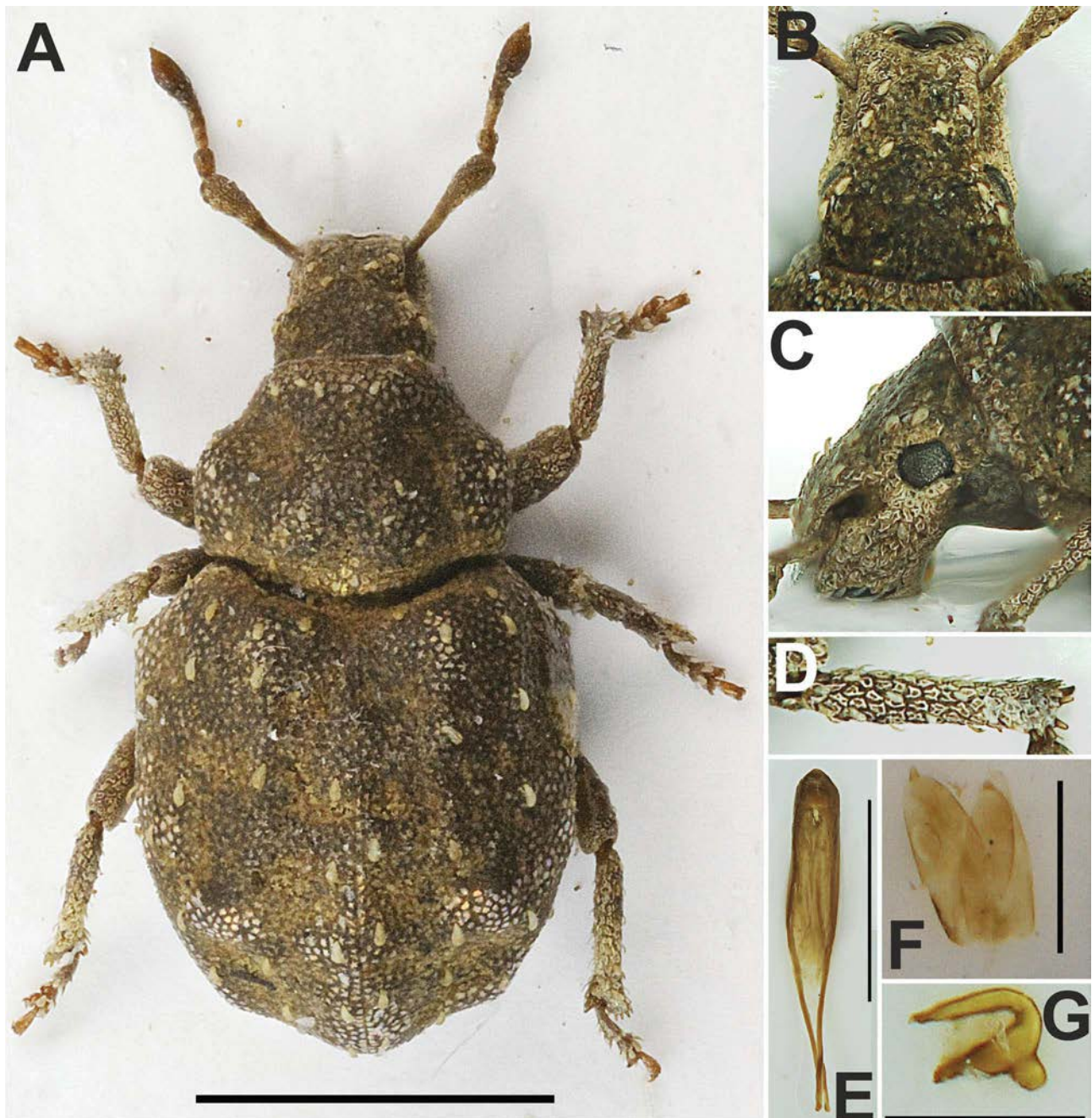


FIGURE 3. *Pentatrachyphloeus andersoni* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F**, **G**).

Antennae (Fig. 3A) short, scapes robust, $4.1\text{--}4.3 \times$ longer than wide, straight, at basal half weakly, at apical half distinctly enlarged apicad, at apex $1.1\text{--}1.2 \times$ wider than clubs. Funicles 6-segmented; segment 1 and 2 conical, segments 3–6 hardly distinguished; segment 1 $1.6 \times$ longer than wide, $1.6\text{--}1.7 \times$ longer than segment 2, which is $1.5\text{--}1.6 \times$ longer than wide; segments 3 and 4 $1.1\text{--}1.2 \times$ wider than long; segment 5 $1.3 \times$ wider than long; segment 6 $1.4 \times$ wider than long; clubs $1.7\text{--}1.8 \times$ longer than wide.

Pronotum wide, $1.24\text{--}1.33 \times$ wider than long, widest at midlength, only slightly tapered posteriad and distinctly tapered anteriad, widely constricted behind anterior margin, with anterior margin conspicuously narrower than posterior one; base distinctly, irregularly arched. Disc with two low but wide protuberances at middle of basal half, separated by shallow and narrow longitudinal furrow, with two distinct, wide and shallow longitudinal depressions at lateral part from base to anterior transverse constriction. When cleared of scales matt, finely and regularly densely granulate, with distinct constriction just behind anterior margin, slender stripe behind anterior margin smooth, moderately shiny. Pronotum in lateral view distinctly convex, anterior third flattened.

Elytra wide, $1.11\text{--}1.14 \times$ wider than long, widest at basal fifth with obliquely subtruncate humeral calli, at basal half subparallel-sided, at apical half broadly rounded with somewhat elongated sutural intervals, base arched. Interval 1 at posterior two-thirds elevated, at posterior declivity distinctly higher above elytra; intervals 3, 5 and 7 weakly elevated mainly in basal two thirds. Posthumeral calli feebly visible dorsally, well visible in dorsolateral view. When cleared of scales intervals finely and regularly granulate, matt, striae slender, punctate. Elytra in lateral view distinctly convex.

Protibiae (Fig. 3D) robust, $5.8\text{--}6.1 \times$ longer than wide, at apex enlarged laterally and mesally, subtruncate, straight, laterally obliquely subtruncate, armed with 5 short but stout, very slender brownish to blackish spines and brownish mucro, in males less enlarged, slenderer, with finer, yellowish spines. Meso- and metatibiae at apical surface densely squamose, laterally armed with numerous short and stout blackish spines and inside with brownish mucro. Tarsi slender, segment 2 $1.2\text{--}1.3 \times$ wider than long; segment 3 $1.3\text{--}1.4 \times$ wider than long and $1.3\text{--}1.4 \times$ wider than segment 2; onychium $1.5\text{--}1.6 \times$ longer than segment 3; claws fused at short basal part, then divergent.

Ventrite 1 in middle about $3 \times$ longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa slightly longer than ventrite 2; ventrite 2 short, equally long as ventrite 3 or 4. Suture 1 slightly arched, finer than the other sutures. Metaventral process distinctly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of spatulate setae.

Male genitalia. Penis (Fig. 3E) short, ventrally subparallel-sided with slightly convex sides, short apical part evenly tapered with weakly concave sides; in lateral view moderately wide, tip evenly tapered apicad.

Female genitalia. Gonocoxites (Fig. 3F) flat, weakly sclerotised, apically broadly rounded with short apical styli. Sternite VIII with long and slender apodeme and umbrella-shaped plate, distinctly wider than long. Spermatheca (Fig. 3G) with long and slender cornu, almost straight; corpus large, elongated; ramus large, rounded, isodiametric; nodulus tube-shaped, longer than wide.

Derivation of name. This species is dedicated to Robert S. Anderson, Canadian Museum of Nature Collection, Ottawa, who loaned to the first author very interesting material of Entiminae for study. Moreover, we thank him also for help and critical comments for improving the article.

Biology. Unknown.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. *Pentatrachyphloeus andersoni* **sp. nov.** by its short and wide, flat elytra with low tubercles, raised setae only on odd intervals and regularly tapered epifrons is among species with 6-segmented funicle the most similar to *P. bufo* **sp. nov.** It is possible to distinguish it from *P. bufo* **sp. nov.** by its longer rostrum and more slender pronotum and elytra, but also by a short and wide penis. Similar shape of the body with low tubercles and raised elytral setae only on odd intervals are shared with *P. muelleriae* **sp. nov.** and *P. tuberculatus* **sp. nov.**, but from both it is easily possible to distinguish *P. andersoni* by 6-segmented funicle, dorsally invisible scrobes and shorter scapes and onychium of all legs.

***Pentatrachyphloeus baumi* sp. nov.**

(Figs 4A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:DB848437-AD60-4D9F-9CE1-D457E2BFE390>

Type locality. Gauteng (South Africa).

Type material. Holotype: ♂, 'South Africa, Gauteng [without precise locality]' (SANC). Paratypes: 3 ♀♀, 4 spec., the same data as holotype (SANC).

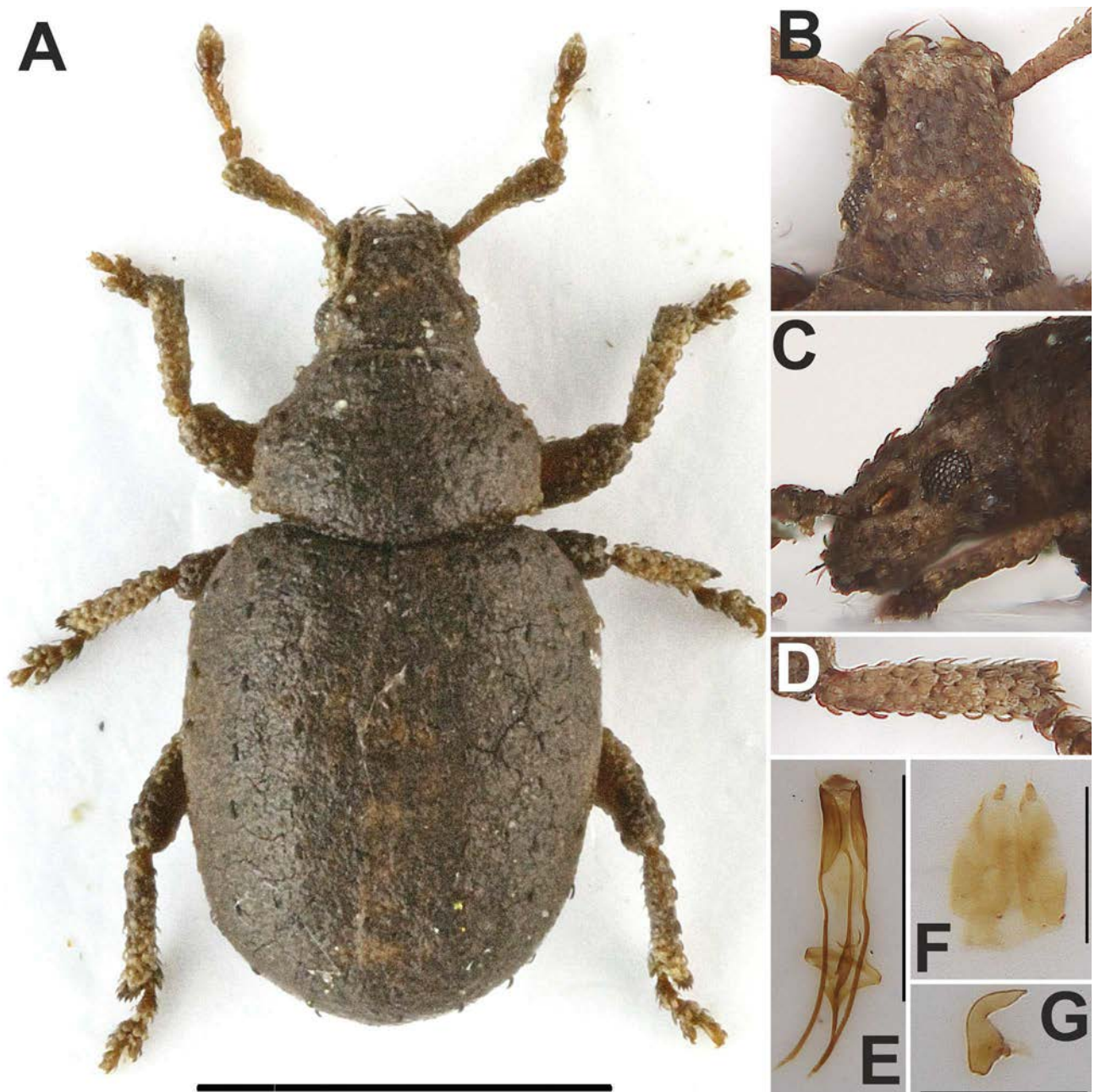


FIGURE 4. *Pentatrachyphloeus baumi* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F**, **G**).

Description (Figs 4A–G). Body length 1.84–2.17 mm, holotype 1.94 mm. Body (Fig. 4A) brownish, antennae and legs light brownish, clubs slightly darker. Dorsal part of body densely covered with irregularly angular appressed scales, finely longitudinally striate, 3–4 across width of one interval. Odd elytral intervals with inconspicuous, even in some specimens hardly visible, short, slender, subspatulate, semiappressed setae, shorter than half width of one interval, distance between two setae about 4–5 longer than length of one seta. Pronotum and head with rostrum irregularly sparsely scattered with same setae as elytra. Scapes, femora and tibiae with very short and slender, semiappressed setae, hardly visible and not prominent from outline. Vestiture light brownish, raised setae blackish.

Rostrum (Figs 4A–C) 1.53–1.56 × wider than long, widest at base, regularly weakly tapered anteriorly with

straight sides, at base $1.07\text{--}1.09 \times$ wider than at apex; laterally convex. Epifrons regularly tapered anteriorly, with straight sides, perfectly flat, separated from head by very slender V-shaped sulcus, at apex $0.7\text{--}0.8 \times$ as wide as rostrum at same place. Antennal scrobes dorsally visible as very short and slender furrows at anterior part of rostrum; in lateral view weakly enlarged posteriorly, narrowly subtriangular, directed towards eye, separated from it by slender squamose stripe. Eyes convex, weakly prominent from outline of head; in lateral view subcircular, placed just above middle of head. Head slightly enlarged posteriorly, without supraocular tubercles.

Antennae (Fig. 4A) moderately robust; scapes regularly gradually enlarged apically, $4.0\text{--}4.2 \times$ longer than wide, $1.4\text{--}1.5 \times$ longer than funicles, at apex $1.1\text{--}1.2 \times$ wider than club; funicles 6-segmented; segment 1 the biggest, conical, $1.6\text{--}1.7 \times$ longer than wide and $1.6\text{--}1.7 \times$ longer than segment 2, which is $1.4\text{--}1.5 \times$ longer than wide; segments 3 and 4 $1.3\text{--}1.4 \times$ wider than long; segment 5 $1.4\text{--}1.5 \times$ wider than long; segment 6 $1.8\text{--}1.9 \times$ wider than long; clubs $1.4\text{--}1.5 \times$ longer than wide.

Pronotum slender, $1.42\text{--}1.44 \times$ wider than long, widest at basal half, here subparallel-sided, distinctly more tapered anteriorly than posteriorly, distinctly broadly constricted behind anterior margin. Disc regularly convex. Base arched. Pronotum in lateral view distinctly convex, behind anterior margin flattened.

Elytra oval, $1.18\text{--}1.21 \times$ longer than wide, widest at midlength, with distinctly rounded sides and rounded apex, with narrow striae and equally flat and wide intervals. Base arched; posthumeral calli developed, visible only in dorso-lateral view. Elytra in lateral view distinctly convex.

Protibiae (Fig. 4D) short and robust, $4.9\text{--}5.1 \times$ longer than wide, laterally with straight sides, with rounded apex armed with 5–6 sparse, black short spines and one, short, brownish mucro. Meso- and metatibiae laterally armed with short black spines and very short, hardly visible mucro. Tarsi wide and short; segment 2 $1.6\text{--}1.7 \times$ wider than long; segment 3 $1.6\text{--}1.7 \times$ wider than long and $1.3\text{--}1.4 \times$ wider than segment 2; onychium $1.1\text{--}1.2 \times$ longer than segment 3, regularly enlarged apically; claws fused at short basal part, then distinctly divergent.

Abdominal ventrite 1 in middle more than twice longer than ventrite 2 and shorter than ventrites 2–4 combined, behind metacoxa weakly longer than ventrite 2; ventrite 2 distinctly shorter than ventrites 3 and 4 combined; ventrites 3 and 4 short. Suture 1 straight, slightly finer than the other sutures. Metaventral process wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with indistinct subspatulate setae.

Male genitalia. Penis (Fig. 4E) short, widest at base, indistinctly tapered anteriorly with slightly concave sides, tip short, subtriangular, with slightly concave sides.

Female genitalia. Gonocoxites (Fig. 4F) short and wide, flat, tapered apically with short and wide apical styli. Sternite VIII with long and slender apodeme and umbrella-shaped plate, about as wide as long. Spermatheca (Fig. 4G) with short and almost straight cornu; corpus large, rounded; ramus large, subtrapezoidal, about as long as wide; nodulus small, hump-shaped.

Derivation of name. This species is dedicated to Jiří Baum (1900–1944), Czech arachnologist and ornithologist, who visited Africa in northern, western and south-eastern part several times, and in 1931 went drove all of Africa from Cairo in Egypt to Cape Town in South Africa by car. Material collected by him is deposited in the Prague National Museum. Baum was killed during the Second World War, resisting the occupation of his country.

Distribution. South Africa, Gauteng.

Differential diagnosis. Among species with 6-segmented funicle and slender elytra with raised setae only on odd intervals, *P. baumi* sp. nov. is easily distinguishable by elytra with raised setae inconspicuous, slightly shorter than half the width of one interval.

***Pentatrachyphloeus brevithorax* sp. nov.**

(Figs 5A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:025F0810-309D-4ECB-8552-39FE6A338437>

Type locality. Giants Castle Park, ca 1800 m (KwaZulu-Natal, South Africa)

Type material. Holotype: ♂, 'SOUTH AFRICA: NATAL [KwaZulu-Natal], Giants Castle Park, 6 Mar 1968, 5800 ft. el., T. Schuh, JA&S Slater, M. Sweet [lgt.]' (SANC).

Description (Figs 5A–E). Body length, holotype 2.01 mm. Body (Fig. 5A) dark brownish, the only known specimen, holotype is partly teneral. Body vestiture partly incrustated and hardly recognizable. Elytra covered with irregularly rounded appressed scales, 3–4 across one elytral interval; pronotum and head with rostrum with

dense rounded scales, depressed in middle; scapes, femora and tibiae with similar dense appressed scales as pronotum, only slightly smaller. Elytra with one regular row of inconspicuous, semierect short setae, slightly shorter than third of width of one interval and hardly longer than diameter of one appressed scale, setae slender, subspatulate, widest at midlength, distance between two setae 4–6 × longer than length of one seta. Pronotum and head with rostrum with similar semierect setae as elytra, only faintly shorter, sparsely irregularly scattered. Scapes, femora and tibiae with moderately densely irregularly scattered slender and short, subspatulate semierect setae, hardly visible as prominent from outline. Appressed scales dark brownish, elytra with numerous, small spots of whitish scales, apical part of rostrum and lateral part of head with rostrum greyish. Semierect setae on elytra whitish grey.

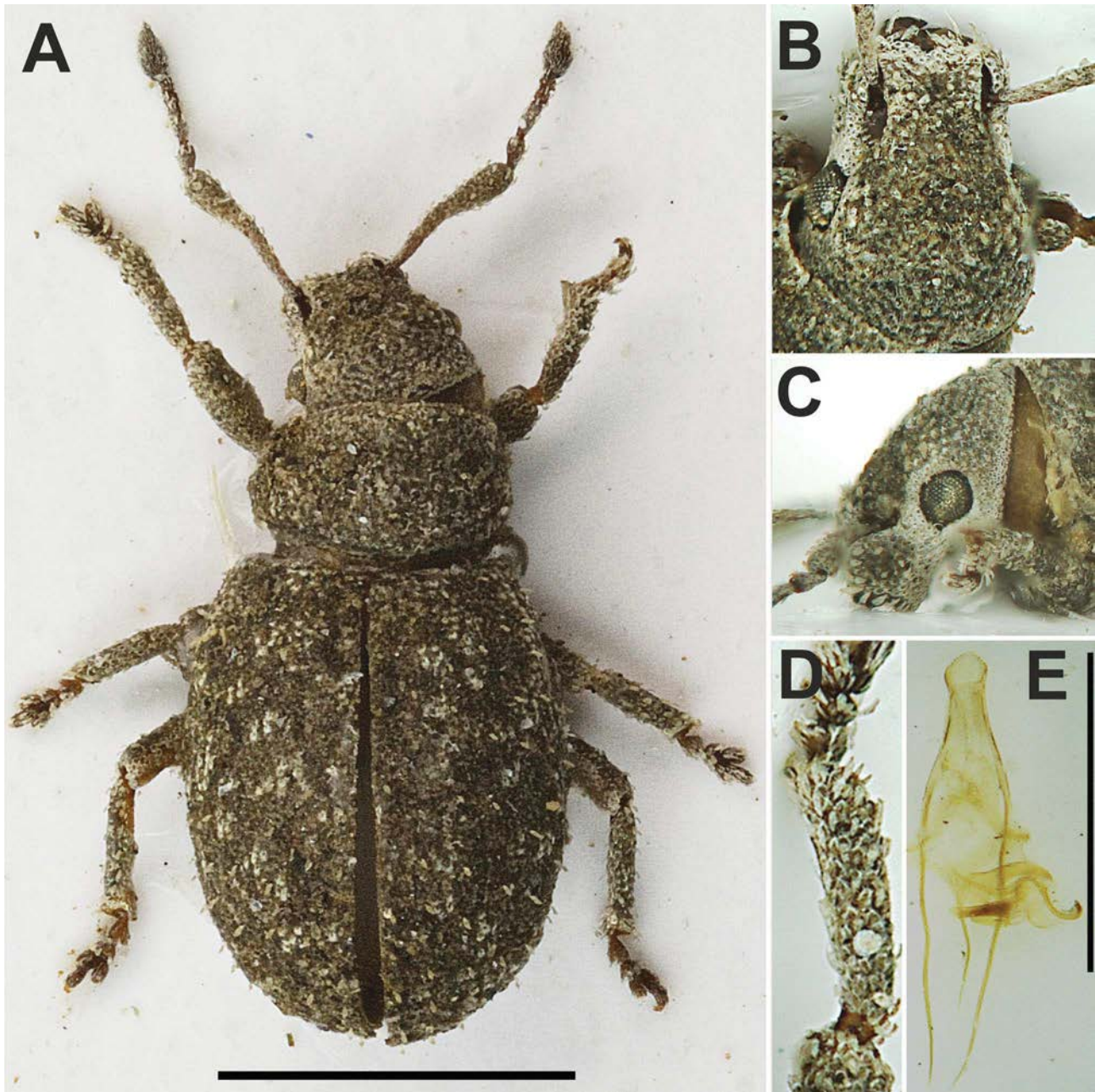


FIGURE 5. *Pentatrachyphloeus brevithorax* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus. Scale bars: 1 mm (**A**) and 0.5 mm (**E**).

Rostrum (Figs 5A–C) short and wide, 1.56 × wider than long, widest at base, regularly tapered apicad with slightly concave sides, at base 1.12 × wider than at apex; laterally distinctly convex. Epifrons at basal half distinctly tapered apicad, then slightly enlarged apicad, with distinctly concave sides; flat, at apical part shallowly

depressed. Frons densely squamose. Epistome V-shaped, slender and short. Antennal scrobes dorsally visible at apical half of rostrum, slender, reniform; laterally slender, curved, distinctly enlarged posteriad, drop-shaped with well edged ventral margin and ill-defined dorsal margin, directed towards middle of eyes, separated from them by wide squamose stripe. Eyes small, convex, moderately prominent from outline of head; laterally subcircular, about at middle of head. Head wide and short, distinctly convex.

Antennae (Fig. 5A) moderately slender; scapes slender, $1.5 \times$ longer than funicles, $3.57 \times$ longer than wide, curved at midlength, at basal half slender, at apical half evenly enlarged apicad, at apex $1.1 \times$ wider than clubs. Funicles 5-segmented; segments 1 and 2 long and slender, conical; segment 1 $1.8 \times$ longer than wide, $1.1 \times$ longer than segment 2, which is $1.9 \times$ longer than wide; segments 3–5 isodiametric; clubs slender, $2.1 \times$ longer than wide.

Pronotum very wide and short, $1.67 \times$ wider than long, widest at basal third, more tapered anteriorly than posteriad, with rounded sides. Disc regularly convex; base weakly arched. Pronotum in lateral view almost flat.

Elytra oval, $1.25 \times$ longer than wide, widest at midlength with rounded sides, broadly rounded at apex, humeri slender, indistinct, regularly rounded; intervals flat, wide, striae very narrow, concealed by vestiture; when cleared of scales intervals smooth, shiny, striae very narrow, finely punctate. Base almost straight. Elytra in lateral view weakly convex.

Tibiae (Figs 5A, D) short and robust; protibiae $4.2 \times$ longer than wide, at apex rounded, weakly enlarged inside, with fringe of short and fine, 6–8 sparse brownish spines and mucro at internal angle. Meso- and metatibiae laterally fringed by short and fine, sparse brownish spines and short mucro. Tarsi short; segment 2 $1.6 \times$ wider than long; segment 3 $1.4 \times$ wider than long and $1.4 \times$ wider than segment 2; onychium $0.8 \times$ longer than segment 3; claws solidly fused at basal half, weakly divergent at apical part.

Abdominal ventrite 1 in middle almost $3 \times$ longer than ventrite 2, behind metacoxa weakly longer than ventrite 2; ventrite 2 slightly shorter than ventrites 3 and 4 combined; ventrites 3 and 4 short. Suture 1 slightly arched, narrower and finer than the others. Metaventral process narrower than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of slender, inconspicuous semiappressed setae.

Male genitalia. Penis (Fig. 5E) widest at base, at basal half subparallel-sided, then distinctly tapered anteriorly, apex weakly enlarged and at tip rounded, head-shaped; laterally almost straight.

Female. Unknown.

Derivation of name. The Latin name of the new species, meaning “with short pronotum” was chosen in reference to its extremely short and wide prothorax.

Biology. Unknown.

Distribution. South Africa, KwaZulu-Natal.

Differential diagnosis. *Pentatrachyphloeus brevithorax* **sp. nov.** is very similar to *P. patruelis* in its elytra with inconspicuous, very short semierect setae. From this latter species it can be easily distinguished mainly by rostrum tapered apicad (vs. rostrum widened apicad in *P. patruelis*), epifrons with concave sides (vs. epifrons with straight sides), funicle segments 3–5 isodiametric (vs. segments 3–5 distinctly wider than long), pronotum $1.67 \times$ wider than long (vs. pronotum 1.44 – $1.45 \times$ wider than long), penis at apex rounded (vs. penis at apex obtuse). Within the species with 5-segmented funicles, rostrum not enlarged apicad and wide pronotum, *P. brevithorax* **sp. nov.** is similar to *P. vossi* **sp. nov.** and *P. kuscheli* **sp. nov.**, from which could be distinguished by characters stated in the key.

Pentatrachyphloeus bufo **sp. nov.**

(Figs 6A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:9860FFA4-98E0-4C8B-B0DB-3D3F21DAACCB>

Type locality. Skukuza, Kruger National Park (Mpumalanga, South Africa).

Type material. Holotype: 1 ♂, ‘[South Africa, Mpumalanga] K. N. W. Skukuza, Jan. [January] 1960, H. v. Schalkwyk [lgt.]’ (SANC). Paratypes: 12 ♂♀, the same data as holotype (SANC); 2 ♂♀, ‘[South Africa, Mpumalanga] K. N. W., Salieljepad, (10 myl v. Skukuza.), Nov. [November] 1960, H.A.D. v. Schalkwyk [lgt.]’ (SANC); 1 spec., ‘[South Africa, Mpumalanga] K. N. W., Skukuza, 8 myl na Malelaan, Jan. [January] 1960, H. v. Schalkwyk [lgt.]’ (SANC).

Description (Figs 6A–G). Body length 1.94–2.25 mm, holotype 2.13 mm. Body (Fig. 6A) blackish, femora,

tibiae, apical half of scapes and clubs dark brownish, basal part of scapes, funicles and tarsi paler, reddish brown; spines at apical part of tibiae brownish, mucro yellowish. The whole body strongly incrustated by thick soil coat with hardly recognizable vestiture. Appressed scales small, sparse, irregularly angular with weak pearly sheen, distance between two scales slightly shorter than diameter of one scale. Semiappressed setae greyish, short and sparse, inconspicuous. Setae on elytra subspatulate, about twice longer than diameter of one appressed scale, form one sparse regular row on odd intervals. Setae on pronotum, head with rostrum, scapes, femora and tibiae shorter and narrower than on elytra, not prominent from outline.

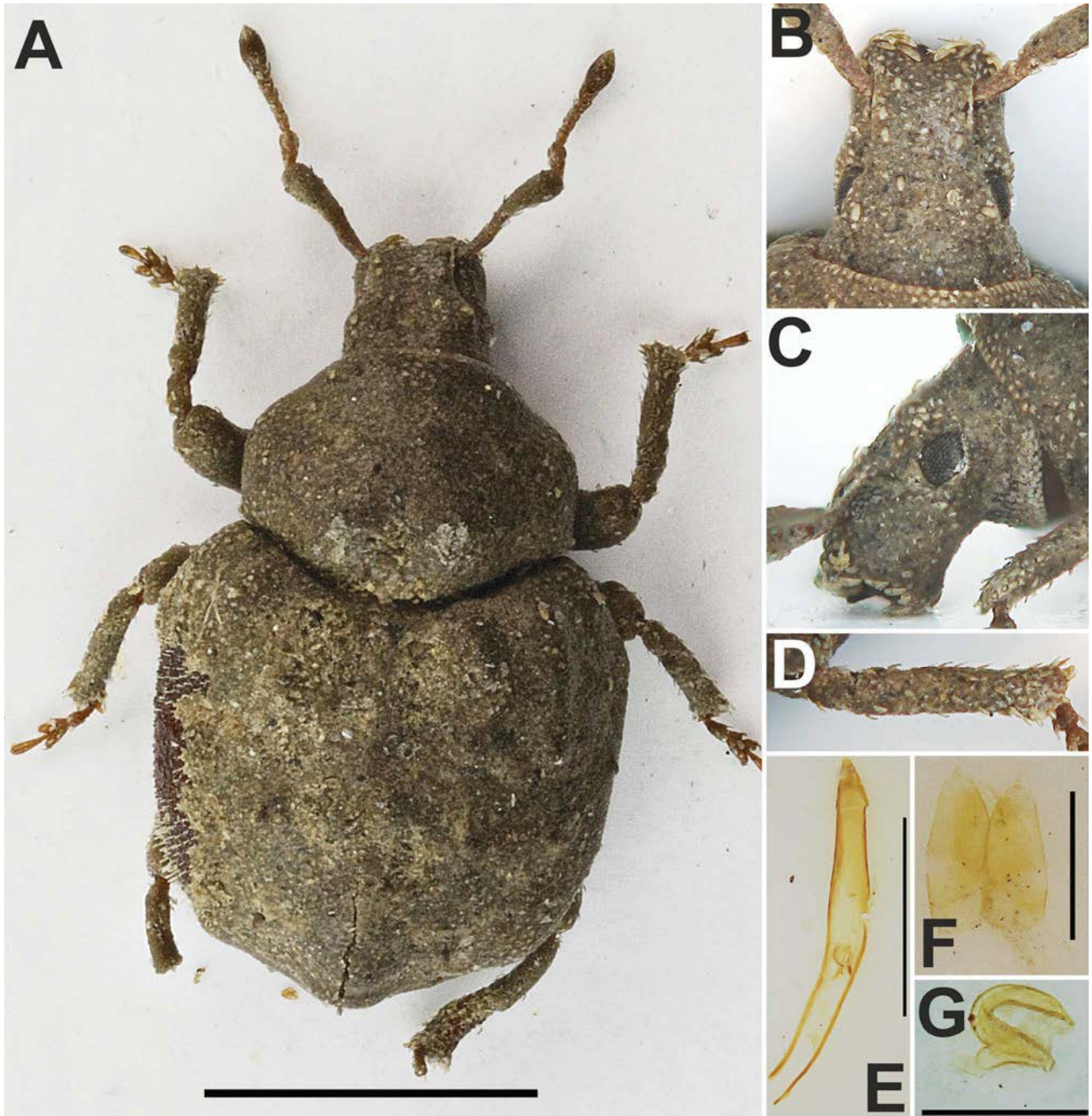


FIGURE 6. *Pentatrachyploeus bufo* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F, G**).

Rostrum (Figs 6A–C) $1.50\text{--}1.56 \times$ wider than long, widest at base, here $1.07\text{--}1.11 \times$ wider than at apex, weakly tapered anteriorly with slightly concave sides; laterally convex. Epifrons flat, weakly tapered anteriorly with slightly concave sides. When cleared of scales shiny, regularly longitudinally depressed, finely and moderately

densely punctate, separated from head by slender V-shaped sulcus, space with sulcus shallowly depressed. Epistome almost invisible, V-shaped, densely covered with appressed, long and wide, spatulate setae, transversally placed. Antennal scrobes dorsally invisible; in lateral view almost regularly enlarged posteriad, in short anterior part glabrous, then squamose, dorsal and ventral margin moderately visible as reaching posterior margin of eyes, dorsal margin creating short longitudinal keel above eyes. Eyes small, subcircular, slightly convex, hardly visible in dorsal view; laterally placed just above middle of head. Head flat and wide, with low tubercles above eyes.

Antennae (Fig. 6A) short and robust; scapes $1.2\text{--}1.3 \times$ longer than funicles, $3.9\text{--}4.1 \times$ longer than wide, regularly enlarged apicad, weakly curved at midlength, at apex $1.3\text{--}1.4 \times$ wider than clubs. Funicles 6-segmented; segment 1 and 2 slender and conical; segment 1 about longer than segments 2 and 3 combined, $1.8\text{--}2.0 \times$ longer than wide, $1.6 \times$ longer than segment 2, which is $1.6\text{--}1.7 \times$ longer than wide; segment 3 $1.1 \times$ longer than wide; segment 4 isodiametric; segment 5 $1.1 \times$ wider than long; segment 6 $1.2\text{--}1.3 \times$ wider than long; clubs $1.7\text{--}1.8 \times$ longer than wide.

Pronotum wide, $1.35\text{--}1.43 \times$ wider than long, at basal half widest, subparallel-sided with weakly rounded sides, at anterior half distinctly tapered anteriorly with wide constriction behind anterior margin. Disc with two low and wide protuberances at middle and with wide three longitudinal depressions, with ill-defined margins, reaching from base to transverse anterior constriction. When cleared of scales shiny, finely and moderately densely granulate, with distinct transverse furrow creating constriction, just behind anterior third of pronotum. Base distinctly, irregularly arched. Pronotum in lateral view distinctly convex, anterior third flattened.

Elytra widely rounded, $1.02\text{--}1.09 \times$ longer than wide, with somewhat rounded sides, broadly subtriangularly tapered posteriad, base distinctly arched. Interval 1 at posterior half enlarged and keel-shaped elevated; intervals 3, 5 and 7 along the whole length weakly more elevated than even ones, at base more than on the disc. Posthumeral calli well visible in dorso-lateral view. Elytra in lateral view moderately convex.

Protibiae (Fig. 6D) robust, $4.5\text{--}4.7 \times$ longer than wide, at apex rounded, laterally and mesally enlarged, with 5 brownish short and small spines and inside curved mucro, in males less enlarged with finer, yellowish spines; meso- and metatibiae at apex with 8–9 short brownish sparse spines and inside curved long mucro. Tarsi slender, segment 2 $1.3 \times$ wider than long; segment 3 $1.5\text{--}1.6 \times$ wider than long and $1.3\text{--}1.4 \times$ wider than segment 2; onychium $1.9\text{--}2.0 \times$ longer than segment 3, regularly enlarged apicad; claws fused at short basal part, divergent.

Abdominal ventrite 1 in middle about $3 \times$ longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa longer than ventrite 2; ventrite 2 distinctly longer than ventrite 3 or 4; ventrites 3 and 4 short. Suture 1 slightly arched, finer than the other sutures. Metaventral process distinctly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of spatulate setae.

Male genitalia. Penis (Fig. 6E) long and slender, widest at base, irregularly tapered apicad with tip tapered, regularly pointed; in lateral view straight, slender, evenly tapered apicad.

Female genitalia. Gonocoxites (Fig. 6F) flat and wide, weakly sclerotised, apically broadly rounded, with apical styli. Sternite VIII with long and slender apodeme and small, umbrella-shaped, isodiametric plate. Spermatheca (Fig. 6G) with slender slightly curved cornu, rounded, isodiametric ramus and nodulus longer than wide, evenly tapered apicad.

Derivation of name. *Pentatrachyphloeus bufo* **sp. nov.** by its flat, wide, bumpy body is reminiscent of toads from the genus *Bufo* Linnaeus, 1758. This similarity gives the name to the new species.

Biology. Unknown.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. *Pentatrachyphloeus bufo* **sp. nov.** by its short and wide, flat elytra with low tubercles, raised setae only on odd intervals and regularly tapered epifrons is among species with 6-segmented funicle the most similar to *P. andersoni* **sp. nov.** It is possible to distinguish it from *P. andersoni* **sp. nov.** by shorter rostrum and wider pronotum and elytra, but also by a long and slender penis. Similar shape of the body with low tubercles and raised elytral setae only on odd intervals have also *P. muelleriae* **sp. nov.** and *P. tuberculatus* **sp. nov.** with 5-segmented funicle, but from both, *P. bufo* **sp. nov.** is easily distinguishable by 6-segmented funicle, dorsally invisible scrobes and shorter scapes.

***Pentatrachyphloeus endroedyi* sp. nov.**

(Figs 7A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:8D18871A-DC40-4026-9EC7-985BD140558F>

Type locality. 16 km north of Barberton, 25°25' S, 30°34' E (Mpumalanga, South Africa).

Type material. Holotype: 1 ♂, 'S. Afr. [South Africa, Mpumalanga], E. Transvaal, Barberton, 16 km N, 25.42 S–30.57 E, 24.10.1986, E-Y: 2306, groundtraps, 31 days, leg. Endrödy-Younga, groundtrap with faeces bait' (TMSA). Paratypes: 4 ♂♀, the same data as holotype (TMSA); 17 ♂♀, ditto, but '24.9.1986, E-Y: 2289' (TMSA); 3 ♂♀, ditto, but '30.11.1986, E-Y: 2331, groundtraps, 53 days' (TMSA).

Description (Figs 7A–G). Body length 1.88–2.13 mm, holotype 2.01 mm. Body (Fig. 7A) blackish, antennae and legs dark brownish to blackish, only basal part of scapes paler, brownish; spines at apical part of tibiae brownish, mucro yellowish. Whole body strongly incrustated by thick soil coat with hardly recognizable vestiture. Appressed scales small, moderately sparse, irregularly star-shaped, distance between two scales slightly shorter than diameter of one scale. Semiappressed setae greyish, very sparse, distinct only on elytra. Setae on elytra spatulate, finely longitudinally striate, slightly shorter than half of width of one interval, form one very sparse regular row on odd intervals, about 6–7 setae on each interval, each on the top of small protuberance. Setae on pronotum, head with rostrum, scapes, femora and tibiae shorter and narrower than those on elytra, not prominent from outline.

Rostrum (Figs 7A–C) 1.48–1.53 × wider than long, widest at base, at base 1.11–1.15 × wider than at apex, somewhat tapered anteriorly with slightly rounded sides; laterally convex. Epifrons flat, at basal two thirds parallel-sided, at apical third distinctly tapered anteriorly. When cleared of scales shiny, regularly longitudinally depressed, finely and moderately densely punctate, separated from head by slender V-shaped sulcus, interocular space with sulcus deeply depressed, vertex denser punctate than epifrons. Frons squamose. Epistome almost invisible, V-shaped, densely covered with appressed, long and wide, spatulate setae, transversally placed. Antennal scrobes dorsally invisible; in lateral view distinctly enlarged posteriorly, weakly curved, in short anterior part glabrous, then squamose, dorsal and ventral margin moderately visible as reaching posterior margin of eyes, dorsal margin creating short longitudinal keel above eyes. Eyes small, subcircular, slightly convex, hardly visible in dorsal view; laterally placed just above middle of head. Head very short and wide, with low, longitudinal supraocular tubercles.

Antennae (Fig. 7A) short and robust; scapes 1.2–1.3 × longer than funicles, 3.1–3.2 × longer than wide, at midlength abruptly dilated anteriorly, at apex 1.4–1.5 × wider than clubs. Funicles 6-segmented; segment 1 conical, about longer than segments 2 and 3 combined, 1.5–1.6 × longer than wide, 1.7–1.8 × longer than segment 2; segment 2 1.3 × longer than wide; segment 3 1.1–1.2 × longer than wide; segment 4 1.2 × wider than long; segment 5 1.3 × wider than long; segment 6 1.4–1.5 × wider than long; clubs 1.6–1.7 × longer than wide.

Pronotum wide, 1.52–1.56 × wider than long, widest just at midlength, weakly tapered posteriorly with weakly concave sides, at anterior half distinctly tapered anteriorly with wide constriction behind anterior margin. Disc with two low and wide protuberances at middle and with three wide longitudinal depressions with ill-defined margins, reaching from base to transverse anterior constriction. When cleared of scales, shiny, finely and moderately densely granulate, with distinct transverse furrow creating constriction just behind anterior third of pronotum. Base distinctly, irregularly arched. Pronotum in lateral view distinctly convex, anterior third flattened.

Elytra wide, subquadrate, isodiametric to 1.04 × longer than wide, widest just behind base, with dorsally visible laterally prominent posthumeral calli, broadly subtriangularly tapered posteriorly, base distinctly arched. Interval 1 at posterior half, intervals 3, 5 and 7 along the whole length weakly more elevated than even ones; odd intervals with sparse low protuberances along whole length. Elytra in lateral view moderately convex.

Protibiae (Fig. 7D) robust, 4.1–4.3 × longer than wide, at apex rounded, laterally and mesally weakly enlarged, with 5 brownish short and small spines and inside curved mucro, in males less enlarged with finer, yellowish spines; meso- and metatibiae at apex laterally armed with 8–9 short brownish sparse spines and inside curved long mucro. Tarsi slender, segment 2 1.5–1.6 × wider than long; segment 3 1.4–1.5 × wider than long and only 1.2 × wider than segment 2; onychium 1.7–1.8 × longer than segment 3, regularly enlarged apically; claws fused at short basal part, distinctly divergent.

Abdominal ventrite 1 in middle about 3 × longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa longer than ventrite 2; ventrite 2 longer than ventrite 3 or 4; ventrites 3 and 4 short. Suture 1 arched, finer than the other sutures. Metaventral process distinctly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subs spatulate setae.

Male genitalia. Penis (Fig. 7E) long and slender, widest at base, irregularly tapered apicad with shortly rounded sides; in lateral view slightly curved with more elongated tip.

Female genitalia. Gonocoxites (Fig. 7F) flat and wide, regularly tapered apicad, with apical styli. Sternite VIII with long and slender apodeme, plate umbrella-shaped, twice wider than long. Spermatheca (Fig. 7G) with slender and weakly curved cornu; ramus weakly longer than wide, rounded; nodulus longer than wide, subtriangular, weakly curved.

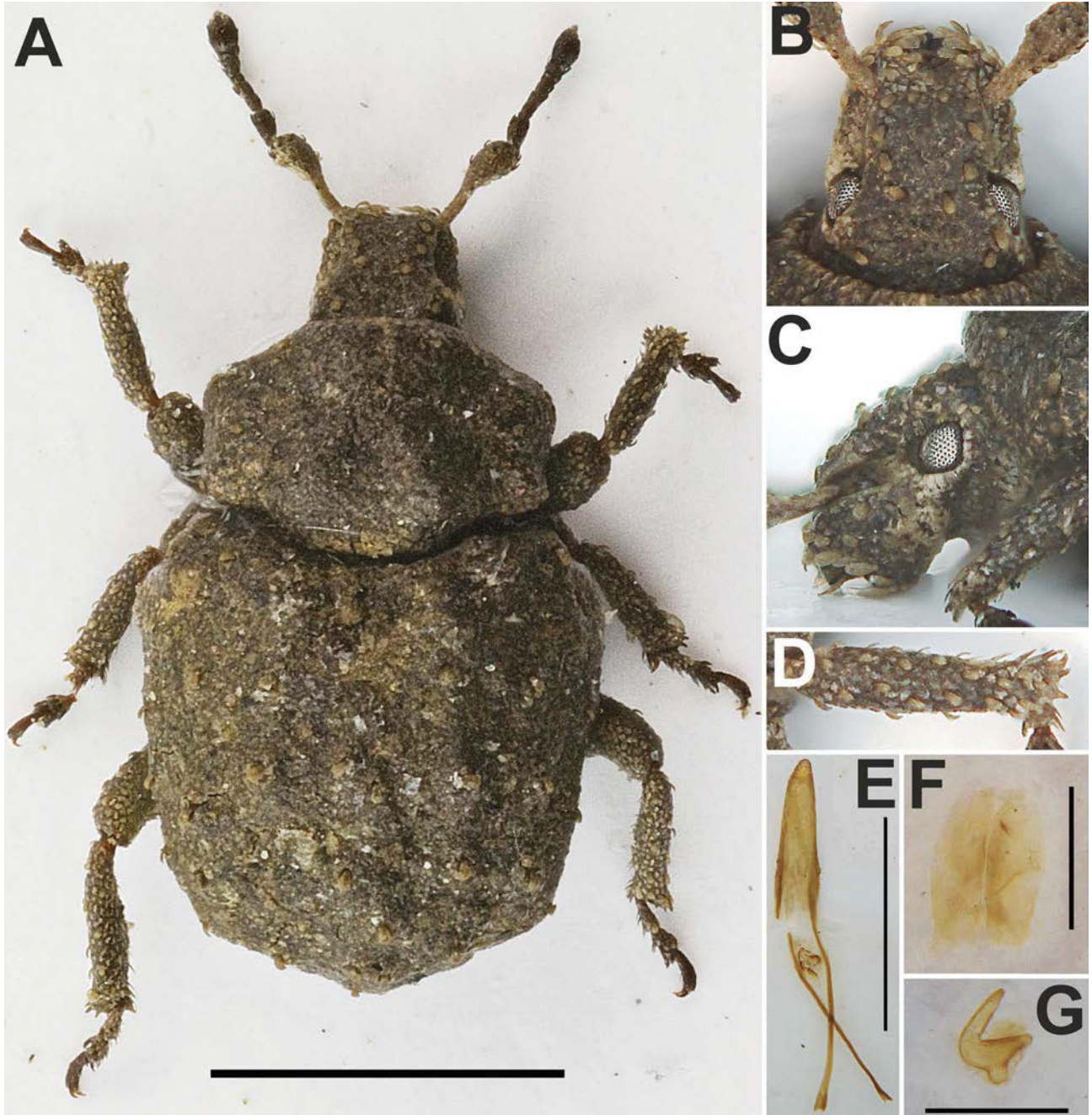


FIGURE 7. *Pentatrachyphloeus endroedyi* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (A), 0.5 mm (E) and 0.25 mm (F, G).

Derivation of name. The species takes its name from the late Sebastian Endrödy-Younga (1934–1999), a Hungarian entomologist who worked for several years in the Transvaal Museum, collecting, besides the types of newly described *Pentatrachyphloeus*, very interesting specimens of all kinds, primarily Coleoptera.

Biology. Type material was collected in ground traps baited with feces or meat.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. *Pentatrachyphloeus endroedyi* sp. nov. is in its short and flat elytra with low tubercles and raised setae on only odd intervals similar mainly to *P. andersoni* sp. nov. and *P. bufo* sp. nov. also with 6-segmented funicle, and *P. muelleriae* sp. nov. and *P. tuberculatus* sp. nov. with 5-segmented funicle. From all of them is possible to distinguish it by dorsally visible laterally prominent posthumeral calli, epifrons at apical third more tapered than in basal part and antennal scapes at midlength abruptly dilated apicad.

***Pentatrachyphloeus exiguus* sp. nov.**

(Figs 8A–F)

<http://zoobank.org/urn:lsid:zoobank.org:act:8867245C-56ED-41A9-97C3-0CEBAEE61A00>

Type locality. 1 km north-west of Skukuza, 24°35' S, 31°22' E, Kruger National Park (Mpumalanga, South Africa).

Type material. Holotype: ♂, 'S. Afr. [South Africa, Mpumalanga], Kruger Nat. Pk., Skukuza, 1 km NW, 24.59 S–31.37 E, 22.1.1995, E-Y: 3086, groundtraps, Endrödy & Bellamy, groundtrap with banana bait' (TMSA). Paratypes: 1 ♂ 1 ♀, the same data as holotype (TMSA).

Description (Figs 8A–F). Body length 1.38–1.75 mm, holotype 1.68 mm. Body (Fig. 8A) dark brownish, antennae, tibiae and tarsi paler, reddish brown. Dorsal part of body with irregularly rounded scales, depressed in middle, imbricated, 3–4 across width of one interval. Scapes, femora and tibiae with similar, but somewhat smaller scales. Elytra with conspicuous, subspatulate, longitudinally striate, light brownish semierect setae, slightly longer and more raised at posterior part of elytra, form one regular row on each interval, slightly longer than half of width of one interval, distance between two setae about 3–4 × longer than length of one seta. Pronotum and head with rostrum with similar setae, only somewhat shorter than elytral ones, densely irregularly scattered. Scapes, femora and tibiae with short and slender semiappressed setae, hardly prominent from outline. Body vestiture dark brownish.

Rostrum (Figs 8A–C) 1.24–1.31 × wider than long, from base to apex slightly regularly enlarged with straight sides, at apex 1.06–1.11 × wider than at base; laterally weakly convex, somewhat separated from head by shallow transverse furrow. Epifrons regularly and distinctly tapered anteriorly with straight sides, at apex slightly wider than half of rostrum width at same place, shallowly longitudinally depressed and separated from head by slender V-shaped sulcus, concealed by scales. When cleared of scales matt, rough, irregularly punctate, with short and moderately wide longitudinal median furrow. Antennal scrobes dorsally visible at anterior two thirds as narrow furrow; laterally long, weakly curved, distinctly enlarged posteriorly, separated from eyes by slender squamose stripe. Eyes moderately large, convex, prominent from outline of head; in lateral view oval, placed in dorsal third of head. Head flat, without tubercles above eyes; when cleared of scales rough and matt, with wide longitudinal median stria and short and wide, dense longitudinal striae on surface.

Antennae (Fig. 8A) short and robust; scapes 4.6–4.8 × longer than wide and 1.3 × longer than funicles, at apical third weakly curved and gradually regularly enlarged apicad, at apex equally wide as clubs. Funicles 5-segmented; segments 1 and 2 long and conical; segment 1 1.5 × longer than wide and 1.1–1.2 × longer than segment 2, which is 1.6–1.7 × longer than wide; segments 3–5 1.2 × wider than long; clubs 1.6–1.8 × longer than wide.

Pronotum 1.49–1.60 × wider than long, widest behind midlength, with rounded sides, anteriorly more tapered than posteriorly; disc regularly convex; base almost straight. When cleared of scales disc very rough, coarsely and irregularly punctate. In lateral view convex, behind anterior margin flattened.

Elytra oval, 1.25–1.34 × longer than wide, with regularly rounded sides and broadly rounded apex, widest at midlength. Base straight. Intervals narrow, equally wide and almost flat; striae wide, concealed by scales; sutural interval at base narrowed; when cleared of scales intervals weakly shiny, slightly convex and equally wide as coarsely and densely punctate striae. Posthumeral calli indistinct, slightly visible in dorso-lateral view. Elytra in lateral view distinctly convex.

Protibiae (Fig. 8D) short and robust, 4.3–4.6 × longer than wide, with straight lateral edge, at apex obliquely subtruncate, armed with 4–5 very short and fine, reddish brown spines and yellowish, long, inside curved mucro. Meso- and metatibiae laterally armed with numerous, slender and dense, bristle-shaped brownish spines and yellowish, short mucro. Tarsi short and robust; segment 2 1.3–1.4 × wider than long; segment 3 1.3–1.4 × wider

than long and $1.3 \times$ wider than segment 2; onychium $1.5 \times$ longer than segment 3, distinctly enlarged apicad; claws connate at short basal part, divergent.

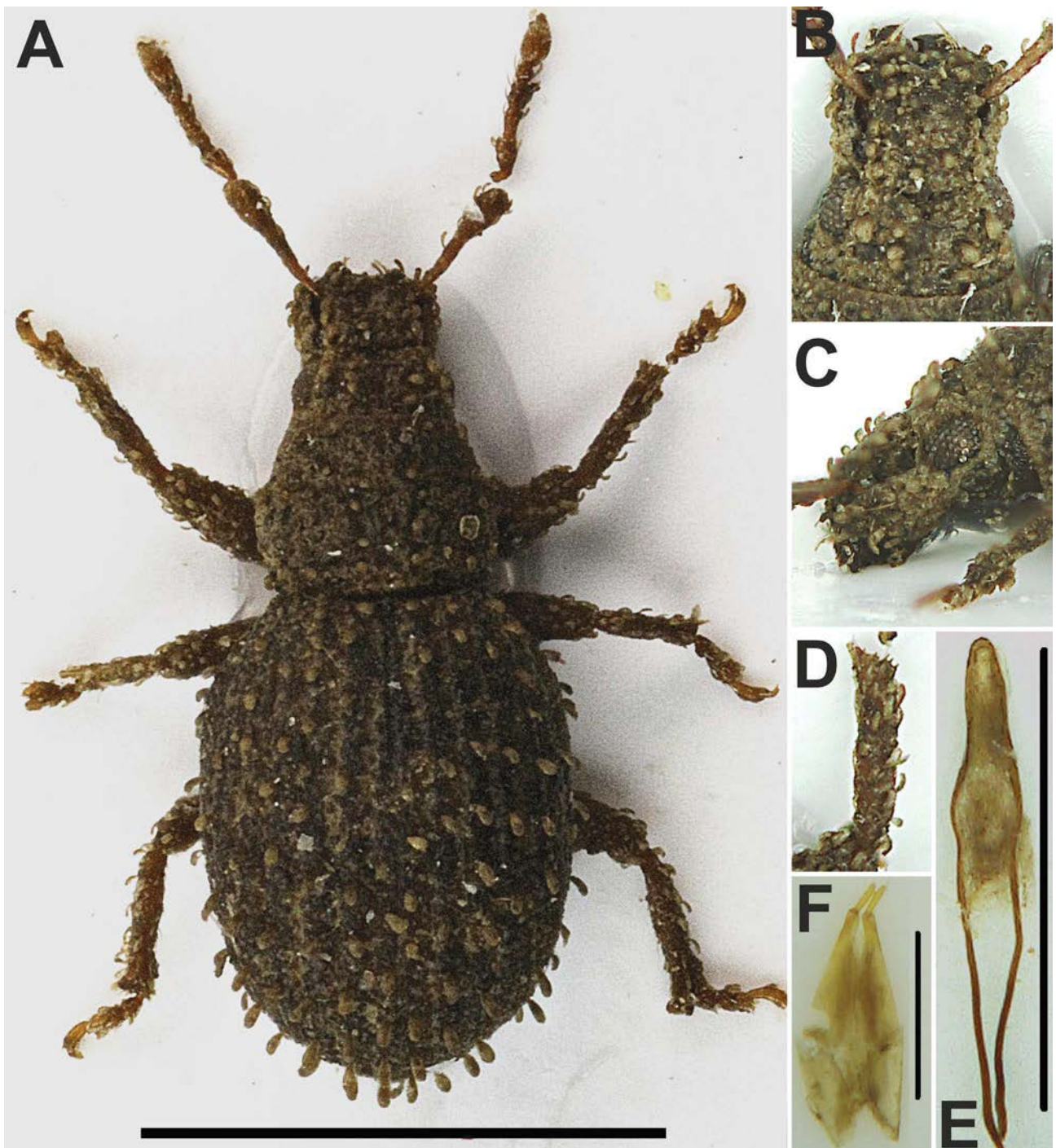


FIGURE 8. *Pentatrachyphloeus exiguus* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F**).

Abdominal ventrite 1 in middle about $2.5 \times$ longer than ventrite 2 and slightly shorter than ventrites 2–4 combined, behind metacoxa distinctly longer than ventrite 2; ventrite 2 shorter than ventrites 3 and 4 combined; ventrites 3 and 4 short. Suture 1 almost straight, finer than the other sutures. Metaventral process wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of slender subspatulate setae.

Male genitalia. Penis (Fig. 8E) long and slender, ventrally widest at base and at midlength, with slightly concave sides at basal and apical half, apical half about evenly tapered apicad, tip subtriangular, slender; in lateral view very slender, almost straight.

Female genitalia. Gonocoxites (Fig. 8F) long and slender, evenly tapered apicad, with very long and slender styli. Sternite VIII with long and slender apodeme and moderately small, isodiametric, umbrella-shaped plate. Spermatheca not examined.

Derivation of name. This species is named for its very small size of the body suggested its name, meaning in Latin "minute, negligible".

Biology. Type specimens were collected in ground traps baited with bananas.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. Elytra with conspicuous setae on each interval make this new species similar to *P. oberprieleri* **sp. nov.**, from which it is easily distinguishable by funicles 5-segmented, while the latter has funicles 7-segmented. In its anteriorly enlarged rostrum *P. exiguus* **sp. nov.** is similar only to *P. patruelis*, but it is easily distinguishable from it by long, subspatulate setae on the whole dorsal part of the body, while *P. patruelis* has dorsal part of the body with extremely short and fine raised setae, hardly visible also in lateral view.

***Pentatrachyphloeus frici* sp. nov.**

(Figs 9A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:405556CF-6E7E-4146-BA4A-8A59C3DEC9B9>

Type locality. Wildtuin, Kruger National Park (Limpopo, South Africa).

Type material. Holotype: ♂, '[South Africa, Limpopo], Krug. Nas. Wildtuin, N96, 8/11/1962, HAD van Schalkwyk' (SANC). Paratypes: 1 ♂ 1 ♀, the same data as holotype (SANC).

Description (Figs 9A–G). Body length 2.14–2.43 mm, holotype 2.14 mm. Body (Fig. 9A) dark brownish, funicles with clubs and tarsi reddish brown. Appressed scales on dorsal part of body irregularly star-shaped with mostly 5 short tips, 3–4 across width of one interval, not completely covering integument and leaving slender space among them, scales on femora, tibiae and scapes smaller than those on elytra; scales light brownish to whitish with weak pearly sheen. Elytra on odd intervals with sparse row of semiappressed, spatulate setae, about as long as half width of one interval, 7–9 along whole length of interval 3 or 5. Setae on pronotum and head with rostrum similar to those on elytra but shorter, sparsely irregularly scattered. Scapes, femora and tibiae with short, slender, subspatulate, semiappressed setae, hardly prominent from their outline.

Rostrum (Figs 9A–C) 1.62–1.69 × wider than long, indistinctly evenly tapered apicad with straight sides, at base 1.07–1.09 × wider than at apex; laterally distinctly convex. Epifrons narrow, weakly tapered anteriorly with slightly concave sides, flat with indistinct slender longitudinal median stria, at apex 0.6 × as wide as rostrum at same place, separated from head by slender V-shaped sulcus. Antennal scrobes dorsally visible as slender furrow at apical half of rostrum; in lateral view with dorsal border directed to upper border of eye and ventral border directed to lower border of eye, inside squamose, glabrous part of scrobe form slender furrow, weakly curved and directed toward lower border of eye. Eyes moderately large, well visible in dorsal view, weakly prominent from outline of head; laterally subsquared with slightly concave lower border, placed just above middle of head. Head wide and short, weakly constricted behind eyes, with low tubercles above eyes, visible in dorso-lateral view.

Antennae (Fig. 9A) short, scapes robust, 4.9–5.0 × longer than wide, straight, 1.3 × longer than funicle, evenly enlarged from base to apex, at apex equally wide as clubs. Funicles 7-segmented; segments 1 and 2 long and conical, segments 3–7 hardly distinguished; segment 1 1.5–1.6 × longer than wide, 1.5–1.6 × longer than segment 2, which is 1.5–1.6 × longer than wide; segments 3–5 1.3 × wider than long; segment 6 1.4–1.5 × wider than long; segment 7 1.6–1.7 × wider than long; clubs 1.7–1.8 × longer than wide.

Pronotum narrow and long, 1.12–1.23 × wider than long, widest behind midlength, distinctly tapered anteriorly, widely constricted behind anterior margin; base arched. Disc with shallow and wide, ill-defined longitudinal median furrow at basal half and wide and shallow transverse depression behind anterior border. Pronotum in lateral view distinctly convex, anterior third flattened.

Elytra wide, 1.17–1.26 × wider than long, widest at midlength with obliquely subtruncate humeral calli, at basal half subparallel-sided, at apical half broadly rounded; base arched. Odd intervals weakly more elevated and wider than even ones, with distinct sparse tubercles, distinctly prominent from outline of elytra. Striae narrow, finely punctured, hidden by vestiture. Posthumeral calli distinct, well visible in dorso-lateral view. Elytra in lateral view almost flat.

Protibiae (Fig. 9D) robust, $4.7\text{--}4.9 \times$ longer than wide, laterally straight, at apex obliquely subtruncate, slenderly armed with 5 short black spines and long brownish mucro. Meso- and metatibiae laterally armed with numerous short and stout blackish spines and inside with brownish mucro. Tarsi with segment 2 $1.4\text{--}1.5 \times$ wider than long; segment 3 $1.5\text{--}1.6 \times$ wider than long and $1.3\text{--}1.4 \times$ wider than segment 2; onychium $1.6\text{--}1.7 \times$ longer than segment 3; claws fused at short basal part, then divergent.

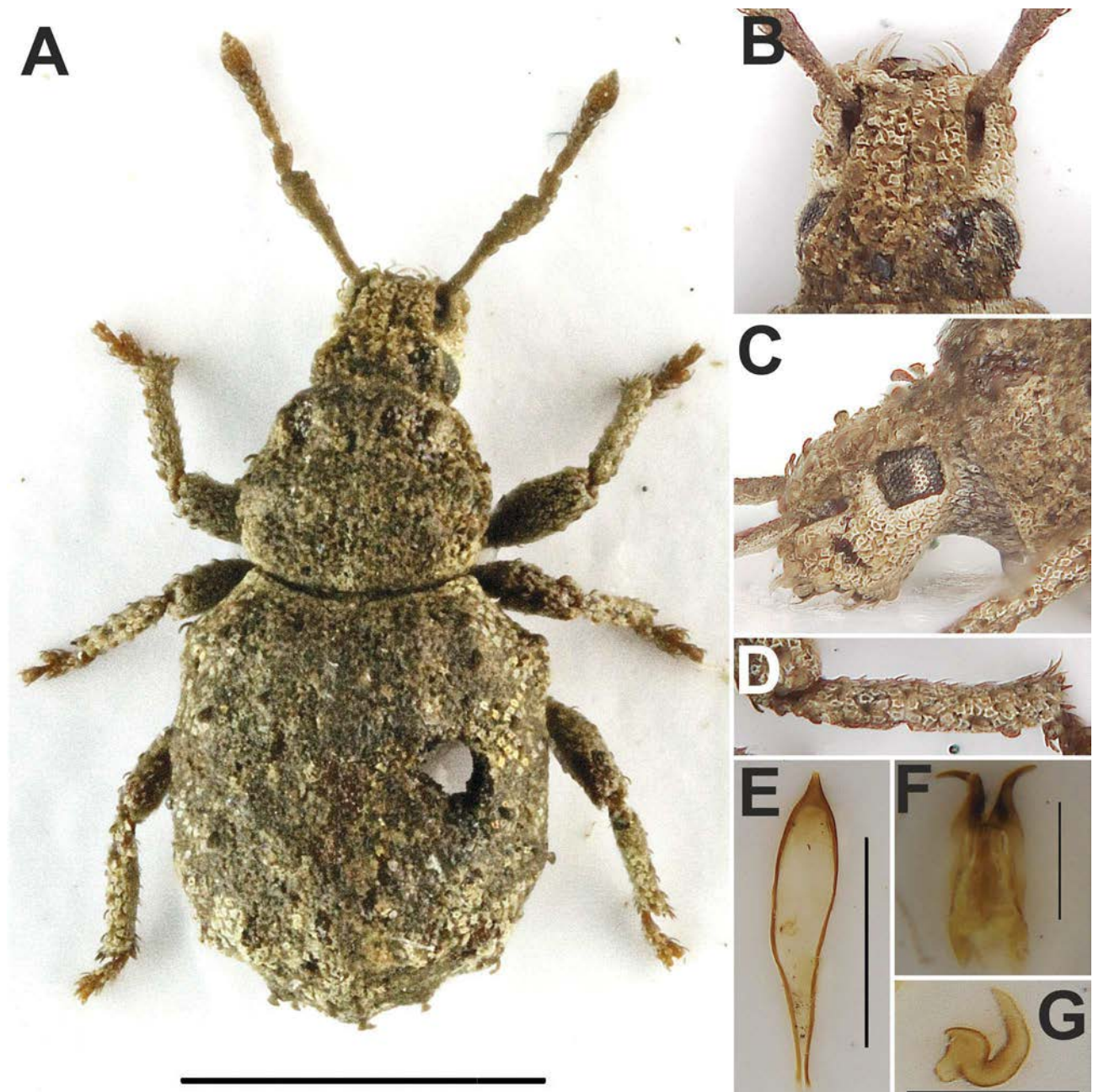


FIGURE 9. *Pentatrachyphloeus frici* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F**, **G**).

Ventrite 1 in middle about twice longer than ventrite 2 and slightly shorter than ventrites 2–4 combined, behind metacoxa $1.5 \times$ longer than ventrite 2; ventrite 2 long, about as long as ventrite 3 and 4 combined. Suture 1 straight, finer than the other sutures. Metaventral process distinctly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of spatulate setae.

Male genitalia. Penis (Fig. 9E) moderately long, widest at midlength with regularly rounded sides, tip shortly elongated with concave sides.

Female genitalia. Gonocoxites (Fig. 9F) articulated, proximal portion slender, flat, regularly tapered to distal part, here very slender and sharply pointed, conspicuously laterally curved, sabre-shaped and sclerotised, without visible styli. Sternite VIII with long and slender apodeme and small, umbrella-shaped plate, distinctly wider than long. Spermatheca (Fig. 9G) with long and regularly curved cornu; corpus large, rounded; ramus large, isodiametric; nodulus very small, hump-shaped.

Derivation of name. This species is dedicated to Alberto Vojtěch Frič (1882–1944), Czech traveller, botanist and ethnographer, who spent 12 years in South and Central America and who was in his time a famous cactus specialist.

Biology. Unknown.

Distribution. South Africa, Limpopo.

Differential diagnosis. Among species with 7-segmented funicle and raised elytral setae only on odd intervals this is the only species with distinct humps on odd elytral intervals and obliquely subtruncate humeri.

***Pentatrachyphloeus grobellaarae* sp. nov.**

(Figs 10A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:231BAC40-E57F-4AE8-8271-4A31D42F2024>

Type locality. Fannies Island Camp, St. Lucia lake, 28°06' S, 32°15' E (KwaZulu-Natal, South Africa).

Type material. Holotype: ♂, 'SOUTH AFRICA, NATAL [KwaZulu-Natal], Fannies Island Camp, St. Lucia [lake], 28.10S 32.25E, 14-16.i.1981, I. M. Millar [lgt.]' (SANC); Paratypes: 3 ♂♂ 1 ♀, the same data as holotype (SANC); 1 ♂, 'SÜDAFRICA [South Africa, KwaZulu-Natal], Mkuze Game Res., 27°36'S/32°13'E, 2.-4.II.1994, leg. U. Göllner' (MFNB).

Description (Figs 10A–G). Body length 1.94–2.13 mm, holotype 2.13 mm. Body (Fig. 10A) dark brownish, basal half of funicles and tarsi paler, reddish brown. Appressed scales on dorsal part of body irregularly angular, some of them with fine longitudinal striae on elytra or with depressed middle on rostrum, on elytra leaving only very narrow space among them, 3 across interval width. Elytra with conspicuous, wide, spatulate, semierect setae creating one dense row on each interval, widest at tips, distinctly wider than diameter of one appressed scale, about longer than interval width or slightly shorter, distance of two setae 3–4 × longer than length of one seta. Pronotum and head with rostrum with short subspatulate setae, about half of length of elytral interval, densely irregularly arranged, prominent from pronotal outline. Scapes, femora and tibiae irregularly covered with semiappressed short and slender subspatulate setae, hardly prominent from outline. Body vestiture yellowish brown, elytra with short transverse stripes of whitish and blackish scales, pronotum with two moderately wide, curved, longitudinal brownish stripes.

Rostrum (Figs 10A–C) 1.39–1.49 × wider than long, parallel-sided with straight sides, at base equally wide as at apex; laterally weakly regularly convex. Epifrons wide and flat, weakly tapered anteriorly with weakly concave sides, at apex about wider than three quarters of width of rostrum at same place, with slender longitudinal stria along whole length, continuing behind eyes. When cleared of scales moderately matt, roughly irregularly longitudinally punctate with slender longitudinal median stria and without developed transverse narrow sulcus. Antennal scrobes in dorsal view hardly visible at apical half; in lateral view slender, slightly curved, well edged, directed to middle of eyes, separated from them by very slender squamose stripe. Eyes moderately large, weakly convex and slightly prominent from outline of head; laterally subcircular, placed slightly above middle of head. Head wide and slightly convex, without tubercles above eyes; when cleared of scales rough with the same structure as epifrons.

Antennae (Fig. 10A) robust; scapes 4.0–4.2 × longer than wide, gradually enlarged apically, at midlength weakly curved, at apex 1.1 × wider than clubs. Funicles 6-segmented, gradually enlarged towards clubs; segment 1 robust, isodiametric, 1.5 × longer than segment 2, which is 1.1–1.2 × longer than wide; segments 3 and 4 1.3 × wider than long; segment 5 1.5 × wider than long and segment 6 1.7 × wider than long; clubs 1.5 × longer than wide.

Pronotum 1.48–1.56 × wider than long, widest at basal half with weakly rounded sides, at apical half distinctly tapered anteriorly, behind anterior margin weakly constricted. Disc regularly convex with slender longitudinal median stria along whole length; base weakly regularly arched. When cleared of scales, disc matt, finely densely

regularly punctate, slender stripe behind anterior margin unpunctate, smooth. In lateral view pronotum weakly convex, behind anterior margin flattened.

Elytra oval, $1.09\text{--}1.17 \times$ longer than wide, widest at anterior fifth, with weakly rounded sides. Base weakly arched. All intervals equally wide and almost flat, striae moderately wide. When cleared of scales intervals shiny, smooth; striae distinctly punctate, moderately wide. Humeral calli obliquely subtruncate. Posthumeral calli in dorso-lateral view distinct and prominent laterally. Elytra in lateral view almost flat.

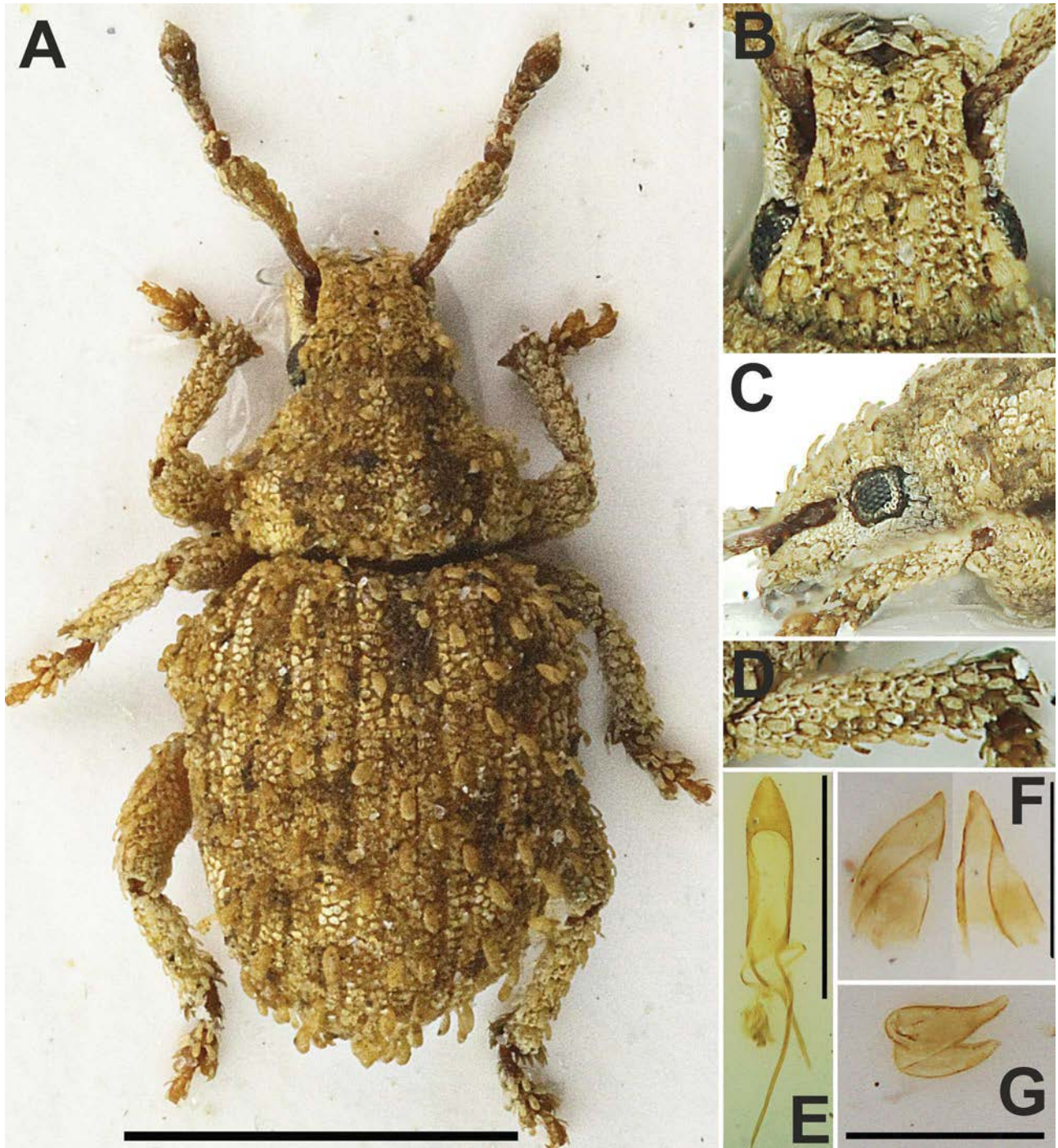


FIGURE 10. *Pentatrachyphloeus grobbelaarae* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F**, **G**).

Tibiae (Figs 10A, D) short and robust; protibiae $4.7\text{--}4.9 \times$ longer than wide, at apex subtruncate, straight, with 4–5 small and short, brownish, sparse setae and inside curved mucro, laterally with distinct, moderately deep

indentation reaching to about seventh of length of tibiae, with one small short spine at the end, indistinctly laterally prominent. Meso- and metatibiae densely squamose, laterally armed with moderately dense, short, numerous, blackish spines and one short mucro. Tarsi with segment 2 $1.5 \times$ wider than long; segment 3 $1.4 \times$ wider than long and $1.4 \times$ wider than segment 2; onychium $1.1 \times$ longer than segment 3; claws fused at basal part, then divaricate.

Abdominal ventrite 1 in middle about twice longer than ventrite 2, behind metacoxa about wider than ventrite 2; ventrite 2 equally long as ventrites 3 and 4 combined. Suture 1 slightly arched, finer than the others. Metaventral process slightly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of long and wide, spatulate setae.

Male genitalia. Penis (Fig. 10E) moderately long and slender, ventrally in basal two thirds subparallel-sided, in apical third subtriangular with slightly rounded sides, tip slender, rounded; in lateral view slender, almost straight.

Female genitalia. Gonocoxites (Fig. 10F) articulated, wide, subtriangular, evenly tapered apicad, well sclerotised mainly in lateral and distal part, styli not visible. Sternite VIII with long and slender apodeme and moderately small plate, halfcircle, weakly wider than long. Spermatheca (Fig. 10G) with very short and evenly tapered cornu; corpus elongated; ramus short and wide, rounded; nodulus distinctly longer than wide, subtriangular, evenly tapered apicad, longer than cornu.

Derivation of name. The new species is dedicated to Elizabeth (Beth) Grobbelaar, an entomologist from the Agricultural Research Council in Pretoria, South Africa, colleague and friend of the first author, working on taxonomy of Chrysomelidae and Cerambycidae.

Biology. Unknown.

Distribution. South Africa, KwaZulu-Natal.

Differential diagnosis. Singular species, very easily separable from all others by body vestiture with dense conspicuous rows of semierect spatulate, wide setae on each elytral interval and moderately deep lateral indentation at the apex of protibiae.

***Pentatrachyphloeus hanzelkai* sp. nov.**

(Figs 11A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:DE6BCD87-4496-44E7-8B07-2C03DE6470F5>

Type locality. Sani Pass, ca 1700 m (KwaZulu-Natal, South Africa).

Type material. Holotype: ♀, 'SOUTH AFRICA: Natal [KwaZulu-Natal], Sani Pass, 10 March 1968, 5400 ft., James A. Slater [lgt.]' (SANC).

Description (Figs 11A–E). Body length 2.94 mm, holotype. Body (Fig. 11A) brownish, antennae and tibiae with tarsi paler, reddish brown. Appressed scales on elytra hardly visible due to strong soil incrustation, on pronotum and head with rostrum rounded, finely longitudinally striate, weakly imbricated. Elytra with sparse row of wide, spatulate, semierect setae, widest at midlength, finely longitudinally striate, growing just from tips of elytral protuberances on odd intervals. Pronotum and head with rostrum with irregularly scattered similar semierect setae, only weakly shorter. Scapes and femora with tibiae with semiappressed subspatulate setae, not prominent from outline.

Rostrum (Figs 11A–C) short and wide, $1.52 \times$ wider than long, from base weakly evenly enlarged anteriorly with straight sides, at apex $1.06 \times$ wider than at base; laterally distinctly convex. Epifrons distinctly tapered anteriorly with slightly convex sides, longitudinally shallowly depressed at middle, with swollen margins, weakly separated from head by slender V-shaped sulcus, concealed by scales. Antennal scrobes dorsally hardly visible; in lateral view curved, slender, moderately deep, directed to middle of eyes, separated from them by slender squamose stripe. Eyes small, subcircular, convex, dorsally partly concealed by dorso-laterally prominent, supraocular tubercles, laterally placed just in the middle of head. Head very short and wide, slightly enlarged posteriorly, with conspicuous supraocular longitudinal tubercles partly concealing eyes in dorsal view.

Antennae (Fig. 11A) with robust scapes and slender funicles; scapes $4.2 \times$ longer than wide, at basal half weakly S-shaped curved, at midlength abruptly enlarged and in apical half subparallel-sided, at apex $1.3 \times$ wider than clubs. Funicles 7-segmented; segments 1 and 2 slender, conical; segment 1 twice longer than wide and $1.6 \times$ longer than segment 2, which is $1.5 \times$ longer than wide; segments 3–5 $1.1 \times$ wider than long; segment 6 $1.2 \times$ wider than long; segment 7 $1.3 \times$ wider than long; clubs $1.8 \times$ longer than wide.

Pronotum short and wide, $1.69 \times$ wider than long, widest at basal third, with weakly rounded sides, behind anterior margin constricted. Disc with slender and shallow, ill-defined longitudinal median furrow. Base slightly arched. Pronotum in lateral view convex, behind anterior margin flattened.

Elytra oval, widest at midlength, $1.19 \times$ longer than wide, with weakly rounded sides, broadly rounded at apex. Base almost straight. Odd intervals except of interval 1 elevated, with distinct and sparse small tubercles, 7–8 along length of intervals 3 and 5. Posthumeral calli small, visible only in dorso-lateral view. When cleared of scales intervals shiny, smooth; striae distinctly punctate. Elytra in lateral view convex.

Protibiae (Fig. 11D) robust, $4.5 \times$ longer than wide, at apex rounded, not enlarged laterally, armed with 8 short and sparse, bristle-shaped blackish spines, longer at outer part than at inner, and with brownish mucro. Meso- and metatibiae with apical surface squamose, only around tarsal insertion glabrous, laterally armed with dense, moderately long, bristle-shaped blackish spines and with brownish mucro. Tarsi with segment 2 $1.3 \times$ wider than long; segment 3 $1.6 \times$ wider than long and $1.3 \times$ wider than segment 2, and onychium $1.4 \times$ longer than segment 3. Claws fused at basal part, then divaricate.

Abdominal ventrite 1 in middle $3 \times$ longer than ventrite 2, behind metacoxa about equally wide as ventrite 2; ventrite 2 short, equally long as ventrite 3 or 4. Suture between ventrites 1 and 2 U-shaped. Metaventral process equally wide as transverse diameter of metacoxa.

Male. Unknown.

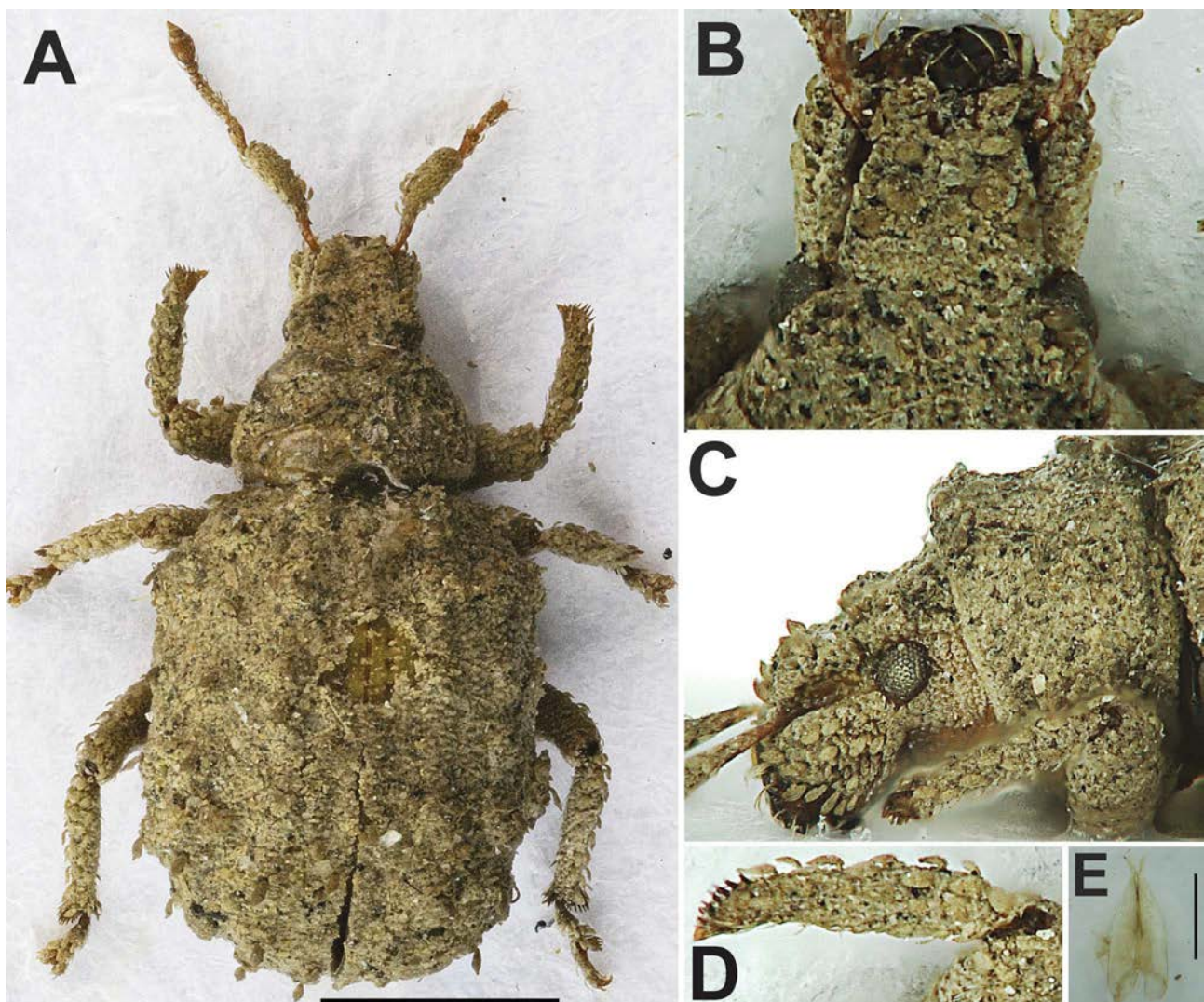


FIGURE 11. *Pentatrachyphloeus hanzelkai* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—gonocoxite. Scale bars: 1 mm (**A**), and 0.25 mm (**E**).

Female genitalia. Gonocoxites (Fig. 11E) longly subtriangular, evenly narrowly tapered apicad, with long apical styli. Sternite VIII with long and slender apodeme; plate moderately large, subtriangular, about isodiametric. Spermatheca not examined.

Derivation of name. This species is dedicated to Jiří Hanzelka (1920-2003), Czech traveller, who together with Miroslav Zikmund travelled all over Africa, South America, Asia and Oceania by car.

Biology. Unknown.

Distribution. South Africa, KwaZulu-Natal.

Differential diagnosis. Singular species, very easily separable from all others by the following set of characters: rostrum evenly enlarged anteriorly, funicles 7-segmented, eyes dorsally partly concealed by dorso-laterally prominent tubercles, elytra on odd intervals with distinct tubercles, the apex of protibiae with 8 blackish, slender, bristle-shaped spines.

***Pentatrachyphloeus holubi* sp. nov.**

(Figs 12A–F)

<http://zoobank.org/urn:lsid:zoobank.org:act:3A7691A1-98F1-4D7A-8F52-7C7C99E9DAAD>

Type locality. Kruger National Park (Mpumalanga, South Africa).

Type material. Holotype: ♀, 'MUS. ROY. AFR. CENTR. [South Africa, Mpumalanga] Transvaal: Kruger Park, ex. Coll. Dr Breuning' (SANC).

Description (Figs 12A–F). Body length 2.56 mm, holotype. Body (Fig. 12A) brownish, antennae and legs reddish brown. Dorsal part of body densely covered with imbricated oval appressed scales, depressed in middle, 3–4 across width of one interval. Elytra with conspicuous semierect light brownish subspatulate setae, creating one regular row on each interval, almost longer than width of one interval, distance between two setae about 3–4 × longer than length of one seta. Pronotum and head with rostrum with identical setae, setae on pronotum weakly, on head with rostrum distinctly shorter than elytral ones, densely irregularly scattered. Scapes, femora and tibiae with irregularly scattered semiappressed slender setae, hardly prominent from outline. Body vestiture light brownish.

Rostrum (Figs 12A–C) 1.37 × wider than long, weakly tapered anteriorly with slightly concave sides, at base 1.14 × wider than at apex; laterally weakly convex. Epifrons wide and flat, weakly tapered anteriorly with concave sides, separated from head by slender transverse sulcus and with median longitudinal furrow, both concealed by scales. Antennal scrobes in dorsal view narrowly reniform at apical half; in lateral view almost straight, slightly enlarged posteriorly, separated from eyes by wide squamose stripe. Eyes of medium size, weakly convex and faintly prominent from outline of head; laterally subcircular, placed at dorsal third of head. Head wide and weakly convex, with low tubercles above eyes.

Antennae (Fig. 12A) moderately slender; scapes straight, slightly evenly enlarged apicad, 4.9 × longer than wide and 1.2 × longer than funicles, at apex 0.9 × wider than clubs. Funicles 7-segmented; segments 1 long, slender and conical; segment 1 1.6 × longer than wide and twice longer than segment 2, which is 1.3 × longer than wide; segments 3 and 4 1.2 × wider than long; segment 5 1.4 × wider than long; segment 6 1.5 × wider than long; segment 7 1.6 × wider than long; clubs 1.6 × longer than wide.

Pronotum 1.41 × wider than long, widest behind midlength, distinctly constricted behind anterior margin. Disc regularly convex; base straight. In lateral view convex, behind anterior margin flattened.

Elytra oval, 1.29 × longer than wide, from base shortly obliquely subtruncate to weakly prominent posthumeral calli and here widest; sides subparallel-sided, apex broadly widened. Base weakly arched. All intervals equally wide and almost flat, striae narrow, concealed by scales. Elytra in lateral view convex.

Tibiae (Figs 12A, D) moderately slender; protibiae 5.4 × longer than wide, with lateral edge straight, at apex rounded with 5–6 sparse, short and small, yellowish spines and one inside curved long mucro. Meso- and metatibiae laterally armed with sparse, slender and long, yellowish brown spines and one long yellowish mucro. Tarsi slender; segment 2 1.3 × wider than long; segment 3 1.2 × wider than long and 1.2 × wider than segment 2; onychium 1.3 × longer than segment 3, distinctly enlarged apicad; claws connate at short basal part, parallel.

Abdominal ventrite 1 in middle about 1.5 × longer than ventrite 2 and distinctly shorter than ventrites 2–4 combined, behind metacoxa equally long as ventrite 2; ventrite 2 longer than ventrites 3 and 4 combined; ventrites 3 and 4 short. Suture 1 slightly sinuose, finer than the other sutures. Metaventral process slightly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of slender subspatulate setae.

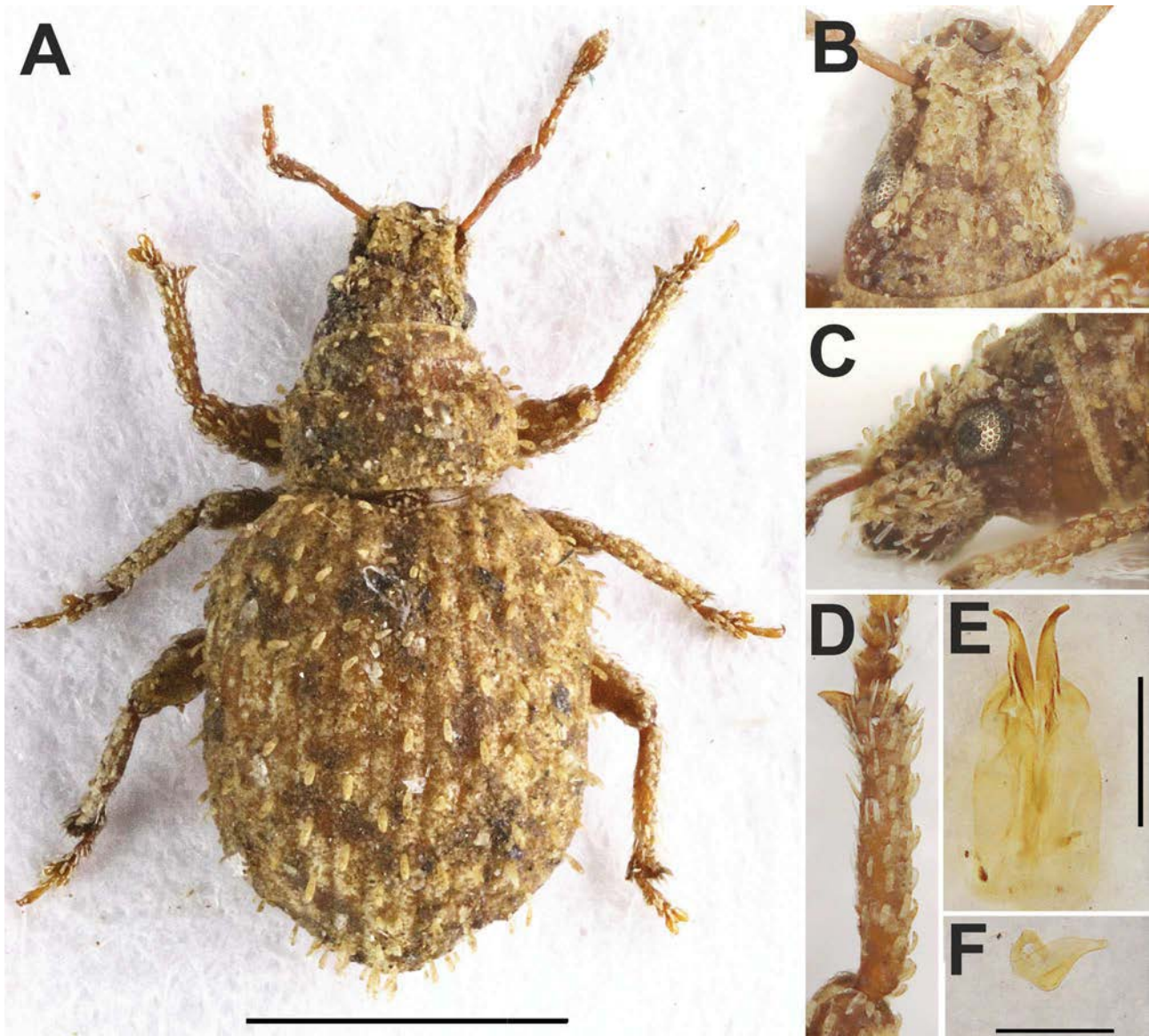


FIGURE 12. *Pentatrachyphloeus holubi* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—gonocoxite; **F**—spermatheca. Scale bars: 1 mm (**A**), and 0.25 mm (**E**, **F**).

Male. Unknown.

Female genitalia. Gonocoxites (Fig. 12E) articulated, proximal portion weakly sclerotised, weakly tapered apicad, at distal portion abruptly tapered to two very slender, more sclerotised, sabre-shaped arms, distinctly curved outside apically, without visible styli. Sternite VIII with slender and long apodeme and with short and wide, umbrella-shaped plate, more than twice wider than long. Spermatheca (Fig. 12F) with slender cornu; corpus large, elongated; ramus only indicated as rounded subtriangular hump; nodulus tubular, straight, slightly tapered apicad, more than twice longer than wide.

Derivation of name. This species is dedicated to Dr Emil Holub (1847–1902), a Czech doctor, traveller and ethnographer, who visited Africa between 1872–1879 and 1883–1887 during his scientific expeditions and made extensive natural and ethnographic collections. During his second expedition, Holub was going to cross all of Africa from Cape Town to Cairo on foot, but this expedition was suspended by his ill health resulting in his death. Entomological material collected by Emil Holub is deposited in the National Museum in Prague.

Biology. Unknown.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. Together with *P. oberprieleri* sp. nov. the only species with 7-segmented funicle,

rostrum not enlarged apically and erect elytral setae on all intervals. *P. holubi* **sp. nov.** is easily distinguished from *P. oberprieleri* **sp. nov.** by erect elytral setae almost longer than width of one interval (vs. about longer than half of width of one interval in *P. oberprieleri* **sp. nov.**), rostrum slightly tapered apicad (vs. parallel-sided), scapes at apex $0.9 \times$ wider than clubs (vs. $1.1\text{--}1.2 \times$ wider than clubs), suture between ventrites 1 and 2 sinuose (vs. straight), gonocoxites abruptly tapered apically to slender, sabre-shaped arms, without styli (vs. evenly tapered apically, with long apical styli) and plate of female sternite VIII more than twice wider than long (vs. isodiametric).

***Pentatrachyphloeus howdenae* sp. nov.**

(Figs 13A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:40D1FF7B-6722-4D12-9AC6-6AF89DF0EA5E>

Type locality. Kruger National Park, Pretoriuskop, 200 m (Mpumalanga, South Africa).

Type material. Holotype: ♂, 'S. [South] AFRICA, Tvl. [Mpumalanga], Kruger N. Pk. [National Park], Pretoriuskop, 13.XII.1985, 200m, H. & A. Howden [lgt.]' (SANC).

Description (Figs 13A–E). Body length 1.59 mm, holotype. Body (Fig. 13A) brownish. Appressed scales on dorsal part irregularly rounded, almost concealing integument, on elytra 4 across width of interval, in lateral part of rostrum paler, whitish, distinctly longitudinally striate. Appressed scales on scapes, femora and tibiae similar to those on elytra, only smaller. Semierect setae on elytra conspicuous, very sparse, subspatulate, widest apicad, slightly longer than half width of interval, 6–7 along length of interval 3 and 5. Semierect setae on pronotum and head with rostrum similar to those on elytra, shorter, sparsely irregularly scattered. Scapes, femora and tibiae with semiappressed, subspatulate setae, slightly smaller than pronotal ones.

Rostrum (Figs 13A–C) wide, $1.50 \times$ wider than long, slightly tapered anteriorly with straight sides, at base $1.14 \times$ wider than at apex; laterally convex. Epifrons conspicuously tapered anteriorly with almost straight sides, at apex $0.6 \times$ wider than rostrum at the same place, flat. Antennal scrobes dorsally hardly visible in anterior half; laterally distinctly curved, moderately wide, directed to lower half of eyes, separated from eyes by wide squamose stripe. Eyes slightly convex, moderately large, dorsally hardly visible and not prominent from outline of head; laterally subrectangular, placed about at middle of head. Head flat and wide, distinctly tapered anteriorly, with low longitudinal tubercles above eyes, visible only in dorso-lateral view; head behind eyes constricted.

Antennae (Fig. 13A) moderately slender; scapes $1.6 \times$ longer than funicles, $5.6 \times$ longer than wide, almost straight, at apical half evenly enlarged anteriorly, at apex $0.8 \times$ wider than clubs. Funicles 6-segmented; segment 1 long and conical, $1.4 \times$ longer than wide and $2.1 \times$ longer than segment 2, which is short, $1.1 \times$ longer than wide; segment 3 $1.2 \times$ wider than long; segment 4 $1.3 \times$ wider than long; segment 5 $1.6 \times$ wider than long; segment 6 $1.7 \times$ wider than long; clubs $1.7 \times$ longer than wide.

Pronotum moderately slender, $1.18 \times$ wider than long, distinctly more slender than elytra, widest at midlength with rounded sides, distinctly more tapered anteriorly than posteriorly, behind anterior margin distinctly widely constricted, at basal half with three weakly visible, ill-defined, wide, shallow, longitudinal depressions. Base regularly arched. Pronotum in lateral view distinctly convex, behind anterior margin constricted.

Elytra oval, $1.25 \times$ longer than wide, obliquely subtruncate from base to posthumeral calli, slightly visible dorsally and well visible in dorso-lateral view; elytra subparallel-sided, broadly rounded at apex. Base arched. Odd intervals elevated, interval 1 mainly at posterior half, with hardly visible small and low protuberances along the whole length; even intervals flat. Striae completely concealed by scales. Elytra in lateral view distinctly convex.

Tibiae (Figs 13A, D) short and robust, protibiae $6.0 \times$ longer than wide, laterally with straight edge, apex rounded, armed with 4–5 short and sparse, brownish spines and inside curved mucro. Meso- and metatibiae laterally armed with sparse short brownish spines and inside curved mucro; apical surface densely squamose. Tarsi moderately slender; segment 2 $1.6 \times$ wider than long segment 3 $1.4 \times$ wider than long and $1.2 \times$ wider than segment 2; onychium $1.7 \times$ longer than segment 3; claws fused at basal part, then divergent.

Abdominal ventrite 1 in middle almost $4 \times$ longer than ventrite 2, behind metacoxa about $3 \times$ longer than ventrite 2; ventrite 2 slightly longer than ventrite 3 or 4, shorter than ventrites 3 and 4 combined. Suture 1 almost straight, finer than the others. Metaventral process distinctly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate setae.

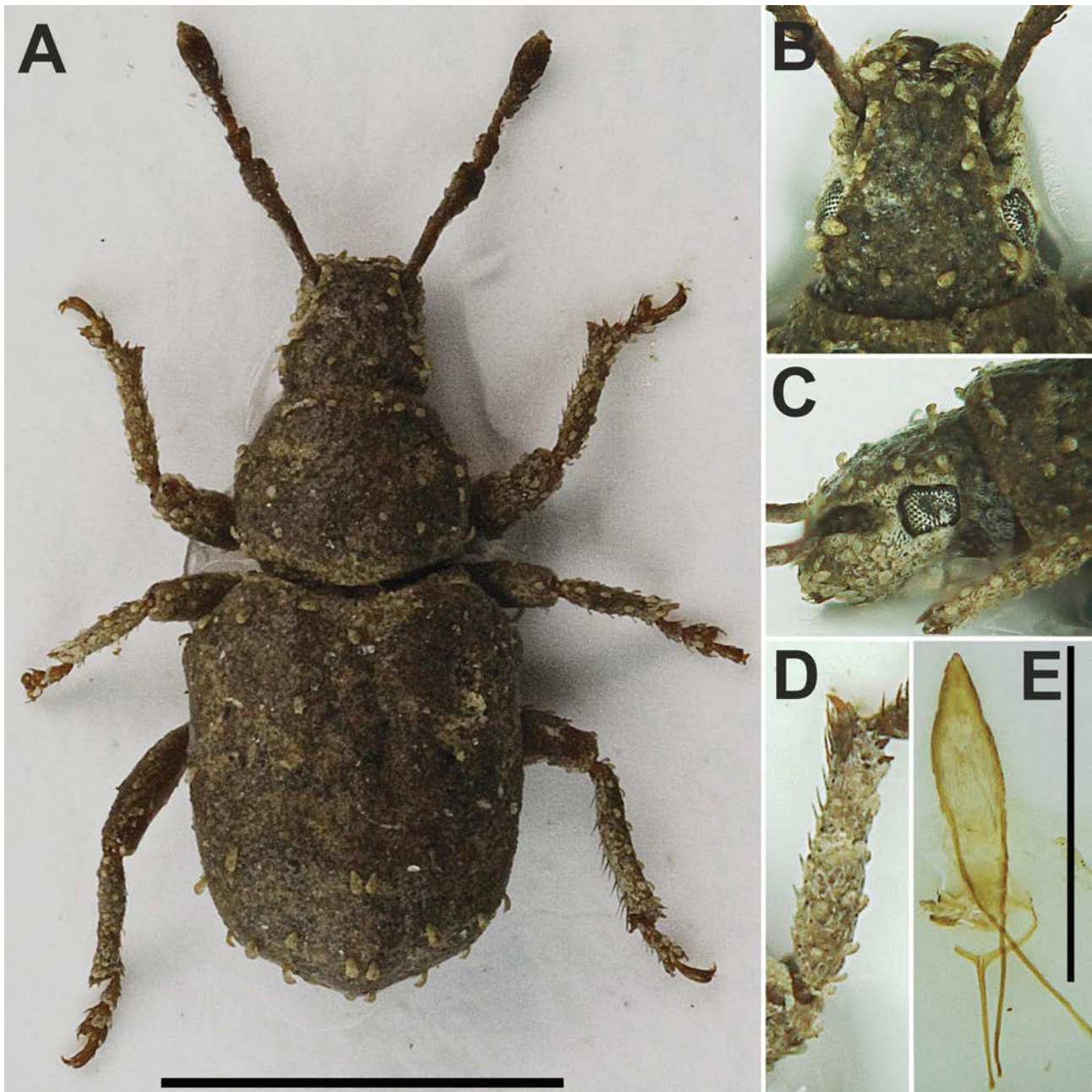


FIGURE 13. *Pentatrachyphloeus howdenae* **sp. nov.** **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus. Scale bars: 1 mm (**A**), and 0.5 mm (**E**).

Male genitalia. Penis (Fig. 13E) short, widest near the base, evenly regularly tapered apicad with slightly rounded sides, tip slender, pointed. Laterally slender, regularly curved.

Female. Unknown.

Derivation of name. This species is dedicated to Anne Elizabeth Howden (1927–2016), Canadian entomologist dealing mainly with the taxonomy of weevils, author of several comprehensive monographs regarding mainly weevils of South America.

Biology. Unknown.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. *Pentatrachyphloeus howdenae* **sp. nov.** is among species with 6-segmented funicle with slender pronotum and elytra together with *P. tenuicollis* **sp. nov.** the only species with odd elytral intervals elevated with raised setae. It is possible to distinguish it from *P. tenuicollis* **sp. nov.** by wider rostrum, longer onychium and penis evenly tapered apicad.

***Pentatrachyphloeus hystrix* sp. nov.**

(Figs 14A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:FDC94B05-FD93-4168-80D4-2B884D20ACE8>

Type locality. Kruger National Park, Satara, 24°23' S, 31°47' E (Mpumalanga, South Africa).

Type material. Holotype: ♂, 'SOUTH AFRICA [Mpumalanga]: KRUGER NATIONAL PARK: Satara, 24°23'S 31°47'E, 16.xii.1985, CH. Scholtz [lgt.]' (SANC).

Description (Figs 14A–E). Body length 2.19 mm, holotype. Body (Fig. 14A) dark brownish, antennae and legs brownish. Appressed scales on elytra rounded, densely covered integument, 3–4 across width of one interval; scales on pronotum, head and rostrum dense, distinctly depressed at middle. Elytra with conspicuous row of erect, long, slender, subspatulate setae widest at midlength, only slightly wider than diameter of one appressed scale, slightly longer than width of one interval, distance of two setae shorter than twice of their length. Pronotum with similar erect setae as elytral ones, only slightly shorter, prominent from outline; head with rostrum with distinctly shorter setae than elytra. Scapes, femora and tibiae irregularly scattered with slender and short, subspatulate setae, hardly prominent from outline. Body vestiture dark brownish, elytra with light brownish short longitudinal stripes on intervals 4 and 5 and with short transverse stripe at posterior declivity; pronotum with three longitudinal, slender light brownish stripes.

Rostrum (Figs 14A–C) $1.41 \times$ wider than long, parallel-sided with straight sides, at base equally wide as at apex; laterally weakly regularly convex. Epifrons subparallel-sided with straight sides, at apex about wider than three quarters of width of rostrum at the same place. When cleared of scales flat, without any longitudinal sulcus, matt, irregularly densely punctate, separated from head by slender V-shaped sulcus. Antennal scrobes dorsally hardly visible in apical part; in lateral view slender, weakly curved, well edged, directed to the middle of eyes, separated from them by very slender squamose stripe. Eyes moderately large, distinctly convex and prominent from outline of head; laterally subcircular, placed above middle of head. Head wide and slightly shallowly depressed, without tubercles above eyes; when cleared of scales with the same structure as epifrons, with slender longitudinal median stria.

Antennae (Fig. 14A) slender; scapes $5.3 \times$ longer than wide, at basal half weakly S-shaped, slender, at apical half gradually enlarged, at apex $0.8 \times$ wider than clubs; funicles 6-segmented; funicle segment 1 $1.7 \times$ longer than wide and twice longer than segment 2, which is $1.3 \times$ longer than wide; segments 3–5 $1.2 \times$ wider than long; segment 6 $1.5 \times$ wider than long; clubs $1.6 \times$ longer than wide.

Pronotum $1.42 \times$ wider than long, widest just behind midlength, with distinctly rounded sides, anteriorly more tapered than posteriad, behind anterior margin weakly constricted. Disc regularly convex; base almost straight. When cleared of scales matt, finely regularly, moderately dense punctate, slender stripe behind anterior margin unpunctate, smooth, shiny. In lateral view pronotum almost flat, behind anterior margin flattened.

Elytra oval, $1.19 \times$ longer than wide, widest at midlength, with regularly rounded sides. Base almost straight. All intervals equally wide and flat, striae slender. Humeral calli regularly rounded. Posthumeral calli indistinct in dorso-lateral view. Elytra in lateral view almost flat.

Tibiae (Figs 14A, D) short and robust; protibiae $5.7 \times$ longer than wide, at apex subtruncate, straight, with one longer, laterally placed yellowish spine and 3–4 very short, blackish, sparse small spines and inside curved yellowish mucro, laterally with short and shallow indentation reaching to about one tenth length of tibiae, terminated by laterally prominent short yellowish spine. Meso- and metatibiae densely squamose, laterally armed with moderately dense, short, numerous, blackish spines and one short mucro. Tarsi with segment 2 $1.4 \times$ wider than long; segment 3 $1.3 \times$ wider than long and $1.4 \times$ wider than segment 2; onychium $1.2 \times$ longer than segment 3.

Abdominal ventrite 1 in middle equally long as ventrite 2, behind metacoxa slightly longer than ventrite 2; ventrite 2 distinctly longer than ventrites 3 and 4 combined. Suture 1 distinctly arched, finer than the others. Metaventral process slightly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate setae.

Male genitalia. Penis (Fig. 14E) long and slender, ventrally widest at base, evenly tapered apicad with almost straight sides, tip slender, rounded; in lateral view slender, almost straight.

Female. Unknown.

Derivation of name. The dense long conspicuous setae on the dorsal part of the body suggested the Latin name of this new species, which evokes the porcupine, *Hystrix* Linnaeus, 1758.

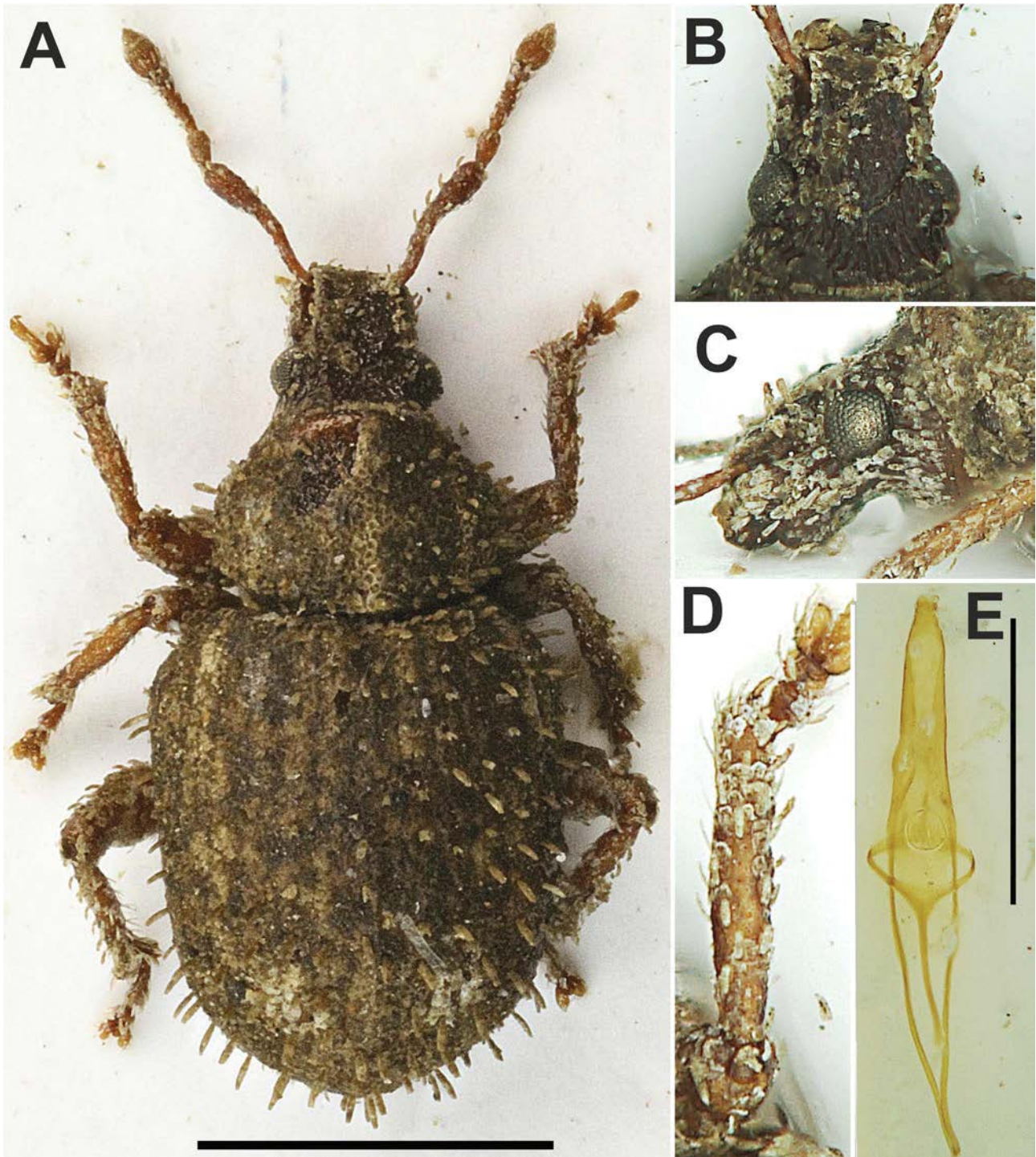


FIGURE 14. *Pentatrachyphloeus hystrix* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus. Scale bars: 1 mm (A), and 0.5 mm (E).

Biology. Unknown.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. Unusual species, very easily separated from all others by body vestiture with dense conspicuous rows of erect subspatulate setae on each elytral interval, laterally prominent along the whole length of pronotum and elytra and by conspicuously arched suture between ventrites 1 and 2.

***Pentatrachyphloeus insignicornis* sp. nov.**

(Figs 15A–F)

<http://zoobank.org/urn:lsid:zoobank.org:act:4F112854-940C-4BD0-BB9C-DF3A67A9337F>

Type locality. Lost Valley, Giants Castle Nature Reserve, 2100 m (KwaZulu-Natal, South Africa).

Type material. Holotype: ♀, '[South Africa, KwaZulu-Natal] LOST VALLEY, GIANTS CASTLE NAT. RES., 8-X-1983, 2100 m, SE 29 29 Ab, C. H. SCHOLTZ' (SANC).

Description (Figs 15A–F). Body length 2.13 mm, holotype. Body (Fig. 15A) dark brownish, tarsi paler, light brownish; antennae blackish. Appressed scales on body hardly recognizable through soil incrustation. Semiappressed setae on elytra short but well visible, spatulate, slightly longer than wide, finely longitudinally striate, forming one very dense regular row on each odd intervals, distance between two setae slightly longer than length of one seta, about longer than third of width of one interval, blackish, with only several randomly scattered whitish setae. Pronotum and head with rostrum with identical setae as elytral ones, irregularly scattered with dense row on margins of epifrons and above eyes, on disc of pronotum blackish, in lateral parts of pronotum nad head with rostrum whitish. Femora and tibiae with the same setae, only slightly shorter, densely irregularly scattered; scapes with semiappressed narrow blackish setae. Body vestiture dark brownish.

Rostrum (Figs 15A–C) $1.27 \times$ wider than long, at base $1.04 \times$ wider than at apex, slightly regularly tapered anteriorly with straight sides; laterally convex. Epifrons flat, distinctly tapered anteriorly with straight sides, at apex slightly wider than half of width of rostrum at same place, separated from head by V-shaped sulcus completely concealed by scales. Antennal scrobes dorsally hardly visible as very narrow furrows at apical part of rostrum; in lateral view narrow, furrow-shaped, weakly curved, directed to middle of eyes, separated from them by wide squamose stripe. Eyes small, weakly convex, hardly prominent from outline of head, dorsally partly concealed by small tubercles, in lateral view placed in dorsal third of head. Head wide and flat, with small tubercles above eyes, behind eyes weakly enlarged posteriorly.

Antennae (Fig. 15A) monstrously robust; scapes $4.3 \times$ longer than wide, $1.4 \times$ longer than funicles, at midlength weakly curved, just at base wide, regularly enlarged from base to apex, at apex equally wide as clubs. Funicles 7-segmented; segments 1 and 2 subtriangular; segment 1 isodiametric, $1.4 \times$ as long and wide as segment 2, which is $1.2 \times$ wider than long; segments 3–6 $2.4 \times$ wider than long; segment 7 $2.8 \times$ wider than long and almost equally wide as clubs; clubs $1.4 \times$ longer than wide.

Pronotum $1.39 \times$ wider than long, widest at basal half with weakly rounded sides, regularly tapered anteriorly, weakly constricted behind anterior margin. Disc at basal half with middle and lateral longitudinal, wide, ill-defined, shallow depressions; when cleared of scales shiny, finely and sparsely punctate, with slender transverse stria before midlength. Base arched. Pronotum in lateral view convex, behind anterior margin flattened.

Elytra oval, $1.29 \times$ longer than wide, widest at midlength, with regularly rounded sides and broadly rounded at apex. Striae concealed by scales, odd intervals slightly more elevated than even ones. When cleared of scales striae finely punctate, intervals moderately shiny, finely and sparsely granulate. Posthumeral calli almost indistinct. Base arched; elytra in lateral view convex.

Tibiae (Figs 15A, D) short and robust; protibiae $4.0 \times$ longer than wide, lateral edge straight, apex obliquely subtruncate, armed with short and fine, yellowish spines and short, inside curved mucro. Meso- and metatibiae laterally armed with fringe of fine, dense, bristle-shaped greyish spines with one short mucro. Tarsi short and robust; segment 2 $1.4 \times$ wider than long; segment 3 $1.7 \times$ wider than long and $1.2 \times$ wider than segment 2; onychium $1.5 \times$ longer than segment 3, distinctly enlarged apically; claws fused at short basal part, distinctly divergent.

Abdominal ventrite 1 in middle about $3 \times$ longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa longer than ventrite 2; ventrite 2 shorter than ventrites 3 and 4 combined; ventrites 3 and 4 long. Suture 1 arched, finer than the other sutures. Metaventral process narrower than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of spatulate setae.

Male. Unknown.

Female genitalia. Gonocoxites (Fig. 15E) articulated, proximal portion wide and flat, but abruptly tapered to distal part, here slender and sharply pointed, curved, sabre-shaped and sclerotised, styli subapical. Sternite VIII with long and slender apodeme; plate umbrella-shaped, short and wide, distinctly wider than long. Spermatheca (Fig. 15F) with long and slender, weakly curved cornu; corpus slender, elongated; ramus twice longer than wide, apically rounded; nodulus slender, C-shaped.

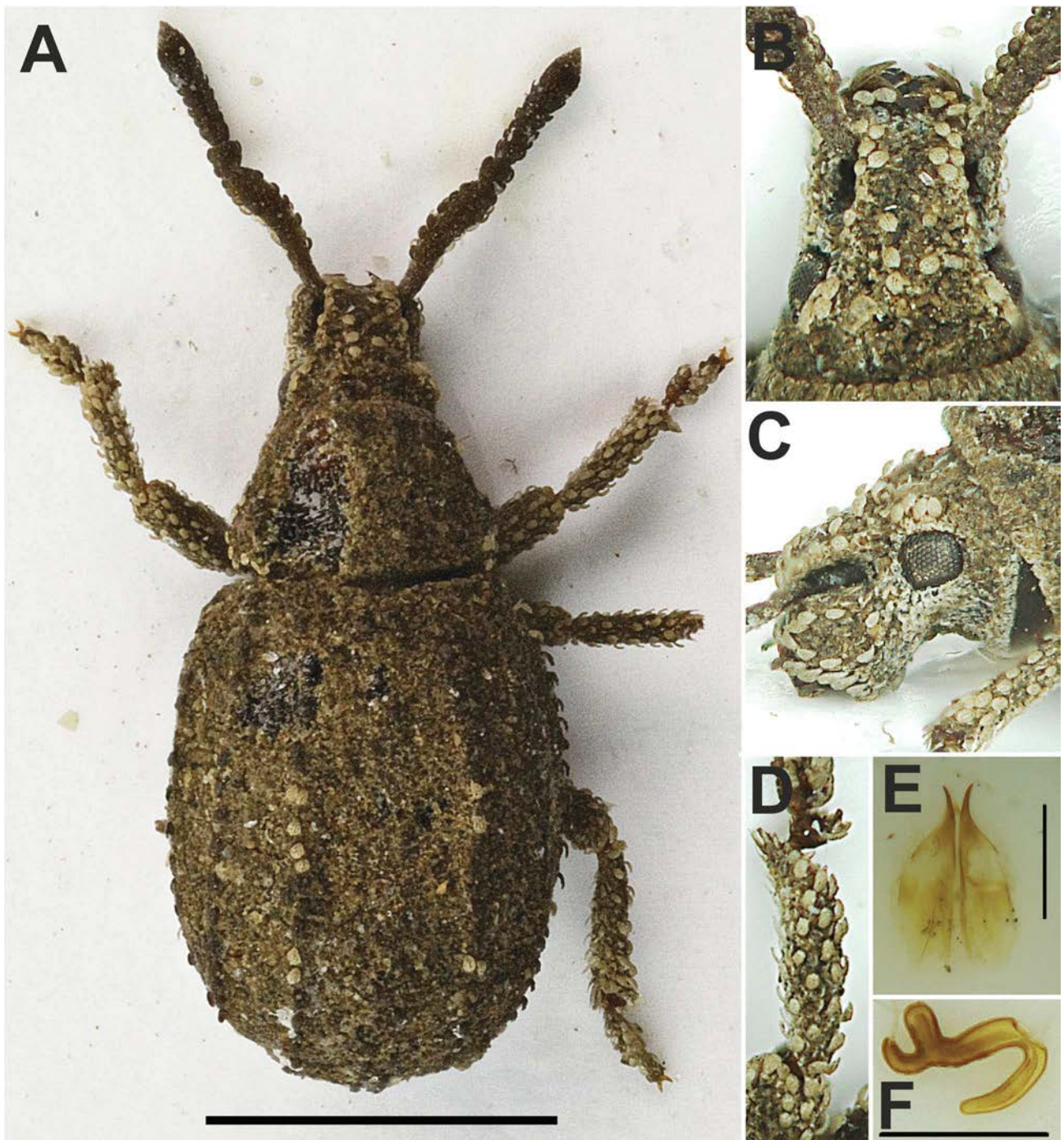


FIGURE 15. *Pentatrachyphloeus insignicornis* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—gonocoxite; **F**—spermatheca. Scale bars: 1 mm (**A**), and 0.25 mm (**E, F**).

Derivation of name. The exceptionally robust antennae suggested the Latin name of this new species.

Biology. Unknown.

Distribution. South Africa, KwaZulu-Natal.

Differential diagnosis. Unique species, together with *P. marshalli* sp. nov. easily distinguishable from the others by monstrously robust antennae, with segment 1 isodiametric, segment 2 wider than long, segments 3–5 conspicuously wider than long, scapes equally wide as protibia at midlength and clubs equally wide as last funicle segments. It is possible to distinguish it from *P. marshalli* sp. nov. by funicle segment 1 only slightly longer than segment 2, segment 2 only slightly wider than long and epifrons at apex wider than half of the width of the rostrum.

***Pentatrachyphloeus kalalovae* sp. nov.**

(Figs 16A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:CC89EE45-3ECA-472A-B582-101E047EA977>

Type locality. Soutpan, Pretoria Dist., 25°14' S, 28°03' E (Gauteng, South Africa).

Type material. Holotype, ♂, 'SOUTH AFRICA, TVL [Transvaal, Gauteng now], Soutpan, Pretoria Dist., 25.24S 28.06E, 21.iii.1990, N. O. Pienaar [lgt.]' (SANC).

Description (Figs 16A–E). Body length, holotype 1.81 mm. Body (Fig. 16A) dark brownish, basal half of scapes, funicles with clubs and tarsi paler, reddish brown. Appressed scales on dorsal part of body irregularly angular, with distinct longitudinal striae on elytra, 3 across interval width. Elytra with conspicuous, wide, spatulate setae creating one dense row on each interval, widest at tips, on disc semiappressed, at apical declivity semierect, twice longer than those on disc, distinctly wider than third of interval width, about longer than half width of one interval, distance of two setae 3–4 × longer than length of one seta. Pronotum and head with rostrum with short spatulate setae, about as long as those on elytral base, densely irregularly scattered. Scapes, femora and tibiae irregularly scattered with semiappressed short and slender subspatulate setae, hardly prominent from outline. Body vestiture light brown, raised setae paler.

Rostrum (Figs 16A–C) 1.42 × wider than long, widest at base, anteriorly slightly tapered with straight sides, at base 1.07 × wider than at apex; laterally weakly regularly convex. Epifrons wide and flat, weakly tapered anteriorly with straight sides, at apex about 0.8 × as wide as rostrum at same place, with slender longitudinal stria along whole length, continuing behind eyes. Antennal scrobes in dorsal view invisible; in lateral view enlarged posteriorly, slightly curved, well edged, directed to middle of eyes, separated from them by slender squamose stripe. Eyes moderately large, weakly convex and prominent from outline of head; laterally subcircular, placed at middle of head. Head wide and slightly convex, with low tubercles above eyes.

Antennae (Fig. 16A) robust; scapes 4.2 × longer than wide, at midlength curved, at apical half distinctly evenly enlarged apically, at apex 1.1 × wider than clubs, 1.2 × longer than funicles. Funicles 6-segmented, segments 1 and 2 long and conical; segment 1 1.7 × longer than wide, 1.4 × longer than segment 2, which is 1.6 × longer than wide; segments 3 and 4 1.3 × wider than long; segment 5 1.4 × wider than long and segment 6 1.5 × wider than long; clubs 1.9 × longer than wide.

Pronotum 1.47 × wider than long, widest at basal quarter with weakly rounded sides, at apical half distinctly tapered anteriorly, behind anterior margin weakly constricted. Disc regularly convex with short, slender longitudinal median stria at base; base weakly regularly arched. In lateral view pronotum weakly convex, behind anterior margin flattened.

Elytra oval, 1.29 × longer than wide, widest at anterior quarter, with weakly rounded sides. Base weakly arched. All intervals equally wide and almost flat, striae slender, slightly punctured. Posthumeral calli in dorso-lateral view prominent laterally. Elytra in lateral view weakly convex.

Tibiae (Figs 16A, D) short and robust; protibiae 4.92 × longer than wide, at apex rounded, laterally straight, with 6 sparse, small and short, blackish spines and inside curved mucro; meso- and metatibiae laterally armed with moderately dense, short, numerous, blackish slender spines and one short mucro. Tarsi with segment 2 1.8 × wider than long; segment 3 1.4 × wider than long and 1.2 × wider than segment 2; onychium 1.2 × longer than segment 3; claws fused at short basal part, weakly divaricate.

Abdominal ventrite 1 in middle about 3.5 × longer than ventrite 2, behind metacoxa about 1.5 × longer than ventrite 2; ventrite 2 1.5 × longer than ventrite 3 or 4. Suture 1 straight, finer than the others. Metaventral process wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of long and wide, spatulate setae.

Male genitalia. Penis (Fig. 16E) subparallel-sided along whole length, at apical third indistinctly shortly wider, then slightly and before apex distinctly tapered.

Female. Unknown.

Derivation of name. The new species is dedicated to Vlasta Kálalová di Lotti (1896–1971), Czech medical doctor, specializing in tropical diseases and entomology, who founded a hospital in Bagdad, and who during her stay in Iraq collected extensive material of all insects now deposited in Prague National Museum.

Biology. Unknown.

Distribution. South Africa, Gauteng.

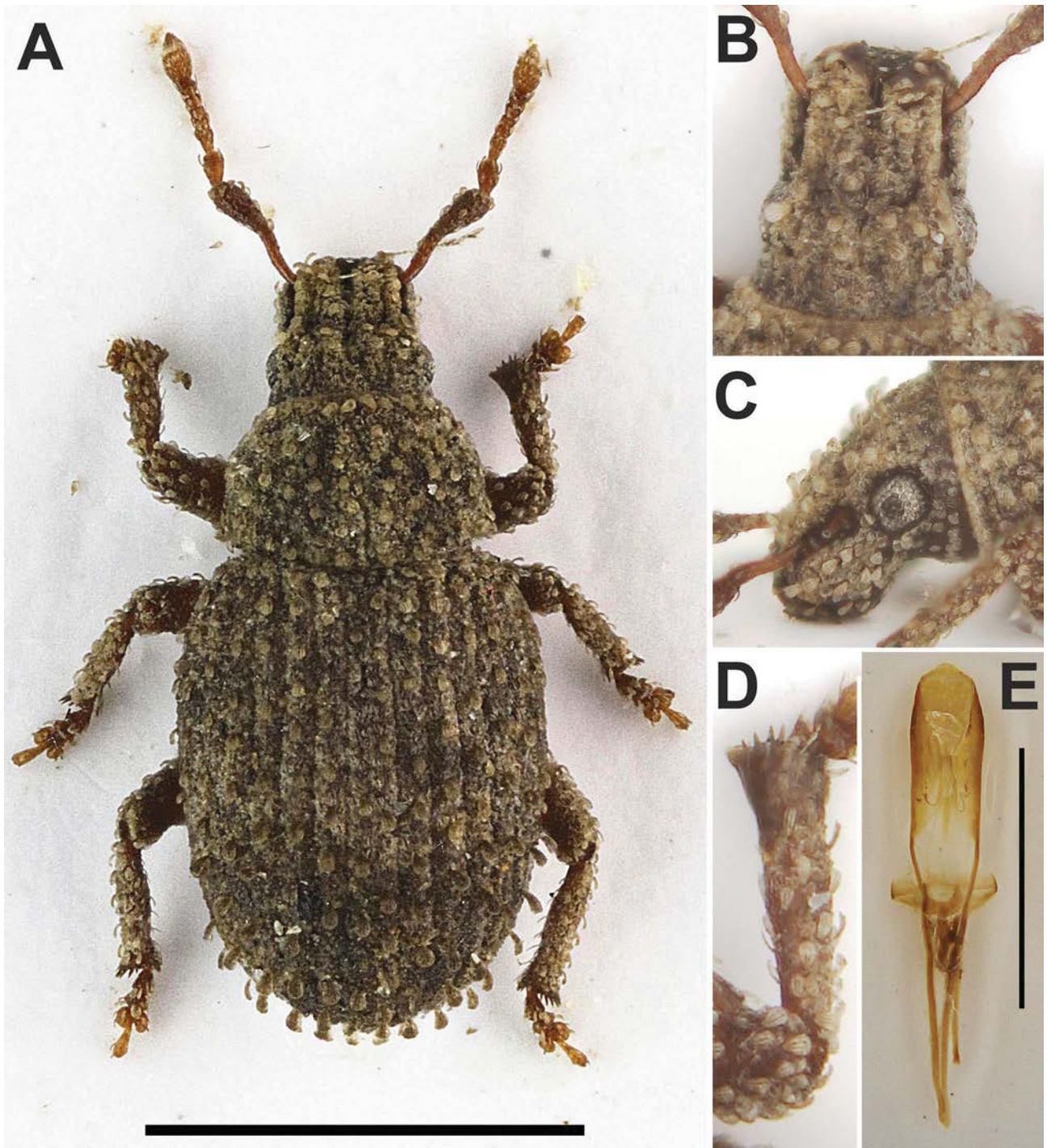


FIGURE 16. *Pentatrachyphloeus kalalovae* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus. Scale bars: 1 mm (**A**), and 0.5 mm (**E**).

Differential diagnosis. Among species with 6-segmented funicle, raised setae on all elytral intervals wide, spatulate, widest at apex and pronotum with semiappressed setae the newly described species is similar only to *P. grobbelaerae* sp. nov. *P. kalalovae* sp. nov. is possible to distinguish from it by elytral setae at apex twice longer than those on the disc, scapes enlarged at the apical half, funicle segments 1 and 2 more slender and longer, ventrite 2 shorter than ventrites 3 and 4 combined, and penis apically widely tapered.

***Pentatrachyphloeus kuscheli* sp. nov.**

(Figs 17A–D)

<http://zoobank.org/urn:lsid:zoobank.org:act:C699FF25-A61A-40ED-9CBE-EE7B96454625>

Type locality. ca 2.9 km north of Cato Ridge (KwaZulu-Natal, South Africa).

Type material. Holotype: ♀, 'SOUTH AFRICA: Natal [KwaZulu-Natal], 4.6 mi. N. Cato Ridge, 16 April 1968, JA&S Slater, T. Schuh [lgt.]' (SANC).

Description (Figs 17A–D). Body length 2.38 mm, holotype. Body (Fig. 17A) dark brownish, only basal part of scapes paler, reddish brown; spines at apical part of tibiae black, mucro yellowish. The whole body strongly incrustated by thick soil coat with hardly recognizable vestiture. Appressed scales small, moderately dense, irregularly angular, distance between two scales shorter than diameter of one scale. Semiappressed setae blackish, short and sparse, inconspicuous. Setae on elytra subspatulate, weakly longer than diameter of one appressed scale, form one sparse regular row on odd intervals. Setae on pronotum, head with rostrum, scapes, femora and tibiae shorter and narrower than on elytra, not prominent from outline.

Rostrum (Figs 17A–C) $1.52 \times$ wider than long, widest at base, here $1.14 \times$ wider than at apex, weakly regularly tapered anteriorly with slightly concave sides; laterally convex. Epifrons flat, weakly and shallowly longitudinally depressed, subparallel-sided, only in short apical part distinctly tapered anteriorly, separated from head by slender V-shaped sulcus, covered with scales. Epistome almost invisible, V-shaped. Antennal scrobes dorsally invisible; in lateral view weakly enlarged posteriorly, in short anterior part glabrous, then squamose, dorsal and ventral margin moderately visible as reaching posterior margin of eyes, dorsal margin creating short longitudinal tubercle above eyes, dorsally partly concealing them. Eyes small, subcircular, slightly convex, almost invisible in dorsal view; laterally placed just above middle of head. Head very short and wide, weakly enlarged posteriorly, with low, longitudinal supraocular tubercles, visible mainly in dorso-lateral view.

Antennae (Fig. 17A) short and robust; scapes $1.3 \times$ longer than funicles, $3.3 \times$ longer than wide, weakly curved at midlength, at apical half regularly enlarged apically, at apex $1.5 \times$ wider than clubs. Funicles 5-segmented; segment 1 and 2 slender and conical; segment 1 $1.6 \times$ longer than wide, $1.3 \times$ longer than segment 2, which is $1.7 \times$ longer than wide; segment 3 $1.1 \times$ wider than long; segment 4 $1.3 \times$ wider than long; segment 5 $1.5 \times$ wider than long; clubs $1.7 \times$ longer than wide.

Pronotum wide, $1.44 \times$ wider than long, widest at midlength, slightly tapered posteriorly and distinctly tapered anteriorly with wide constriction behind anterior margin. Disc with three wide longitudinal depressions, with ill-defined margins, reaching from base to anterior transverse constriction. Base distinctly, irregularly arched. Pronotum in lateral view distinctly convex, anterior third flattened.

Elytra subparallel-sided, $1.19 \times$ longer than wide, broadly rounded posteriorly, base distinctly arched. Interval 1 at posterior half enlarged and elevated; intervals 3, 5 and 7 along whole length weakly more elevated than even ones, at base more than on the disc, with very small, low, sparse protuberances along the whole length. Posthumeral calli well visible in dorso-lateral view. Elytra in lateral view almost flat.

Protibiae (Fig. 17D) robust, $3.6 \times$ longer than wide, at apex rounded, laterally and mesally enlarged, with 4 moderately distinct, sparse, black short and small spines and inside curved mucro; meso- and metatibiae at apex with 8–9 short brownish sparse spines and inside curved long mucro. Tarsi slender, segment 2 $1.3 \times$ wider than long; segment 3 $1.2 \times$ wider than long and $1.2 \times$ wider than segment 2; onychium $1.6 \times$ longer than segment 3, regularly enlarged apically; claws fused at short basal part, divergent.

Abdominal ventrite 1 in middle about $3 \times$ longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa twice longer than ventrite 2; ventrite 2 slightly longer than ventrite 3 or 4; ventrites 3 and 4 short. Suture 1 weakly arched, distinctly finer than the other sutures. Metaventral process somewhat wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate setae.

Male. Unknown.

Female genitalia. Not examined, lost during a historical remounting.

Derivation of name. Patronymic, named after Guillermo Kuschel (1918–2017), New Zealand entomologist, born in Chile, an eminent weevil worker who has also contributed significantly to our knowledge of Curculionidae.

Biology. Unknown.

Distribution. South Africa, KwaZulu-Natal.

Differential diagnosis. Among species with 5-segmented funicle, rostrum tapered anteriorly and elytra with

raised setae only on odd intervals *P. kuscheli* **sp. nov.** is similar in its wide pronotum only to *P. vossi* **sp. nov.** *P. kuscheli* **sp. nov.** differs from it by rostrum with straight sides, epifrons parallel-sided in the majority of its length and long and slender funicle segments 2–5.

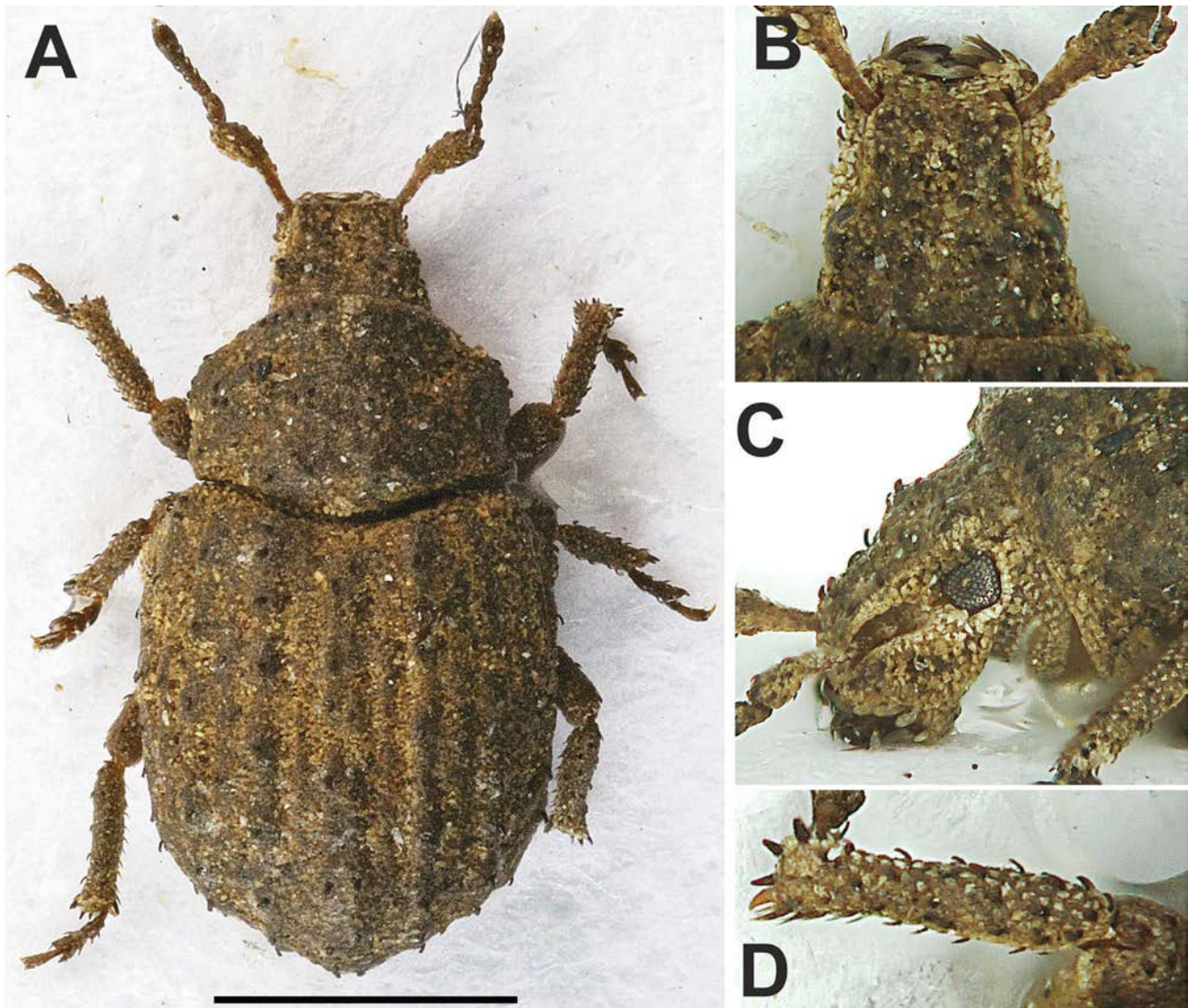


FIGURE 17. *Pentatrachyphloeus kuscheli* **sp. nov.** **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female. Scales bar: 1 mm (A).

***Pentatrachyphloeus laevis* sp. nov.**

(Figs 18A–F)

<http://zoobank.org/urn:lsid:zoobank.org:act:9E682422-6874-420A-8AB0-B3138C62F1FB>

Type locality. Kruger National Park, Pumbe sands, 24°07' S, 31°33' E (Mpumalanga, South Africa).

Type material. Holotype: ♀, 'S. Afr [South Africa, Mpumalanga]: Kruger Nat. Pk [National Park], Pumbe sands, 24.12 S–31.55 E, 22.11.1994: E-Y: 3063, groundtraps, 60 days, Endrödy, Bellamy, groundtraps with meat bait' (TMSA). Paratype: 1 ♀, the same data as holotype (TMSA).

Description (Figs 18A–F). Body length: holotype 1.98 mm, paratype 2.06 mm. Body (Fig. 18A) dark brownish, antennae and legs paler, unicoloured reddish brown, spines at apex of tibiae yellowish red. Elytra densely covered with irregularly angular appressed scales, depressed at middle, 5–6 across width of one interval, completely covering integument and leaving only extremely slender striae. Pronotum and head with rostrum with similar, but distinctly bigger appressed scales completely hiding integument; eyes bordered by slender ring of whitish scales, head behind eyes with bigger whitish scales with weak bluish sheen. Scapes, femora and tibiae with

similar appressed scales as elytra. Elytra with one sparse regular row of semierect, whitish, subspatulate setae on odd intervals, about longer than half of width of one interval, distance between two setae quintuple of length of one seta, setae longer at posterior declivity than on the disc and longer and wider on intervals 5 and 7 than on inner intervals 1 and 3. Pronotum, head with rostrum, scapes, femora and tibiae with semiappressed subspatulate setae, third of length of elytral setae, sparsely irregularly scattered, not prominent from outline. Dorsal part of body brownish with greyish brown head with rostrum, one specimen with whitish stripe in basal half of interval 6.

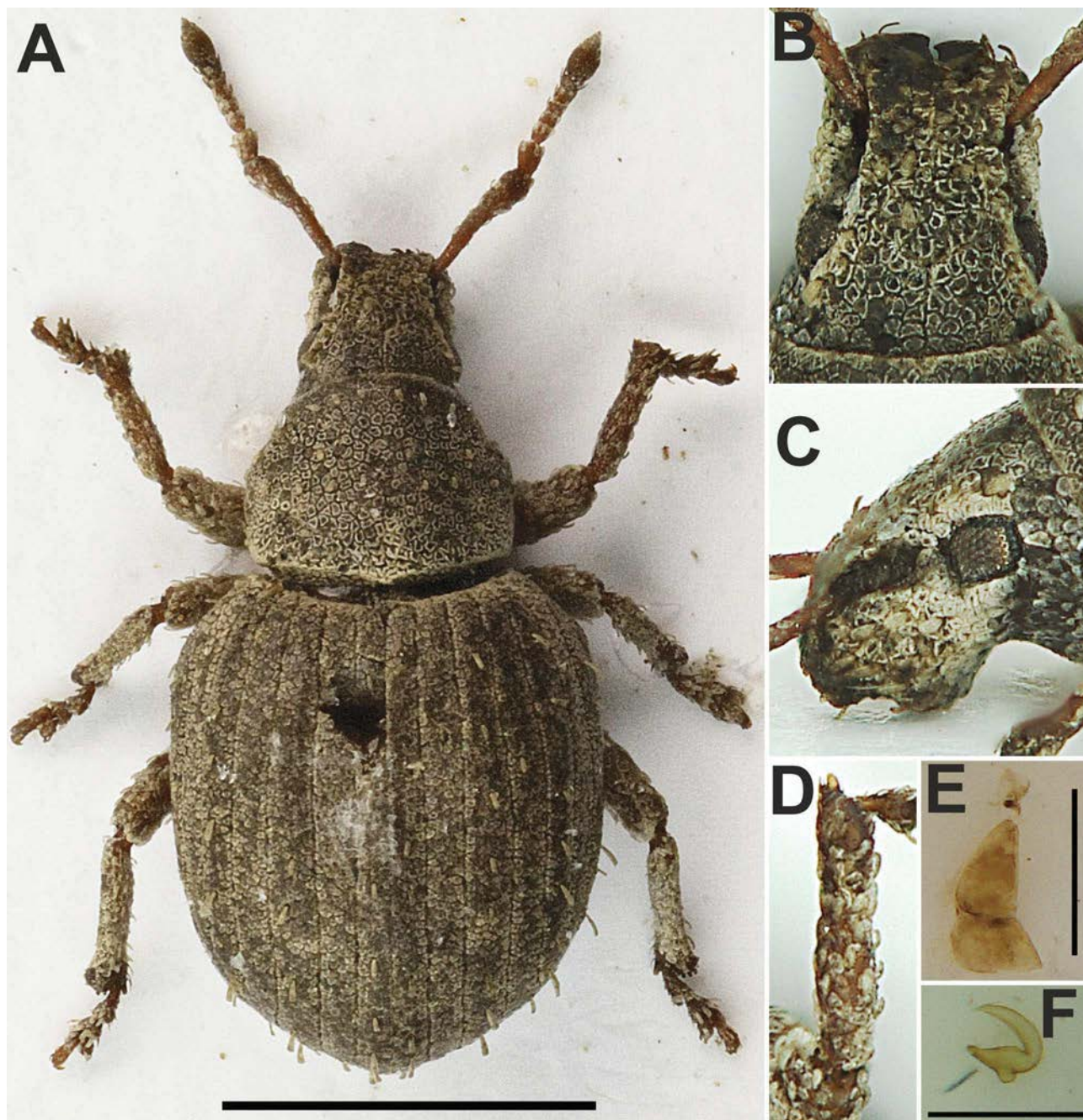


FIGURE 18. *Pentatrachyphloeus laevis* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—gonocoxite; **F**—spermatheca. Scale bars: 1 mm (**A**), and 0.25 mm (**E**, **F**).

Rostrum (Figs 18A–C) 1.53–1.56 × wider than long, regularly tapered anteriorly with straight sides, at base 1.07–1.09 × wider than at apex; laterally convex. Epifrons regularly tapered anteriorly, with slightly concave sides, perfectly flat, separated from head by very slender V-shaped sulcus, vertex flat with very slender longitudinal median stria reaching anterior margin of pronotum. Frons densely squamose. Epistome V-shaped, hardly visible.

Antennal scrobes dorsally visible as very short and slender furrows at anterior part of rostrum; in lateral view weakly enlarged posteriad, furrow-shaped, with dorsal margin directed to dorsal and ventral margin directed to ventral margin of eye, but not reaching it, separated from it by slender squamose stripe. Eyes moderately large, convex, well visible in dorsal view but not prominent from outline of head; in lateral view faintly subrectangle, placed just above middle of head. Head very short, slightly enlarged posteriad; supraocular tubercles very low, indistinct.

Antennae (Fig. 18A) moderately robust; scapes regularly gradually enlarged apicad, $4.6\text{--}4.7 \times$ longer than wide, $1.4\text{--}1.5 \times$ longer than funicles, at apex equally wide as clubs; funicles 6-segmented; segment 1 conical, about longer than segments 1 and 2 combined, $1.4 \times$ longer than wide and $1.8 \times$ longer than segment 2, which is $1.1 \times$ longer than wide; segment 3 $1.3 \times$ wider than long; segment 4 shortest, $1.5 \times$ wider than long; segment 5 $1.3 \times$ wider than long; segment 6 $1.5\text{--}1.6 \times$ wider than long; clubs $1.5\text{--}1.6 \times$ longer than wide.

Pronotum slender, $1.25\text{--}1.32 \times$ wider than long, widest at midlength with regularly rounded sides, distinctly more tapered anteriorly than posteriad, weakly constricted behind anterior margin. Disc regularly convex with almost indistinct, slender, shallow, ill-defined longitudinal median furrow along whole length, in one specimen hardly visible. Base arched. Pronotum in lateral view weakly convex, behind anterior margin flattened.

Elytra oval, $1.15\text{--}1.24 \times$ longer than wide, with distinctly rounded sides and rounded apex, with extremely narrow striae and almost flat wide intervals, odd intervals indistinctly more elevated than even ones. Base arched; posthumeral calli developed, visible only in dorso-lateral view. Elytra in lateral view distinctly convex.

Protibiae (Fig. 18D) short and robust, $3.7\text{--}4.1 \times$ longer than wide, laterally straight, with rounded apex armed with 6 sparse, yellowish red short spines and one, short, brownish mucro. Meso- and metatibiae laterally armed with 10 dense, reddish short spines and very short, hardly visible mucro. Tarsi moderately wide and short; segment 2 $1.4 \times$ wider than long; segment 3 $1.4 \times$ wider than long and $1.4 \times$ wider than segment 2; onychium equally long as segment 3, regularly enlarged apicad; claws fused at basal half, weakly divergent at apical half.

Abdominal ventrite 1 in middle more than twice longer than ventrite 2 and slightly shorter than ventrites 2–4 combined, behind metacoxa longer than ventrite 2; ventrite 2 slightly shorter than ventrites 3 and 4 combined; ventrites 3 and 4 moderately long. Suture 1 slightly arched, slightly finer than the other sutures. Metaventral process about wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate, moderately long setae.

Male. Unknown.

Female genitalia. Gonocoxites (Fig. 18E) short and wide, flat, weakly tapered apicad and broadly apically rounded, with hardly visible, short, subapical styli. Sternite VIII with long and slender apodeme and short and wide, broadly subtriangular plate, about twice wider than long. Spermatheca (Fig. 18F) with slender, regularly curved cornu; corpus large; ramus isodiametric, apically rounded; nodulus subtriangular, at apex slightly curved, distinctly longer than wide.

Derivation of name. Smooth, moderately glossy integument without conspicuous setae gives the name to this species.

Biology. Type specimens were collected in ground traps baited with meat.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. *Pentatrachyphloeus laevis* sp. nov. differs from all other species by elytra with raised setae only on odd intervals and by all intervals equally flat. It differs from other species having odd intervals flat with raised setae by appressed scales smooth, slightly shiny, funicle segments 4–6 short and transverse, head lacking supraocular tubercles and short onychium.

Pentatrachyphloeus lajumensis sp. nov.

(Figs 19A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:F1AD3131-DABA-430A-80C3-FF4323BA1674>

Type locality. Lajuma Research Station, $23^{\circ}01'36''$ S, $29^{\circ}26'15''$ E, Soutpansberg summit (Limpopo, South Africa).

Type material. Holotype: ♂, 'RSA, Limpopo, Lajuma Research Station, 23 01 36 S 29 26 15 E, Soutpansberg Summit, Sourveld, Pitfall trap, 27.ii.2012, C. Schoeman lgt.' (TMSA). Paratypes: 2 ♀♀, the same data as holotype (TMSA, RBSC).

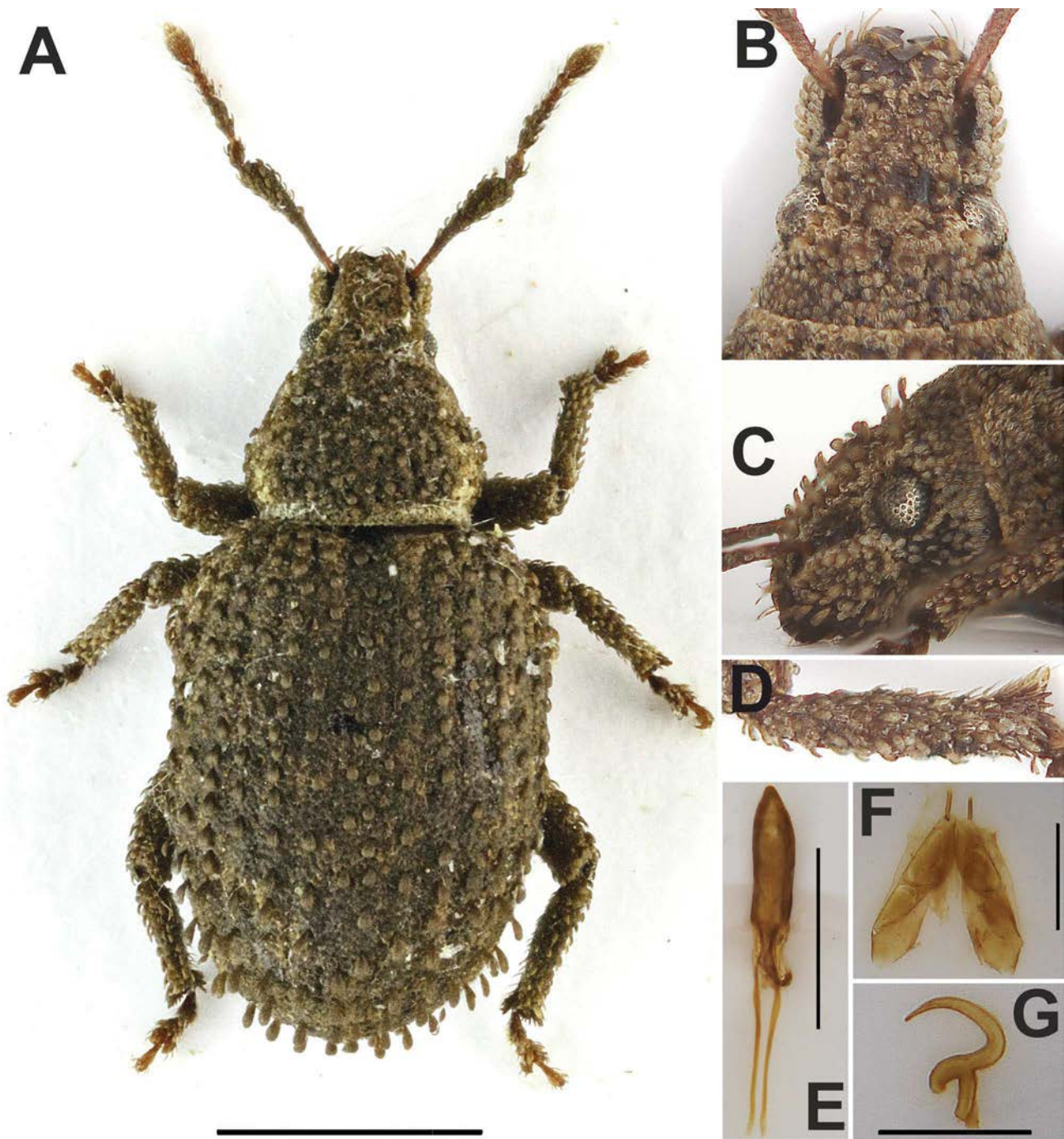


FIGURE 19. *Pentatrachyphloeus lajumensis* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F**, **G**).

Description (Figs 19A–G). Body length 2.34–3.16 mm, holotype 2.34 mm. Body (Fig. 19A) including antennae and legs dark brownish, only clubs and tarsi slightly paler, brownish. Body covered with imbricated, rounded appressed scales, on elytra 3–4 across width of one interval, finely longitudinally striate. Elytra with dense regular row of spatulate setae, on disc semiappressed, as long as half width of interval, at apical declivity semierect, almost as long as half width of one interval. Pronotum and head with rostrum densely regularly covered with short, semiappressed, spatulate setae. Scapes, femora and tibiae densely regularly covered with short, subspatulate, semiappressed setae, on scapes more slender than on legs. Body vestiture light brownish.

Rostrum (Figs 19A–C) 1.33–1.40 × wider than long, with weakly rounded sides; laterally convex. Epifrons flat, distinctly tapered anteriorly with concave sides, at midlength about as wide as half width of rostrum at same

place, separated from head by distinct, arched, transverse sulcus at middle of eyes. Antennal scrobes in dorsal view visible as moderately wide furrows at apical half; in lateral view slightly enlarged posteriad, directed towards ventral border of eye but not reaching it. Eyes moderately large, slightly prominent from outline of head; laterally subcircular, placed about at middle of head. Head wide and enlarged posteriad, without tubercles above eyes; lateral and ventral part densely longitudinally striate.

Antennae (Fig. 19A) slender; scapes straight, $5.2\text{--}5.4 \times$ longer than wide and $1.1 \times$ longer than funicles, at apical half evenly enlarged apicad, at apex $1.2 \times$ wider than clubs. Funicles 7-segmented; segment 1 $1.6\text{--}1.7 \times$ longer than wide and equally long as segment 2, which is $1.9\text{--}2.0 \times$ longer than wide; segments 3–6 isodiametric; segment 7 $1.1 \times$ wider than long; clubs $1.7\text{--}1.8 \times$ longer than wide.

Pronotum $1.32 \times$ wider than long, widest at basal third, with distinctly rounded sides, distinctly more tapered anteriorly. Disc regularly convex; base almost straight; in lateral view flat.

Elytra oval, $1.37\text{--}1.42 \times$ longer than wide, widest at midlength with distinctly rounded sides. Base arched. All intervals equally wide and flat, striae very narrow, punctured, hidden by scales. Posthumeral calli almost indistinct, visible only in dorso-lateral view. Elytra in lateral view almost flat.

Protibiae (Fig. 19D) $5.2\text{--}5.4 \times$ longer than wide, with lateral edge straight, at apex rounded with 8–9 small, blackish spines and brownish mucro. Meso- and metatibiae fringed by dense, short, blackish spines and short brownish mucro. Tarsi short; segment 2 $1.3 \times$ wider than long; segment 3 $1.3 \times$ wider than long and $1.1 \times$ wider than segment 2; onychium $1.4 \times$ longer than segment 3; claws connate in basal third, divaricate.

Abdominal ventrite 1 in middle $4 \times$ longer than ventrite 2 and slightly longer than ventrites 2–4 combined, behind metacoxa twice longer than ventrite 2; ventrite 2 short, equally long as ventrite 3 or 4. Suture 1 straight, finer than the others. Metaventral process distinctly wider than transverse diameter of metacoxa. Ventrites 2–4 with transverse row of subspatulate semiappressed setae.

Male genitalia. Penis (Fig. 19E) slender, subparallel-sided, evenly tapered apicad, tip subtriangular; laterally almost straight, evenly tapered apicad.

Female genitalia. Gonocoxites (Fig. 19F) weakly sclerotised, subtriangular, with very slender, moderately long apical styli. Sternite VIII with moderately robust apodeme and with subtriangular slender plate, $1.2\text{--}1.3 \times$ longer than wide. Spermatheca (Fig. 19G) with very slender and long, curved cornu; corpus elongated; ramus and nodulus slender, tubular, perpendicularly staying, ramus $3 \times$, nodulus $2 \times$ longer than wide.

Derivation of name. This species takes its name from the Lajuma Research Station, where the type material was collected.

Biology. Collected to pitfall traps in sourveld.

Distribution. South Africa, Limpopo.

Differential diagnosis. By 7-segmented funicle and a very dense row of spatulate scales on elytral intervals, longer at apical declivity than on the disc, densely regularly placed spatulate scales on pronotum and arched transverse sulcus between middle parts of eyes this species is very similar to *P. soutpansbergensis* sp. nov. From the latter it is possible to distinguish it mainly by wider pronotum, equally long funicle segment 1 and 2, longer onychium and spermatheca with very slender cornu, ramus and nodulus.

Pentatrachyphloeus leleupi sp. nov.

(Figs 20A–F)

<http://zoobank.org/urn:lsid:zoobank.org:act:F5E0352A-9B78-4C48-A2DE-2FF6D053994C>

Type locality. Mt. Selinda, Chirinda forest, 1300 m (Manica, Zimbabwe).

Type material. Holotype: ♀, 'I.R.S.A.C.-MUS.R.A.C., S. Rhodesia [Zimbabwe, Manica]: Mt. Selinda, forêt de Chirinda, VII.1960, 1 300 m., N. Leleup [lgt.], Récolté dans l'humus' (RMCA). Paratypes: 1 ♀, the same data as holotype (RMCA).

Description (Figs 20A–F). Body length holotype 2.44 mm, paratype 2.25 mm. Body (Fig. 20A) dark brownish; funicle with clubs and tarsi paler, reddish brown. Appressed scales on dorsal part of body rounded, imbricated, longitudinally striate, completely covering integument, 3–4 across one interval width, leaving wide striae on elytra; appressed scales on scapes, femora and tibiae similar but smaller. Semierect setae on elytra form one dense conspicuous regular row on all intervals, slender, subspatulate, widest at midlength, weakly longer than

half width of one interval, at posterior declivity somewhat longer than on disc, distance of two setae slightly longer than twice length of one seta. Semierect setae on pronotum and head with rostrum slightly shorter than elytral setae, sparsely irregularly scattered. Semiappressed setae on scapes, femora and tibiae moderately long, slender, hardly prominent from outline. Body vestiture dark brownish with light brownish irregular small spots and paler sutural interval; semierect setae light brownish.

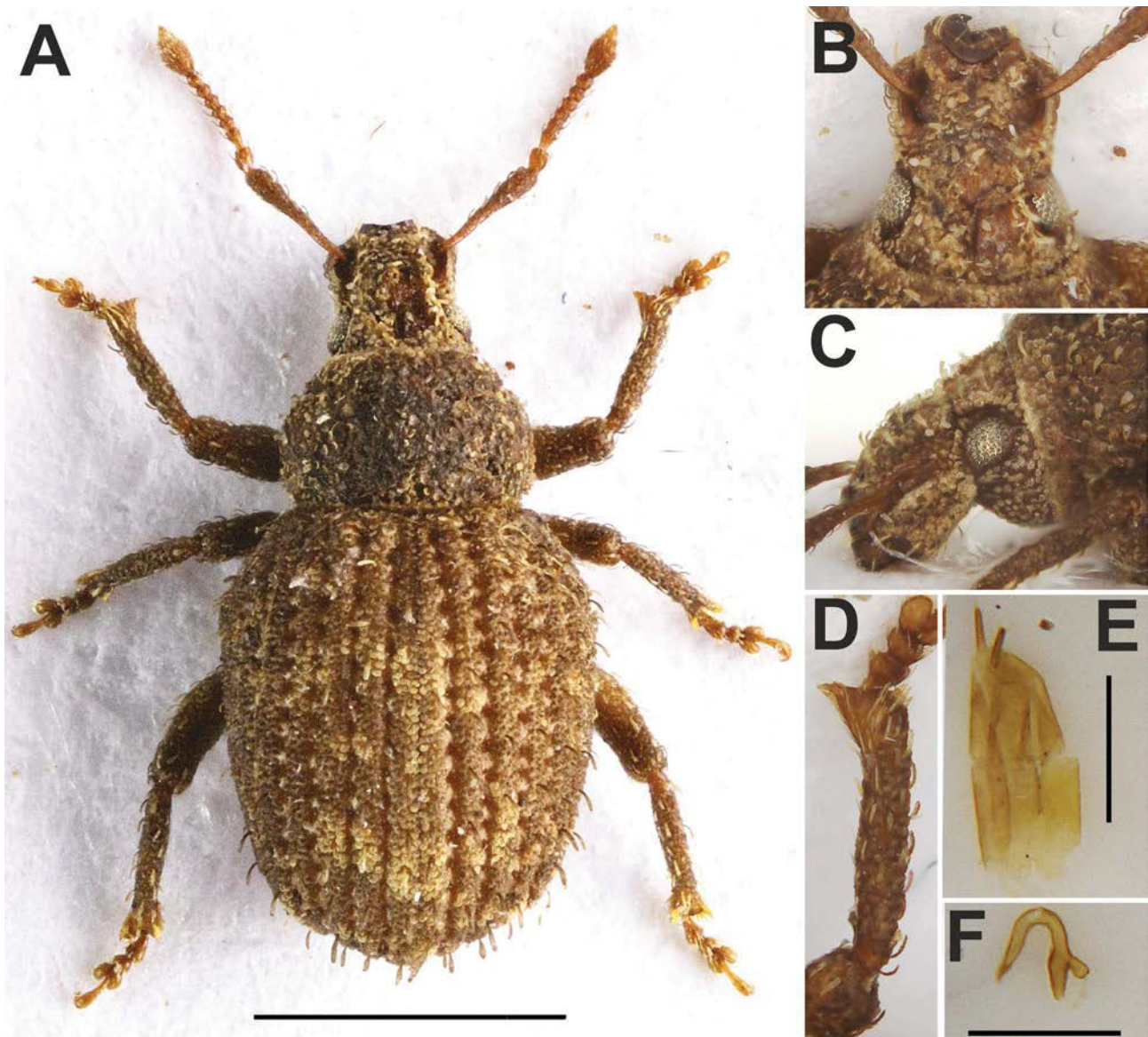


FIGURE 20. *Pentatrachyphloeus leleupi* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—gonocoxite; **F**—spermatheca. Scale bars: 1 mm (A), and 0.25 mm (E, F).

Rostrum (Figs 20A–C) $1.27\text{--}1.39 \times$ wider than long, distinctly enlarged anteriorly with straight sides, at base $1.02\text{--}1.04 \times$ wider than at apex; laterally slightly convex. Epifrons distinctly tapered anteriorly, with straight sides, at apex equally wide as half of width of rostrum at same place, flat; when cleared of scales matt, densely punctate, separated from head by V-shaped, slender transverse sulcus. Antennal scrobes dorsally well visible at anterior half, pit-shaped; laterally narrow and short, separated from eyes by wide squamose stripe. Eyes moderately large, somewhat convex and prominent from outline of head; in lateral view placed in dorsal third of head. Head wide and flat, short, without tubercles above eyes, behind eyes enlarged posteriorly, below eyes finely longitudinally striate; when cleared of scales matt, densely punctate, with short and slender longitudinal median stria.

Antennae (Fig. 20A) moderately slender; scapes $5.7\text{--}6.1 \times$ longer than wide and $1.5\text{--}1.6 \times$ longer than funicles, weakly curved at midlength and weakly and regularly enlarged apically, at apex narrower than clubs, which are 1.3

× wider. Funicles 7-segmented; segments 1 and 2 largest, conical; segment 1 1.2–1.3 × longer than wide and 1.2–1.3 × longer than segment 2, which is 1.2 × longer than wide; segments 3–5 1.2–1.3 × wider than long; segment 6 1.5–1.6 × wider than long; segment 7 1.7–1.8 × wider than long; clubs 1.6–1.7 × longer than wide.

Pronotum 1.35–1.38 × wider than long, widest at basal half with rounded sides, behind anterior margin constricted, with regularly convex disc. When cleared of scales, disc shiny, roughly irregularly punctate. Base straight. Pronotum in lateral view convex.

Elytra oval, 1.32–1.38 × longer than wide, from base obliquely subtruncate to weakly prominent subhumeral calli and here widest, with rounded sides and broadly rounded apex; all intervals equally slightly convex; striae moderately wide, well visible, distinctly punctate; base straight. When cleared of scales, intervals shiny, smooth; striae densely broadly punctate. Elytra in lateral view convex.

Protibiae (Fig. 20D) moderately robust, lateral edge straight, at apex obliquely subtruncate, armed with 6–7 sparse, short and fine, yellowish spines and one inside curved mucro. Meso- and metatibiae laterally armed with fringe of sparse, brownish spines and brownish mucro. Tarsi moderately robust, segment 2 1.5 × wider than long; segment 3 1.5 × wider than long and 1.5 × wider than segment 2; onychium 1.3 × longer than segment 3, weakly and regularly enlarged apicad; claws fused at basal half, weakly divergent.

Abdominal ventrite 1 in middle equally long as ventrites 2–4 combined, behind metacoxa twice longer than ventrite 2; ventrite 2 equally long as ventrite 3 or 4. All sutures straight, deep and wide. Metaventral process slightly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of slender subspatulate setae.

Male. Unknown.

Female genitalia. Gonocoxites (Fig. 20E) short and wide, weakly tapered apicad, with very long and slender styli. Sternite VIII with long and slender apodeme and large subtriangular plate, isodiametric. Spermatheca (Fig. 20F) with long and slender, U-shaped cornu; ramus subrectangular, weakly longer than wide; nodulus straight, distinctly longer than wide, weakly evenly tapered apicad.

Derivation of name. The new species is dedicated to the collector of type specimens, Belgian specialist in Scydmaeninae, Narcisse Leleup (1912–2001), who sifted many times in the subequatorial part of Africa and collected plenty of very interesting terricolous weevils.

Biology. Type specimens were sifted from forest litter.

Distribution. This is the only known species from Zimbabwe.

Differential diagnosis. *Pentatrachyphloeus leleupi* **sp. nov.**, together with *P. hanzelkai* **sp. nov.**, are the only species with 7-segmented funicle and rostrum enlarged apicad. From *P. hanzelkai* **sp. nov.** it is easily distinguishable by elytra without protuberances (vs. elytra with conspicuous protuberances in *P. hanzelkai* **sp. nov.**), semierect setae on all elytral intervals (vs. only on odd intervals), head without supraocular tubercles (vs. with laterally prominent distinct tubercles) and scapes slender, evenly enlarged apicad (vs. robust, abruptly enlarged at midlength).

***Pentatrachyphloeus lesothoensis* sp. nov.**

(Figs 21A–F)

<http://zoobank.org/urn:lsid:zoobank.org:act:B93DF44B-2F58-4E5E-B58B-6A67621EA78C>

Type locality. Sehlabathebe National Park, 29°30' S, 29°03' E (Qacha's Nek, Lesotho).

Type material. Holotype: ♀, 'LESOTHO [Qacha's Nek], Sehlabathebe National Park, 29.51S 29.06E, 1-3.iv.1994, M. Stiller [lgt.]' (SANC). Paratype: 1 ♀, the same data as holotype (SANC).

Description (Figs 21A–F). Body length holotype 2.25 mm, paratype 2.41 mm. Body (Fig. 21A) dark brownish; femora dark brownish; antennae, tibiae and tarsi paler, reddish brown. Appressed scales on dorsal part of body irregularly angular, weakly depressed in middle, imbricated, completely covering integument, 3–4 across one interval width, leaving only moderately wide striae on elytra; appressed scales on scapes, femora and tibiae almost identical, only slightly smaller. Semierect setae on elytra form one dense regular row on odd intervals, distance of two setae slightly longer than length of one seta, conspicuous, subspatulate, finely longitudinally striate, about longer than half of width of one interval, at posterior declivity somewhat longer than on disc. Semierect setae on pronotum and head with rostrum half of length of elytral setae, subspatulate, distinctly longitudinally striate,

sparsely irregularly scattered, on rostrum form dense row on margin of epifrons, on head form dense row above eyes. Semierect setae on scapes, femora and tibiae weakly longer than diameter of one appressed scale, slender, densely irregularly scattered, weakly prominent from outline. Body vestiture greyish white with dark brownish irregular small spots; semierect setae greyish to light brownish.

Rostrum (Figs 21A–C) 1.27–1.39 × wider than long, at base 1.02–1.04 × wider than at apex, slightly regularly tapered anteriorly with straight sides; laterally convex. Epifrons distinctly tapered anteriorly, with weakly concave sides, at apex only somewhat wider than half of width of rostrum at same place, flat; when cleared of scales shiny, without any texture, separated from head by V-shaped, slender transverse sulcus. Antennal scrobes dorsally well visible at anterior half; laterally very narrow and short, weakly curved, furrow-shaped, separated from eyes by wide squamose stripe. Eyes moderately large, distinctly convex and prominent from outline of head; in lateral view placed in dorsal third of head. Head wide and flat, without tubercles above eyes, behind eyes weakly enlarged posteriorly; when cleared of scales shiny, only with short and slender longitudinal median stria.

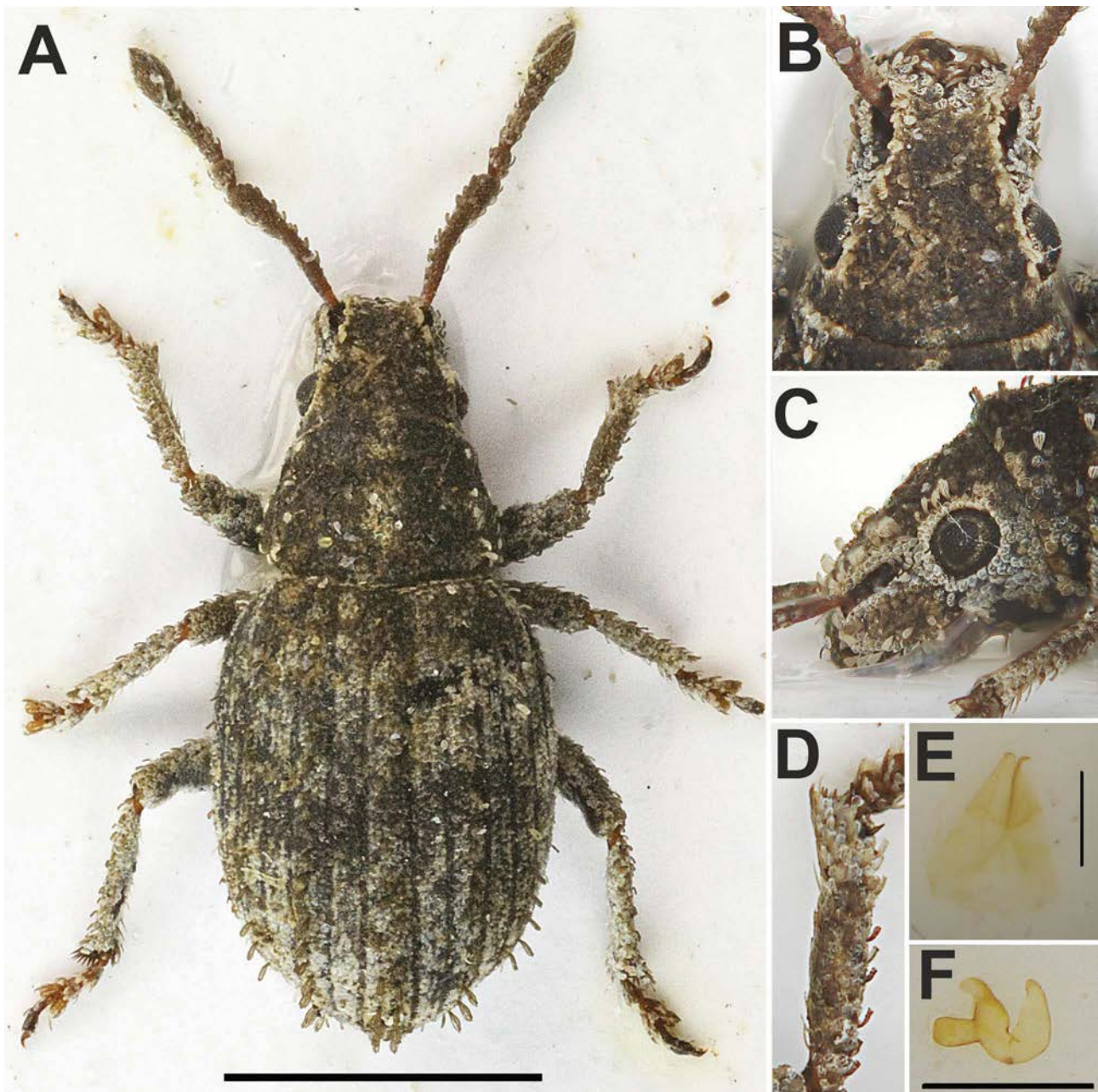


FIGURE 21. *Pentatrachyphloeus lesothoensis* sp. nov. A—habitus, dorsal view, female; B—rostrum, female, dorsal view; C—rostrum, female, lateral view; D—protibia, female; E—gonocoxite; F—spermatheca. Scale bars: 1 mm (A), and 0.25 mm (E, F).

Antennae (Fig. 21A) moderately robust; scapes 5.7–6.1 × longer than wide and 1.5–1.6 × longer than funicles, weakly curved at midlength and weakly and regularly enlarged apicad, at apex narrower than clubs, which are 1.3 × wider. Funicles 7-segmented; segments 1 and 2 largest, conical; segment 1 1.2–1.3 × longer than wide and 1.2–1.3 × longer than segment 2, which is 1.2 × longer than wide; segments 3–5 1.2–1.3 × wider than long; segment 6 1.5–1.6 × wider than long; segment 7 1.7–1.8 × wider than long; clubs 1.6–1.7 × longer than wide.

Pronotum 1.35–1.38 × wider than long, widest at basal half with rounded sides, anteriorly regularly tapered, behind anterior margin weakly constricted with regularly convex disc. When cleared of scales, disc shiny, without punctures or granules, only with narrow transverse stria at anterior third. Base weakly arched. Pronotum in lateral view convex, at anterior third flattened.

Elytra oval, 1.32–1.38 × longer than wide, widest at midlength, with distinctly rounded sides and narrowly rounded apex; all intervals equally flat; striae moderately wide, well visible; base weakly arched. When cleared of scales, intervals shiny, without punctures or granules, striae very narrow, finely and sparsely punctate. Posthumeral calli indistinct, hardly visible in dorso-lateral view. Elytra in lateral view convex.

Protibiae (Fig. 21D) moderately robust, lateral edge straight, at apex rounded, armed with 7 sparse and fine, short blackish spines and one short, inside curved mucro. Meso- and metatibiae laterally armed with fringe of dense, fine, long, bristle-shaped blackish spines and one very short, yellowish mucro. Tarsi moderately robust, segment 2 1.5 × wider than long; segment 3 1.5 × wider than long and 1.5 × wider than segment 2; onychium 1.3 × longer than segment 3, weakly and regularly enlarged apicad; claws fused at basal half, weakly divergent.

Abdominal ventrite 1 in middle about twice longer than ventrite 2 and distinctly shorter than ventrites 2–4 combined, behind metacoxa equally long as ventrite 2; ventrite 2 shorter than ventrites 3 and 4 combined; ventrites 3 and 4 long. Suture 1 indistinctly arched, only slightly finer than the other sutures. Metaventral process narrower than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of slender subspatulate, moderately long setae.

Male. Unknown.

Female genitalia. Gonocoxites (Fig. 21E) flat and wide, evenly tapered apicad, tips very shortly pointed, without visible styli. Sternite VIII with long and slender apodeme and large plate, umbrella-shaped, isodiametric. Spermatheca (Fig. 21F) with short and weakly curved cornu; ramus subsquared; nodulus subtrapezoidal, with short curved tube at tip.

Derivation of name. Named after small mountain country Lesotho, as the only *Pentatrachyphloeus* known from this region, and the second entimine species known from Lesotho.

Biology. Unknown.

Distribution. Lesotho.

Differential diagnosis. Only two species have the following set of characters: antennal funicles 7-segmented, only odd intervals bearing raised elytral setae and antennae slender, not monstrously robust—*P. lesothoensis* **sp. nov.** and *P. frici* **sp. nov.** The former easily differs from the latter by regularly rounded humeri, elytral intervals flat lacking tubercles and appressed scales imbricate.

***Pentatrachyphloeus machulkai* sp. nov.**

(Figs 22A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:0ACF6D13-92E9-43CF-9453-C8271B84466F>

Type locality. De Kalk 71, Jacobsdal (Free State, South Africa).

Type material. Holotype: ♂, ‘S. Africa, OFS [South Africa, Orange Free State, Free State now], De Kalk 71, Jacobsdal, SE 2924 Bb, 16-18. Nov. 1981, Louw, Gaje, Mosala [lgt.], NMBH 1489’ (NMBH).

Description (Figs 22A–E). Body length holotype 2.08 mm. Body (Fig. 22A) including antennae and legs brownish. Appressed scales on dorsal part of body moderately large, rounded, distinctly imbricated with depressed middle part, completely covering integument, only 2–3 across one interval width; appressed scales on scapes, femora and tibiae smaller and not depressed. Semierect setae on elytra form one conspicuous regular row on all intervals, wide, spatulate, finely longitudinally striate, longer than half the width of one interval, distance of two setae about 3 × longer than length of one seta. Semierect setae on pronotum and head with rostrum spatulate, about half as long as elytral setae, sparsely irregularly scattered. Semiappressed setae on scapes, femora and tibiae

moderately slender, hardly prominent from outline. Body vestiture light brownish with brownish irregular small spots on elytra and two median wide longitudinal stripes on pronotum and head; semierect setae alternately light and dark brownish.

Rostrum (Figs 22A–C) 1.21 × wider than long, weakly enlarged anteriorly with straight sides; laterally slightly convex. Epifrons parallel-sided, with straight sides, at apex 0.6 × as wide as width of rostrum at same place, shallowly longitudinally depressed, separated from head by V-shaped, slender transverse sulcus. Antennal scrobes dorsally visible at anterior third, pit-shaped; laterally narrow, directed towards middle of eye, separated from eyes by wide squamose stripe. Eyes moderately large, somewhat convex and prominent from outline of head; in lateral view subcircular, placed in middle of head. Head wide, short, enlarged posteriorly, with low tubercles above eyes, behind eyes enlarged posteriorly.

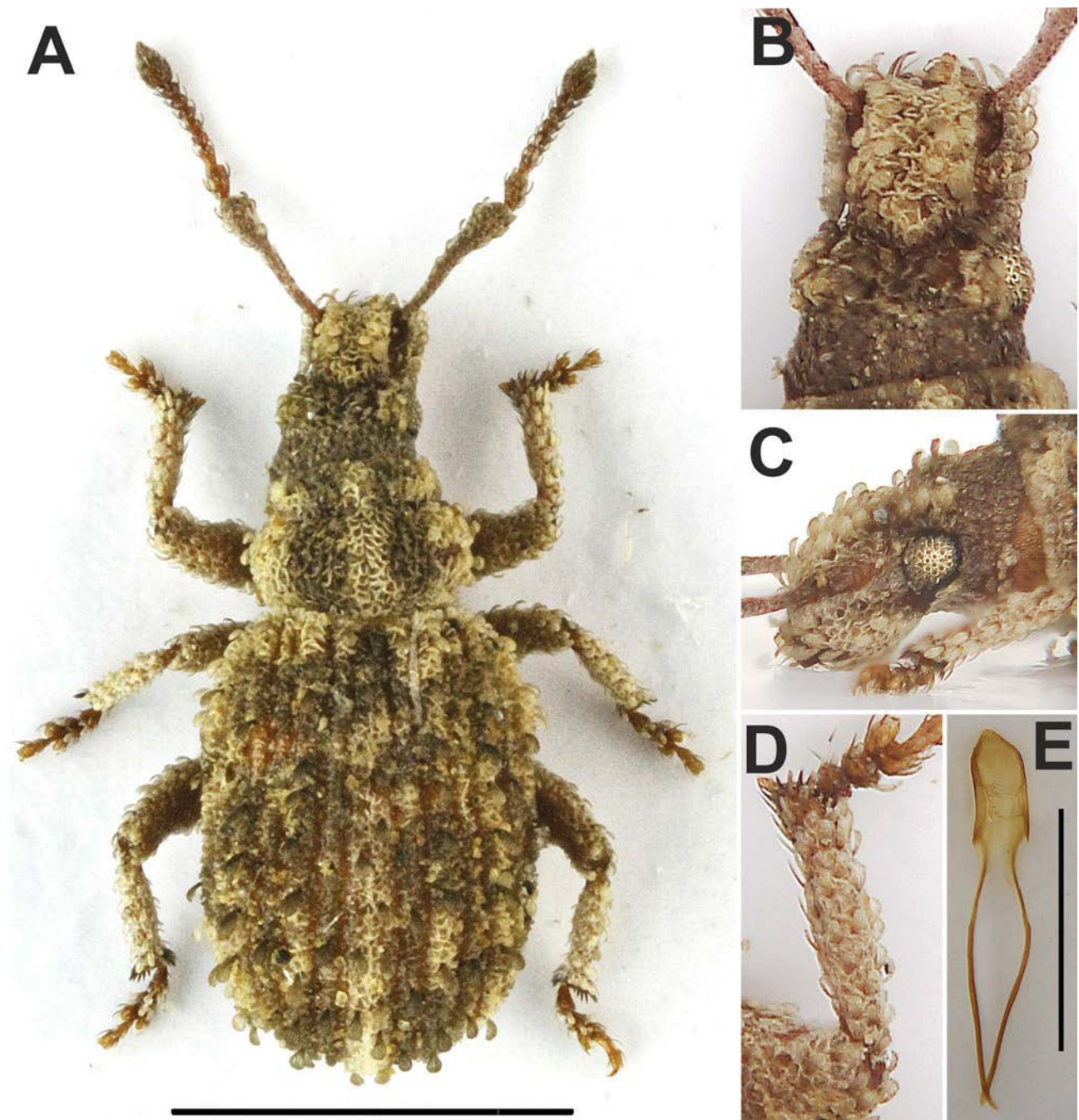


FIGURE 22. *Pentatrachyphloeus machulkai* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus. Scale bars: 1 mm (**A**), and 0.5 mm (**E**).

Antennae (Fig. 22A) moderately slender; scapes $4.2 \times$ longer than wide and $1.2 \times$ longer than funicles, weakly and regularly enlarged apicad at apical half, at apex $1.1 \times$ wider than clubs. Funicles 7-segmented; segment 1 largest, conical; segment 1 $1.6 \times$ longer than wide and $1.6 \times$ longer than segment 2, which is $1.4 \times$ longer than wide; segment 3 $1.2 \times$ wider than long; segments 4–6 $1.3 \times$ wider than long; segment 7 $1.4 \times$ wider than long; clubs $1.7 \times$ longer than wide.

Pronotum $1.42 \times$ wider than long, widest at basal half with rounded sides, behind anterior margin distinctly constricted with regularly convex disc. Base slightly arched. Pronotum in lateral view convex, behind anterior border flattened.

Elytra oval, $1.38 \times$ longer than wide, with regularly rounded humeral calli, then subparallel-sided, widest slightly behind midlength, broadly apically rounded; odd intervals wider and more elevated than even ones; striae moderately wide, punctate; base almost straight. Elytra in lateral view almost flat.

Protibiae (Fig. 22D) moderately robust, $4.4 \times$ longer than wide, lateral edge straight, at apex rounded, armed with 8 sparse, short and fine, black spines and one inside curved mucro. Meso- and metatibiae laterally and mesally armed with fringe of black spines and brownish mucro. Tarsi with segment 2 $1.4 \times$ wider than long; segment 3 $1.3 \times$ wider than long and $1.4 \times$ wider than segment 2; onychium $1.2 \times$ longer than segment 3; claws fused at short basal part, then distinctly divergent.

Abdominal ventrite 1 in middle $2.5 \times$ longer than ventrite 2 and slightly shorter than ventrites 2–4 combined, behind metacoxa $1.5 \times$ longer than ventrite 2; ventrite 2 slightly longer than ventrite 3 or 4. All sutures straight, suture 1 finer than the others. Metaventral process slightly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of slender subspatulate setae.

Male genitalia. Penis (Fig. 22E) subparallel-sided with slightly concave sides, apex evenly subtriangular, tip only indistinctly separated.

Female. Unknown.

Derivation of name. This species is dedicated to Bedřich Machulka (1875–1954), Czech collector of products of nature and photographer. He spent an important part of his life in Africa, mainly Libya, Sudan and Kenya. His collection of small mammals and insects is deposited in the Prague National Museum.

Biology. Unknown.

Distribution. South Africa, Free State.

Differential diagnosis. Among species with 7-segmented funicle and anteriorly enlarged rostrum *P. machulkai* sp. nov. is exceptional by elytra with odd intervals wider and more elevated than even intervals, with wide and spatulate setae and large appressed scales distinctly depressed at the middle and parallel-sided epifrons, which is exceptional in the whole genus.

***Pentatrachyphloeus marshalli* sp. nov.**

(Figs 23A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:8B840404-229C-4166-A5D0-9505BAEFF4AD>

Type locality. Frere, ca 1200 m (KwaZulu-Natal, South Africa).

Type material. Holotype: ♂, '[South Africa, KwaZulu-Natal] FRERE, Natal 3800 ft., Captured 3.XI.1892, by G. A. K. Marshall' (BMNH). Paratype: 1 ♀, the same data as holotype but '25.XI.1892' (BMNH).

Description (Figs 23A–G). Body length holotype 1.88 mm, paratype 2.13 mm. Body (Fig. 23A) dark brownish; antennae blackish; tarsi paler, brownish. Appressed scales on body hardly recognizable through soil incrustation. Raised setae on elytra semiappressed on disc and semierect at posterior declivity, shorter in male than in female, subspatulate, finely longitudinally striate, creating one very dense regular row on each odd interval, distance between two setae slightly shorter than length of one seta, setae about longer than half of width of one interval, blackish, with only several randomly scattered whitish setae. Pronotum and head with rostrum with short-oval, semiappressed greyish setae, irregularly scattered with dense row on margins of epifrons and above eyes. Scapes, femora and tibiae with same semiappressed setae, only slightly shorter, very densely irregularly scattered; scapes with blackish, femora and tibiae with greyish setae. Body vestiture dark brownish.

Rostrum (Figs 23A–C) 1.22 – $1.27 \times$ wider than long, about parallel-sided; laterally convex. Epifrons from base distinctly tapered anteriorly with straight sides, at apex narrower than width of rostrum at same place, flat, separated

from head by narrow V-shaped sulcus, completely concealed by scales. Antennal scrobes dorsally visible at anterior third; in lateral view slender, curved, furrow-shaped, separated from eyes by wide squamose stripe, directed to middle of eyes with dorsal margin almost reaching dorsal margin of eyes. Eyes small, weakly convex and weakly prominent from outline of head; in lateral view placed at dorsal third of head. Head wide, without tubercles above eyes, weakly enlarged posteriad behind eyes.

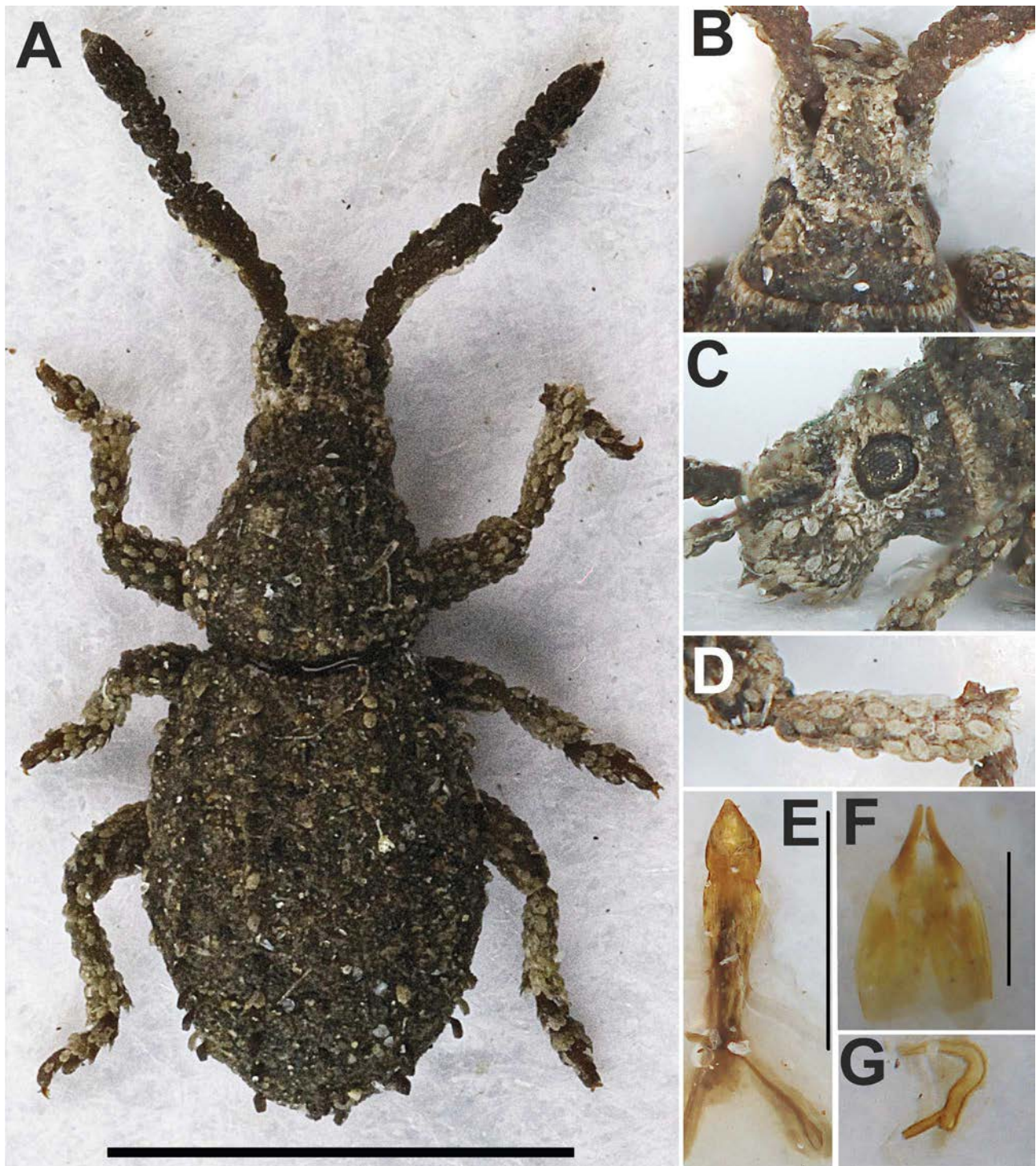


FIGURE 23. *Pentatrachyphloeus marshalli* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (A), 0.5 mm (E) and 0.25 mm (F, G).

Antennae (Fig. 23A) monstrously robust. Scapes $4.2\text{--}4.5 \times$ longer than wide and $1.2\text{--}1.4 \times$ longer than funicles, wide just from base, regularly enlarged apicad, weakly curved before midlength, at apex $1.2\text{--}1.3 \times$ wider

than clubs. Funicles 7-segmented; segment 1 largest, subtriangular, equally wide as long, $2.2 \times$ longer than segment 2; segments 2–7 very transverse, wider than clubs; segment 2 $2.0\text{--}2.2 \times$ wider than long; segments 3–5 $2.8\text{--}3.0 \times$ wider than long; segments 6 and 7 $3.2 \times$ wider than long; clubs $1.4\text{--}1.5 \times$ longer than wide.

Pronotum $1.29\text{--}1.39 \times$ wider than long, widest at basal half with weakly rounded sides, regularly tapered anteriorly, slightly constricted behind anterior margin. Disc at basal half with hardly visible middle and lateral longitudinal, wide, ill-defined, shallow depressions; when cleared of scales shiny, finely and sparsely granulate. Base arched. Pronotum in lateral view almost flat.

Elytra oval, $1.33\text{--}1.37 \times$ longer than wide, widest at midlength, with regularly rounded sides and broadly rounded at apex. Striae concealed by scales, odd intervals slightly more elevated than even ones. When cleared of scales striae finely punctate, very slender, intervals moderately shiny, finely and sparsely granulate. Posthumeral calli indistinct. Base arched; elytra in lateral view convex.

Tibiae (Figs 23A, D) very short and robust; protibiae $3.6\text{--}3.8 \times$ longer than wide, lateral edge straight, apex rounded, armed with 6 short and fine, yellowish spines and short, inside curved mucro. Meso- and metatibiae laterally armed with fringe of fine, dense, bristle-shaped greyish spines with one short mucro. Tarsi short and robust; segment 2 $1.5\text{--}1.6 \times$ wider than long; segment 3 $1.7\text{--}1.8 \times$ wider than long and $1.1\text{--}1.2 \times$ wider than segment 2; onychium $1.5 \times$ longer than segment 3, distinctly enlarged apicad; claws fused at short basal part, distinctly divergent.

Abdominal ventrite 1 in middle about $3 \times$ longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa longer than ventrite 2; ventrite 2 shorter than ventrites 3 and 4 combined; ventrites 3 and 4 short. Suture 1 arched, finer than the other sutures. Metaventral process narrower than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of spatulate setae.

Male genitalia. Penis (Fig. 23E) moderately short, at basal third constricted, basal part with weakly rounded sides, apical half drop-shaped with apical third regularly triangular, tip pointed; in lateral view weakly curved, apical third very slender, elongated.

Female genitalia. Gonocoxites (Fig. 23F) articulated, proximal portion wide and flat, abruptly tapered and more sclerotised at distal part, here slender, sabre-shaped, curved, styli subapical. Sternite VIII with long and slender apodeme; plate umbrella-shaped, slightly wider than long. Spermatheca (Fig. 23G) with long and slender cornu; ramus very short, truncated; nodulus very slender, tubular, straight, $4 \times$ longer than wide.

Derivation of name. This species is dedicated to the late Sir Guy A. K. Marshall (1871–1959) who collected the type material and who stands as one of the best known and energetic researchers of South African weevils.

Biology. Unknown.

Distribution. South Africa, KwaZulu-Natal.

Differential diagnosis. Unique species, together with *P. insignicornis* **sp. nov.** easily distinguishable from the others by monstrously robust antennae, with segment 1 isodiametric, segment 2 wider than long, segments 3–5 conspicuously wider than long, scapes equally wide as protibia at midlength and clubs equally wide as last funicle segments. It is possible to distinguish it from *P. insignicornis* **sp. nov.** by funicle segment 1 distinctly longer than segment 2, segment 2 distinctly wider than long and epifrons at apex more slender than half of the width of the rostrum.

Pentatrachyphloeus muelleriae **sp. nov.**

(Figs 24A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:441D3E0C-A607-4F61-A9F8-6F6B45DAD01D>

Type locality. Kruger National Park, 15 km south-west of Skukuza, $25^{\circ}04' \text{ S}$, $31^{\circ}18' \text{ E}$, (Mpumalanga, South Africa).

Type material. Holotype: ♂, 'S. Afr. [South Africa, Mpumalanga], Kruger Nat. Pk., Skukuza, 15 km SW, $25.07 \text{ S--}31.31 \text{ E}$, 22.1.1995, E-Y: 3088, groundtraps, Endrödy, Bellamy, groundtrap with banana bait' (TMSA). Paratypes: 1 ♂, the same data as holotype (TMSA); 2 ♂♂ 1 ♀, 'S. [South] AFRICA, Tvl. [Mpumalanga], Kruger N. Pk. Nr. Satara, 15-18.XII.1985, H. & A. Howden [lgt.]' (CMNC); 3 ♂♂, 'S. A. K. N. P. [South Africa, Kruger Nature Park] [Mpumalanga], Satara, XII-16-1985, sweep, M. Sanborne [lgt.]' (CMNC, SANC); 1 ♂, '[South Africa, Mpumalanga], Krug. Nas. [Kruger Nature Park], Wildtuin, 7/11/1962, HADvanSchalkwyk [lgt.]' (SANC).

Description (Figs 24A–G). Body length 2.25–2.38 mm, holotype 2.31 mm. Body (Fig. 24A) brownish; scapes, femora and tibiae brownish, funicles, clubs and tarsi paler, reddish brown. Appressed scales on dorsal part of elytra, pronotum and head with rostrum irregularly angular, partly with hole in the middle, greyish with feeble pearly sheen, sparse, distance between two scales about as half of diameter of one scale, 4–5 across one elytral interval. Appressed scales on scapes, femora and tibiae small, irregularly angular, distinctly depressed in middle, dense, leaving only very short space between them. Semierect setae on elytra inconspicuous, dark brownish, subspatulate, about longer than third of width of one interval, very sparse, 6–7 on length of one interval, growing from tips of small protuberances on odd intervals. Semiappressed setae on pronotum, head with rostrum, scapes, femora and tibiae hardly visible, oval, very short, only somewhat longer than diameter of one appressed scale. Body vestiture dark brownish with spots of greyish, pearly scales.

Rostrum (Figs 24A–C) $1.43\text{--}1.50 \times$ wider than long, at base $1.06\text{--}1.08 \times$ wider than at apex, regularly tapered anteriorly with weakly concave sides; laterally convex. Epifrons narrow, distinctly tapered anteriorly with concave sides, at apex about wider than half of width of rostrum, flat, longitudinally depressed; when cleared of scales shiny, finely, sparsely and regularly granulate, with slender longitudinal median stria along whole length and reaching anterior margin of pronotum, separated from head by narrow, V-shaped sulcus. Antennal scrobes dorsally well visible in anterior third; laterally short and very narrow, glabrous, directed to middle of eyes. Eyes moderately large, dorsally well visible, but not prominent from outline of head, laterally placed in dorsal third of head. Head flat, when cleared of scales shiny, finely, sparsely and regularly granulate, with visible tubercles above eyes, visible mainly in dorso-lateral view; head behind eyes narrowed, weakly constricted.

Antennae (Fig. 24A) moderately slender; scapes $4.3\text{--}4.5 \times$ longer than wide and $1.4 \times$ longer than funicle, weakly curved at midlength, at apical half moderately regularly gradually enlarged apicad, at apex equally wide as clubs. Funicles 5-segmented; segments 1 and 2 largest, long and conical; segment 1 $1.6\text{--}1.7 \times$ longer than wide and $1.3\text{--}1.4 \times$ longer than segment 2, which is $1.8\text{--}2.0 \times$ longer than wide; segment 3 $1.2 \times$ wider than long; segment 4 $1.3\text{--}1.4 \times$ longer than long; segment 5 $1.6\text{--}1.7 \times$ wider than long; clubs $1.6\text{--}1.7 \times$ longer than wide.

Pronotum slender, $1.14\text{--}1.20 \times$ wider than long, distinctly more slender than elytra, at basal half widest with weakly rounded sides, anteriorly distinctly tapered, behind anterior margin widely constricted. Disc at basal half with wide and shallow, rounded depression in middle and two shallower, less developed longitudinal depressions on sides. When cleared of scales, disc shiny, densely, finely, regularly granulate, at anterior third somewhat more shiny, with sparser granulation, and with middle depression separated by two low slender longitudinal keels. Base weakly arched. Pronotum in lateral view distinctly convex, at anterior third flattened.

Elytra oval, $1.22\text{--}1.25 \times$ longer than wide, obliquely subtruncate from base to posthumeral calli, slightly visible dorsally and well visible in dorso-lateral view; elytra with rounded sides, broadly rounded at apex. Base distinctly arched. Odd intervals with small, sparse, low protuberances, indistinctly prominent from outline in dorsal or lateral view, even intervals flat. Striae slender, completely concealed by scale vestiture. Elytra in lateral view convex.

Protibiae (Fig. 24D) moderately short and robust, $4.5\text{--}4.8 \times$ longer than wide, laterally with straight edge, apex rounded, armed with 5 dark brownish, sparse, short and fine spines and one long, slender, inside curved mucro. Meso- and metatibiae laterally armed with 6–8 fine and short, moderately dense spines and one slender, inside curved yellowish mucro. Tarsi moderately robust; segment 2 $1.4\text{--}1.5 \times$ wider than long; segment 3 $1.4\text{--}1.5 \times$ wider than long and $1.3\text{--}1.4 \times$ wider than segment 2; onychium $1.4\text{--}1.5 \times$ longer than segment 3, distinctly enlarged apicad; claws connate at short basal part, distinctly divergent.

Abdominal ventrite 1 in middle about $3 \times$ longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa distinctly longer than ventrite 2; ventrite 2 distinctly longer than ventrite 3 or 4; ventrites 3 and 4 short. Suture 1 weakly arched, finer than the other sutures. Metaventral process wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate setae.

Male genitalia. Penis (Fig. 24E) moderately short, widest at base, evenly tapered apicad along the whole length, tip shortly rounded; in lateral view slender, straight, evenly tapered apicad.

Female genitalia. Gonocoxites (Fig. 24F) articulated, wide with rounded sides, well sclerotised mainly in lateral and distal part, the latter slender and sharply pointed, curved, sabre-shaped, styli not visible. Sternite VIII with long and slender apodeme and umbrella-shaped plate, distinctly wider than long. Spermatheca (Fig. 24G) with short, wide and regularly curved cornu and large, rounded corpus; ramus not developed; nodulus very small, hump-shaped.

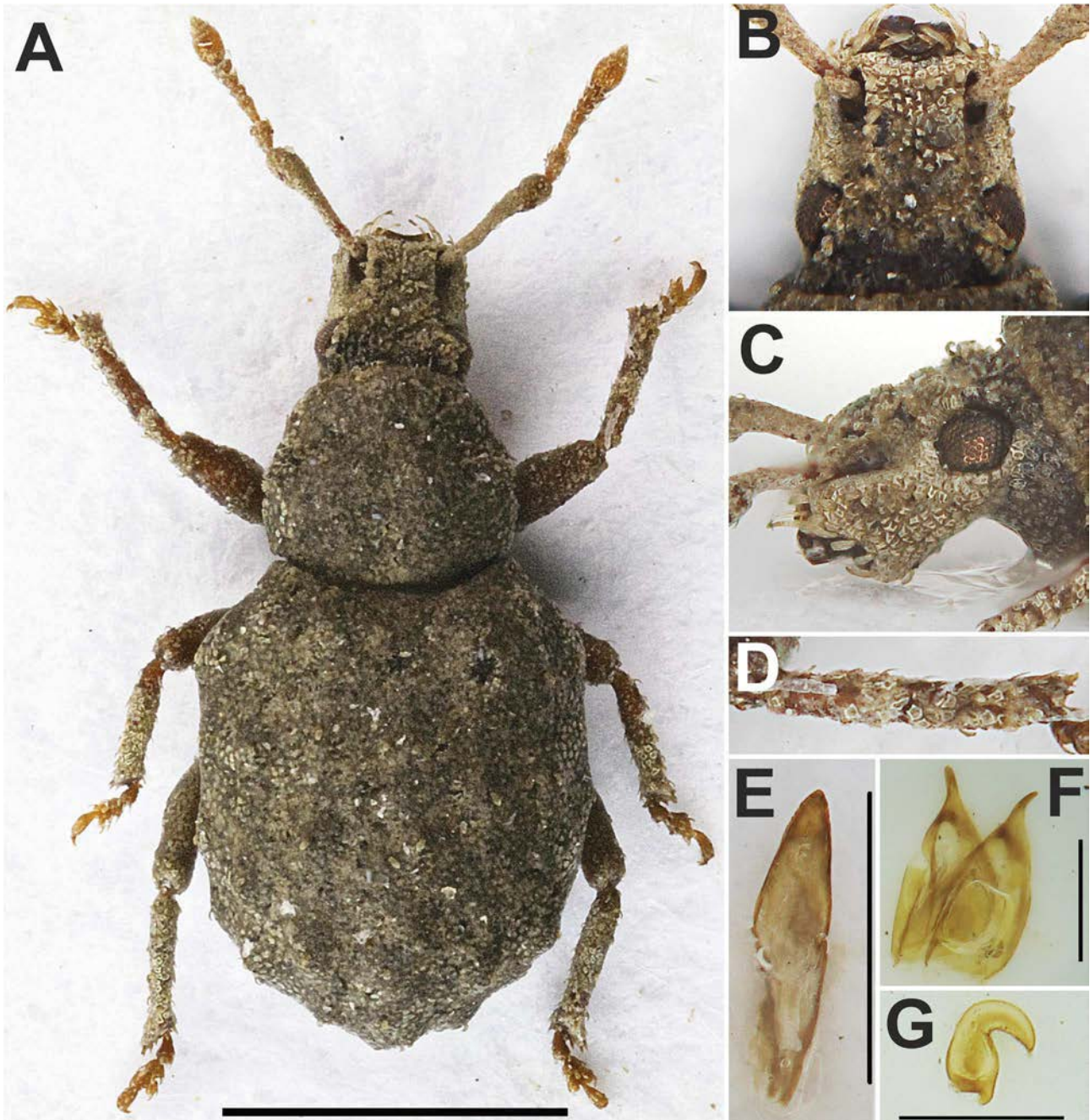


FIGURE 24. *Pentatrachyphloeus muelleriae* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F, G**).

Derivation of name. This species is dedicated to Ruth Müller, curator of Ditsong National Museum in Pretoria, who loaned us very interesting material of Entiminae for study.

Biology. Part of type material was collected to ground traps baited with bananas.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. *Pentatrachyphloeus muelleriae* sp. nov. is in its flat elytra with low tubercles and with raised setae only on odd intervals, dorsally well visible antennal scrobes and 5-segmented funicles similar only to *P. tuberculatus* sp. nov., from which it is possible to distinguish it by narrow rostrum, scrobes dorsally wide and penis ventrally evenly tapered apicad. Similar elytra with tubercles and setae on only odd intervals are also found in *P. andersoni* sp. nov., *P. bufo* sp. nov. and *P. endroedyi* sp. nov., but all these three species can be easily distinguished by their funicle with 6 segments and scrobes dorsally not visible.

***Pentatrachyphloeus musili* sp. nov.**

(Figs 25A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:2822024B-9ADA-4D23-9B9E-8B8A80A39F9D>

Type locality. Thabazimbi, 30 km on Buffelsdriftheek Road (Limpopo, South Africa).

Type material. Holotype: ♂, ‘S. Africa, TVL [South Africa, Limpopo], Thabazimbi, 30 km on Buffelsdriftheek Rd, SE 2427 Ad, 9 Mar. 1983, C. M. Engelbrecht, NMBH 13265’ (NMBH). Paratypes: 2 ♀♀, the same data as holotype (NMBH).

Description (Figs 25A–G). Body length 1.75–1.98 mm, holotype 1.75 mm. Body (Fig. 25A) brownish, antennae and legs paler, yellowish brown, clubs slightly darker, dark brownish. The whole body in type specimens strongly incrustated by soil, with hardly visible structure of appressed scales, but scales on elytra irregularly star-shaped, with distinct puncture in the middle. Elytra with one conspicuous, sparse regular row of erect, wide spatulate setae on odd intervals, almost as long as width of one interval, distance between two setae 3–5 × as long as length of one seta. Pronotum and head with rostrum sparsely scattered with short, wide, spatulate setae, half as long as elytral setae. Scapes, femora and tibiae with semiappressed, slender, subspatulate setae, sparsely irregularly scattered, inconspicuously prominent from outline.

Rostrum (Figs 25A–C) 1.52–1.56 × wider than long, evenly tapered anteriorly with straight sides, at base 1.08–1.11 × wider than at apex; laterally convex. Epifrons wide, regularly tapered anteriorly with concave sides, at apex 0.7–0.8 × as wide as rostrum at the same place, perfectly flat, separated from head by very slender V-shaped sulcus. Antennal scrobes dorsally hardly visible; in lateral view weakly curved, enlarged posteriorly, directed to middle of eye, separated from it by slender squamose stripe. Eyes flat, hardly visible in dorsal view, only indistinctly prominent from outline of head; in lateral view short oval, placed just above middle of head. Head short and wide, weakly enlarged posteriorly, without supraocular tubercles.

Antennae (Fig. 25A) slender; scapes weakly curved at midlength, regularly gradually enlarged apically at apical half, at apex 1.1 × as wide as clubs, 4.6–4.7 × longer than wide, 1.2–1.3 × longer than funicles; funicles 6-segmented with segment 1 and 2 slender and long, conical; segment 1 twice longer than wide, 1.6–1.7 × longer than segment 2, which is 1.6–1.7 × longer than wide; segments 3–5 1.1 × longer than wide; segment 6 isodiametric; clubs 1.8 × longer than wide.

Pronotum wide, 1.53–1.63 × wider than long, widest at basal third with rounded sides, distinctly more tapered anteriorly than posteriorly, weakly constricted behind anterior margin. Disc regularly convex; base arched. Pronotum in lateral view weakly convex, at anterior third flattened.

Elytra oval, 1.18–1.21 × longer than wide, widest at midlength, with broadly rounded humeri, at basal half subparallel-sided, apically broadly rounded, with narrow striae and flat intervals. Base arched; posthumeral calli not developed. Elytra in lateral view almost flat.

Protibiae (Fig. 25D) short and robust, 4.7–4.9 × longer than wide, straight laterally, with rounded apex armed with 6 sparse, brownish short spines and one, moderately long, brownish mucro. Meso- and metatibiae laterally and mesally armed with dense, brownish short spines and long and curved mucro. Tarsi moderately slender; segment 2 1.2–1.3 × wider than long; segment 3 1.2–1.3 × wider than long and 1.5–1.6 × wider than segment 2; onychium 1.1 × longer than segment 3; claws fused at short basal part, then distinctly divergent.

Abdominal ventrite 1 in middle 3 × longer than ventrite 2 and about as long as ventrites 2–4 combined, behind metacoxa almost twice longer than ventrite 2; ventrite 2 about as long as ventrite 3 or 4; ventrites 3 and 4 short. Suture 1 slightly arched, slightly finer than the other sutures. Metaventral process about wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate, moderately long setae.

Male genitalia. Penis (Fig. 25E) short, widest at base, at short basal part parallel-sided, then abruptly tapered anteriorly, from middle part in short portion parallel-sided again, tip regularly subtriangular.

Female genitalia. Gonocoxites (Fig. 25F) flat, regularly tapered apically with long apical styli. Sternite VIII with long and slender apodeme and evenly subtriangular plate, as wide as long, tip regularly pointed. Spermatheca (Fig. 25G) with slender, regularly curved cornu; corpus rounded; ramus twice longer than wide, with parallel sides, obliquely bent down; nodulus distinctly smaller than ramus, subtriangular, about as long as wide.

Derivation of name. This species is dedicated to Alois Musil (1868–1944), well known Czech traveller, orientalist, Arabist and ethnographer, who several times visited the Orient and published many discoveries from this region. He is the author of the extensive, 6 volume series „Oriental Explorations and Studies“.

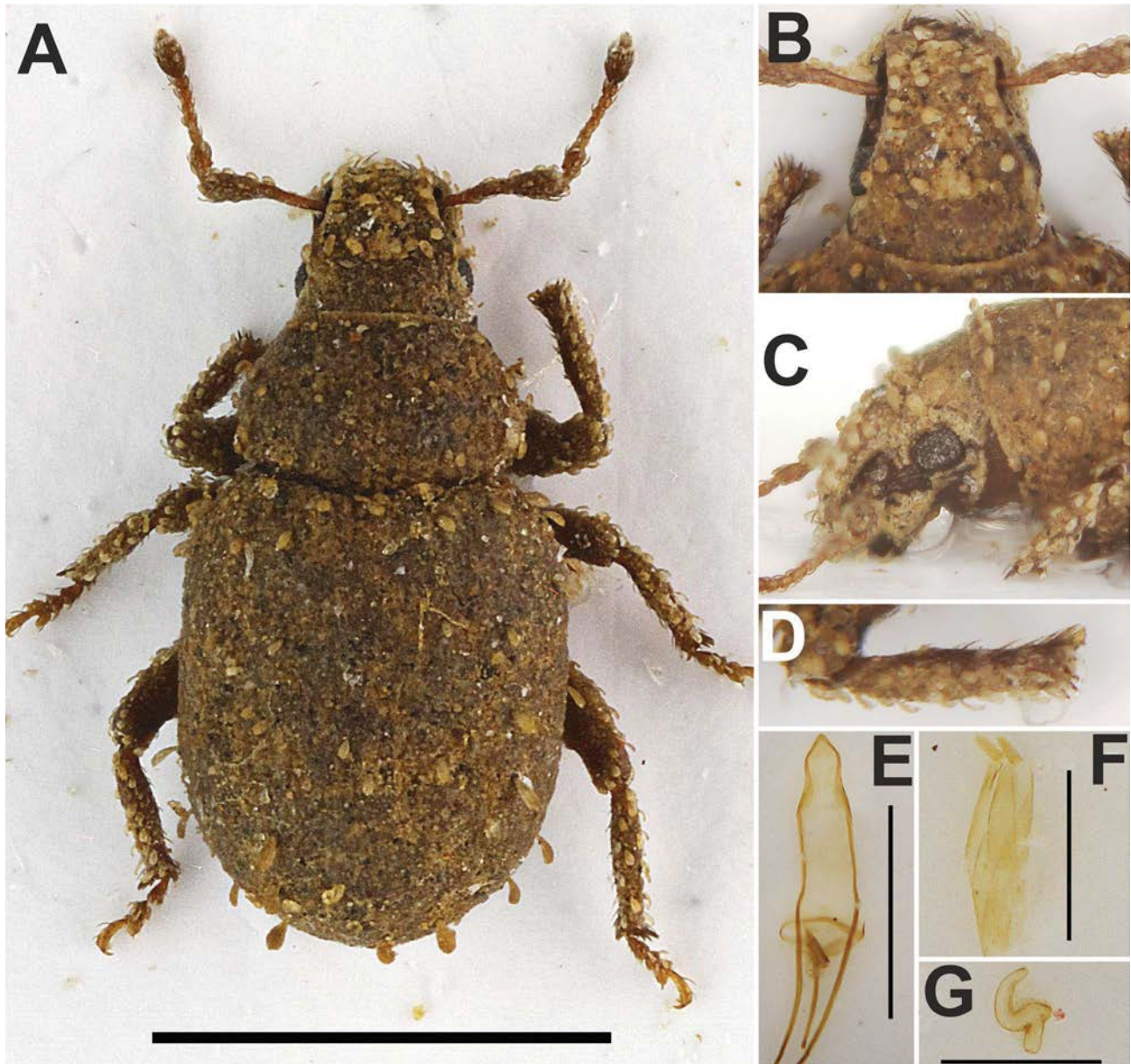


FIGURE 25. *Pentatrachyphloeus musili* **sp. nov.** **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F, G**).

Biology. Unknown.

Distribution. South Africa, Limpopo.

Differential diagnosis. Among species with 6-segmented funicle and slender elytra with raised setae only on odd intervals *P. musili* **sp. nov.** is easily distinguishable by slender funicle segments, elytra with long spatulate setae, penis distinctly constricted at midlength, and a plate of female sternite VIII subtriangular with a distinct tip.

***Pentatrachyphloeus nanus* (Fåhraeus, 1871)**

(Figs 26A–D)

Trachyphloeus nanus Fåhraeus, 1871: 37 (original description).

Trachyphloeus nanus: Borovec & Meregalli 2013: 501 (note).

Pentatrachyphloeus nanus: Borovec & Skuhrovec 2017a: 526 (taxonomic comment).

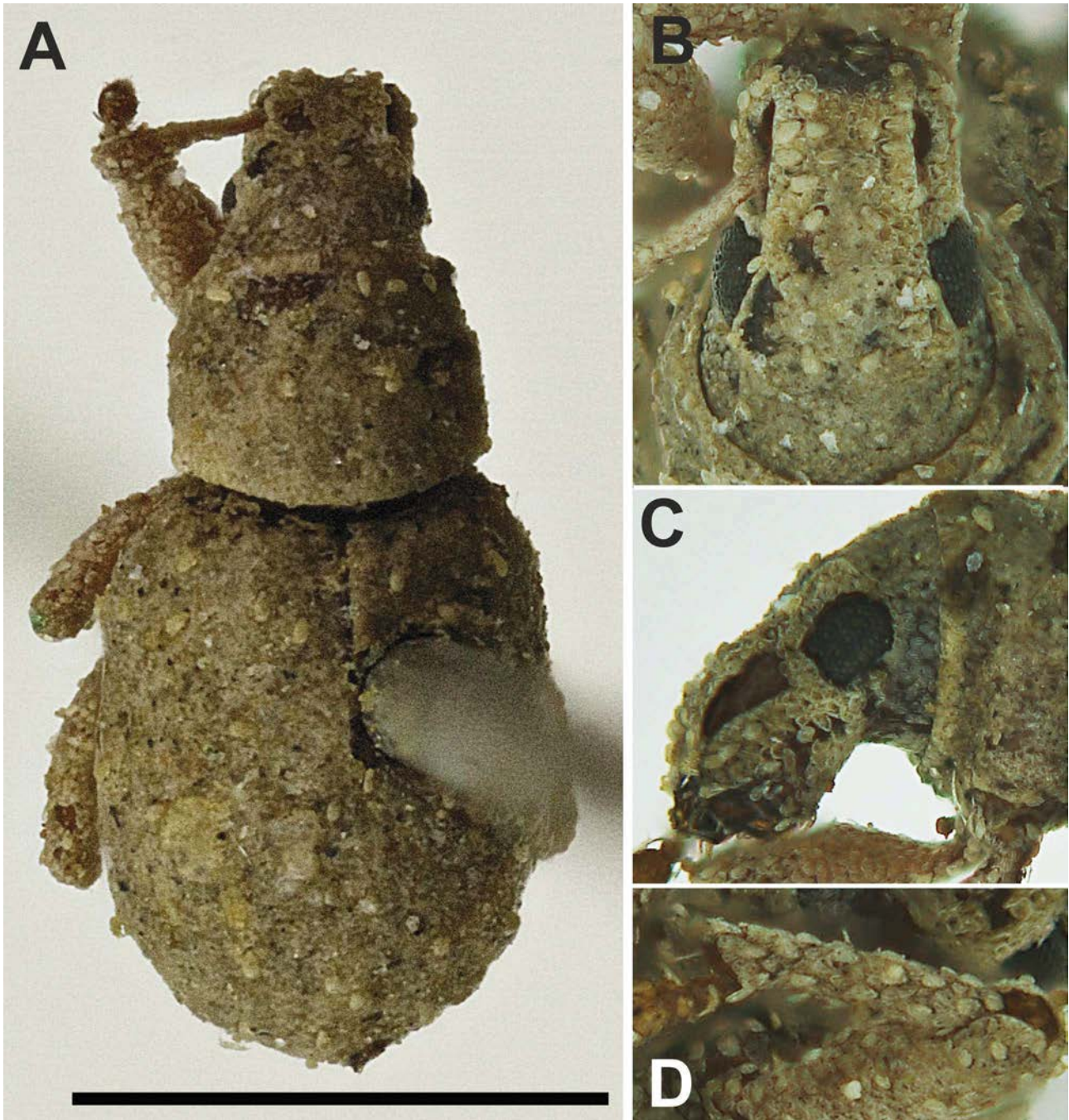


FIGURE 26. *Pentatrachyphloeus nanus* (Fåhræus, 1871). **A**—habitus, dorsal view; **B**—rostrum, dorsal view; **C**—rostrum, lateral view; **D**—protibia. Scales bar: 1 mm (**A**).

Type locality. Caffraria [South Africa].

Type material. Detailed by Borovec & Skuhrovec (2017a).

Redescription (Figs 26A–D). Body length 1.63 mm, lectotype. Body (Fig. 26A) including antennae and legs unicoloured light reddish brown, the only known specimen, lectotype is partly teneral. Appressed scales are badly recognizable due to soil incrustation, but most likely rounded, finely longitudinally striate, imbricated. Elytra with semiappressed subspatulate setae, slightly longer than half of width of one interval, creating one sparse row on odd intervals, distance between two setae about $6\text{--}7 \times$ longer than length of one seta. Pronotum and head with rostrum covered with same, only slightly shorter setae, irregularly sparsely scattered. Scapes, femora and tibiae with very short, oval setae, not prominent from outline. Colour of vestiture is not possible to define under soil covering of lectotype.

Rostrum (Figs 26A–C) $1.22 \times$ wider than long, slightly regularly tapered anteriorly with straight sides, at base $1.10 \times$ wider than at apex; laterally weakly convex, slightly separated from head by transverse sulcus. Epifrons flat, regularly weakly tapered anteriorly with straight sides, with slender short longitudinal median stria and V-shaped sulcus separated it from head. Antennal scrobes dorsally visible at apical half of rostrum as slender furrows; in lateral view weakly curved, long, distinctly enlarged posteriorly, directed against eyes and separated from them by slender squamose stripe. Eyes moderately large, convex, prominent from outline of head; in lateral view subcircular, placed about at middle of head. Head regularly convex, with low, indistinct tubercles above eyes, enlarged posteriorly.

Antennae (Fig. 26A) moderately slender; scapes $5.0 \times$ longer than wide, slightly curved at midlength, at apical half weakly regularly gradually enlarged apically, clubs $1.2 \times$ wider than scapes at apex. Funicles 6-segmented; segments 1 and 2 long and conical; segment 1 twice longer than wide, $1.3 \times$ longer than segment 2, which is $2.1 \times$ longer than wide; segment 3 isodiametric; segments 4–6 $1.2 \times$ wider than long; clubs $1.7 \times$ longer than wide.

Pronotum $1.20 \times$ wider than long, widest at basal half, here subparallel-sided, distinctly constricted behind anterior margin. Disc regularly convex with wide constriction along the whole width; base weakly regularly arched. In lateral view pronotum almost flat, lowered at anterior third.

Elytra oval, $1.32 \times$ longer than wide, widest at midlength, with regularly rounded sides and rounded at apex. Base weakly arched; subhumeral calli very small, visible only in dorso-lateral view. Striae under incrustation not visible, odd intervals slightly more elevated than even ones, with sparse, low, small protuberances. Elytra in lateral view convex.

Tibiae short and robust; protibiae (Fig. 26D) $4.3 \times$ longer than wide, with straight lateral side, at apex rounded, armed with 5 sparse, short and fine, brownish spines and one slender, inside curved mucro; meso- and metatibiae laterally armed with sparse, short and fine spines with short mucro. Tarsi moderately robust, ratio of segments is hardly measurable; claws connected at base.

Abdominal ventrites not examined, destroyed by pin.

Sex and genitalia not examined.

Distribution. Species described from Caffraria, which is the historical name of southeastern part of South Africa, today's Eastern Cape.

Biology. Unknown.

Differential diagnosis. One from the smallest species of the genus. It is similar only to *P. musili* **sp. nov.**, *P. laevis* **sp. nov.** and *P. baumi* **sp. nov.** in its 6-segmented funicle, elytra with raised setae only on odd intervals, with all intervals equally flat and head without distinct supraocular tubercle. It is possible to distinguish it from *P. musili* **sp. nov.** by wide funicle segments and short raised elytral setae, from *P. laevis* **sp. nov.** by matt appressed scales and long onychium and from *P. baumi* **sp. nov.** by well visible raised elytral setae and narrow rostrum and pronotum.

***Pentatrachyphloeus ntinini* sp. nov.**

(Figs 27A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:F72586FE-6668-446E-B225-84431DCD1F26>

Type locality. Ntinini Nature Reserve, $28^{\circ}17' S$, $30^{\circ}56' E$, 1015 m (KwaZulu-Natal, South Africa).

Type material. Holotype: 1 ♂, 'SOUTH AFRICA, KZN [KwaZulu-Natal], Ntinini Nature Reserve, $28^{\circ}17' S$, $30^{\circ}56' E$, 1015 m, 16.xi.2010, R. Stals [lgt.], Savanna grassveld: very short grass. Adults in soil; same size & colour as soil particles' (SANC). Paratypes: 32 ♂♀, the same data as holotype (SANC).

Description (Figs 27A–G). Body length 1.56–2.28 mm, holotype 1.89 mm. Body (Fig. 27A) blackish, femora and tibiae dark brownish, antennae and tarsi paler, reddish brown, spines at anterior part of tibiae dark brownish to blackish, only mucro yellowish. Body vestiture hardly visible due to strong body soil incrustation. Appressed scales small, irregularly angular to oval, some scales with small hole in middle, sparse, distance between two scales about equal to diameter of one scale. Semiappressed setae on whole body very small, blackish, hardly visible, short oval, about equally long as diameter of one appressed scale, form one regular moderately dense row on each interval, on odd intervals denser than on even ones, on pronotum and head with rostrum sparsely irregularly scattered, on scapes, femora and tibiae not prominent from outline.

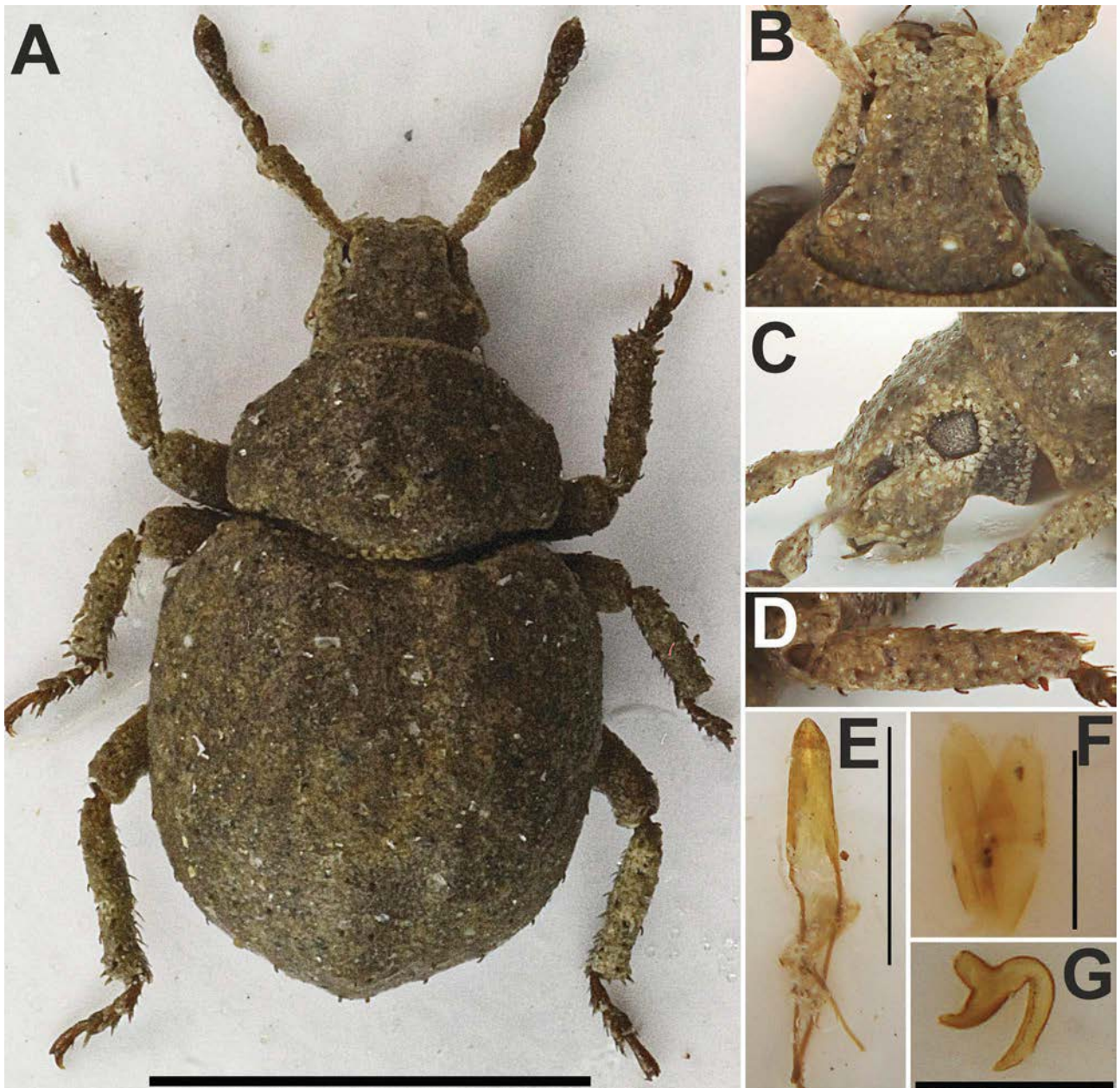


FIGURE 27. *Pentatrachyphloeus ntinini* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F, G**).

Rostrum (Figs 27A–C) short and very wide, $1.64\text{--}1.73 \times$ wider than long, before eyes abruptly dilated anteriorly and then distinctly regularly tapered anteriorly, with weakly concave sides, at base $1.27\text{--}1.36 \times$ wider than at apex; laterally almost flat and in same level as head, only at anterior part convex. Epifrons at short basal part tapered anteriorly, then about parallel-sided, with weakly convex sides, moderately wide and almost flat, with shallow, ill-defined longitudinal furrow, weakly separated from head by narrow V-shaped sulcus. When cleared of scales shiny, finely and densely granulate, regularly shallowly longitudinally depressed, separated from head by very narrow, V-shaped sulcus, vertex with stria shallowly depressed. Epistome densely covered with appressed, long and wide, spatulate setae, transversally placed. Antennal scrobes dorsally invisible; in lateral view almost regularly enlarged posteriorly, in short anterior part glabrous, then squamose, dorsal and ventral margin moderately visible as reaching posterior edge of eyes, dorsal margin creating short longitudinal keel above eyes. Eyes small, subcircular, slightly convex, hardly visible in dorsal view; laterally placed just above middle of head. Head short and wide, enlarged posteriorly, with low, longitudinal supraocular tubercles visible mainly in dorso-lateral view.

Antennae (Fig. 27A) short and robust; scapes $1.4\text{--}1.5 \times$ longer than funicles, $3.4\text{--}3.6 \times$ longer than wide, distinctly but regularly, gradually enlarged apicad, at apex $1.3 \times$ wider than clubs. Funicles 5-segmented; segment 1 largest, equally long as segment 2 and 3 combined, $1.5\text{--}1.6 \times$ longer than wide and $1.6\text{--}1.7 \times$ longer than segment 2; segment 2 $1.5\text{--}1.6 \times$ longer than wide; segment 3 isodiametric; segment 4 $1.2\text{--}1.3 \times$ wider than long; segment 5 $1.6\text{--}1.7 \times$ wider than long; clubs $1.6\text{--}1.7 \times$ longer than wide.

Pronotum distinctly short and wide, $1.61\text{--}1.71 \times$ wider than long, widest at basal half, here subparallel-sided with weakly rounded sides, at anterior half distinctly tapered anteriorly with wide constriction behind anterior margin. Disc with distinct, moderately deep, but very wide three longitudinal depressions, with ill-defined margins, reaching from base to anterior transverse constriction. When cleared of scales shiny, finely and moderately densely granulate, with distinct transverse furrow creating constriction just behind anterior third of pronotum. Base distinctly, irregularly arched. Pronotum in lateral view irregularly but distinctly convex, anterior third flattened.

Elytra short and wide, $1.08\text{--}1.13 \times$ longer than wide, with moderately rounded sides and very broadly rounded apex. Base distinctly arched, interval 1 at posterior half and intervals 3, 5 and 7 along the whole length more elevated than the others, at short basal part more than on the disc; striae sparsely and widely punctate. Posthumeral calli weakly visible in dorso-lateral view. Elytra in lateral view moderately convex.

Protibiae (Fig. 27D) robust, $3.7\text{--}4.0 \times$ longer than wide, at apex weakly enlarged, apex rounded, without indentations, armed with 5 sparse, short, blackish spines and slender, curved yellowish mucro; in males lateral edge almost straight and spines shorter and finer, brownish. Meso- and metatibiae armed with short and sparse, 8–10 brownish spines and yellowish mucro. Tarsi slender, segment 2 $1.2 \times$ wider than long; segment 3 $1.2\text{--}1.3 \times$ wider than long and $1.1\text{--}1.2 \times$ wider than segment 2; onychium weakly and regularly enlarged apicad, $1.4\text{--}1.5 \times$ longer than segment 3; claws fused at short basal part, then distinctly divergent.

Abdominal ventrite 1 in middle about $3 \times$ longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa longer than ventrite 2; ventrite 2 slightly longer than ventrite 3 or 4; ventrites 3 and 4 short. Suture 1 indistinctly arched, only distinctly finer than the other sutures. Metaventral process wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of spatulate, almost rounded setae.

Male genitalia. Penis (Fig. 27E) long and slender, widest at base, about evenly tapered anteriorly, at short apical part more than in middle, tip subtriangular; in lateral view slender, almost straight, widest at apical quarter, distinctly tapered apicad.

Female genitalia. Gonocoxites (Fig. 27F) flat, regularly tapered anteriorly, narrowly tapered apicad, weakly sclerotised, with short apical styli. Sternite VIII with long and slender apodeme and small plate, which is umbrella-shaped, very short and wide, more than twice wider than long. Spermatheca (Fig. 27G) with long and slender, weakly curved cornu; ramus subrectangular, weakly longer than wide; nodulus longer than wide, evenly tapered apicad, with weakly curved tip.

Derivation of name. This new species takes its name from the name of Ntinini Nature Reserve.

Biology. Type material was collected on soil among short grass in savanna grassveld.

Distribution. South Africa, KwaZulu-Natal.

Differential diagnosis. Unique species, distinctly distinguishable from all other *Pentatrachyphloeus* species by rostrum in dorsal view before eyes strikingly, abruptly, angulately widened anteriorly. Only *P. schoemani* **sp. nov.** has also rostrum widest shortly before the base and then distinctly tapered anteriorly, but from this species with 7-segmented funicle and distinct dense raised setae on the whole dorsal part of body *P. ntinini* **sp. nov.** easily differs by funicle 5-segmented and dorsal part of the body with hardly visible raised setae, as long as one appressed scale.

Pentatrachyphloeus oberprieleri **sp. nov.**

(Figs 28A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:696ED467-913C-424C-BCD5-E35F6CA4FE0E>

Type locality. Pretoria, Wapadrand, $25^{\circ}28' \text{ S}$, $28^{\circ}11' \text{ E}$ (Gauteng, South Africa).

Type material. Holotype: ♀, 'South Africa, Tvl [Gauteng], Tvl, Pretoria, Wapadrand, 25.48S 28.20E, 08.ii.1984, R. Oberprieler, collected off *Setaria lindbergiana*' (SANC). Paratypes: 3 ♀♀, the same data as holotype (SANC); 1 ♀, '[South Africa, North West], Hartbeespoort, SE 25 27 Db, 9-X-1976, E. Holm' (SANC); 1 ♂ 1 ♀, 'S. [South] Africa, Transvaal [Gauteng], Meintjies Kop, Pretoria, 25. NOV.1967, JA&S Slater, T. Schuh

[lgt.]' (CMNC); 2 ♀♀, 'S. [South] Africa, TVL [Gauteng], 20-25 km E Pretoria, 17, 18.XI.1984, H. & A. Howden [lgt.]' (CMNC); 5 ♂♂, 'RSA [South Africa], Gauteng, Pretoria, hill inside of town, 25°41.507' S, 28°12.534' E, 1417 m, 3.xii.2017, general sweeping (grassnetting) and beating of shrubs and trees, R. Borovec & M. Meregalli lgt.' (RBSC, JSPC, MMTI).

Description (Figs 28A–G). Body length 1.69–2.02 mm, holotype 1.97 mm. Body (Fig. 28A) dark brownish, antennae and legs brownish, basal part of scapes, funicles and tarsi paler, reddish brown. Body of all specimens incrustated by soil, appressed scales hardly recognizable, probably irregularly angular and longitudinally striate or depressed in middle. Elytra with conspicuous semierect dark brownish subspatulate setae, creating one regular row on each interval, about longer than half of width of one interval, distance between two setae about 4–5 × longer than length of one seta. Pronotum and head with rostrum with identical setae, only slightly shorter than elytral ones, densely irregularly distributed. Scapes, femora and tibiae with irregularly scattered semiappressed short and slender dark brownish setae, moderately dense, hardly prominent from outline. Body vestiture probably dark brownish.

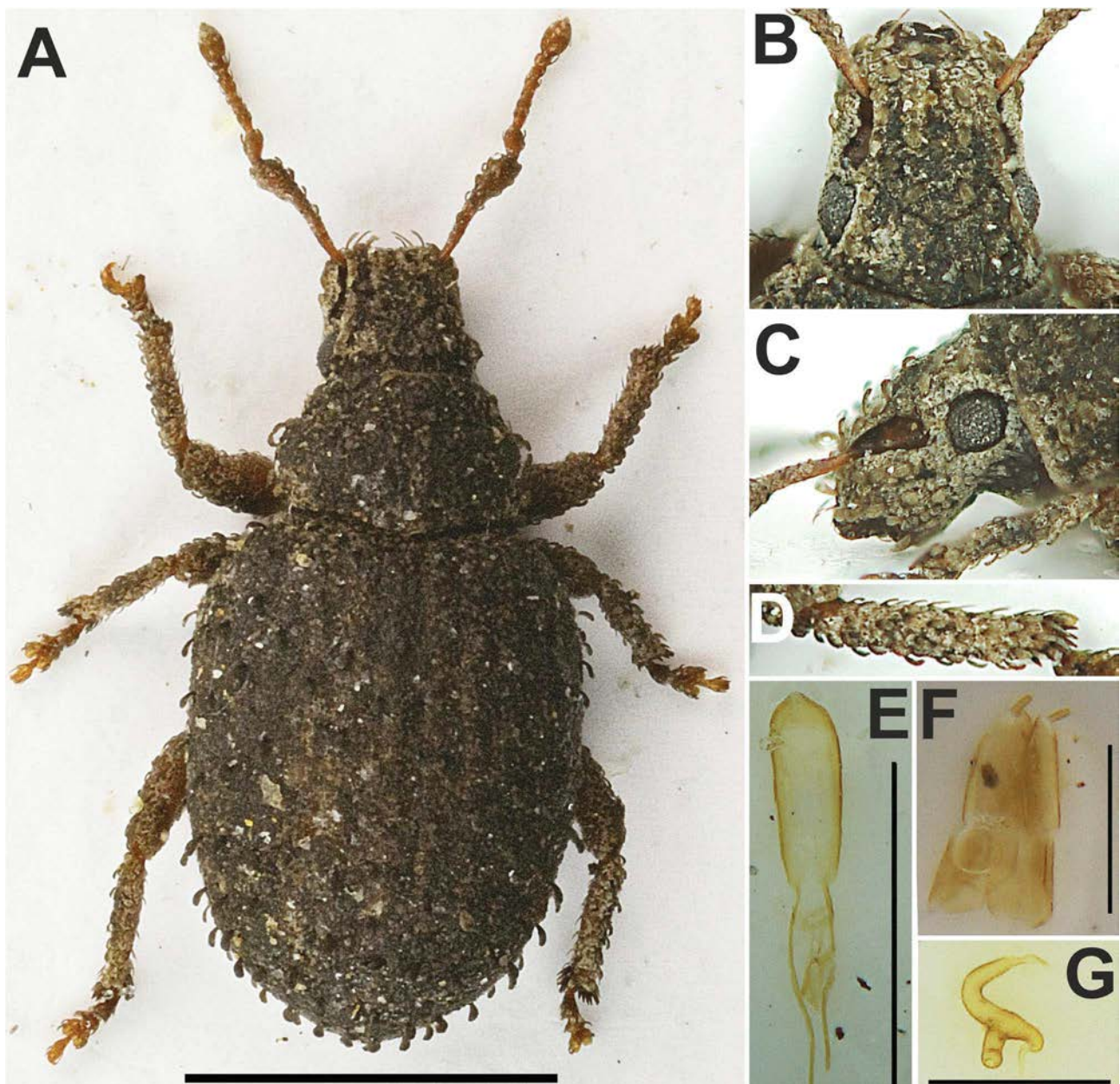


FIGURE 28. *Pentatrachyphloeus oberprieleri* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F**, **G**).

Rostrum (Figs 28A–C) 1.39–1.50 × wider than long, slightly and regularly tapered anteriorly with straight sides, at base 1.07–1.09 × wider than at apex; laterally weakly convex. Epifrons wide and flat, weakly regularly tapered anteriorly with straight sides, at apex about wider than three quarters of width of rostrum at same place, separated from head by slender transverse sulcus and with median longitudinal furrow, both concealed by scales. When cleared of scales moderately matt, rough, with wide longitudinal median furrow and two slender lateral furrows along the whole length. Antennal scrobes in dorsal view narrow in apical half and enlarged posteriorly in basal half; in lateral view almost straight, somewhat enlarged posteriorly, long, separated from eyes by slender squamose stripe. Eyes small, weakly convex and faintly prominent from outline of head; laterally subcircular, placed about at middle of head. Head wide and weakly convex, without tubercles above eyes; when cleared of scales rough, with median moderately wide longitudinal furrow reaching anterior margin of pronotum and several short and wide, longitudinal striae.

Antennae (Fig. 28A) less robust as in the other *Pentatrachyphloeus* species; scapes straight, 4.5–4.6 × longer than wide and 1.2–1.3 × longer than funicles, at apical half regularly enlarged apically, at apex 1.1–1.2 × wider than clubs. Funicles 7-segmented; segments 1 and 2 long, slender and conical; segment 1 1.6–1.7 × longer than wide and 1.4–1.5 × longer than segment 2, which is 1.6–1.7 × longer than wide; segments 3–6 1.3–1.4 × wider than long; segment 7 longer than previous, 1.2–1.3 × wider than long; clubs 1.6 × longer than wide.

Pronotum 1.47–1.56 × wider than long, widest at basal half with rounded sides, tapered anteriorly, constricted behind anterior margin. Disc regularly convex; base weakly arched. When cleared of scales disc rough, moderately matt, irregularly coarsely punctate with longitudinal median furrow along whole length. In lateral view weakly convex, behind anterior margin flattened.

Elytra oval, 1.24–1.27 × longer than wide, widest at midlength, with regularly rounded sides. Base weakly arched. All intervals equally wide and almost flat, striae narrow, concealed by scales. When cleared of scales moderately shiny, intervals narrow, weakly convex, striae wide, deepened and distinctly punctate. Posthumeral calli almost indistinct, visible only in dorso-lateral view. Elytra in lateral view weakly convex.

Tibiae (Figs 28A, D) short and robust; protibiae 4.2–4.5 × longer than wide, with lateral edge straight, at apex rounded with 5–6 sparse, short and small, dark brownish spines and one inside curved mucro. Meso- and metatibiae laterally armed with dense, numerous, moderately long, slender, bristle-shaped, dark brownish to blackish spines and one short yellowish mucro. Tarsi short and robust; segment 2 1.3–1.4 × wider than long; segment 3 1.5–1.6 × wider than long and 1.3–1.4 × wider than segment 2; onychium 1.2–1.3 × longer than segment 3, distinctly enlarged apically; claws connate at short basal part, divergent.

Abdominal ventrite 1 in middle about 2.5 × longer than ventrite 2 and slightly shorter than ventrites 2–4 combined, behind metacoxa distinctly longer than ventrite 2; ventrite 2 shorter than ventrites 3 and 4 combined; ventrites 3 and 4 short. Suture 1 slightly arched, finer than the other sutures. Metaventral process wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of slender subspatulate setae.

Male genitalia. Penis (Fig. 28E) moderately long and slender, from base slightly evenly enlarged apically, widest before tip; tip regularly tapered, subtriangular with slightly convex sides. Penis in lateral view almost straight.

Female genitalia. Gonocoxites (Fig. 28F) weakly sclerotised, regularly tapered apically, narrowly tapered apically, with moderately long apical styli. Sternite VIII with slender and moderately sized apodeme and with large, subtriangular plate, about longer than wide. Spermatheca (Fig. 28G) with slender and moderately short, almost straight cornu; corpus slender, elongated; ramus slender and long, twice longer than wide, apically rounded; nodulus at basal half subtriangular, at apical half slender, curved.

Derivation of name. This species is dedicated to its collector, Rolf G. Oberprieler (CSIRO, Canberra, Australia), an eminent expert on South African and Australian Curculionidae.

Biology. Part of the type material was collected from *Setaria lindenbergiana* (Poaceae). Part of the material was swept from savanna-type habitat during daylight.

Distribution. South Africa, Gauteng, North West.

Differential diagnosis. Together with *P. holubi* sp. nov. the only species with 7-segmented funicle, rostrum not enlarged apically and erect elytral setae on all intervals. *P. oberprieleri* sp. nov. is easily possible to distinguish from *P. holubi* sp. nov. by erect elytral setae about longer than half of width of one interval (vs. almost longer than width of one interval in *P. holubi* sp. nov.), rostrum parallel-sided (vs. slightly tapered apically), scapes at apex 1.1–1.2 × wider than clubs (vs. 0.9 × wider than clubs), suture between ventrites 1 and 2 straight (vs. sinuose),

gonocoxites evenly tapered apically, with long apical styli (vs. abruptly tapered apically to slender, sabre-shaped arms, without styli) and plate of female sternite VIII isodiametric (vs. more than twice as wide as long).

***Pentatrachyphloeus patruelis* Voss, 1974**

(Figs 29A–F)

Pentatrachyphloeus patruelis Voss, 1974: 417 (original description).

Pentatrachyphloeus patruelis: Alonso-Zarazaga & Lyal 1999: 183 (catalogue); Borovec & Meregalli 2013: 501 (note); Borovec & Skuhrovec 2017a: 528 (taxonomic comment); Borovec & Skuhrovec 2017b: 647 (note).

Type locality. Cape Prov., Elands Height, 15 miles SW Mount Fletcher (Eastern Cape, South Africa).

Type material. Detailed by Borovec & Skuhrovec (2017a).

Redescription (Figs 29A–F). Body length 1.56–2.28 mm, holotype 1.97 mm. Body (Fig. 29A) unicoloured brownish, only apical half of scapes somewhat darker. Dorsal part of body covered with irregularly rounded scales, partly imbricated, 4–5 across one elytral interval, on pronotum, head and rostrum depressed in middle, on scapes and legs slightly smaller than on elytra. Semierect setae on whole body hardly visible, extremely small, at most longer than diameter of one appressed scale, blackish, pointed, on elytra form one regular row on each interval, moderately dense, on other parts of body irregularly scattered, not prominent from outline. Vestiture mixed from whitish scales with feeble pearly sheen and rusty brownish spots on elytra, pronotum rusty brownish with whitish lateral longitudinal stripes, rostrum rusty brownish with whitish spot in the middle of epifrons, head with white spot around ventral half of eyes.

Rostrum (Figs 29A–C) 1.44–1.51 × wider than long, from base regularly enlarged apicad with straight sides, at apex 1.06–1.09 × wider than at base; laterally weakly regularly convex. Epifrons regularly tapered anteriorly with straight sides, flat, separated from head by narrow, V-shaped sulcus, when cleared of scales glabrous, finely sparsely punctate, vaulted, sulcus distinctly V-shaped, well edged. Frons densely squamose. Epistome V-shaped, weakly more slender than epifrons at apex, extremely short. Antennal scrobes dorsally visible only at short apical part as narrow furrow; laterally short, furrow, weakly curved, glabrous, separated from eyes by wide squamose stripe, with dorsal margin directed to middle of eyes and ventral margin directed to ventral margin of eyes. Eyes moderately large, convex, prominent from outline of head; laterally subcircular, in the middle of head. Head distinctly enlarged posteriorly.

Antennae (Fig. 29A) moderately robust; scapes 4.4–4.8 × longer than wide, 1.7–1.8 × longer than funicles, weakly curved at midlength, at apical half moderately and regularly enlarged apicad, at apex 1.2–1.3 × wider than clubs. Funicles 5-segmented; segments 1 and 2 largest, conical; segment 1 1.5–1.6 × longer than wide, 1.2–1.3 × longer than segment 2, which is 1.7–1.8 × longer than wide; segments 3 and 4 1.3–1.4 × wider than long; segment 5 1.6–1.7 × wider than long; clubs 1.7 × longer than wide.

Pronotum 1.44–1.45 × wider than long, widest at basal third, with distinctly rounded sides, markedly constricted behind anterior margin. Disc regularly convex, when cleared of scales shiny, coarsely but sparsely punctate, distance between two punctures several times longer than diameter of one puncture, with very fine and small punctures between. Base weakly arched. Pronotum in lateral view convex, flattened behind anterior margin.

Elytra oval, 1.27–1.29 × longer than wide, with distinctly and regularly rounded sides, broadly rounded at apex, humeri regularly rounded, distinct, with narrow striae concealed by appressed scales and wide, almost flat intervals, with odd intervals slightly more elevated than even ones. Posthumeral calli almost indistinct also in dorso-lateral view. Base weakly arched. Elytra in lateral view convex.

Tibiae (Figs 29A, D) moderately short and robust; protibiae 3.7–4.0 × longer than wide, at apex slightly enlarged laterally, armed with 5–6 sparse, very short, dark brownish spines and short, inside curved mucro. Meso- and metatibiae laterally fringed by dark brownish, numerous, dense, slender, bristle-shaped spines and long, curved, yellowish red mucro. Tarsi short and robust; segment 2 1.7–1.8 × wider than long; segment 3 1.4–1.5 × wider than long and 1.3 × wider than segment 2; onychium equally long as segment 3, distinctly dilated apicad; claws fused at basal half, weakly divergent.

Abdominal ventrite 1 in middle about twice longer than ventrite 2 and slightly shorter than ventrites 2–4 combined, behind metacoxa equally long as ventrite 2; ventrite 2 slightly shorter than ventrites 3 and 4 combined; ventrites 3 and 4 moderately long. Suture 1 indistinctly arched, almost straight, only slightly finer than the other

sutures. Metaventral process narrower than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of slender, moderately long setae.

Male genitalia. Penis (Fig. 29E) short, ventrally at basal half subparallel-sided, at midlength shortly abruptly enlarged, at apical half subtrapezoidal, apex wide, obtuse; in lateral view very wide, at apex obtuse.

Female genitalia. Gonocoxites not examined. Sternite VIII with long and slender apodeme, plate wide, umbrella-shaped, almost twice wider than long. Spermatheca (Fig. 29F) with almost straight cornu; corpus large, elongated; ramus subsquared, slightly wider than long; nodulus equally long as ramus, subtriangular.

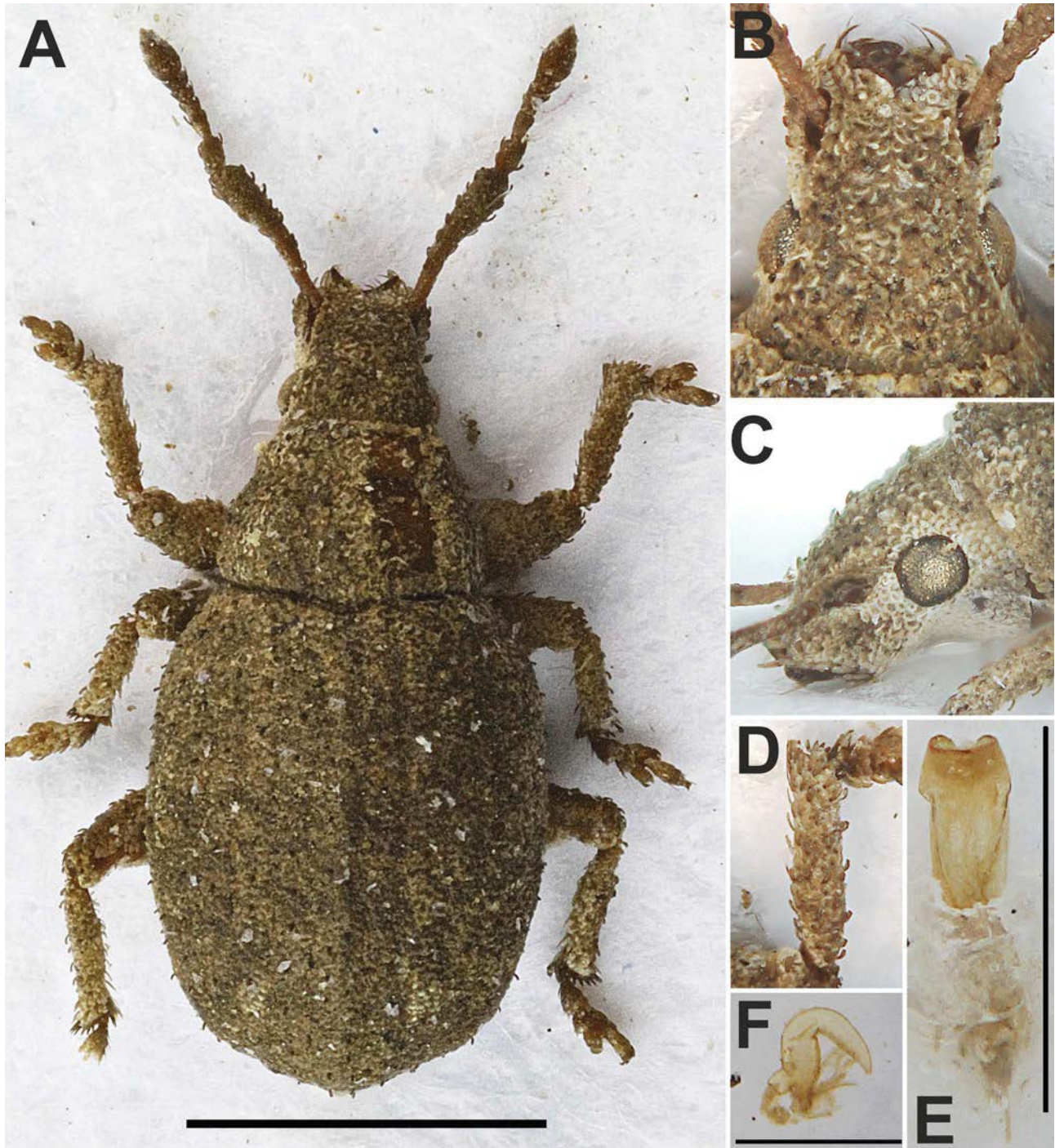


FIGURE 29. *Pentatrachyphloeus patruelis* Voss, 1974. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F**).

Distribution. South Africa, Eastern Cape.

Biology. Unknown.

Differential diagnosis. *Pentatrachyphloeus patruelis* is typical by its rostrum distinctly enlarged anteriorly. Among other species with 5-segmented funicle only *P. exiquus* sp. nov. also has enlarged rostrum, but the latter species differs in conspicuous setae on the dorsal part of the body, longer rostrum and wider pronotum. Also, four species with 7-segmented funicle have rostrum widened anteriorly. *P. patruelis* is distinguishable by elytra without tubercles and epifrons anteriorly distinctly tapered similar to *P. leleupi* sp. nov. and *P. stingli* sp. nov., from the both it is easily distinguishable by elytra without long raised setae.

***Pentatrachyphloeus pavlicai* sp. nov.**

(Figs 30A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:6564F67A-5FF2-4B46-84B0-D856852296B7>

Type locality. Krugersdrift Dam, Bloemfontein (Free State, South Africa).

Type material. Holotype: ♂, 'S. Africa, OFS [South Africa, Orange Free state, Free State now], Krugersdrift Dam, Bloemfontein, SE 2926 Aa, May 1982, Entomology Dept., NMBH 1495' (NMBH). Paratypes: 3 ♀♀, 6 spec., the same data as holotype, but 'March 1983' (1 spec.), 'March 1986' (1 spec.), '2. April 1981' (1 spec.), 'May 1983' (1 spec.), 'June 1983' (3 spec.), 'July 1984' (1 spec.) and 'October 1983' (1 spec.) (NMBH).

Description (Figs 30A–G). Body length 2.03–2.51 mm, holotype 2.03 mm. Body (Fig. 30A) brownish to dark brownish, only antennae and legs paler, brownish to reddish brown. Body covered with distinctly imbricated, rounded appressed scales, on elytra 3–4 across width of one interval, finely longitudinally striate, scales on pronotum and head with rostrum with middle depression. Elytra with dense regular row of spatulate setae, setae suberect, slightly longer than half the width of interval, equal on the disc and on apical declivity. Pronotum and head with rostrum densely regularly covered with semiappressed spatulate setae, shorter than elytral ones. Scapes, femora and tibiae densely regularly covered with short and slender, subspatulate, semiappressed setae. Body vestiture light brownish.

Rostrum (Figs 30A–C) 1.33–1.40 × wider than long, subparallel-sided or with slightly rounded sides; laterally convex. Epifrons flat, longitudinally shallowly indistinctly depressed, distinctly tapered anteriorly with slightly concave sides, at apex 0.6 × as wide as half width of rostrum at same place, separated from head by distinct, arched, transverse sulcus before eyes. Antennal scrobes in dorsal view visible as moderately wide furrows at apical third; in lateral view weakly enlarged posteriorly, directed towards middle of eye, separated from it by slender squamose stripe. Eyes moderately large, slightly prominent from outline of head; laterally subcircular, placed about at middle of head. Head wide and enlarged posteriorly, with tubercles above eyes, visible in dorso-lateral view.

Antennae (Fig. 30A) slender; scapes straight, 5.3–5.5 × longer than wide and 1.2 × longer than funicles, at apical third clavate, at apex as wide as clubs. Funicles 7-segmented; segment 1 1.6 × longer than wide and 1.1 × longer than segment 2, which is 1.7–1.8 × longer than wide; segments 3–5 1.1–1.2 × wider than long; segment 6 1.2–1.3 × wider than long; segment 7 1.4 × wider than long; clubs 1.6–1.7 × longer than wide.

Pronotum 1.44–1.50 × wider than long, widest at basal third, with distinctly rounded sides, distinctly more tapered anteriorly, behind anterior border constricted. Disc regularly convex with short median longitudinal ill-defined stria at basal half; base almost straight; in lateral view weakly convex, behind anterior border flattened.

Elytra oval, 1.35–1.37 × longer than wide, subparallel-sided. Base arched. All intervals equally wide and flat, striae very narrow, punctured, hidden by scales. Posthumeral calli almost indistinct, visible only in dorso-lateral view. Elytra in lateral view almost flat.

Protibiae (Fig. 30D) 5.3–5.5 × longer than wide, with lateral edge straight, at apex obliquely subtruncate with 4–5 small, blackish spines and brownish mucro. Meso- and metatibiae fringed by dense, short, blackish spines and short brownish mucro. Tarsi somewhat slender; segment 2 1.3–1.4 × wider than long; segment 3 1.5–1.6 × wider than long and 1.2–1.3 × wider than segment 2; onychium 1.6–1.7 × longer than segment 3; claws connate at short basal part, then divaricate.

Abdominal ventrite 1 in middle 2.5 × longer than ventrite 2 and slightly shorter than ventrites 2–4 combined, behind metacoxa 1.5 × longer than ventrite 2; ventrite 2 weakly longer than ventrite 3 or 4. Suture 1 straight, finer than the others. Metaventral process wider than transverse diameter of metacoxa. Ventrites 2–4 with transverse row of subspatulate semiappressed setae.

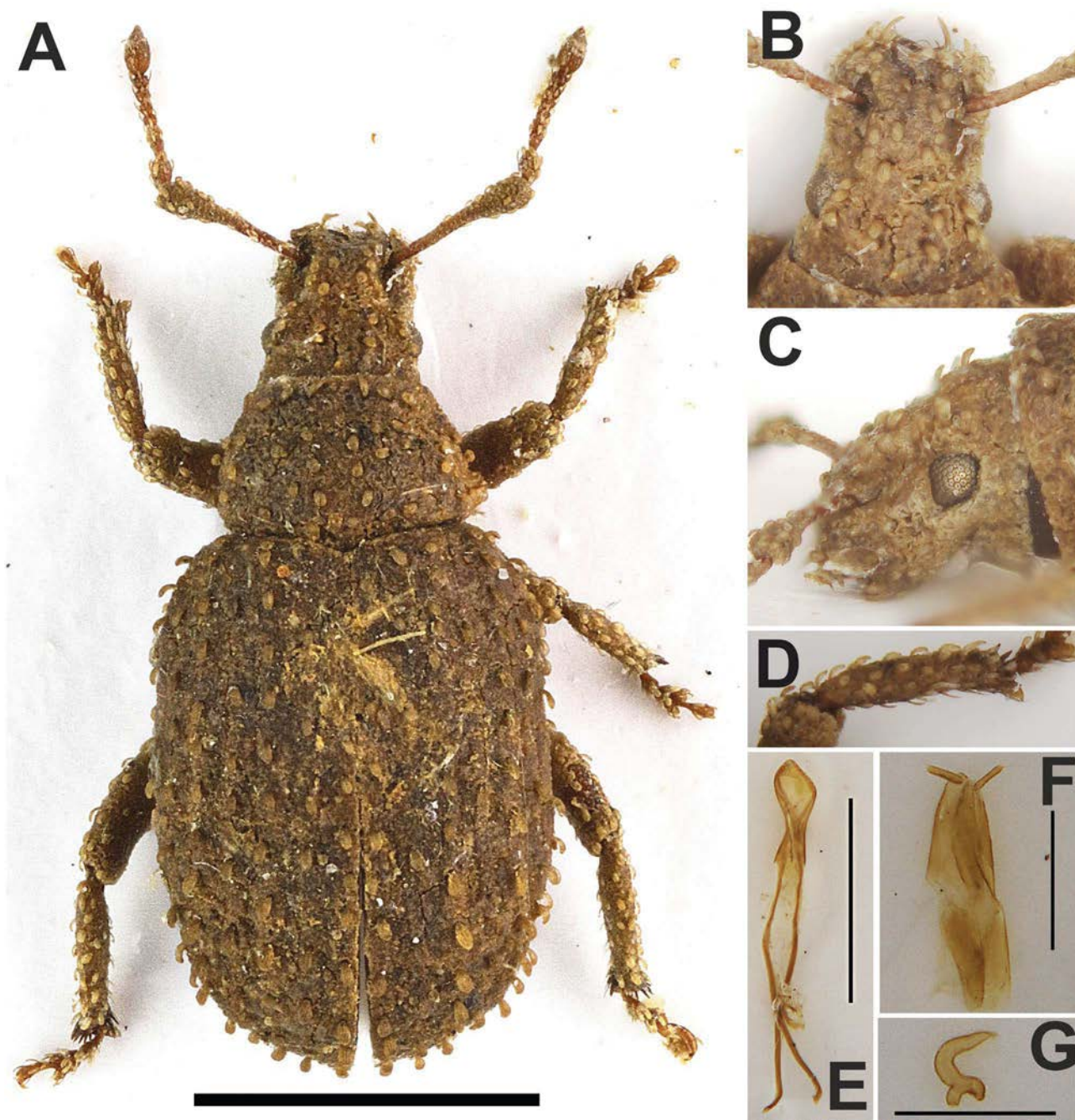


FIGURE 30. *Pentatrachyphloeus pavlicai* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F**, **G**).

Male genitalia. Penis (Fig. 30E) with concave sides, at apical quarter evenly subtriangular.

Female genitalia. Gonocoxites (Fig. 30F) weakly sclerotised, subtriangular, with very slender, long apical styli. Sternite VIII with moderately robust apodeme, widest at midlength, with subtriangular slender plate, 1.2–1.3 × longer than wide. Spermatheca (Fig. 30G) with almost straight cornu; corpus slender, elongated; ramus tubular, weakly longer than wide; nodulus 2 × longer than wide, curved.

Derivation of name. This newly described species is dedicated to Czech musician and composer Jiří Pavlica, who spent some time in festivals in South Africa and who, in co-operation with Dizu Plaatjies, South African musician and expert in African culture, produced a CD and series of concerts where they managed to connect original native folk music of both countries.

Biology. Unknown.

Distribution. South Africa, Free State.

Differential diagnosis. *Pentatrachyphloeus pavlicai* **sp. nov.** is similar to *P. soutpansbergensis* **sp. nov.**, *P. rudyardi* **sp. nov.** and *P. lajumensis* **sp. nov.** in slender funicle 7-segmented, raised setae on all intervals with a high density of setae and gonocoxites with long styli. In pronotum wide, funicle segment 2 long and spatulate elytral setae it is most similar to the latter, from which it can be distinguished by head with supraocular lobes, subparallel-sided elytra, elytral setae equally long along the whole length, long onychium and short ramus of spermatheca and different structure of length of abdominal ventrites.

***Pentatrachyphloeus rudyardi* sp. nov.**

(Figs 31A–F)

<http://zoobank.org/urn:lsid:zoobank.org:act:D6422445-0B7C-4FB3-BFD3-7EB774D45D41>

Type locality. Gonden Tribal Authority, 22°54'46" S 30°03'50" E, Soutpansberg Mountain (Limpopo, South Africa).

Type material. Holotype: ♀, 'RSA, Limpopo, Gonden Tribal Authority, 22°54'46" S 30°03'50" E, Soutpansberg Mountain, Bushveld, Pitfall trap, 4.xii.2012, C. Schoeman lgt.' (TMSA).

Description (Figs 31A–F). Body length 3.24 mm, holotype. Body (Fig. 31A) including antennae and legs dark brownish. Body covered with imbricated, rounded appressed scales, on elytra 4 across width of one interval, finely longitudinally striate. Elytra with dense regular row of subspatulate setae, on disc semierect, as long as half width of interval, at apical declivity erect, distinctly longer than half width of one interval. Pronotum and head with rostrum densely regularly covered with short, semiappressed, subspatulate setae. Scapes, femora and tibiae densely regularly covered with short, subspatulate, semiappressed setae, on scapes more slender than on legs. Body vestiture light brownish.

Rostrum (Figs 31A–C) 1.29 × wider than long, with parallel straight sides; laterally convex. Epifrons flat, dorsally shallowly longitudinally concave, weakly tapered anteriorly with slightly concave sides, at midlength wider than half width of rostrum at same place, separated from head by arched, transverse sulcus at anterior margins of eyes. Antennal scrobes in dorsal view visible as very slender furrows at apical half; in lateral view narrow, weakly curved, directed towards ventral border of eye, separated from it by wide squamose stripe. Eyes moderately large, slightly prominent from outline of head; laterally subcircular, placed about at anterior third of head. Head wide and enlarged posteriorly, without tubercles above eyes.

Antennae (Fig. 31A) slender; scapes straight, 5.3 × longer than wide and 1.2 × longer than funicles, at apical third evenly enlarged apically, at apex 1.1 × wider than clubs. Funicles 7-segmented; segment 1 1.8 × longer than wide and 1.5 × longer than segment 2, which is 1.5 × longer than wide; segments 3–7 1.2–1.3 × wider than long; clubs 1.8 × longer than wide.

Pronotum 1.29 × wider than long, widest at basal third with distinctly rounded sides, distinctly more tapered anteriorly. Disc regularly convex; base almost straight; in lateral view flat.

Elytra oval, 1.32 × longer than wide, widest at basal third with indistinctly rounded sides. Base arched. All intervals equally wide and flat, striae very narrow, punctured, hidden by scales. Posthumeral calli almost indistinct, visible only in dorso-lateral view. Elytra in lateral view almost flat.

Protibiae (Fig. 31D) 5.5 × longer than wide, with lateral edge straight, at apex rounded with 7–8 small, blackish spines and brownish mucro. Meso- and metatibiae fringed by dense, short, blackish spines and brownish mucro. Tarsi short; segment 2 1.2 × wider than long; segment 3 1.4 × wider than long and 1.4 × wider than segment 2; onychium 1.5 × longer than segment 3; claws connate in basal half, weakly divaricate.

Abdominal ventrite 1 in middle 4 × longer than ventrite 2 and slightly longer than ventrites 2–4 combined, behind metacoxa twice longer than ventrite 2; ventrite 2 short, slightly longer than ventrite 3 or 4. Suture 1 slightly arched, finer than the others. Metaventral process distinctly wider than transverse diameter of metacoxa. Ventrites 2–4 with transverse row of slender, subspatulate semiappressed setae.

Male genitalia unknown.

Female genitalia. Gonocoxites (Fig. 31E) weakly sclerotised, subtriangular, with very slender, moderately long apical styli. Sternite VIII with moderately robust apodeme and with subtriangular slender plate, 1.3 × longer than wide. Spermatheca (Fig. 31F) with slender almost straight cornu; corpus robust, elongated; ramus rounded, isodiametric; nodulus straight, at basal half conical, at apical half tubular, 4 × longer than width at midlength.

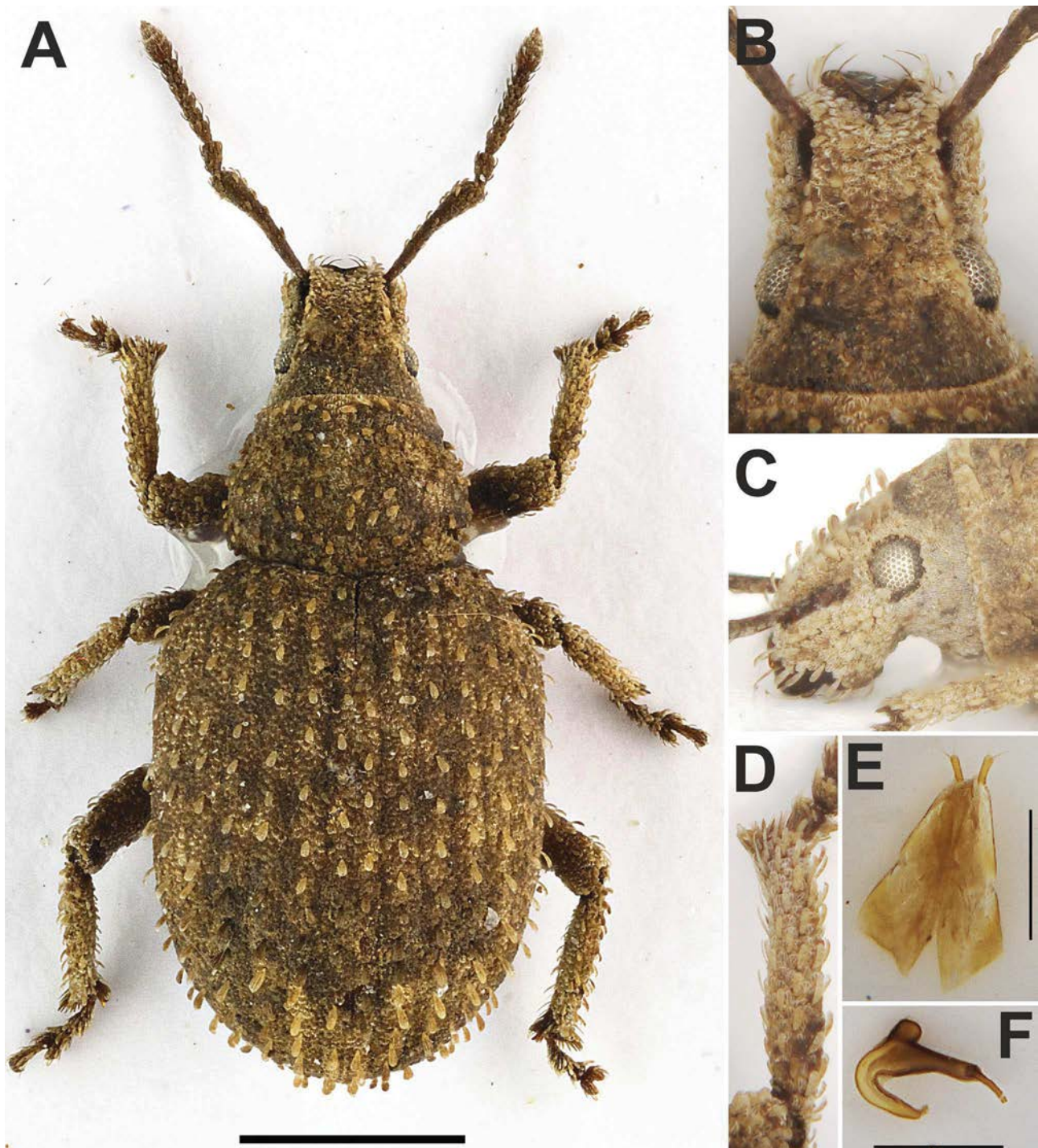


FIGURE 31. *Pentatrachyphloeus rudyardi* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—gonocoxite; **F**—spermatheca. Scale bars: 1 mm (**A**), and 0.25 mm (**E**, **F**).

Derivation of name. This species is dedicated to English journalist, short-story writer, poet and novelist Rudyard Kipling (1865–1936), author of the Jungle Book, who stayed in the Soutpansberg mountain, which inspired many of his children’s stories, especially The Just-So Stories.

Biology. Collected by pitfall trap in the bushveld.

Distribution. South Africa, Limpopo.

Differential diagnosis. In its 7-segmented funicle, dense row of semierect setae on each interval longer at apical declivity than on disc, this species is similar to *P. lajumensis* sp. nov. and *P. soutpansbergensis* sp. nov. but could be distinguished from the both species mainly by slender, subspatulate setae on the elytral disc, scrobes in

dorsal view visible only as very narrow furrows and spermatheca with nodulus long and straight, 4 × longer than at midlength wide, at basal half conical, at apical half tubular.

***Pentatrachyphloeus schoemani* sp. nov.**

(Figs 32A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:9DE1C9A0-6758-499E-9E61-66BE8617E89E>

Type locality. Marakele National Park, 24°27'46" S, 27°34'21" E (Limpopo, South Africa).

Type material. Holotype: ♂, 'RSA Limpopo, Marakele National Park, 24°27'46"S 27°34'21" E, Waterberg Mountain Bushveld, Pitfall trap, 10.ii.2010, C. Schoeman lgt.' (TMSA). Paratypes: 1 ♂, the same data as holotype (TMSA).

Description (Figs 32A–E). Body length holotype 2.75 mm, paratype 2.52 mm. Body (Fig. 32A) including scapes, femora and tibiae dark brownish, funicles with clubs and tarsi paler, reddish brown. The whole dorsal part of body, scapes, femora and tibiae densely covered with irregularly rounded appressed scales, finely longitudinally striate, 4–5 across width of one interval, completely covering integument. Elytra with one very dense regular row of subspatulate setae on all intervals, on disc semiappressed, as long as half width of one interval, at apical declivity semierect, slightly longer than half width of one interval, distance between two setae shorter than length of one seta. Pronotum and head with rostrum densely regularly covered with short, semiappressed subspatulate setae, slightly shorter than those on elytral disc. Scapes, femora and tibiae with dense, semiappressed, slender subspatulate setae. Dorsal part of body dark brownish, elytra with small, greyish spots.

Rostrum (Figs 32A–C) 1.62–1.65 × wider than long, at very short basal part enlarged apicad, here widest and then distinctly evenly tapered anteriad, with straight sides, at base 1.27–1.31 × wider than at apex; laterally convex. Epifrons conspicuously tapered anteriad, with straight sides, flat, with slender longitudinal median stria, separated from head by slender V-shaped sulcus, at apex 0.7–0.8 × as wide as rostrum at same place. Antennal scrobes dorsally invisible; in lateral view slender, furrow-shaped, directed to middle of eye, but not reaching it, separated from it by slender squamose stripe. Eyes convex, clearly prominent from outline of head; in lateral view subrotundate, placed just above middle of head. Head short and wide, without supraocular tubercles.

Antennae (Fig. 32A) slender; scapes 5.1 × longer than wide, 1.2–1.3 × longer than funicles, curved at midlength, at apical half weakly enlarged apicad, at apex equally wide as clubs; funicles 7-segmented; segments 1 and 2 slender and conical; segment 1 1.4–1.5 × longer than wide and 1.3 × longer than segment 2, which is 1.5–1.6 × longer than wide; segment 3 shortest, 1.2 × wider than long; segment 4 and 5 1.1 × wider than long; segment 6 isodiametric; segment 7 1.2–1.3 × wider than long; clubs 2.1–2.2 × longer than wide.

Pronotum short and wide, 1.70–1.83 × wider than long, widest behind midlength with distinctly rounded sides, distinctly more tapered anteriad than posteriad, weakly constricted behind anterior margin. Disc regularly convex. Base slightly arched. Pronotum in lateral view almost flat.

Elytra oval, 1.22–1.24 × longer than wide, widest at midlength with almost parallel sides, apically broadly rounded, with narrow striae and equally flat intervals. Base slightly arched; posthumeral calli hardly visible only in dorso-lateral view. Elytra in lateral view weakly convex.

Protibiae (Fig. 32D) short and robust, 5.3–5.5 × longer than wide, straight laterally, with rounded apex armed with 7–8 short brownish spines and short brownish mucro. Meso- and metatibiae laterally armed with dense, very short bristles and very short, hardly visible mucro. Tarsi moderately wide and short; segment 2 1.4 × wider than long; segment 3 1.3 × wider than long and 1.3 × wider than segment 2; onychium 1.4 × longer than segment 3; claws fused at basal half, weakly divergent at apical half.

Abdominal ventrite 1 in middle 3.5 × longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa twice longer than ventrite 2; ventrite 2 shorter than ventrites 3 and 4 combined; ventrites 3 and 4 short. Suture 1 straight, slightly finer than the other sutures. Metaventral process weakly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate, moderately long setae.

Male genitalia. Penis (Fig. 32E) slender, widest at base, irregularly tapered along whole length, with slightly concave sides at midlength; tip subtriangular with slightly convex sides; laterally weakly curved, widest at midlength, evenly tapered apicad and basad.

Female. Unknown.

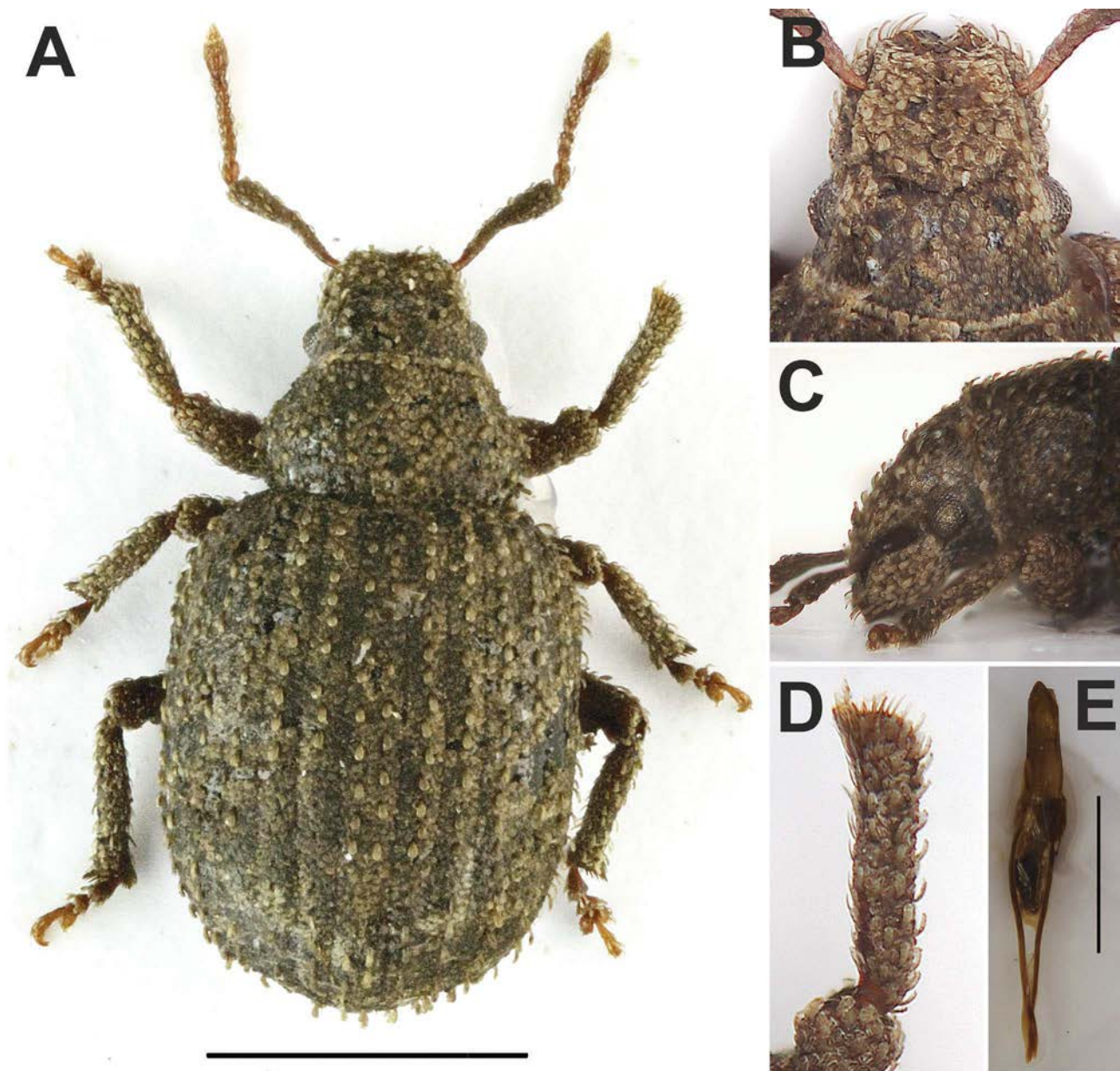


FIGURE 32. *Pentatrachyphloeus schoemani* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aeedeagus. Scale bars: 1 mm (**A**), and 0.5 mm (**E**).

Derivation of name. This new species is dedicated to the collector of the majority of *Pentatrachyphloeus* species known from Limpopo, an expert in the ecology of this region, Colin Schoeman from University of Venda (South Africa).

Biology. Collected by pitfall traps in the bushveld.

Distribution. South Africa, Limpopo.

Differential diagnosis. *Pentatrachyphloeus schoemani* sp. nov. is easily distinguished from all other *Pentatrachyphloeus* species with 7-segmented funicle by rostrum widest shortly before the base and then distinctly tapered with straight sides.

Pentatrachyphloeus soutpansbergensis sp. nov.

(Figs 33A–F)

<http://zoobank.org/urn:lsid:zoobank.org:act:77FD139C-4C69-4619-9CF1-66A2542BB0E3>

Type locality. Bluegums Poort, 22°57'50" S, 29°53'44" E, Soutpansberg summit (Limpopo, South Africa).

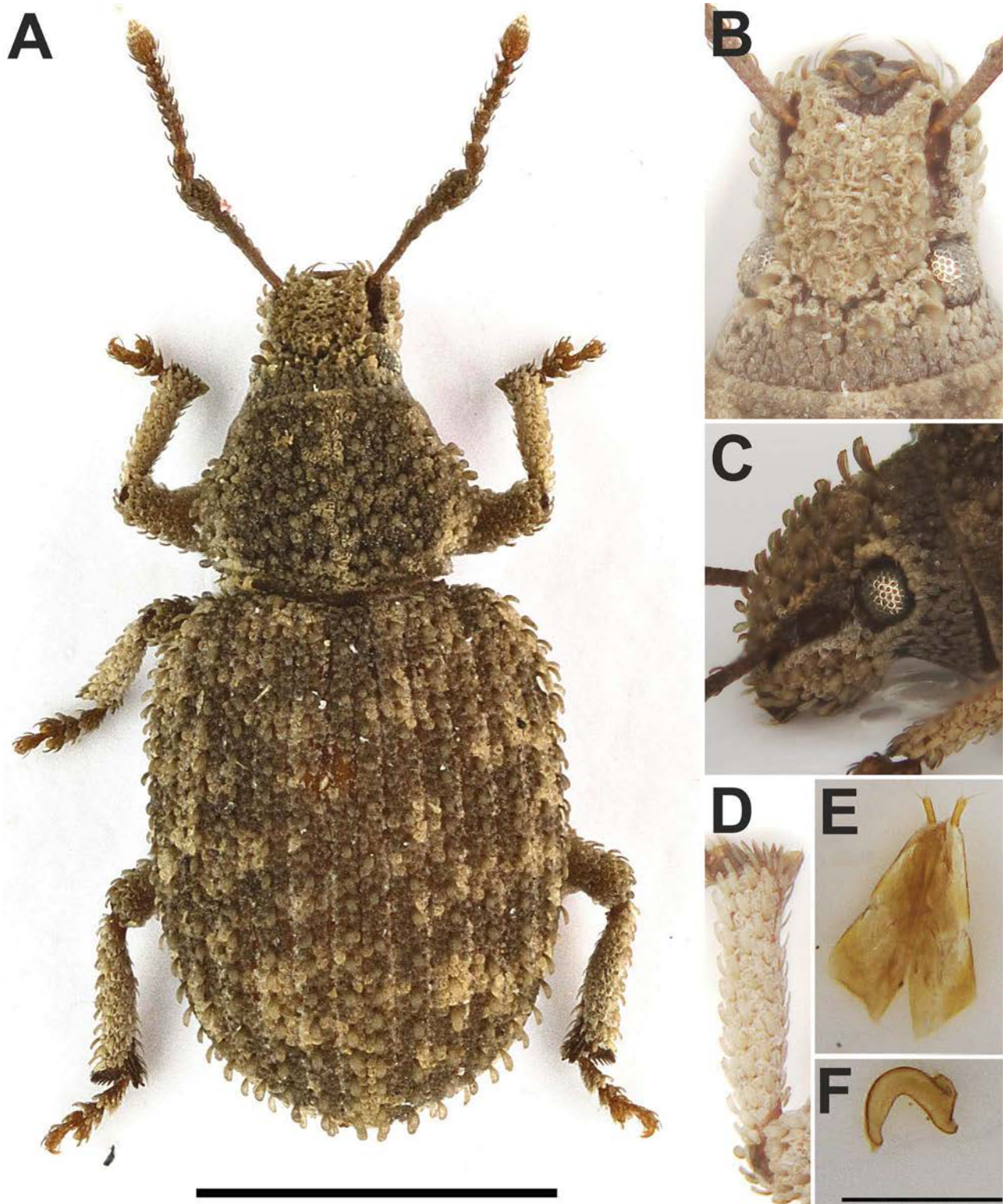


FIGURE 33. *Pentatrachyphloeus soutpansbergensis* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—gonocoxite; **F**—spermatheca. Scale bars: 1 mm (**A**), and 0.25 mm (**E**, **F**).

Type material. Holotype: ♀, 'RSA, Limpopo, Bluegums Poort, 22°57'50" S 29°53'44" E, Soutpansberg Summit, Sourveld, Pitfall trap, 15.ii.2012, C. Schoeman lgt.' (TMSA).

Description (Figs 33A–F). Body length 2.56 mm, holotype. Body (Fig. 33A) brownish, antennae and legs dark brownish, clubs and tarsi paler, reddish brown. Body covered with imbricated, rounded, moderately large appressed scales, on elytra 3 across width of one interval, finely longitudinally striate. Elytra with dense regular row of spatulate setae, on disc semiappressed, as long as half width of interval, at apical declivity semierect, slightly longer than half width of one interval. Pronotum and head with rostrum densely regularly covered with short, semiappressed, spatulate setae. Scapes, femora and tibiae densely regularly covered with short, subspatulate, semiappressed setae, on scapes more slender than on legs. Body vestiture dark brownish, epifrons and lateral stripes on pronotum, and small spots on elytra paler, light brownish.

Rostrum (Figs 33A–C) $1.34 \times$ wider than long, subparallel-sided; laterally distinctly convex. Epifrons wide and flat, weakly evenly tapered anteriorly with straight sides, dorsally shallowly longitudinally depressed, separated from head by distinct, arched, transverse sulcus at middle of eyes. Antennal scrobes in dorsal view visible as moderately wide furrows of equal width; in lateral view enlarged posteriorly, directed towards ventral border of eye, but not reaching it. Eyes moderately large, slightly prominent from outline of head; laterally subcircular, placed about at middle of head. Head wide and distinctly enlarged posteriorly, without tubercles above eyes. Lateral and ventral part densely longitudinally striate.

Antennae (Fig. 33A) slender; scapes straight, $5.1 \times$ longer than wide and $1.3 \times$ longer than funicles, at apical half evenly enlarged apically, at apex $1.1 \times$ wider than clubs. Funicles 7-segmented; segment 1 $1.6 \times$ longer than wide and $1.6 \times$ longer than segment 2, which is $1.2 \times$ longer than wide; segments 3–6 $1.1 \times$ wider than long; segment 7 $1.2 \times$ wider than long; clubs $1.9 \times$ longer than wide.

Pronotum $1.32 \times$ wider than long, widest behind midlength with distinctly rounded sides, more tapered anteriorly than posteriorly. Disc regularly convex; base almost straight; in lateral view flat.

Elytra oval, $1.32 \times$ longer than wide, widest at midlength, with distinctly rounded sides. Base arched. All intervals equally wide and flat, striae very narrow, punctured, hidden by scales. Posthumeral calli almost indistinct, visible only in dorso-lateral view. Elytra in lateral view flat.

Protibiae (Fig. 33D) $5 \times$ longer than wide, with lateral edge straight, at apex rounded with 7–8 small, blackish spines and brownish mucro. Meso- and metatibiae fringed by dense, short, blackish spines and short brownish mucro. Tarsi short; segment 2 $1.4 \times$ wider than long; segment 3 $1.3 \times$ wider than long and $1.1 \times$ wider than segment 2; onychium $1.2 \times$ longer than segment 3; claws connate in basal half, parallel.

Abdominal ventrite 1 in middle $3 \times$ longer than ventrite 2 and about equally long as ventrites 2–4 combined, behind metacoxa $1.5 \times$ longer than ventrite 2; ventrite 2 shorter than ventrites 3 and 4 combined; ventrites 3 and 4 short. Suture 1 straight, finer than the others. Metaventral process weakly wider than transverse diameter of metacoxa. Ventrites with short semiappressed setae.

Male genitalia unknown.

Female genitalia. Gonocoxites (Fig. 33E) weakly sclerotised, narrowly long oval, with very slender, moderately long apical styli. Sternite VIII with slender apodeme and with subtriangular, isodiametric plate. Spermatheca (Fig. 33F) with regularly curved cornu; corpus elongated; ramus slender, twice as long as wide, pressed to corpus; nodulus short, isodiametric, directed apically.

Derivation of name. This species is named after Soutpansberg mountain, an exceptional mountain rich in nature in Limpopo province.

Biology. Collected to pitfall traps in the sourveld.

Distribution. South Africa, Limpopo.

Differential diagnosis. *Pentatrachyphloeus soutpansbergensis* **sp. nov.** is similar in body structure to *P. lajumensis* **sp. nov.**, other similarities are in 7-segmented funicle with slender segments, parallel-sided rostrum, each elytral intervals with dense raised setae at most as long as half the width of one interval. *Pentatrachyphloeus soutpansbergensis* **sp. nov.** differs from *P. lajumensis* **sp. nov.** by short onychium, short funicle segment 2 and short spermathecal nodulus. By the same set of characters, it is possible to distinguish *P. soutpansbergensis* **sp. nov.** from other similar species, *P. rudyardi* **sp. nov.** and *P. pavlicai* **sp. nov.**

***Pentatrachyphloeus spinimanus* sp. nov.**

(Figs 34A–F)

<http://zoobank.org/urn:lsid:zoobank.org:act:F049919C-6A4F-492C-B3B0-B49BC4A8756D>

Type locality. Kruger National Park, Satara, 24°23' S, 31°47' E (Mpumalanga, South Africa).

Type material. Holotype: ♀, 'SOUTH AFRICA [Mpumalanga]: KRUGER NATIONAL PARK: Satara, 24 23 S 31 47 E, 16.xii.1985, CH. Scholtz [lgt.]' (SANC). Paratype: 1 ♀, the same data as holotype (SANC).

Description (Figs 34A–F). Body length holotype 2.31 mm, paratype 2.41 mm. Body (Fig. 34A) brownish, antennae and legs paler, reddish brown. Appressed scales on dorsal part of body irregularly rounded, finely longitudinally striate, partly imbricated, on elytra 3–4 across width one interval. Appressed scales on antennae and legs similar to those on elytra, only smaller. Elytral intervals with moderately dense, conspicuous, regular row of setae; setae wide, subspatulate, semiappressed on disc, semierect at apical declivity, weakly longer than half width of one interval, distance between two setae slightly longer than length of one seta. Outer intervals starting from interval 8 and basal half of interval 7 with distinctly shorter setae. Pronotum and head with rostrum densely irregularly covered with the same setae as elytra, only slightly shorter. Scapes, femora and tibiae with short, slender, semiappressed, subspatulate setae.

Rostrum (Figs 34A–C) short and wide, 1.44–1.49 × wider than long, subparallel-sided with straight sides, as wide at base as at apex; in lateral view slightly convex. Epifrons wide, slightly tapered anteriorly, with straight sides, flat, shallowly longitudinally depressed; when cleared of scales densely punctate, separated from head by slender, V-shaped sulcus. Antennal scrobes dorsally hardly visible at anterior part of rostrum; laterally weakly curved and enlarged posteriorly, directed to middle of eyes, separated from them by slender squamose stripe. Eyes moderately large, dorsally prominent from outline of head; laterally subrounded, placed above middle of head. Head flat and wide, with low longitudinal tubercles above eyes, visible mainly in dorso-lateral view; head behind eyes enlarged posteriorly; vertex when cleared of scales densely punctate with slender longitudinal middle stria.

Antennae (Fig. 34A) moderately slender; scapes 1.4–1.5 × longer than funicles, 5.1–5.3 × longer than wide, at basal half weakly S-shaped, at apical half evenly enlarged apically, at apex equally wide as clubs; funicles 6-segmented; segment 1 1.3–1.4 × longer than wide and 1.6–1.7 × longer than segment 2, which is 1.3–1.4 × longer than wide; segment 3 1.1 × wider than long; segments 4 and 5 1.2–1.3 × wider than long; segment 6 1.3–1.4 × wider than long; clubs 1.6–1.7 × longer than wide.

Pronotum 1.41–1.45 × wider than long, widest at basal third, with distinctly rounded sides, behind anterior margin distinctly constricted. Disc regularly convex. Base weakly arched. Pronotum laterally convex, behind anterior margin lowered.

Elytra long oval, 1.23–1.29 × longer than wide, widest at midlength, with weakly rounded sides. Base weakly arched; subhumeral calli in dorso-lateral view weakly visible. All intervals almost flat. Striae completely concealed by scales. Elytra in lateral view almost flat.

Tibiae (Figs 34A, D) short and robust, protibiae 5.3–5.6 × longer than wide, apex of protibiae distinctly enlarged outside and inside, distinctly lobed with shallow but long outer and inner indentation; lateral and middle lobe armed with long, slender, curved blackish spine; inner lobe only mucronate; inner indentation with short and small brownish spine. Meso- and metatibiae laterally armed with fringe of slender brownish yellow spines and inside curved short brownish mucro. Apical surface glabrous. Tarsi with segment 2 1.2–1.3 × wider than long; segment 3 1.6–1.7 × wider than long and 1.3–1.4 × wider than segment 2; onychium 2.5 × longer than segment 3; claws fused at basal half, then slightly divergent.

Abdominal ventrite slender, 1.1–1.2 × longer than wide; ventrite 1 in middle about 1.5 × as long, behind metacoxa equally long as ventrite 2; ventrite 2 longer than ventrites 3 and 4 combined. Suture 1 fine, sinuose; the other ventrites straight, deep and wide. Metaventral process weakly wider than transverse diameter of metacoxa.

Male. Unknown.

Female genitalia. Gonocoxites (Fig. 34E) articulated, proximal portion short and wide, regularly tapered apically, in distal part abruptly elongated to long and very slender, sabre-shaped tips, curved, divergent outside, styli not visible. Sternite VIII with long and slender apodeme and wide, umbrella-shaped plate, almost twice wider than long. Spermatheca (Fig. 34F) with cornu almost straight, evenly tapered apically; corpus large; ramus rounded, short and wide, distinctly wider than long; nodulus very long and slender, only somewhat shorter than cornu, tapered mainly at short basal part, then tubular, slightly curved.

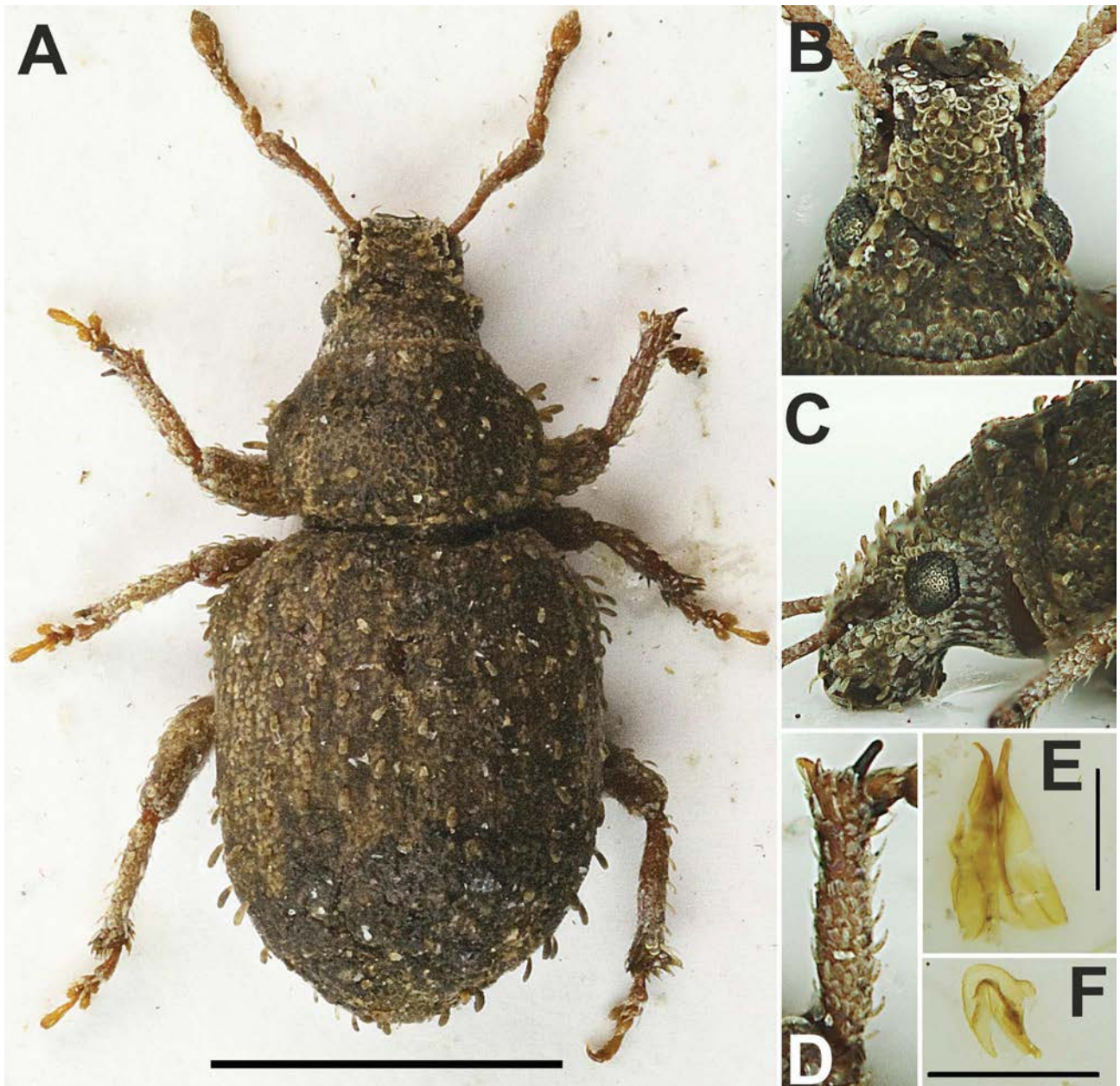


FIGURE 34. *Pentatrachyphloeus spinimanus* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—gonocoxite; **F**—spermatheca. Scale bars: 1 mm (A), and 0.25 mm (E, F).

Derivation of name. The Latin name of this new species derives from the prominent protibial spines.

Biology. Unknown.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. This species is clearly distinguishable from all other species of South African Trachyphloeini by the lobed apex of protibiae armed with two long and slender, laterally directed spines.

***Pentatrachyphloeus stingli* sp. nov.**

(Figs 35A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:842C9805-A504-4D5D-8D73-53F72E5D0B4E>

Type locality. Lapalala Wilderness, Nylstroom, 23°51' S, 28°17' E (Limpopo, South Africa).

Type material. Holotype: ♂, 'S. Africa, TVL [South Africa, Transvaal, Limpopo now], Lapalala Wilderness, Nylstroom, 23°51'S, 28°17'E, 21-23 Jan. 1987, S. Louw [lgt.], NMBH 22590' (NMBH).

Description (Figs 35A–E). Body length holotype 2.36 mm. Body (Fig. 35A) including antennae and legs dark brownish, only apical half of antennal scapes darker. Appressed scales on dorsal part of body irregularly angular, imbricated, at middle depressed, completely covering integument, 3–4 across one interval width; appressed scales on scapes, femora and tibiae similar but smaller. Erect setae on elytra form one dense conspicuous regular row on all intervals, subspatulate, widest at apex, distinctly longer than half width of one interval, equally long on disc and at apex, distance of two setae as long or slightly longer than twice length of one seta. Semierect setae on pronotum and head with rostrum subspatulate, about half as long as elytral setae, densely irregularly distributed. Semiappressed setae on scapes, femora and tibiae short, slender, hardly prominent from outline. Body vestiture light brownish with dark brownish irregular small spots on elytra and two large spots on pronotal disc; erect setae light brownish.

Rostrum (Figs 35A–C) $1.31 \times$ wider than long, slightly enlarged anteriorly with straight sides, at apex $1.05 \times$ wider than at base; laterally weakly convex. Epifrons distinctly tapered anteriorly, at basal half with slightly convex, at apical half with slightly concave sides, at apex $0.6 \times$ as wide as rostrum at same place, longitudinally shallowly depressed, separated from head by arched, slender transverse sulcus. Antennal scrobes dorsally well visible at anterior half, pit-shaped; laterally narrow, directed towards ventral border of eye, separated from eyes by slender squamose stripe. Eyes moderately large, somewhat convex and weakly prominent from outline of head; in lateral view subcircular, placed at middle of head. Head wide and flat, short, with low tubercles above eyes, behind eyes enlarged posteriorly, below eyes finely longitudinally striate; vertex with slender median longitudinal stria.

Antennae (Fig. 35A) moderately slender; scapes $5.0 \times$ longer than wide and $1.3 \times$ longer than funicles, straight, evenly enlarged apically, at apex equally wide as clubs. Funicles 7-segmented; segments 1 and 2 largest, conical; segment 1 $1.3 \times$ longer than wide, equally wide as segment 2, which is $1.6 \times$ longer than wide; segments 3–5 isodiametric; segment 6 $1.1 \times$ wider than long; segment 7 $1.2 \times$ wider than long; clubs $1.8 \times$ longer than wide.

Pronotum $1.29 \times$ wider than long, widest at basal third with rounded sides, behind anterior margin weakly constricted; disc regularly convex with very slender longitudinal stria at basal two thirds. Base weakly arched. Pronotum in lateral view convex, flattened behind anterior border.

Elytra short oval, $1.22 \times$ longer than wide, with rounded sides and broadly rounded apex; all intervals equally wide and flat; striae slender, indistinctly punctate; subhumeral calli visible in dorso-lateral view; base weakly arched. Elytra in lateral view convex.

Protibiae (Fig. 35D) moderately robust, $4.8 \times$ longer than wide; with lateral edge straight, apex rounded, armed with 7 sparse, short, blackish spines and one inside curved mucro. Meso- and metatibiae laterally armed with fringe of short blackish spines and brownish mucro. Tarsi moderately robust, segment 2 $1.8 \times$ wider than long; segment 3 $1.6 \times$ wider than long and $1.2 \times$ wider than segment 2; onychium $1.4 \times$ longer than segment 3, weakly and regularly enlarged apically; claws fused at short basal part, then weakly divaricate.

Abdominal ventrite 1 in middle $4 \times$ longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa $1.5 \times$ longer than ventrite 2; ventrite 2 equally long as ventrite 3 or 4. Suture 1 fine, straight, the others deep and wide. Metaventral process wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of slender subspatulate setae.

Male genitalia. Penis (Fig. 35E) short, well sclerotised, widest at base, weakly regularly tapered apically with slightly concave sides, apex regularly subtriangular; in profile regularly curved with elongated apex.

Female. Unknown.

Derivation of name. This species is dedicated to Miloslav Stingl, Czech traveller, ethnographer and author of almost 40 books about the Mayan region, Polynesians, Inuits, Aborigines and other nations. Stingl visited 150 countries of all continents and speaks 17 languages.

Biology. Unknown.

Distribution. South Africa, Limpopo.

Differential diagnosis. In its 7-segmented funicle and slightly apically enlarged rostrum *P. stingli* sp. nov. is similar mainly to *P. leleupi* sp. nov., from which it could be distinguished mainly by equally long funicle segments 1 and 2, more robust antennal scape and protibia, shorter elytra and wider elytral raised setae. Among species with 7-segmented funicle with parallel-sided rostrum, *P. stingli* sp. nov. is the most similar to *P. holubi* sp. nov. in long erect elytral setae. It is possible to distinguish it by more robust antennae, tibiae and tarsi and also by suture between ventrites 1 and 2 sinuose and ventrite 1 $4 \times$ longer than ventrite 2.

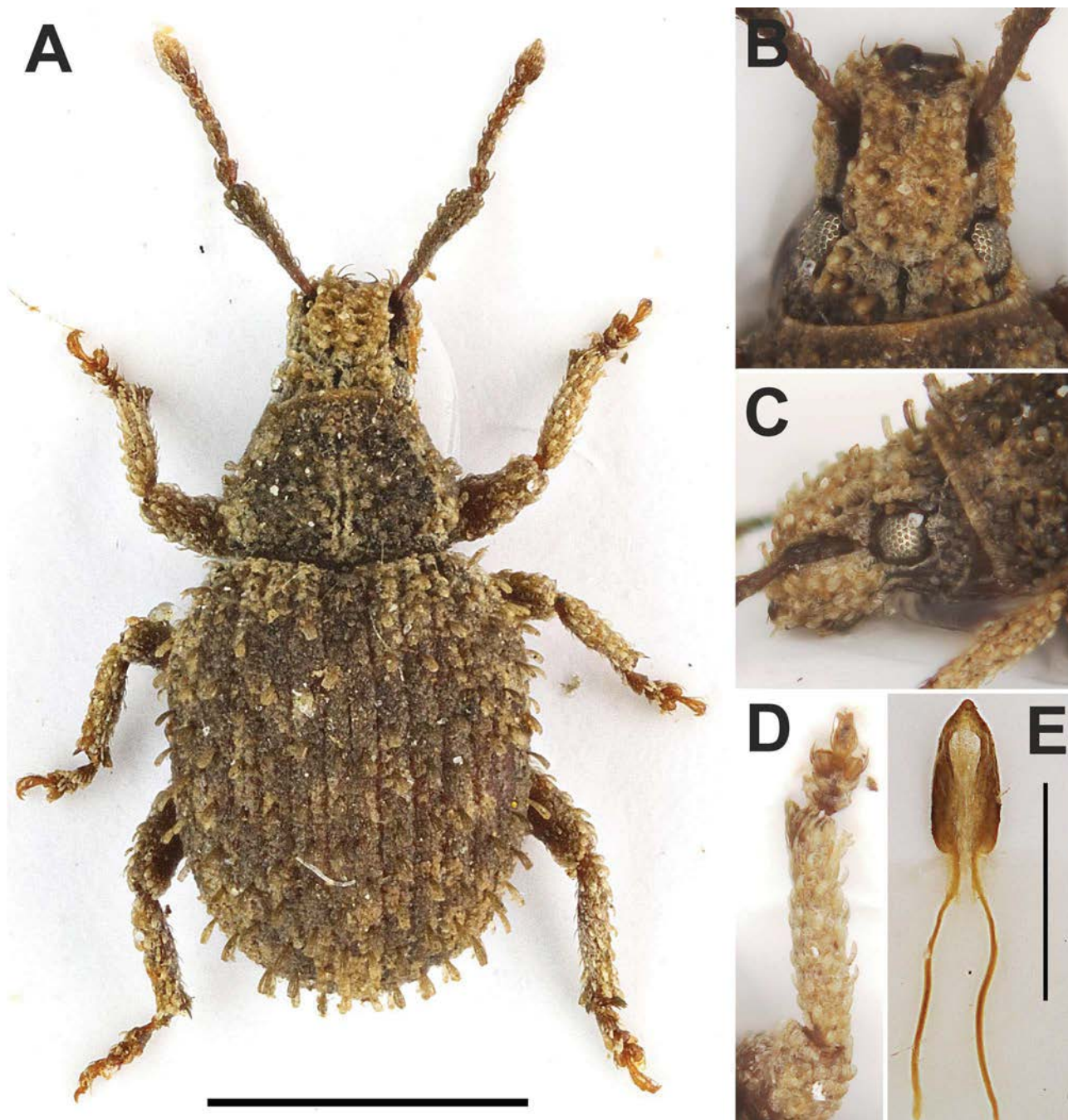


FIGURE 35. *Pentatrachyphloeus stingli* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus. Scale bars: 1 mm (A), and 0.5 mm (E).

***Pentatrachyphloeus tenuicollis* sp. nov.**

(Figs 36A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:AB6A6B80-FF17-4BB3-A10E-C8EEC8226FD3>

Type locality. Guernsey Farm, 15 km E. Klaserie, 500 m (Mpumalanga, South Africa).

Type material. Holotype: ♂, ‘S. [South] Africa, Tvl. [Transvaal, Mpumalanga now], Guernsey Farm, 15 km E. Klaserie, 28.XII.1985, 500m, H. & A. Howden [Igt.]’ (SANC). Paratype: 1 ♂, the same data as holotype (CMNC).

Description (Figs 36A–E). Body length holotype 1.94 mm, paratype 1.88 mm. Body (Fig. 36A) brownish, only clubs slightly darker. Appressed scales on elytra and pronotum irregularly angular, sparse, leaving narrow

space among them, on elytra 4 across width of interval, appressed scales on rostrum, dorsally as well as laterally, denser, with distinct depression in middle. Appressed scales on scapes, femora and tibiae similar to those on elytra, dense, concealing integument. Semierect setae on elytra conspicuous, very sparse, growing just from tips of small protuberances, subspatulate, widest apicad, slightly longer than half width of interval, 6–7 along length of interval 3 and 5. Semierect setae on pronotum and head with rostrum similar to those on elytra, shorter, sparsely irregularly scattered. Scapes, femora and tibiae with semiappressed, subspatulate setae, slightly smaller than pronotal ones.

Rostrum (Figs 36A–C) moderately slender, 1.16–1.26 × wider than long, subparallel-sided with straight sides, equally wide at base and at apex; laterally convex. Epifrons distinctly tapered anteriorly with slightly concave sides, at apex 0.5–0.6 × wider than rostrum at same place, flat. Antennal scrobes dorsally visible in anterior half as slender furrows; laterally slender and short, directed to middle of eyes, reaching to half of distance to eyes. Eyes moderately large, dorsally weakly convex and prominent from outline of head, long; laterally subrectangular, placed about in middle of head. Head flat and wide, distinctly tapered anteriorly, with longitudinal tubercles above eyes, visible mainly in dorso-lateral view; head behind eyes constricted.

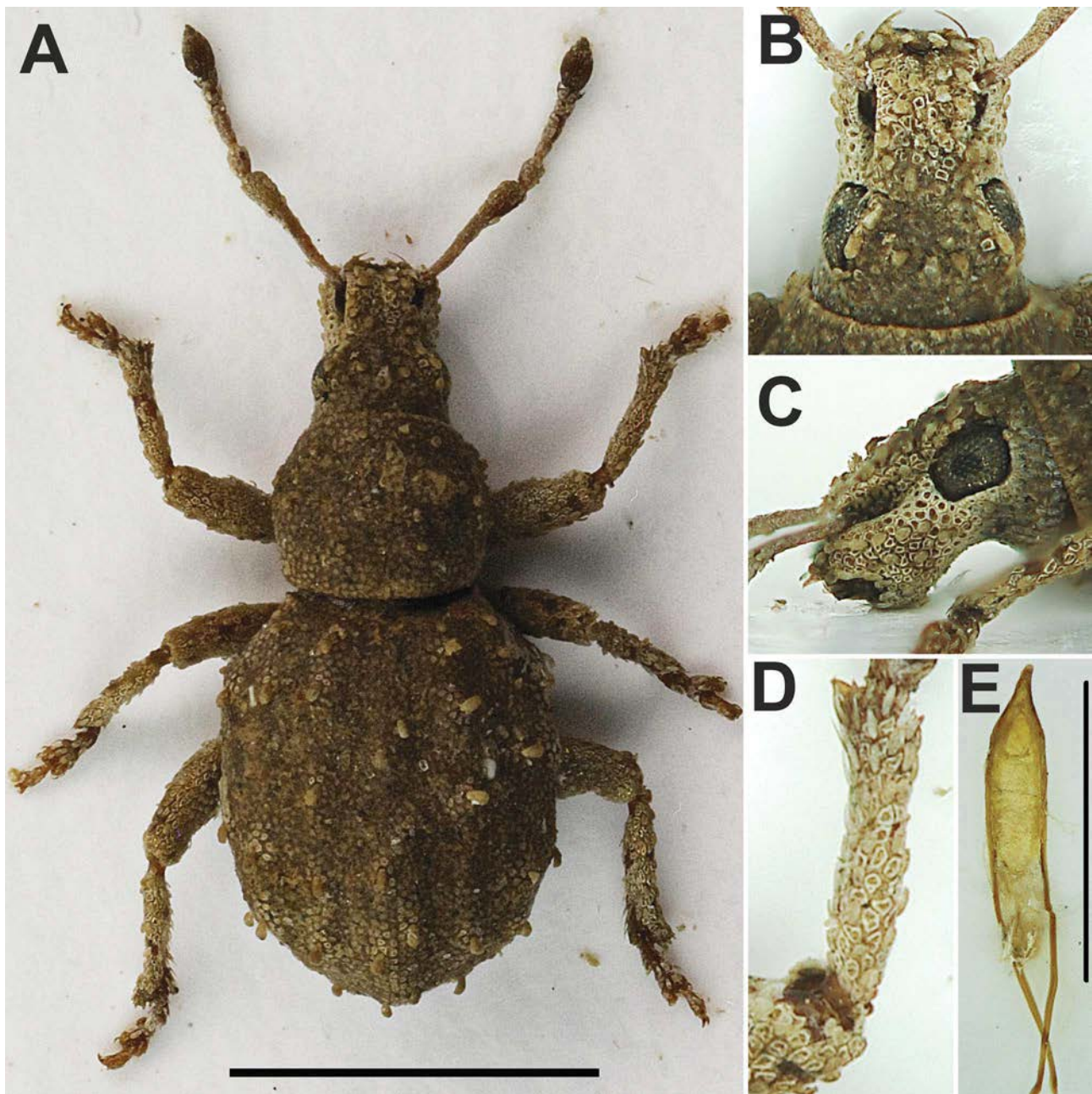


FIGURE 36. *Pentatrachyphloeus tenuicollis* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus. Scale bars: 1 mm (A), and 0.5 mm (E).

Antennae (Fig. 36A) moderately slender; scapes 1.5–1.6 × longer than funicles, 4.9–5.3 × longer than wide, at midlength slightly curved, at basal half slender, at apical half evenly enlarged apicad, at apex 0.8–0.9 × wider than clubs. Funicles 6-segmented; segment 1 long and conical, 1.4 × longer than wide and 1.6–1.7 × longer than segment 2, which is 1.5 × longer than wide; segments 3–5 1.3–1.4 × wider than long; segment 6 1.6–1.7 × wider than long; clubs 1.6–1.7 × longer than wide.

Pronotum slender, 1.11–1.19 × wider than long, distinctly more slender than elytra, widest at midlength with moderately rounded sides, more tapered anteriorly than posteriorly, behind anterior margin distinctly constricted, at basal half with three ill-defined, wide, shallow, longitudinal depressions. Base almost straight. Pronotum in lateral view distinctly convex, behind anterior margin constricted.

Elytra oval, 1.21–1.24 × longer than wide, obliquely subtruncate from base to posthumeral calli, slightly visible mainly in dorso-lateral view; elytra widest at midlength with rounded sides and broadly rounded at apex. Base arched. Odd intervals elevated, interval 1 mainly at posterior half, with sparse small protuberances along whole length; even intervals flat. Striae completely concealed by scales. Elytra in lateral view distinctly convex.

Tibiae (Figs 36A, D) short and robust, protibiae 5.6–5.8 × longer than wide, laterally with straight edge, apex rounded, armed with 6–7 short and sparse, yellowish spines and inside curved mucro. Meso- and metatibiae laterally armed with moderately dense, short yellowish spines and inside curved mucro; apical surface densely squamose, only small area around tarsal insertion glabrous. Tarsi with segment 2 1.4–1.5 × wider than long; segment 3 1.4–1.5 × wider than long and 1.2–1.3 × wider than segment 2; onychium 1.2–1.3 × longer than segment 3; claws fused at basal third, then weakly divergent.

Abdominal ventrite 1 in middle about 3 × longer than ventrite 2, behind metacoxa twice longer than ventrite 2; ventrite 2 weakly longer than ventrite 3 or 4, shorter than ventrites 3 and 4 combined. Suture 1 almost straight, finer than the others. Metaventral process distinctly wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate setae.

Male genitalia. Penis (Fig. 36E) distinct from all other Trachyphloeini with connate claws, ventrally in basal two thirds with weakly rounded sides, at apical third distinctly tapered with conspicuously elongated slender tip with concave sides; in lateral view almost straight, at basal two thirds moderately wide, at apical third slender, slightly curved ventrally.

Female. Unknown.

Derivation of name. Species takes its name from a combination of two Latin words, *tenuis* means slender and *collum* means pronotum.

Biology. Unknown.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. Among species with 6-segmented funicle with slender pronotum and elytra together with *P. howdenae* **sp. nov.**, the only species with odd elytral intervals elevated with raised setae. It is possible to distinguish it from *P. howdenae* **sp. nov.** by slender rostrum, shorter onychium and penis subparallel-sided in basal two thirds and then tapered apicad.

***Pentatrachyphloeus tuberculatus* sp. nov.**

(Figs 37A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:4B53ACCF-24DF-4FE1-A35E-8A1358F28E89>

Type locality. Kruger National Park, Pumbe sands, 24°07' S, 31°33' E (Mpumalanga, South Africa).

Type material. Holotype: ♂, 'S. Afr. [South Africa, Mpumalanga], Kruger Nat. Pk, Pumbe sands, 24.13 S–31.56 E, 22.11.1994, E-Y: 3061, grassnetting, Endrödy & Bellamy' (TMSA). Paratypes: 13 ♂♀, the same data as holotype (TMSA); 7 ♂♀, ditto, but '24.1.1995, E-Y: 3096, groundtraps, groundtrap with meat bait'; 5 ♂♀, ditto, but '22.11.1994, E-Y: 3060, grass tussocks'; 2 ♂♀, but '22.11.1994, E-Y: 3059, groundtraps, 60 days, groundtraps with faeces bait' (all TMSA).

Description (Figs 37A–G). Body length 2.13–2.59 mm, holotype 2.42 mm. Body (Fig. 37A) brownish, funicles with clubs and tarsi paler, reddish brown. Appressed scales on elytra irregularly oval to angular, sparse, distance between two scales about as half of their diameter, 4–5 across one interval, white-greyish with pearly or cupreous sheen. Appressed scales on pronotum and head with rostrum irregularly star-shaped with hole in middle,

distance between two scales shorter than half of diameter of one scale. Appressed scales on scapes, femora and tibiae small, irregularly angular, distinctly depressed in middle, dense, leaving only very small space among them. Semierect setae on elytra light brownish, subspatulate, about longer than third of width of one interval, very sparse, 6–7 on length of one interval, growing from tips of protuberances on odd intervals. Semierect setae on pronotum and head with rostrum about half of length of elytral setae, sparsely irregularly scattered. Scapes, femora and tibiae with setae slender, scapes and femora with setae short, semiappressed, tibiae with setae longer, semierect, prominent from outline. Body vestiture dark brownish with spots of greyish, pearly scales.

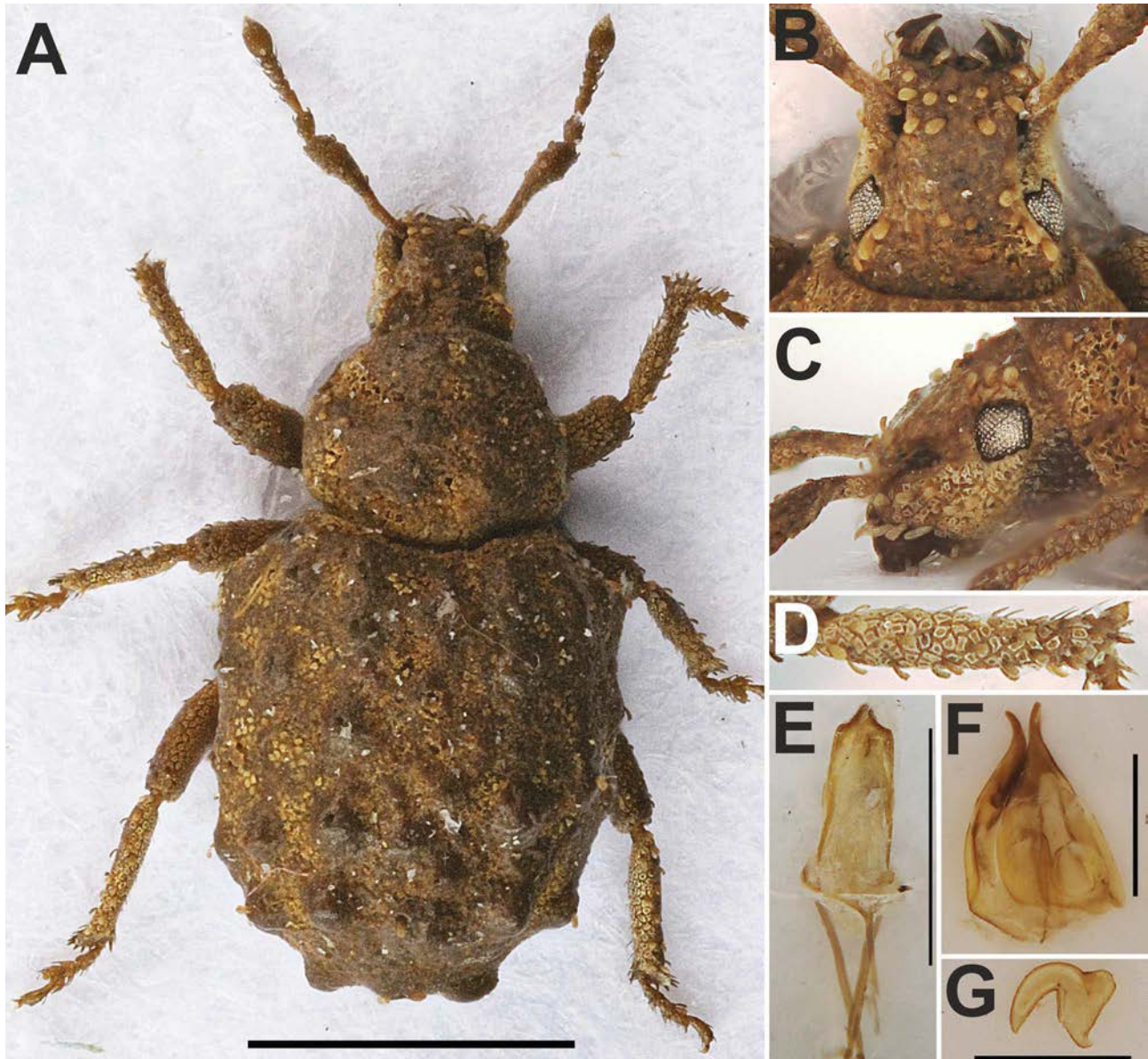


FIGURE 37. *Pentatrachyphloeus tuberculatus* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F**, **G**).

Rostrum (Figs 37A–C) 1.61–1.71 × wider than long, at base 1.07–1.12 × wider than at apex, regularly tapered anteriorly with slightly concave sides; laterally convex. Epifrons flat, moderately wide, distinctly and regularly tapered apically with weakly concave sides, at apex distinctly wider than half of rostrum at same place; when cleared of scales shiny, regularly and finely granulate, with slender median longitudinal stria, separated from head by slender, V-shaped sulcus. Antennal scrobes in dorsal view visible only as slender furrow at anterior part; in lateral view glabrous part very short, scrobes curved, moderately wide, enlarged posteriorly, separated from eyes by wide squamose stripe, directed against eyes, dorsal margin slightly indicated to reach dorsal margin of eyes. Eyes

moderately large, dorsally not prominent from outline of head and partly concealed by tubercles; laterally subcircular, placed in dorsal third of head. Head flat, with small tubercles above eyes visible mainly in dorso-lateral view, when cleared of scales shiny, regularly densely and finely granulate, with slender median longitudinal stria reaching anterior margin of pronotum, behind eyes weakly tapered posteriad.

Antennae (Fig. 37A) moderately slender; scapes $4.5\text{--}4.7 \times$ longer than wide and $1.3\text{--}1.4 \times$ longer than funicle, weakly curved at midlength, at apical half moderately regularly gradually enlarged apicad, at apex $1.1 \times$ wider than clubs. Funicles 5-segmented; segments 1 and 2 largest, long and conical; segment 1 $1.6\text{--}1.8 \times$ longer than wide and $1.1\text{--}1.2 \times$ longer than segment 2, which is $2.0\text{--}2.2 \times$ longer than wide; segments 3 and 4 isodiametric to $1.1 \times$ wider than long; segment 5 $1.3 \times$ wider than long; clubs $1.6\text{--}1.7 \times$ longer than wide.

Pronotum slender, $1.22\text{--}1.27 \times$ wider than long, distinctly more slender than elytra, at basal half widest with weakly rounded sides, anteriorly distinctly tapered, behind anterior margin widely constricted. Disc at basal half with wide and shallow, rounded depression in middle and two shallower, less developed longitudinal depressions on sides. When cleared of scales, disc at basal two thirds matt, densely, finely, regularly granulate, at anterior third somewhat shiny, with sparser granulation, with middle depression separated by two low slender longitudinal keels. Base weakly arched. Pronotum in lateral view distinctly convex, at anterior third flattened.

Elytra oval, $1.16\text{--}1.23 \times$ longer than wide, obliquely subtruncate from base to posthumeral calli well visible dorsally and in dorso-lateral view; elytra with rounded sides, broadly rounded at apex. Base distinctly arched. Odd intervals with moderately large, sparse, low protuberances, distinctly prominent from outline in dorsal or lateral view, even intervals flat. Striae slender, completely concealed by scale vestiture. Elytra in lateral view convex.

Tibiae (Figs 37A, D) moderately short and robust, $4.6\text{--}4.8 \times$ longer than wide, laterally with straight edge, apex rounded, armed with 4 dark brownish to blackish, sparse, short and fine spines and one long, slender, inside curved mucro. Meso- and metatibiae laterally armed with 6–8 fine and short, moderately dense spines and one slender, inside curved yellowish mucro. Tarsi moderately robust; segment 2 $1.3\text{--}1.4 \times$ wider than long; segment 3 $1.4\text{--}1.5 \times$ wider than long and $1.2\text{--}1.3 \times$ wider than segment 2; onychium $1.6\text{--}1.7 \times$ longer than segment 3, distinctly and regularly enlarged apicad; claws connate at short basal part, distinctly divergent.

Abdominal ventrite 1 in middle about $3 \times$ longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa distinctly longer than ventrite 2; ventrite 2 distinctly longer than ventrite 3 or 4; ventrites 3 and 4 short. Suture 1 weakly arched, finer than the other sutures. Metaventral process wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate setae.

Male genitalia. Penis (Fig. 37E) short and wide, subparallel with slightly rounded sides, at apical quarter distinctly tapered apicad with deeply concave sides, tip slender, shortly rounded; in lateral view slender, almost straight with elongated apex.

Female genitalia. Gonocoxites (Fig. 37F) articulated, proximal portion wide and short, well sclerotised, regularly tapered apicad with tips very slender and pointed, sabre-shaped, slightly curved, without visible styli. Sternite VIII with long and slender apodeme and umbrella-shaped plate, distinctly wider than long. Spermatheca (Fig. 37G) with short, wide and regularly curved cornu and large, rounded corpus; ramus not developed; nodulus very small, hump-shaped.

Derivation of name. The large prominent protuberances of elytra are emphasized by the Latin name, meaning "with tubercles".

Biology. Type material was collected partly by sweeping of grass or directly from grass tussocks, partly also to ground traps baited with meat or feces.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. *Pentatrachyphloeus tuberculatus* **sp. nov.** in its flat elytra with low tubercles and with raised setae only on odd intervals, dorsally well visible antennal scrobes and 5-segmented funicles is similar only to *P. muelleriae* **sp. nov.**, from which it is possible to distinguish it by wider rostrum, scrobes dorsally narrow and penis ventrally distinctly tapered apicad with deeply concave sides. Similar elytra with tubercles and setae on only odd intervals have also *P. andersoni* **sp. nov.**, *P. bufo* **sp. nov.** and *P. endroedyi* **sp. nov.**, but all these three species have funicle with 6 segments and scrobes dorsally not visible.

***Pentatrachyphloeus vavrai* sp. nov.**

(Figs 38A–F)

<http://zoobank.org/urn:lsid:zoobank.org:act:DA92B932-20B6-464F-B259-D0F9FE18E60A>

Type locality. Glen Gyle, Barkley East (Eastern Cape, South Africa).

Type material. Holotype: ♀, ‘S.Africa, CP [Cape Province, Eastern Cape now], Glen Gyle, Barkley East, SE3027Da, 14. Feb. 1985, J. Eksteen, NMBH 21703’ (NMBH).

Description (Figs 38A–F). Body length 2.51 mm, holotype. Body (Fig. 38A) brownish, antennae and legs reddish brown. Body covered with imbricated, rounded appressed scales, on elytra 4–5 across width of one interval, finely longitudinally striate, on pronotum and head with rostrum slightly larger, depressed at middle. Elytra with inconspicuous, dense regular row of short, semierect, subspatulate setae, as long as third width of one interval, distance between two setae about three times longer than length of one seta. Pronotum and head with rostrum sparsely irregularly scattered by short, semiappressed, subspatulate setae. Scapes, femora and tibiae covered with the same setae as head with rostrum, only slightly shorter. Body vestiture light brownish, part of appressed scales with pearly sheen, forming longitudinal stripes on elytra.

Rostrum (Figs 38A–C) $1.47 \times$ wider than long, subparallel-sided; laterally convex. Epifrons flat, at basal third distinctly tapered apicad, then about parallel-sided, separated from head by arched, transverse sulcus. Antennal scrobes in dorsal view visible as moderately wide furrows of equal width at apical two thirds; in lateral view narrow, weakly curved, directed towards ventral border of eye, separated from it by wide squamose stripe. Eyes moderately large, slightly prominent from outline of head; laterally subcircular, placed about at middle of head. Head wide and distinctly enlarged posteriad, without tubercles above eyes.

Antennae (Fig. 38A) moderately robust; scapes distinctly curved at midlength, $4.7 \times$ longer than wide and $1.5 \times$ longer than funicles, at apical half evenly distinctly enlarged apicad, at apex equally wide as clubs. Funicles 7-segmented; segment 1 conical and the longest, $1.5 \times$ longer than wide and $1.8 \times$ longer than segment 2, which is $1.1 \times$ longer than wide; segments 3 and 4 $1.7 \times$ wider than long; segment 5 $1.8 \times$ wider than long; segment 6 twice wider than long; segment 7 $2.4 \times$ wider than long; clubs $1.6 \times$ longer than wide.

Pronotum $1.27 \times$ wider than long, widest at basal third with distinctly rounded sides, distinctly more tapered anteriorly than posteriorly. Disc regularly convex; base almost straight; in lateral view flat.

Elytra oval, $1.39 \times$ longer than wide, widest at midlength, narrow at basal part, with rounded sides. Base slightly arched. All intervals equally wide and flat, odd intervals very slightly more elevated than even intervals; striae very narrow, punctured, hidden by scales. Posthumeral calli not developed, visible only in dorso-lateral view. Elytra in lateral view weakly convex.

Protibiae (Fig. 38D) $5.2 \times$ longer than wide, with lateral edge straight, at apex rounded with 7–8 small, blackish spines and brownish mucro. Meso- and metatibiae fringed by dense, short, blackish spines and brownish mucro. Tarsi very short; segment 2 $1.9 \times$ wider than long; segment 3 $1.3 \times$ wider than long and $1.3 \times$ wider than segment 2; onychium $0.9 \times$ shorter than segment 3; claws connate in basal third, weakly divaricate.

Abdominal ventrite 1 in middle slightly more than $2 \times$ longer than ventrite 2, slightly shorter than ventrites 2–4 combined, behind metacoxa equally long as ventrite 2; ventrite 2 slightly shorter than ventrites 3 and 4 combined; ventrites 3 and 4 short. Suture 1 straight, finer than the others. Metaventral process weakly wider than transverse diameter of metacoxa. Ventrites densely covered with subspatulate semiappressed setae.

Male genitalia unknown.

Female genitalia. Gonocoxites (Fig. 38E) weakly sclerotised, subtriangular, with extremely short, hardly visible apical styli. Sternite VIII with slender apodeme and with wide, umbrella-shaped plate, $1.5 \times$ wider than long. Spermatheca (Fig. 38F) with regularly curved cornu; corpus large, rounded; ramus and nodule small, ramus rounded, isodiametric; nodule slightly tapered apicad, narrower than ramus.

Derivation of name. Patronymic, named after Jindřich Vávra (1831–1887), a Czech doctor, traveller and botanist, who several times visited North and South America, Asia and Africa. His botanical collection is now deposited in Museum Vienna.

Biology. Unknown.

Distribution. South Africa, Eastern Cape.

Differential diagnosis. *Pentatrachyphloeus vavrai* sp. nov. is among the species having funicle 7-segmented and raised setae on all elytral intervals easily distinguishable by inconspicuous short raised elytral setae, about as

long as a third of one interval, conspicuously wide funicle segments, epifrons distinctly tapered at basal third, onychium shorter than tarsal segment 3 and gonocoxites with extremely short styli.

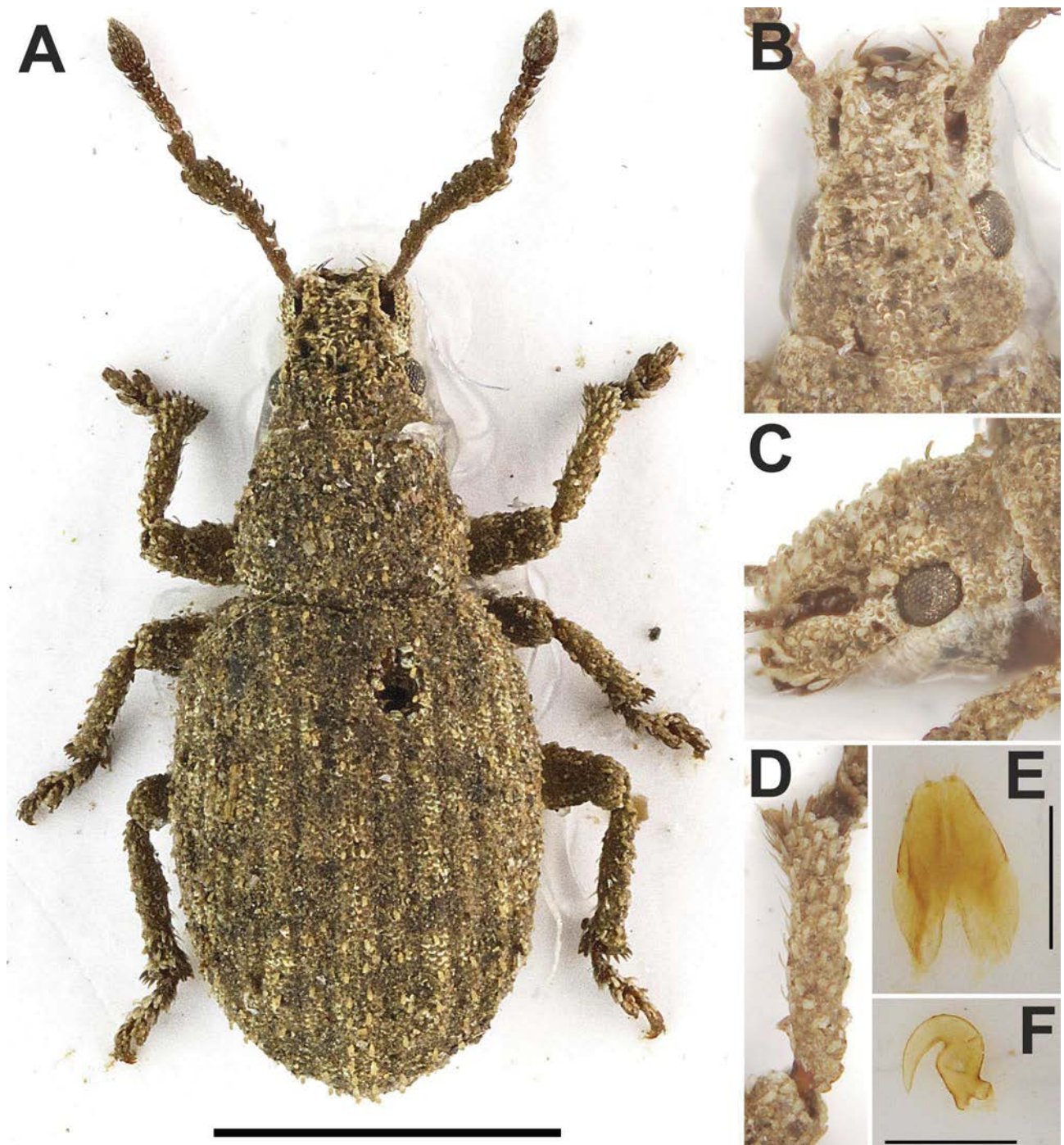


FIGURE 38. *Pentatrachyphloeus vavrai* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—gonocoxite; **F**—spermatheca. Scale bars: 1 mm (**A**), and 0.25 mm (**E**, **F**).

Pentatrachyphloeus vossi sp. nov.

(Figs 39A–E)

<http://zoobank.org/urn:lsid:zoobank.org:act:ADDC7BD8-00F6-4642-8F39-911E9C7BB9A6>

Type locality. Berlin, Karst plateau, 25°18' S, 30°27' E (Mpumalanga, South Africa).

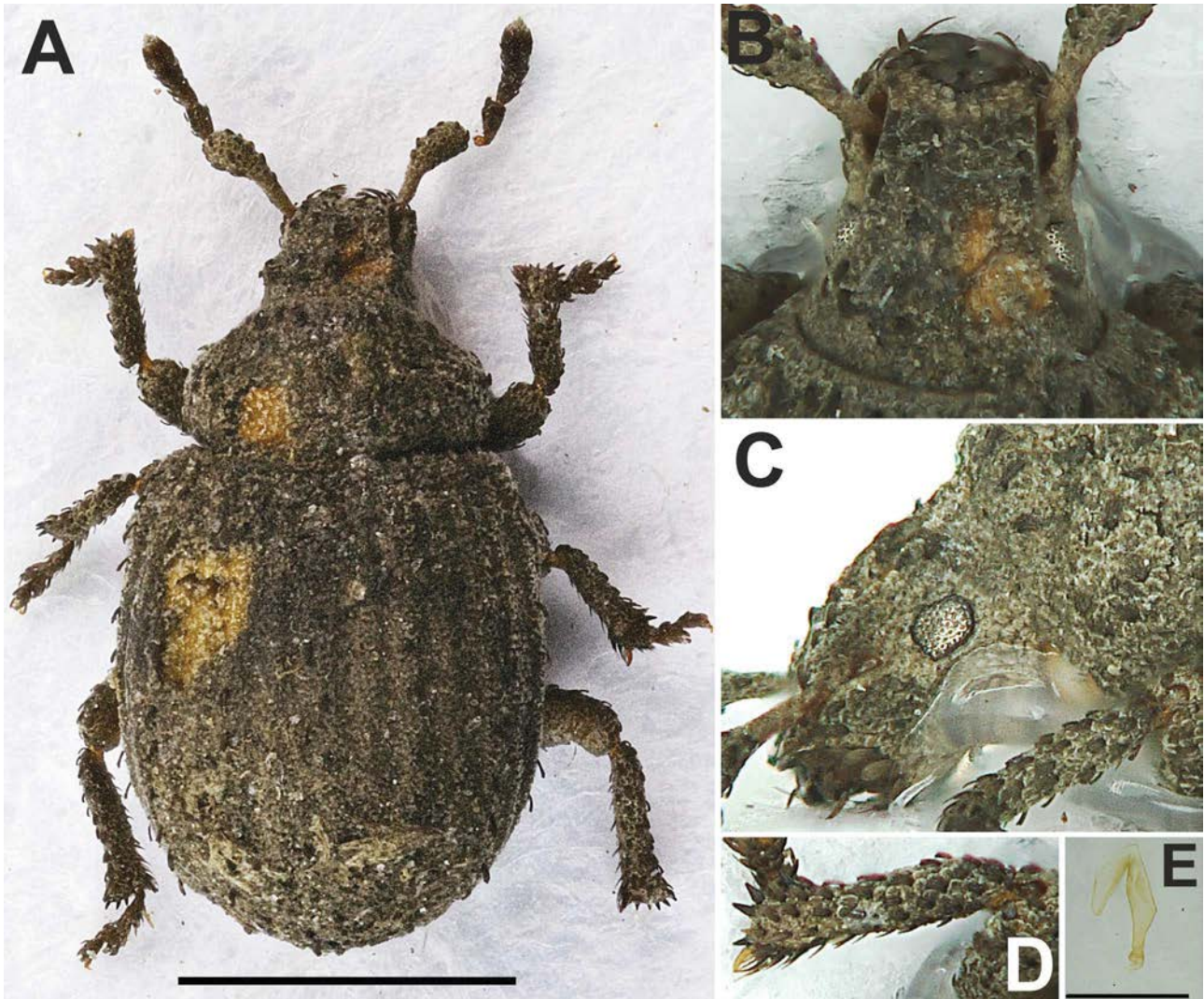


FIGURE 39. *Pentatrachyphloeus vossi* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—spermatheca. Scale bars: 1 mm (**A**), and 0.25 mm (**E**).

Type material. Holotype: ♀, ‘S. Afr. [South Africa, Mpumalanga], E. Transvaal, Berlin, Karst plat., 25.31 S–30.46 E, 10.12.1986, E-Y: 2375, groundtraps, 56 days, leg. Endrödy-Younga, groundtrap with banana bait’ (TMSA).

Description (Figs 39A–E). Body length 2.25 mm, holotype. Body (Fig. 39A) dark brownish, only basal part of scapes reddish brown; spines at anterior part of tibiae black, mucro yellowish. Appressed scales on dorsal part of body irregularly rounded, partly with very short and fine fringes on circumference, distinctly depressed in middle, partly imbricated; appressed scales on scapes, femora and tibiae identical, slightly smaller. Elytra with semiappressed, inconspicuous, subspatulate blackish setae, finely striate, about longer than half of width of one interval, form one regular row on each odd interval, distance between two setae 2–3 × longer than length of one seta. Semiappressed setae on pronotum and head with rostrum irregularly scattered, identical as elytral ones but faintly shorter; semiappressed setae on scapes, femora and tibiae densely irregularly scattered, short-oval, shorter than pronotal ones, not prominent from outline; last segment of clubs with short and fine whitish setae, different from previous segments with short and fine blackish setae. Vestiture of body unicoloured dark brownish.

Rostrum (Figs 39A–C) 1.56 × wider than long, at base equally wide as at apex, with weakly rounded sides; laterally regularly convex. Epifrons regularly tapered anteriorly with straight sides, completely flat, separated from head by narrow V-shaped sulcus, completely concealed by appressed scales, visible only when epifrons and head are cleared of scales. Frons densely squamose, somewhat paler than epifrons. Epistome V-shaped, very small, extremely slender, hardly visible. Antennal scrobes dorsally visible only at apical part of rostrum as short and

slender furrows; in lateral view directed posteriad, with very short glabrous part, ventral margin directed to middle of eyes, dorsal margin directed above eyes and reaching almost behind them, then turned up, creating small tubercles visible dorso-laterally. Eyes small, weakly convex, dorsally almost concealed by tubercles, laterally subcircular, placed in middle of head. Head very short and wide, enlarged posteriad, with low, longitudinal supraocular tubercles above eyes, visible mainly in dorso-lateral view.

Antennae (Fig. 39A) robust and short; scapes short, $3.3 \times$ longer than wide and $1.8 \times$ longer than funicles, curved at midlength, strongly and abruptly dilated from middle to apex, at tip $1.4 \times$ wider than clubs. Funicles 5-segmented; segment 1 largest, about longer than segment 2–4 combined, $1.6 \times$ longer than wide and $2.6 \times$ longer than segment 2, which is $1.3 \times$ wider than long; segments 3–5 strongly transverse, by their width almost continuing to clubs, twice wider than long, segment 5 slightly longer and wider than segments 3 and 4; clubs short, $1.5 \times$ longer than wide.

Pronotum very wide, $1.94 \times$ wider than long, widest at posterior half with slightly rounded sides, behind anterior margin distinctly constricted. Disc regularly convex; base weakly arched. In lateral view pronotum weakly convex, behind anterior margin flattened.

Elytra oval, $1.18 \times$ longer than wide, with weakly rounded sides and broadly rounded apex. Striae punctate but concealed by appressed scales, intervals almost flat, odd intervals slightly more elevated than even ones; base weakly arched. Posthumeral calli well developed, visible only in dorso-lateral view. Elytra in lateral view weakly convex.

Tibiae (Figs 39A, D) short and robust; protibiae $3.8 \times$ longer than wide, enlarged at apex, armed with 4 sparse, short and black spines and long and slender, inside curved mucro; mesotibiae with 5 sparse, metatibiae with 8 denser short and black spines, both with slender, long and curved yellowish mucro. Tarsi short and robust; segment 2 $1.6 \times$ wider than long; segment 3 $1.7 \times$ wider than long and $1.4 \times$ wider than segment 2; onychium $1.2 \times$ longer than segment 3, distinctly enlarged apicad, ellipse-shaped; claws connate at short basal part, distinctly divergent.

Abdominal ventrite 1 in middle slightly more than twice longer than ventrite 2 and slightly shorter than ventrites 2–4 combined, behind metacoxa slightly longer than ventrite 2; ventrite 2 slightly shorter than ventrites 3 and 4 combined; ventrites 3 and 4 moderately long. Suture 1 indistinctly arched, almost straight, only slightly finer than the other sutures. Metaventral process narrower than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate, moderately long setae.

Male. Unknown.

Female genitalia. Gonocoxites not examined. Sternite VIII with long and slender apodeme and umbrella-shaped plate, about twice wider than long. Spermatheca (Fig. 39E) with cornu widest at midlength and long corpus; ramus only indicated by larger part of corpus; nodulus very long, only weakly shorter than cornu, at basal part tapered apicad, at apex rounded, bobble-shaped.

Derivation of name. This species is dedicated to Eduard Voss (1884–1974), an eminent German entomologist, the last specialist in weevils who was able to work on this huge superfamily in world extent and who described the genus *Pentatrachyphloeus*.

Biology. The type specimen was collected in ground trap baited with bananas.

Distribution. South Africa, Mpumalanga.

Differential diagnosis. Among species with 5-segmented funicle and elytra lacking tubercles with raised setae only on odd intervals *P. vossi* **sp. nov.** is similar in its wide pronotum only to *P. kuscheli* **sp. nov.** *P. vossi* **sp. nov.** differs from it by rostrum with arcuated sides, epifrons regularly tapered anteriad and very short and wide funicle segments 2–5.

***Pentatrachyphloeus vrazi* sp. nov.**

(Figs 40A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:FBEC95AD-5BEA-49A8-88B5-6F4992CE36A1>

Type locality. Amatola Scott farm, 22°33' S, 29°13' E (Limpopo, South Africa).

Type material. Holotype: ♂, 'S. Afr., Northern Prov. [South Africa, Limpopo], Amatola Scott farm, 22.56 S–29.23 E, 26.1.1998; E-Y: 3312, groundtraps, leg. R. Müller, groundtraps with meat bait' (TMSA). Paratypes: 2 ♂♂, 1 ♀, 3 spec., the same data as holotype (TMSA).

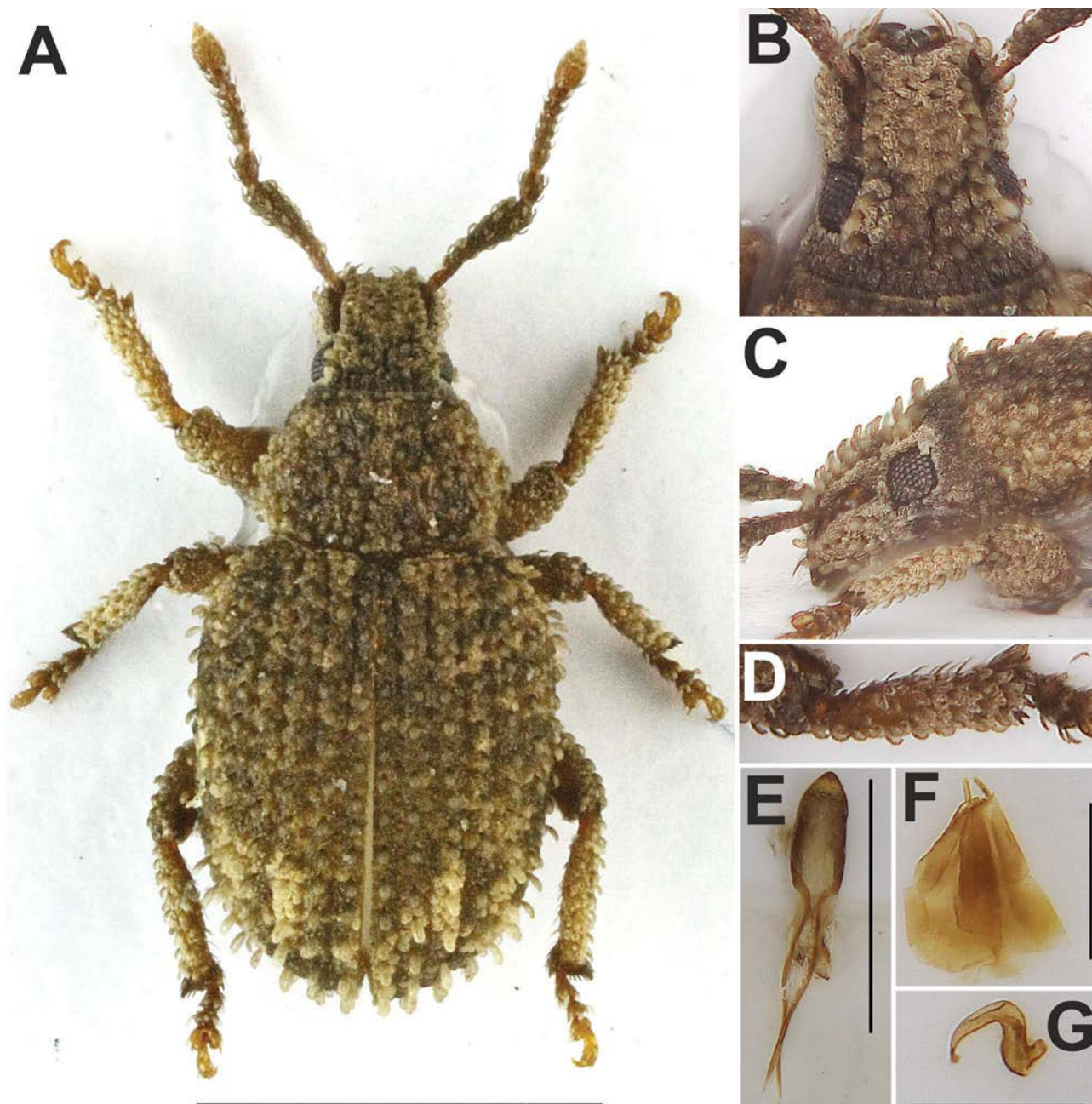


FIGURE 40. *Pentatrachyphloeus vrazi* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (**A**), 0.5 mm (**E**) and 0.25 mm (**F, G**).

Description (Figs 40A–G). Body length 1.94–2.26 mm, holotype 2.03 mm. Body (Fig. 40A) dark brownish, antennae and legs brownish, funicles with clubs and tibiae with tarsi paler, reddish brown. Body covered with imbricated, irregularly angular appressed scales, on elytra 3–4 across width of one interval, distinctly longitudinally striate. Elytra with conspicuous dense regular row of spatulate setae, on disc semiappressed, as long as half width of interval, at apical declivity semierect, distinctly longer than half width of one interval, distance between two setae at most equal to length of one seta. Pronotum and head densely regularly covered with short, semiappressed, spatulate setae; rostrum with four irregular longitudinal rows of setae. Scapes, femora and tibiae densely regularly covered with short, subspatulate, semiappressed setae, on scapes more slender than on legs. Body vestiture brownish, with irregular small spots on elytra, on shoulders, with slender median and wide lateral longitudinal stripes on pronotum and whole epifrons.

Rostrum (Figs 40A–C) 1.40–1.42 × wider than long, with parallel sides; laterally convex. Epifrons flat,

distinctly tapered anteriorly with convex sides at basal three quarters and concave at short apical part, at midlength about $0.6 \times$ as wide as the width of rostrum at same place, separated from head by distinct, slender, V-shaped transverse sulcus before eyes. Antennal scrobes in dorsal view visible as moderately wide furrows at apical half; in lateral view narrow, directed towards middle of eye but not reaching it. Eyes moderately large, slightly prominent from outline of head; laterally subcircular, placed about at middle of head. Vertex with short slender longitudinal median stria. Head wide and enlarged posteriorly, without tubercles above eyes; lateral and ventral part densely longitudinally striate.

Antennae (Fig. 40A) moderately robust; scapes weakly curved before midlength, $4.7 \times$ longer than wide and $1.2 \times$ longer than funicles, at apical half evenly distinctly enlarged apically, at apex equally wide as clubs. Funicles 7-segmented; segments 1 and 2 conical, segment 1 $1.4\text{--}1.5 \times$ longer than wide and $1.6 \times$ longer than segment 2, which is $1.4\text{--}1.5 \times$ longer than wide; segments 3–5 $1.3\text{--}1.4 \times$ longer than wide; segment 6 $1.5\text{--}1.6 \times$ longer than wide; segment 7 $1.6\text{--}1.7 \times$ wider than long; clubs $1.5\text{--}1.6 \times$ longer than wide.

Pronotum $1.41\text{--}1.44 \times$ wider than long, widest at basal third, with distinctly rounded sides, distinctly more tapered anteriorly. Disc regularly convex; base weakly arched; in lateral view almost flat.

Elytra oval, $1.24\text{--}1.31 \times$ longer than wide, widest at midlength with distinctly rounded sides. Base arched. All intervals equally wide and flat, striae very narrow, punctured, hidden by scales. Posthumeral calli distinct, well visible in dorso-lateral view. Elytra in lateral view flat.

Protibiae (Fig. 40D) $4.9\text{--}5.1 \times$ longer than wide, with lateral edge straight, at apex rounded with 6–7 small, brownish spines and short brownish mucro. Meso- and metatibiae fringed by dense, short, blackish spines and short brownish mucro. Tarsi short; segment 2 $1.5 \times$ wider than long; segment 3 $1.4 \times$ wider than long and $1.2 \times$ wider than segment 2; onychium $1.2 \times$ longer than segment 3; claws connate in basal half, divaricate.

Abdominal ventrite 1 in middle $3 \times$ longer than ventrite 2 and equally long as ventrites 2–4 combined, behind metacoxa $1.5 \times$ longer than ventrite 2; ventrite 2 shorter than ventrite 3 and 4 combined. Suture 1 straight, finer than the others. Metaventral process distinctly wider than transverse diameter of metacoxa. Ventrites 2–4 with transverse row of spatulate semiappressed setae.

Male genitalia. Penis (Fig. 40E) at basal half parallel-sided, at apical half evenly tapered apically, subtriangular, tip narrowly pointed; in lateral view weakly curved, at basal half moderately wide, at apical half evenly tapered apically.

Female genitalia. Gonocoxites (Fig. 40F) weakly sclerotised, subtriangular, with very slender, moderately long apical styli. Sternite VIII with moderately robust apodeme and with subtriangular slender plate, $1.1\text{--}1.2 \times$ longer than wide. Spermatheca (Fig. 40G) with slender and almost straight cornu; corpus elongated; ramus slightly longer than wide, obliquely directed ventrally; nodulus almost invisible, hump-shaped.

Derivation of name. The newly described species takes its name from Enrique Stanko Vráz (1860–1932), Czech traveller and collector of products of nature, who visited Africa, Asia, North, Central and South America. His collection including insects is deposited in Prague National Museum.

Biology. Type material was collected in ground traps with meat bait.

Distribution. South Africa, Limpopo.

Differential diagnosis. Having funicle 7-segmented and all elytral intervals with a dense row of spatulate setae, *P. vrazi* sp. nov. is similar to *P. lajumensis* sp. nov., *P. soutpansbergensis* sp. nov. and *P. rudyardi* sp. nov. From all of them, this species is easily distinguishable by funicle segments distinctly wider than long. The only species with similar wide funicle segments and 7-segmented funicle is *P. vavrai* sp. nov., from which *P. vrazi* sp. nov. can be distinguished by conspicuous and long elytral raised setae, wide pronotum, onychium longer than segment 3 and gonocoxites with long styli.

Pentatrachyphloeus zikmundi sp. nov.

(Figs 41A–G)

<http://zoobank.org/urn:lsid:zoobank.org:act:8F000994-3F34-4193-960F-15D84D1C2998>

Type locality. Bloemfontein dist., Naval Hill, Hangmanskloof South, $29^{\circ}06' \text{ S}$, $26^{\circ}14' \text{ E}$ (Free State, South Africa).

Type material. Holotype: ♂, 'S. Africa, OFS [South Africa, Orange Free State, Free State now], Bloemfontein dist., Naval Hill, Hangmanskloof South, $29^{\circ} 06 \text{ S}$, $26^{\circ} 14 \text{ E}$, Oct. 1990, L. Lotz, putval, NMBH 36538' (NMBH). Paratypes: 1 ♀, the same data as holotype, but 'Sept. 1991' (NMBH); 1 spec., the same data as holotype, but

‘Hangkloof South, Nov. 1990’ (NMBH); 1 spec., the same data as holotype, but ‘North Slope Aug. 1991’ (NMBH); 1 ♀, the same data as holotype, but ‘Aug. 1990, Preservative traps’ (NMBH); 1 spec., the same data as holotype, but ‘East plateau, Jun. 1990, Preservative traps’ (NMBH).

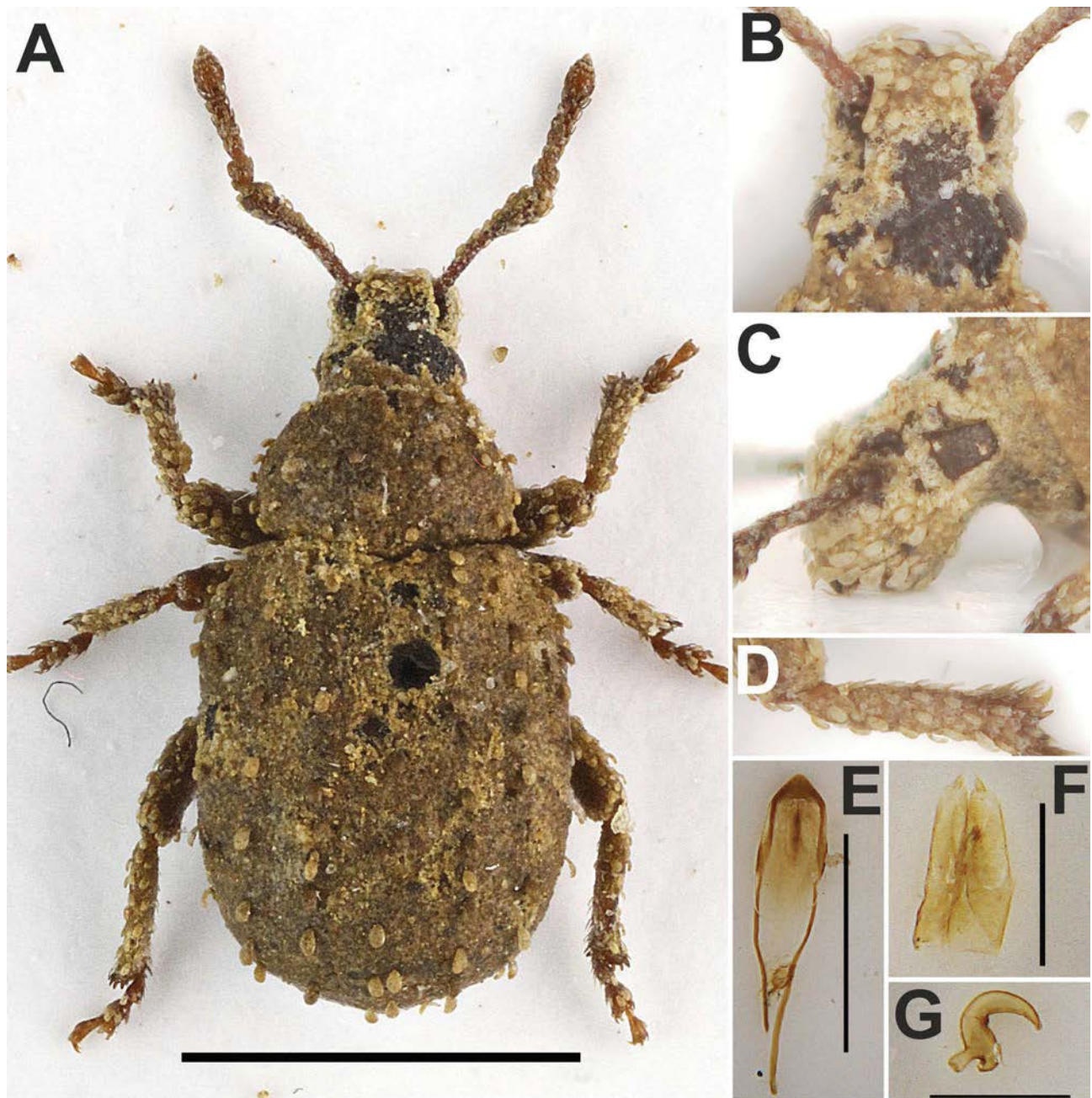


FIGURE 41. *Pentatrachyphloeus zikmundi* sp. nov. **A**—habitus, dorsal view, male; **B**—rostrum, male, dorsal view; **C**—rostrum, male, lateral view; **D**—protibia, male; **E**—aedeagus; **F**—gonocoxite; **G**—spermatheca. Scale bars: 1 mm (A), 0.5 mm (E) and 0.25 mm (F, G).

Description (Figs 41A–G). Body length 2.01–2.52 mm, holotype 2.01 mm. Body (Fig. 41A) dark brownish, antennae and legs paler, reddish brown, clubs in some specimens darker. Body strongly incrustated, structure of appressed scales is not possible to recognize in type specimens. Elytra with conspicuous regular row of semierect, wide, spatulate setae on odd intervals, as long or slightly longer than half width of one interval, distance of two setae about 2–3 longer than length of one seta. Pronotum and head with rostrum sparsely scattered with wide, spatulate setae, slightly shorter than elytral ones, on head and rostrum densely bordered epifrons and inner margin of eyes. Scapes, femora and tibiae with semiappressed, slender, subspatulate setae, inconspicuously prominent from outline. Raised setae alternately light brownish and blackish.

Rostrum (Figs 41A–C) 1.42–1.45 × wider than long, parallel-sided with straight sides; laterally almost flat, in anterior part convex. Epifrons distinctly regularly tapered anteriorly, with slightly concave sides, perfectly flat, separated from head by very slender V-shaped sulcus, at apex 0.5–0.6 × as wide as rostrum at same place. Antennal scrobes dorsally hardly visible as very short and slender furrows at short anterior part of rostrum; in lateral view weakly enlarged posteriorly, furrow-shaped, directed to middle of eye, separated from it by wide squamose stripe. Eyes moderately large, convex, prominent from outline of head, but in dorsal view hidden by supraocular tubercles; in lateral view kidney-shaped, in posterior two thirds tapered posteriorly, with ventroposterior margin distinctly concave, placed just above middle of head. Head weakly enlarged posteriorly, with distinct longitudinal supraocular tubercles.

Antennae (Fig. 41A) moderately robust; scapes straight, clavate at apical third, 4.4–4.6 × longer than wide, 1.4–1.5 × longer than funicles, at apex 1.1–1.2 × wider than clubs; funicles 6-segmented; segment 1 largest, conical, 1.4–1.5 × longer than wide and 1.4 × longer than segment 2, which is 1.2–1.3 × longer than wide; segment 3 1.3 × wider than long; segment 4 1.5 × wider than long; segment 5 1.6 × wider than long; segment 6 twice wider than long; clubs 1.4–1.5 × longer than wide.

Pronotum slender, 1.45–1.48 × wider than long, widest just behind midlength with regularly rounded sides, conspicuously more tapered anteriorly than posteriorly, weakly constricted behind anterior margin. Disc regularly convex with almost indistinct, small, shallow, ill-defined longitudinal depression at middle in basal half. Base arched. Pronotum in lateral view weakly convex, at anterior third flattened.

Elytra long oval, 1.28–1.33 × longer than wide, with distinctly rounded humeri, parallel-sided, apically broadly rounded, with narrow striae, odd intervals slightly more elevated than even ones. Base arched; posthumeral calli developed, visible only in dorso-lateral view. Elytra in lateral view almost flat.

Protibiae (Fig. 41D) short and robust, 5.2–5.4 × longer than wide, at apex weakly enlarged laterally, with rounded apex armed with 4 sparse, black short spines and one, short, brownish mucro. Meso- and metatibiae laterally armed with 4–5 sparse black spines, meso- and metatibiae with long mucro. Tarsi moderately slender; segment 2 1.2–1.3 × wider than long; segment 3 1.4–1.5 × wider than long and 1.2–1.3 × wider than segment 2; onychium 1.6–1.7 × longer than segment 3, distinctly enlarged apically; claws fused at basal half, then distinctly divergent.

Abdominal ventrite 1 in middle 2.5 × longer than ventrite 2 and about equally as long as ventrites 2–4 combined, behind metacoxa slightly longer than ventrite 2; ventrite 2 slightly shorter than ventrites 3 and 4 combined; ventrites 3 and 4 moderately long. Suture 1 slightly arched, slightly finer than the other sutures. Metaventral process about wider than transverse diameter of metacoxa. Ventrites 2, 3 and 4 with single transverse row of subspatulate, moderately long setae.

Male genitalia. Penis (Fig. 41E) short, at basal and apical half parallel-sided, at midlength slightly narrowed at short distance; tip regularly shortly subtriangular.

Female genitalia. Gonocoxites (Fig. 41F) long and slender, flat, weakly tapered apically and apically rounded, with short apical styli. Sternite VIII with long and slender apodeme and short and wide, broadly umbrella-shaped plate, almost twice wider than long. Spermatheca (Fig. 41G) with slender, regularly curved cornu; corpus elongate; ramus tubular, 1.5–2.0 × longer than wide; nodulus about as long as wide, distinctly curved forwardly.

Derivation of name. This species is dedicated to Miroslav Zikmund (1919), Czech traveller, who together with Jiří Hanzelka travelled over all of Africa, South America, Asia and Oceania by car.

Biology. Part of the type series was probably collected by using pitfall traps containing a preservative.

Distribution. South Africa, Free State.

Differential diagnosis. Among species with 6-segmented funicle and slender elytra with raised setae only on odd intervals *P. zikmundi* **sp. nov.** is easily distinguishable by eyes in dorsal view hidden by supraocular tubercles, in lateral view kidney-shaped eyes, protibiae at apex weakly enlarged laterally, onychium 1.6–1.7 × longer than segment 3 and ramus 1.5–2.0 × longer than wide.

Key to the species of *Pentatrachyphloeus*

1. Antennal funicles 5-segmented (Figs 5A, 8A, 17A, 24A, 27A, 29A, 37A, 39A). 2
- Antennal funicles 6- or 7-segmented (Figs 3–4A, 6–7A, 9–16A, 18–23A, 25–26A, 28A, 30–36A, 38A, 40–41A). 9
2. Rostrum in dorsal view before eyes strikingly, abruptly, angulately widened anteriorly (Fig. 27B). *P. ntinini* sp. nov.
- Rostrum in dorsal view before eyes tapered anteriorly or regularly, gradually enlarged anteriorly (Figs 5B, 8B, 17B, 24B, 29B, 37B, 39B). 3
3. Rostrum enlarged anteriorly (Figs 8B, 29B). All elytral intervals with raised setae (Figs 8A, 29A). 4
- Rostrum tapered anteriorly (Figs 5B, 17B, 24B, 37B, 39B). Only odd elytral intervals with raised setae, except *P. brevithorax* sp. nov. with raised setae on all intervals (Figs 5A, 17A, 24A, 37A, 39A). 5
4. Dorsal part of body with hardly visible, extremely small, pointed setae (Fig. 29A). Rostrum shorter, 1.44–1.51 × wider than long (Fig. 29B). Pronotum narrower, 1.44–1.45 × wider than long (Fig. 29A). Penis with apex ventrally wide, obtuse, laterally very wide (Fig. 29E). Body size larger, 1.5–2.3 mm. *P. patruelis* Voss
- Dorsal part of body with conspicuous, large, subspatulate setae (Fig. 8A). Rostrum longer, 1.24–1.31 × wider than long (Fig. 8B). Pronotum wider, 1.49–1.60 × wider than long (Fig. 8A). Penis with apex ventrally slender, tapered apically, laterally very slender (Fig. 8E). Body size smaller, 1.4–1.8 mm. *P. exiquus* sp. nov.
5. Pronotum wide, 1.44–1.94 × wider than long, only slightly narrower than elytra (Figs 5A, 17A, 39A). 6
- Pronotum more slender, 1.14–1.27 × wider than long, distinctly narrower than elytra (Figs 24A, 37A). 8
6. Short semierect setae on all elytral intervals (Fig. 5A). Epifrons with distinctly concave sides (Fig. 5B). Antennal scapes long and slender, 3.6 × longer than wide, at apex 1.1 × wider than clubs (Fig. 5A). Apex of protibiae laterally straight (Fig. 5D). Elytra slender, 1.25 × longer than wide. *P. brevithorax* sp. nov.
- Short semiappressed setae only on odd elytral intervals (Figs 17A, 39A). Epifrons with straight sides (Figs 17B, 39B). Antennal scapes short and robust, 3.3 × longer than wide, at apex 1.4–1.5 × wider than clubs (Figs 17A, 39A). Apex of protibiae laterally enlarged (Figs 17D, 39D). Elytra wider, 1.18–1.19 × longer than wide. 7
7. Rostrum with straight sides (Fig. 17B). Epifrons parallel-sided, at short apical part distinctly tapered anteriorly (Fig. 17B). Funicle segment 1 1.3 × longer than segment 2, segments 3–5 slender, 1.1–1.5 × wider than long (Fig. 17A). Pronotum more slender, 1.44 × wider than long (Fig. 17A). Elytral base distinctly arched. *P. kuscheli* sp. nov.
- Rostrum with arcuated sides (Fig. 39B). Epifrons regularly tapered anteriorly, with straight sides (Fig. 39B). Funicle segment 1 2.6 × longer than segment 2, segments 3–5 wide, twice wider than long (Fig. 39A). Pronotum wider, 1.94 × wider than long (Fig. 39A). Elytral base weakly arched. *P. vossi* sp. nov.
8. Rostrum wide, 1.61–1.71 × wider than long, with wide epifrons, at apex distinctly wider than half of width of rostrum (Fig. 37B). Antennal scrobes dorsally narrow. Elytra with large protuberances, well prominent from outline in dorsal and lateral view (Fig. 37A). Posthumeral calli well visible in dorsal view (Fig. 37A). Onychium 1.6–1.7 × longer than segment 3. Penis ventrally at apical quarter distinctly tapered apically with deeply concave sides (Fig. 37E). *P. tuberculatus* sp. nov.
- Rostrum narrow, 1.43–1.50 × wider than long, with narrow epifrons, at apex about wider than half of width of rostrum (Fig. 24B). Antennal scrobes dorsally wide. Elytra with small protuberances, hardly prominent from outline in dorsal and lateral view (Fig. 24A). Posthumeral calli weakly visible in dorsal view (Fig. 24A). Onychium 1.4–1.5 × longer than segment 3. Penis ventrally evenly tapered apically (Fig. 24E). *P. muelleriae* sp. nov.
9. Antennal funicles 6-segmented (Figs 3–4A, 6–7A, 10A, 13–14A, 16A, 18A, 25–26A, 34A, 36A, 41A). 10
- Antennal funicles 7-segmented (Figs 9A, 11–12A, 15A, 19–23A, 28A, 30–33A, 35A, 38A, 40A). 23
10. All elytral intervals with conspicuous row of semierect to erect setae (Figs 10A, 14A, 16A, 34A). 11
- Only odd elytral intervals with row of semiappressed to semierect setae (Figs 3–4A, 6–7A, 13A, 18A, 25–26A, 36A, 41A). 14
11. Apex of protibiae lobed, with two long and slender, conspicuous spines, laterally prominent (Fig. 34D). Body size 1.9–2.1 mm. *P. spinimanus* sp. nov.
- Apex of protibiae rounded, with only more numerous and short spines (Figs 10D, 14D, 16D). 12
12. Erect elytral setae slender, subspatulate, widest at midlength, distance of two setae less than twice of length of one seta (Fig. 14A). Pronotum laterally with long, erect setae (Fig. 14A). Eyes distinctly prominent from outline of head (Fig. 14A). Scapes at apex 0.8 × wider than clubs. Penis evenly tapered apically (Fig. 14E). Body size 2.2 mm *P. hystrix* sp. nov.
- Semierect elytral setae wide, spatulate, widest apically, distance of two setae 3–4 × longer than length of one seta (Figs 10A, 16A). Pronotum laterally with short, semiappressed setae (Figs 10A, 16A). Eyes hardly prominent from outline of head (Figs 10A, 16A). Scapes at apex 1.1 × wider than clubs. Penis in basal two thirds subparallel-sided (Figs 10E, 16E). 13
13. Raised elytral setae on disc and at posterior declivity equally long (Fig. 10A). Antennal scapes evenly enlarged along whole length. Funicle segment 1 isodiametric, segment 2 1.1–1.2 × longer than wide (Fig. 10A). Ventrite 2 equally long as ventrites 3 and 4 combined. Penis apically narrowly tapered (Fig. 10E). *P. grobbelaerae* sp. nov.
- Raised elytral setae at posterior declivity twice longer than on disc (Fig. 16A). Antennal scapes enlarged at apical half. Funicle segment 1 1.7 × longer than wide, segment 2 1.6 × longer than wide (Fig. 16A). Ventrite 2 shorter than ventrites 3 and 4 combined. Penis apically widely tapered (Fig. 16E). *P. kalalovae* sp. nov.
14. Elytra slender, oval, 1.15–1.24 × longer than wide (Figs 4A, 13A, 18A, 25–26A, 36A, 41A). Pronotum more slender, 1.25–1.32 × wider than long. Base of elytra weakly regularly arched or straight (Figs 4A, 13A, 18A, 25–26A, 36A, 41A). 15
- Elytra wider, short-oval, 1.00–1.14 × longer than wide (Figs 3A, 6–7A). Pronotum wider, 1.34–1.56 × wider than long, only in *P. andersoni* sp. nov. narrower, 1.24–1.33 × wider than long. Base of elytra angularly, irregularly, distinctly arched (Figs 3A, 6–7A). 21

15. Odd elytral intervals elevated. Humeri dorsally obliquely subtruncate (Figs 13A, 36A). 16
 - All elytral intervals equally flat. Humeri dorsally regularly rounded (Figs 4A, 18A, 25–26A, 41A). 17
16. Rostrum narrower, $1.16\text{--}1.26 \times$ wider than long (Fig. 36B). Onychium $1.2\text{--}1.3 \times$ longer than tarsal segment 3. Penis at basal two-thirds subparallel-sided, at apical third distinctly tapered with concave sides (Fig. 36E). Body size 1.9–2.0 mm.
 *P. tenuicollis* **sp. nov.**
 - Rostrum wider, $1.50 \times$ wider than long (Fig. 13B). Onychium $1.7 \times$ longer than segment 3. Penis widest near base, evenly tapered apicad with straight sides (Fig. 13E). Body size about 1.6 mm. *P. howdenae* **sp. nov.**
17. Antennal funicles slender, segments 4 and 5 $1.1 \times$ longer than wide, segment 6 isodiametric (Fig. 25A). Elytra with wide, spatulate, erect setae, almost as long as wide, their length of width of one interval (Fig. 25A). Penis distinctly constricted at midlength (Fig. 25E). Plate of female sternite VIII subtriangular, with distinct tip. *P. musili* **sp. nov.**
 - Antennal funicles wider, segments 4–6 at least $1.2 \times$ wider than long (Figs 4A, 18A, 26A, 41A). Elytra with wide to slender, spatulate to subspatulate, semierect to semiappressed setae, at most as wide as half width of one interval (Figs 4A, 18A, 26A, 41A). Penis not constricted at midlength (Figs 4E, 41E). Plate of female sternite VIII umbrella-shaped, apically rounded. 18
18. Eyes in dorsal view hidden by supraocular tubercles, in lateral view kidney-shaped (Fig. 41A). Protibiae at apex weakly enlarged laterally (Fig. 41D). Onychium $1.6\text{--}1.7 \times$ longer than segment 3. Spermatheca with ramus $1.5\text{--}2.0 \times$ longer than wide (Fig. 41G). *P. zikmundi* **sp. nov.**
 - Eyes in dorsal view not hidden by supraocular tubercles, in lateral view subcircular or subrectangular (Figs 4A, 18A, 26A). Protibiae straight laterally (Figs 4D, 18D, 26D). Onychium at most $1.3 \times$ longer than segment 3. Spermatheca with ramus as long as wide (Figs 4G, 18F). 19
19. Appressed scales on pronotum and elytra smooth, slightly shiny (Fig. 18A). Funicle segment 2 short, $1.1 \times$ longer than wide (Fig. 18A). Onychium equally long as segment 3. Spermatheca with nodulus longer than ramus (Fig. 18F).
 *P. laevis* **sp. nov.**
 - Appressed scales on pronotum and elytra matt (Figs 4A, 26A). Funicle segment 2 long, at least $1.5 \times$ longer than wide (Figs 4A, 26A). Onychium at least $1.2 \times$ longer than segment 3. Spermatheca with nodulus shorter than ramus (Fig. 4G). 20
20. Elytra with raised setae clearly visible, slightly longer than half width of one interval (Fig. 26A). Rostrum and pronotum narrow, rostrum $1.22 \times$ wider than long, pronotum $1.20 \times$ wider than long (Fig. 26A). Funicle segment 2 $2.1 \times$ longer than wide, segments 4–6 $1.2 \times$ wider than long (Fig. 26A). *P. nanus* (Fähræus)
 - Elytra with raised setae inconspicuous, slightly shorter than half width of one interval (Fig. 4A). Rostrum and pronotum wide, rostrum $1.53\text{--}1.56 \times$ wider than long, pronotum $1.42\text{--}1.44 \times$ wider than long (Fig. 4A). Funicle segment 2 $1.4\text{--}1.5 \times$ longer than wide, segments 4 and 5 $1.3\text{--}1.5 \times$, segment 6 $1.8\text{--}1.9 \times$ wider than long (Fig. 4A). *P. baumi* **sp. nov.**
21. Epifrons at apical third more tapered than in basal part (Fig. 7B). Antennal scapes at midlength abruptly dilated apicad. Funicle segment 1 $1.5\text{--}1.6 \times$, segment 2 $1.3 \times$ longer than wide (Fig. 7A). Pronotum wider, $1.52\text{--}1.56 \times$ wider than long, widest at midlength with slightly concave sides at basal half (Fig. 7A). Elytra with small protuberances on odd intervals and with dorsally visible, laterally prominent posthumeral calli (Fig. 7A). *P. endroedyi* **sp. nov.**
 - Epifrons regularly tapered anteriorly (Figs 3B, 6B). Antennal scapes regularly enlarged apicad. Funicle segment 1 $1.8\text{--}2.0$, segment 2 $1.6\text{--}1.7 \times$ longer than wide (Figs 3A, 6A). Pronotum more slender, $1.34\text{--}1.43 \times$ wider than long, widest at basal half with slightly rounded sides (Figs 3A, 6A). Elytra without small protuberances and dorsally visible posthumeral calli (Figs 3A, 6A). 22
22. Rostrum shorter, $1.50\text{--}1.56 \times$ wider than long (Fig. 6B). Pronotum wider, $1.35\text{--}1.43 \times$ wider than long, base deeply arched (Fig. 6A). Elytra shorter, $1.02\text{--}1.09 \times$ longer than wide (Fig. 6A). Dorsal margin of scrobes directed above eyes. Penis long and slender, in lateral view slender (Fig. 6E). Plate of sternite VIII small, isodiametric. Spermatheca with nodulus subtriangular (Fig. 6G). Body size 1.9–2.3 mm. *P. bufo* **sp. nov.**
 - Rostrum longer, $1.30\text{--}1.36 \times$ wider than long (Fig. 3B). Pronotum more slender, $1.24\text{--}1.33 \times$ wider than long, base shallowly arched (Fig. 3A). Elytra longer, $1.11\text{--}1.14 \times$ longer than wide (Fig. 3A). Dorsal margin of scrobes directed towards dorsal margin of eyes. Penis short and wide, in lateral view wide (Fig. 3E). Plate of sternite VIII large, wider than long. Spermatheca with nodulus tubular (Fig. 3G). Body size 1.8–2.6 mm. *P. andersoni* **sp. nov.**
23. Rostrum widest shortly before base and then distinctly tapered anteriorly (Fig. 32B). *P. schoemani* **sp. nov.**
 - Rostrum widest at base, parallel-sided or enlarged apicad (Figs 9B, 11B, 12B, 15B, 19–23B, 28B, 30B, 31B, 33B, 35B, 38B, 40B). 24
24. Rostrum enlarged anteriorly (Figs 11B, 20B, 22B, 35B). 25
 - Rostrum parallel-sided (Figs 9B, 12B, 15B, 19B, 21B, 23B, 28B, 30B, 31B, 33B, 38B, 40B). 28
25. Odd elytral intervals with distinct protuberances (Fig. 11A). Semierect setae only on odd elytral intervals. Eyes dorsally partly concealed by dorso-laterally prominent tubercles (Fig. 11A). Scapes at midlength abruptly enlarged, at apical half wider than clubs (Fig. 11A). *P. hanzelkai* **sp. nov.**
 - All elytral intervals without tubercles (Figs 20A, 22A, 35A). Semierect setae on all elytral intervals. Eyes dorsally well visible, head without supraocular tubercles (Figs 20A, 22A, 35A). Scapes evenly enlarged apicad, only at apex as wide as clubs or wider (Figs 20A, 22A, 35A). 26
26. Epifrons parallel-sided (Fig. 22B). Raised elytral setae wide, almost rounded, slightly longer than wide (Fig. 22A). Odd elytral intervals wider and more elevated than even intervals. Ventrite 2 longer than ventrite 3 or 4. *P. machulkai* **sp. nov.**
 - Epifrons tapered anteriorly (Figs 20B, 35B). Raised elytral setae slender, distinctly longer than wide (Figs 20A, 35A). All elytral intervals equally flat and wide. Ventrite 2 equally long as ventrite 3 or 4. 27
27. Raised elytral setae slender, at apex as wide as diameter of appressed scale (Fig. 20A). Tibiae slender, $6.0\text{--}6.4 \times$ longer than wide. Antennal clubs $1.3 \times$ wider than apex of scapes (Fig. 20A). Funicle segment 1 $1.2\text{--}1.3 \times$ longer than segment 2 (Fig.

- 20A). Elytra oval, 1.32–1.38 × longer than wide. *P. leleupi* sp. nov.
- Raised elytral setae wide, at apex wider than diameter of appressed scale (Fig. 35A). Tibiae more robust, 4.8 × longer than wide. Antennal clubs equally wide as apex of scapes (Fig. 35A). Funicle segment 1 equally long as segment 2 (Fig. 35A). Elytra short oval, 1.22 × longer than wide. *P. stingli* sp. nov.
28. Raised setae on elytra conspicuous, creating equally dense row on each interval (Figs 12A, 19A, 28A, 30A, 31A, 33A, 38A, 40A). Pronotum wider, 1.41–1.56 × wider than long (Figs 12A, 19A, 28A, 30A, 31A, 33A, 38A, 40A). Epifrons at apex wider than three-quarters of rostral width at same place (Figs 12B, 19B, 28B, 30B, 31B, 33B, 38B, 40B). 29
- Raised setae on elytra inconspicuous, creating dense row only on odd intervals (Figs 9A, 15A, 21A, 23A). Pronotum more slender, 1.12–1.39 × wider than long (Figs 9A, 15A, 21A, 23A). Epifrons at apex at most slightly wider than half of rostral width at same place (Figs 9B, 15B, 21B, 23B). 36
29. Antennal funicles robust, segments 3–5 1.3–1.7 ×, segments 6 and 7 1.5–2.4 × wider than long (Figs 38A, 40A). 30
- Antennal funicles slender, segments 3–7 isodiametric to at most 1.3 × wider than long (Figs 12A, 19A, 28A, 30A, 31A, 33A). 31
30. Raised elytral setae inconspicuous, distinctly shorter than half width of one interval (Fig. 38A). Pronotum slender, 1.27 × wider than long (Fig. 38A). Elytra longer, 1.39 × longer than wide. Onychium 0.9 × longer than tarsal segment 3. Gonocoxites with hardly visible styli (Fig. 38E). *P. vavrai* sp. nov.
- Raised elytral setae conspicuous, at apical declivity distinctly longer than half width of one interval (Fig. 40A). Pronotum wide, 1.41–1.44 × wider than long (Fig. 40A). Elytra shorter, 1.24–1.31 × longer than wide. Onychium 1.2 × longer than tarsal segment 3. Gonocoxites with long styli (Fig. 40F). *P. vrazi* sp. nov.
31. Erect elytral setae on disc almost longer than width of one interval, slender, parallel-sided (Fig. 12A). Scapes at apex 0.9 × wider than clubs. Suture between ventrites 1 and 2 sinuose. Gonocoxites abruptly tapered apically to slender, sabre-shaped arms, without styli (Fig. 12E). Plate of female sternite VIII more than twice wider than long. *P. holubi* sp. nov.
- Erect elytral setae on disc about as long as half of width of one interval, subspatulate or spatulate (Figs 19A, 28A, 30A, 31A, 33A). Scapes at apex 1.1–1.2 × wider than clubs. Suture between ventrites 1 and 2 straight or slightly arched. Gonocoxites evenly tapered apically, with long apical styli (Figs 19F, 28F, 30F, 31E, 33E). Plate of female sternite VIII isodiametric or weakly longer than wide. 32
32. Distance between two scales on elytral disc 4–5 × longer than length of one seta (Fig. 28A). Raised elytral setae on posterior declivity inconspicuous, equally long as setae on elytral disc. Gonocoxites with short, moderately wide styli (Fig. 28F). *P. oberprieleri* sp. nov.
- Distance between two scales on elytral disc equal to length of one seta, at most twice as long (Figs 19A, 30A, 31A, 33A). Raised elytral setae on posterior declivity conspicuous, longer than setae on elytral disc, except *P. pavlicai* sp. nov. with setae equally long. Gonocoxites with long and slender styli (Figs 19F, 30F, 31E, 33E). 33
33. Onychium short, 1.2 × longer than tarsal segment 3. Funicle segment 2 short, 1.2 × longer than wide (Fig. 33A). Spermatheca with short nodulus, isodiametric, ramus pressed to corpus (Fig. 33F). *P. soutpansbergensis* sp. nov.
- Onychium long, 1.4–1.5 × longer than tarsal segment 3. Funicle segment 2 long, at least 1.5 × longer than wide (Figs 19A, 30A, 31A). Spermatheca with nodulus longer than wide, ramus perpendicular to corpus (Figs 19G, 30G, 31F). 34
34. Pronotum narrower, 1.29 × wider than long (Fig. 31A). Funicle segment 1 1.5 × longer than segment 2, segment 2 1.5 × longer than wide (Fig. 31A). Antennal scrobes in dorsal view form narrow furrows. Elytral setae on disc subspatulate, semierect. Spermatheca with nodulus 4 × longer than its width at midlength (Fig. 31F). *P. rudyardi* sp. nov.
- Pronotum wider, 1.44–1.51 × wider than long (Figs 19A, 30A). Funicle segment 1 1.1 × longer than segment 2 or equally long as segment 2, segment 2 1.7–2.0 × longer than wide (Figs 19A, 30A). Antennal scrobes in dorsal view form wide furrows. Elytral setae on disc spatulate, semiappressed. Spermatheca with nodulus at most 2 × longer than wide (Figs 19G, 30G). 35
35. Head with supraocular tubercles (Fig. 30A). Elytra subparallel-sided, with raised setae on disc and posterior declivity equally long (Fig. 30A). Onychium 1.6–1.7 × longer than tarsal segment 3. Ventrite 1 2.5 × longer than ventrite 2, ventrite 2 slightly longer than ventrite 3 or 4. Spermathecal ramus slightly longer than wide (Fig. 30G). *P. pavlicai* sp. nov.
- Head without supraocular tubercles (Fig. 19A). Elytra with rounded sides, with raised setae on disc shorter than on posterior declivity (Fig. 19A). Onychium 1.4 × longer than tarsal segment 3. Ventrite 1 4 × longer than ventrite 2, ventrite 2 equally long as ventrite 3 or 4. Spermathecal ramus 3 × longer than wide (Fig. 19G). *P. lajumensis* sp. nov.
36. Antennae reddish brown, slender, funicle segments 1 and 2 longer than wide; segments 3–5 1.2–1.3 × wider than long, scapes narrower than protibia at midlength; clubs distinctly wider than last funicle segments (Figs 9A, 21A). Eyes moderately large, distinctly prominent from outline of head (Figs 9A, 21A). 37
- Entire antennae blackish, monstrously robust, funicle segment 1 isodiametric, segment 2 wider than long, segments 3–5 2.4–3.0 × wider than long, scapes equally wide as protibia at midlength; clubs equally wide as last funicle segments (Figs 15A, 23A). Eyes small, hardly prominent from outline of head (Figs 15A, 23A). 38
37. Elytra with flat intervals, with regularly rounded humeri (Fig. 21A). Rostrum longer, 1.27–1.39 × wider than long (Fig. 21B). Appressed scales irregularly angular, imbricated, completely covering integument. Elytra 1.32–1.38 × longer than wide. *P. lesothoensis* sp. nov.
- Elytra with distinct bumps on odd intervals, with obliquely subtruncate humeri (Fig. 9A). Rostrum shorter, 1.62–1.69 × wider than long (Fig. 9B). Appressed scales irregularly star-shaped, isolated, not covering integument. Elytra 1.17–1.26 × longer than wide. *P. frici* sp. nov.
38. Funicle segment 1 2.2 × longer than segment 2, segment 2 2.0–2.2 × wider than long; segments 3–5 wider than clubs (Fig. 23A). Epifrons at apex more slender than half of width of rostrum at same place (Fig. 23B). Spermatheca with nodulus 4 × longer than ramus (Fig. 23G). Tips of gonocoxites straight (Fig. 23F). *P. marshalli* sp. nov.
- Funicle segment 1 1.4 × longer than segment 2, segment 2 1.2 × wider than long; segments 3–5 slenderer than clubs (Fig.

15A). Epifrons at apex wider than half of width of rostrum at same place (Fig. 15B). Spermatheca with nodulus slightly shorter than ramus (Fig. 15F). Tips of gonocoxites curved outside (Fig. 15E). *P. insignicornis* **sp. nov.**

Check list of *Pentatrachyphloeus* Voss, 1974

<i>P. andersoni</i> sp. nov.	South Africa, Mpumalanga
<i>P. baumi</i> sp. nov.	South Africa, Gauteng
<i>P. brevithorax</i> sp. nov.	South Africa, KwaZulu-Natal
<i>P. bufo</i> sp. nov.	South Africa, Mpumalanga
<i>P. endroedyi</i> sp. nov.	South Africa, Mpumalanga
<i>P. exiguus</i> sp. nov.	South Africa, Mpumalanga
<i>P. frici</i> sp. nov.	South Africa, Limpopo
<i>P. grobbelaerae</i> sp. nov.	South Africa, KwaZulu-Natal
<i>P. hanzelkai</i> sp. nov.	South Africa, KwaZulu-Natal
<i>P. holubi</i> sp. nov.	South Africa, Mpumalanga
<i>P. howdenae</i> sp. nov.	South Africa, Mpumalanga
<i>P. hystrix</i> sp. nov.	South Africa, Mpumalanga
<i>P. insignicornis</i> sp. nov.	South Africa, KwaZulu-Natal
<i>P. kalalovae</i> sp. nov.	South Africa, Gauteng
<i>P. kuscheli</i> sp. nov.	South Africa, KwaZulu-Natal
<i>P. laevis</i> sp. nov.	South Africa, Mpumalanga
<i>P. lajumensis</i> sp. nov.	South Africa, Limpopo
<i>P. leleupi</i> sp. nov.	Zimbabwe
<i>P. lesothoensis</i> sp. nov.	Lesotho
<i>P. machulkai</i> sp. nov.	South Africa, Free State
<i>P. marshalli</i> sp. nov.	South Africa, KwaZulu-Natal
<i>P. muelleriae</i> sp. nov.	South Africa, Mpumalanga
<i>P. musili</i> sp. nov.	South Africa, Limpopo
<i>P. nanus</i> (Fähræus, 1871)	South Africa, Eastern Cape
<i>P. ntinini</i> sp. nov.	South Africa, KwaZulu-Natal
<i>P. oberprieleri</i> sp. nov.	South Africa, Gauteng, North West
<i>P. patruelis</i> Voss, 1974	South Africa, Eastern Cape
<i>P. pavlicai</i> sp. nov.	South Africa, Free State
<i>P. rudyardi</i> sp. nov.	South Africa, Limpopo
<i>P. schoemani</i> sp. nov.	South Africa, Limpopo
<i>P. soutpansbergensis</i> sp. nov.	South Africa, Limpopo
<i>P. spinimanus</i> sp. nov.	South Africa, Mpumalanga
<i>P. stingli</i> sp. nov.	South Africa, Limpopo
<i>P. tenuicollis</i> sp. nov.	South Africa, Mpumalanga
<i>P. tuberculatus</i> sp. nov.	South Africa, Mpumalanga
<i>P. vavrai</i> sp. nov.	South Africa, Eastern Cape
<i>P. vossi</i> sp. nov.	South Africa, Mpumalanga
<i>P. vrazi</i> sp. nov.	South Africa, Limpopo
<i>P. zikmundi</i> sp. nov.	South Africa, Free State

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Revision of the species related to *Lalagetes subfasciatus* Boheman and transfer of remaining *Lalagetes* species to other genera of Embrithini (Coleoptera: Curculionidae: Entiminae)

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Abstract

The genus *Lalagetes* Schoenherr, 1842 is redefined, compared with related genera and all known species placed among three genera. Four new species from South Africa are described: *L. andersoni* sp. nov. (Mpumalanga), *L. howdenorum* sp. nov. (Limpopo), *L. sarkae* sp. nov. (KwaZulu-Natal) and *L. zitae* sp. nov. (KwaZulu-Natal). Lectotypes of *Lalagetes seminulum* Fåhraeus, 1871 and *L. subfasciatus* Boheman, 1842 are designated here, and both species redescribed. All of the following species are keyed and illustrated. The following new combinations are proposed: *Glyptosomus edax* (Marshall, 1939), *G. inaequalis* (Marshall, 1941), *G. leurops* (Marshall, 1931), *G. setosus* (Boheman, 1845), *G. squamulatus* (Boheman, 1842), *G. subfrenatus* (Marshall, 1947b), *G. variegatus* (Boheman, 1845), *Phaylomerinthus hispidus* (Hartmann, 1906), *P. nanus* (Marshall, 1947a), *P. pallipes* (Fåhraeus, 1871), *P. parvus* (Marshall, 1947a), *P. rudis* (Marshall, 1958), *P. signatus* (Hartmann, 1906) and *P. viridulus* (Fåhraeus, 1871).

Key words: Coleoptera, Curculionidae, Entiminae, Embrithini, taxonomy, new species, new combinations, South Africa

Introduction

The genus *Lalagetes* Schoenherr, 1842 was listed by Lacordaire (1863) in the Oosomini Lacordaire, 1863, a placement followed later by Lona (1937). Marshall (1942, 1943), in his studies of the tribes Oosomini and Embrithini Marshall, 1942, did not include this genus within these two tribes. Louw (1998) included the genus *Lalagetes* in the Otiorhynchini, without further comment. Later, in their world catalogue of weevil genera, Alonso-Zarazaga & Lyal (1999) listed this genus in the tribe Peritelini Lacordaire, 1863; as one of many Afrotropical entimine genera with dorsally placed scrobes, lacking humeral calli and with connate claws. Grobbelaar *et al.* (2000) listed the genus *Lalagetes* in the tribe Embrithini, without comment. This tribal placement was confirmed by Borovec *et al.* (2009), based on discussion of diagnostic characters.

In the previous part of our study of Trachyphloeini and Embrithini associated with forest litter from eastern part of South Africa, we resolved the taxonomic position of Trachyphloeini species living in South Africa described under *Trachyphloeus* and any other Trachyphloeini genus known from the Palearctic or Oriental regions (Borovec & Skuhrovec 2017a). The second part of our study of Entiminae associated with forest litter from eastern part of South Africa is devoted to the definition of species around the species *Lalagetes subfasciatus* Boheman, 1842 (type species of the genus *Lalagetes* Schoenherr, 1842) and its differentiation from the genus *Phaylomerinthus* Schoenherr, 1842, which accommodate in large part the remaining part of the former *Lalagetes* species that are not congeneric with the type species *L. subfasciatus*. We transferred 7 species to the genus *Phaylomerinthus* and also 7 to the genus *Glyptosomus* Schoenherr, 1847. Here we describe 4 new species, congeneric with *Lalagetes subfasciatus* Boheman, 1842. In the third part, we will describe a well defined and monophyletic new genus with seven new species (Borovec & Skuhrovec 2017b), and in the fourth part, we will

revise the genus *Pentatrachyphloeus* Voss, 1974, where we have recently found 22 new species. In the fifth part we plan to finish the study of this group by description of two new monotypic genera, and to give a comprehensive overview with analysis of this group.

Taxonomic position of *Lalagetes* Schoenherr, 1842

Lalagetes was described by Schoenherr, 1842, based on description of one species, *Lalagetes subfasciatus* Boheman, 1842, the type species of the genus. Later three species described by Boheman (1842, 1845), four species described by Fähræus (1871), two species described by Hartmann (1906), seven species described by Marshall (1931, 1939, 1941, 1947a, 1947b, 1958) and four species described from South Africa under the generic names *Atrachyphloeus* Voss, 1962 and *Trachyphloeus* Germar, 1817 (Borovec & Skuhrovec 2017a), were added to the genus. The majority of *Lalagetes* species are described from the north-eastern part of South Africa, but one species is also described from Zimbabwe, Congo and Angola. This “genus” is very speciose mainly in the north-eastern South Africa and the number of undescribed species that we were able to examine is very high with about 85 species. Due to this extensive material it is possible to consider that this “genus” is highly variable, on the one hand including species sharing many common characters, as for example “otiorhynchinae” antennal scrobes, small body size, elytral humeral calli not protruding laterally or connate claws, but all these species differ mainly by presence and absence of metatibial corbels and structure of rostrum, abdominal ventrites and female terminalia. Based on these characters, all known described species of this polyphyletic “genus” can be divided into three different genera:

1. Recent examination of the type species of the genus, *Lalagetes subfasciatus* Boheman, 1842, shows that this species by lacking metatibiae corbels and by other characters mainly on rostrum, ventrites and female sternite VIII is congeneric only with *L. seminulum* Fähræus, 1871. Both species thus differ from all other already described *Lalagetes* species. They share these characters with four other undescribed species, creating a small, well defined true genus *Lalagetes*, which is revised in the present paper.

2. The most speciose group of already described “*Lalagetes*” species and the majority of undescribed species are congeneric with *Phaylomerinthus cinereus* Boheman, 1842, type species of a soon to be described monotypic genus (Borovec & Skuhrovec 2017a). They lack corbels on metatibiae, have narrow epifrons, glabrous ventrites and female sternite VIII with plate bearing an arrow-shaped sclerites and pointed apicad and comprise another Embrithini genus, which is similar and related to *Lalagetes*. New combinations are proposed: *Phaylomerinthus hispidus* (Hartmann, 1906) (based on description), *P. nanus* (Marshall, 1947a) (type examined), *P. pallipes* (Fähræus, 1871) (type examined), *P. parvus* (Marshall, 1947a) (type examined), *P. rudis* (Marshall, 1958) (type examined), *P. signatus* (Hartmann, 1906) (based on description) and *P. viridulus* (Fähræus, 1871) (type examined). *Phaylomerinthus* Schoenherr, 1842 includes not only these 7 just transferred species, but also 2 more species transferred from the genera *Atrachyphloeus* and *Trachyphloeus* (Borovec & Skuhrovec 2017a) and 68 undescribed species as represented by the material examined by the first author. Revision of this genus will be the subject of a subsequent study.

3. The third part of the presently described “*Lalagetes*” have well developed metatibial corbels, wide epifrons at base almost as wide as interocular space and dorsally hardly visible antennal scrobes, squamose frons and female sternite VIII with plate umbrella-shaped, not apically pointed and lacking sclerites, and could be placed in the genus *Glyptosomus* Schoenherr, 1847. *Glyptosomus* includes two previously described species, *G. costipennis* Schoenherr, 1847 and *G. angulatus* Marshall, 1939, and two newly transferred species from the genus *Trachyphloeus* (Borovec & Skuhrovec 2017a). The genus contains also 17 undescribed species, examined by first author. New combinations are proposed: *Glyptosomus edax* (Marshall, 1939) (type examined), *G. inaequalis* (Marshall, 1941) (type examined), *G. leurops* (Marshall, 1931) (type examined), *G. setosus* (Boheman, 1845) (type examined), *G. squamulatus* (Boheman, 1842) (type examined), *G. subfrenatus* (Marshall, 1947b) (type examined) and *G. variegatus* (Boheman, 1845) (type examined). Revision of *Glyptosomus* and its placement within the Embrithini is topic of a subsequent paper.

Material and methods

Body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of the elytra, excluding the rostrum. Width/length ratio of the rostrum was measured as maximum width at base versus maximum length to the base of the mandibles. Width/length ratios of pronotum, elytra, antennal segments and tarsomeres were taken at the maximum width and length of the respective parts in dorsal view. Dissected male and female genitalia were studied in glycerine. Female genitalia were afterwards embedded in Solakryl BMX (Medika, Prague); male genitalia were mounted dry on the same card as the respective specimen. Photos of adults were taken with Canon EOS 550D cameras with an MP-E 65 mm macro lens and combined using CombineZM and GIMP2 softwares. Details of adults (rostrum—dorsal and lateral view, protibia, ventrites) and genitalia were taken and corrected with HIROX (RH-2000, digital microscope). The terminology of the rostrum and the genitalia follows Oberprieler *et al.* (2014).

Exact label data of type material are cited: separate labels are indicated by slash (/). Author's remarks and comments are in square brackets. [p]—the preceding data were printed, [hw]—the same were hand-written.

Specimens are deposited in the following museums and private collections:

BMNH	Natural History Museum, London, United Kingdom (formerly British Museum of Natural History), Maxwell Barclay;
CMNC	Canadian Museum of Nature Collection, Ottawa, Canada, Robert Anderson;
ECRI	Enzo Colonnelli collection, Rome, Italy;
MFNB	Museum für Naturkunde, Berlin, Germany, Manfred Uhlig;
MNHW	Museum of Natural History, Wrocław University, Poland, Marek Wanat;
NHRS	Naturhistoriska Riksmuseet, Stockholm, Sweden, Johannes Bergsten;
RBSC	Roman Borovec collection, Sloupno, Czech Republic;
RMCA	Royal Museum of Central Africa, Tervuren, Belgium, Marc de Meyer;
SANC	National Collection of Insects, Pretoria, South Africa, Riaan Stals;
TMSA	Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa, Ruth Müller.

Taxonomy

Genus *Lalagetes* Schoenherr, 1842

(Figs 2C, D, 3A–E, 5A–F, 6A–F, 7A–F, 8A–E, 9A–F, 10A–F)

Lalagetes Schoenherr, 1842: 125 (original description).

Lalagetes: Lacordaire 1863: 193 (monography of Entiminae); Lona 1937: 357 (catalogue); Louw 1998: 10 (note); Alonso-Zarazaga & Lyal 1999: 172 (catalogue); Grobbelaar *et al.* 2000: 24 (note); Borovec *et al.* 2009: 843 (note); Borovec & Oberprieler 2013: 367 (note).

Type species: *Lalagetes subfasciatus* Boheman, 1842, by original description.

Diagnosis. Very small Embrithini to 2.5 mm, with short-oval to globular elytra with mostly long, lancet-shaped, pointed erect setae and large, dense, rounded appressed scales; epifrons at base weakly or distinctly narrower than space between eyes; frons glabrous; epistome distinct; protibiae long and slender; metatibiae without corbel, amucronate with apical surface glabrous; claws fused; ventrites densely scaled with ventrite 2 longer than ventrites 3 and 4 combined and suture between ventrite 1 and 2 sinuose; tegmen with short and weakly sclerotised parameres; female sternite VIII with very long and slender apodeme terminating inside basal half of plate, its plate short and small, subtriangular, with clearly visible basal and apical margin, reaching fifth to sixth of apodeme length.

Redescription (Figs 2C, D; 3A–E, 5A–F, 6A–F, 7A–F, 8A–E, 9A–F, 10A–F).

Body length 1.8–2.5 mm. The whole body brownish to dark brownish, antennae and legs somewhat paler, only clubs in some species blackish. The whole dorsal part of body densely covered by moderately large, rounded appressed scales, 3–5 scales across width of one interval, completely covering integument, isolated to somewhat

imbricate, leaving only very narrow elytral striae exposed; ventral side densely covered by slightly smaller rounded appressed scales, covering integument but somewhat isolated; boundary between gena and subgena with long-oval, transverse glabrous area. Scapes, femora and tibiae densely covered by rounded scales smaller than those on the elytra; funicles and tarsi glabrous; clubs densely and finely setose. The whole dorsal part of body with conspicuous, long, erect, lancet-shaped and pointed apical setae, exceptionally narrowly subspatulate, creating one dense row on each elytral interval, longer in males than in females; pronotum and head with rostrum with identical setae, somewhat shorter than those on elytra, densely irregularly scattered; scapes and tibiae with semiappressed to semierect short to long, slender, lancet-shaped setae; femora with semiappressed short, parallel-sided setae. Body vestiture greyish white, unicolorous to spotted, elytra with transverse stripe on inner intervals or with small irregularly scattered spots from light to dark brownish scales, pronotum with two curved longitudinal bands on disc.

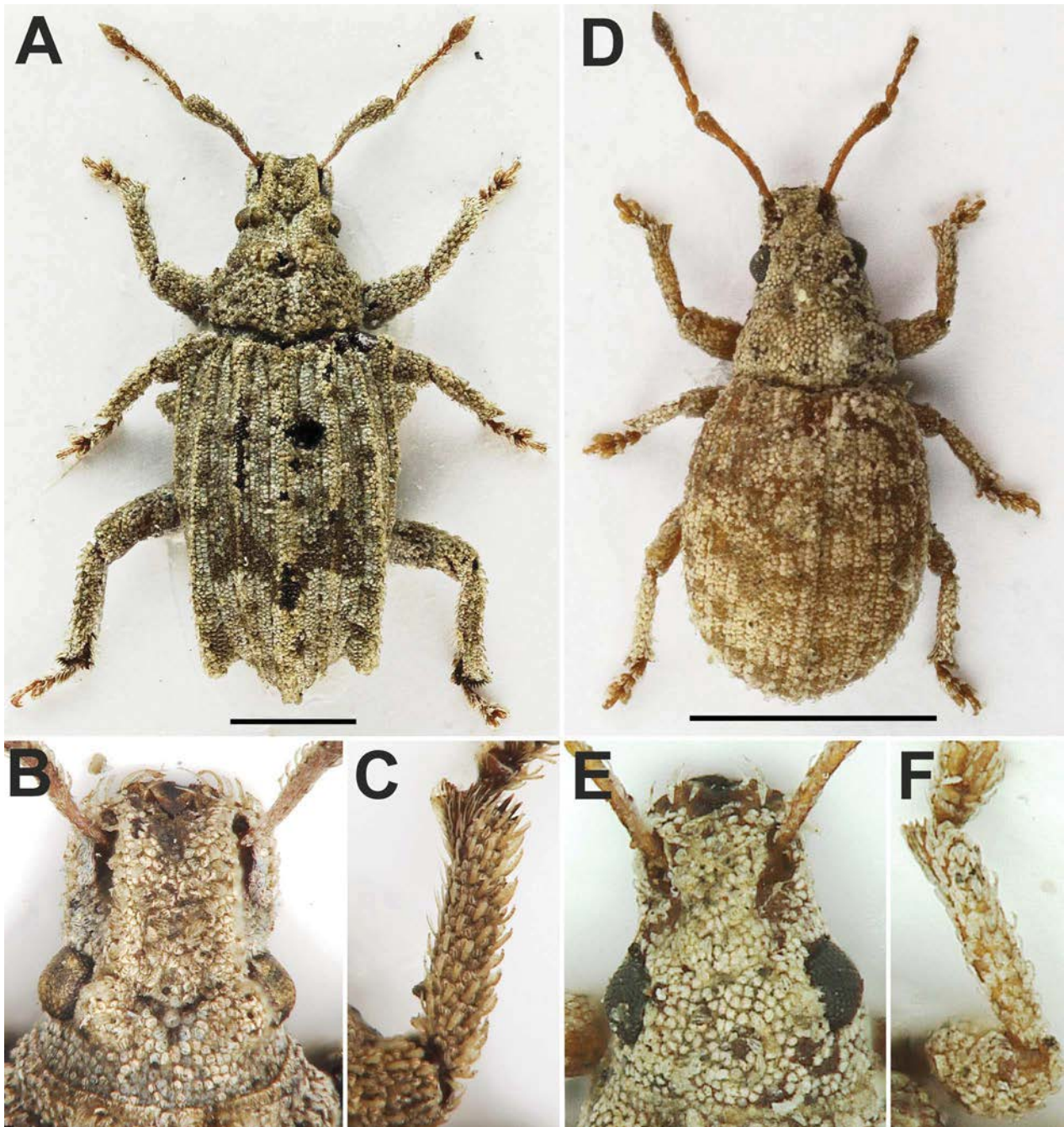


FIGURE 1. Differential characters between genus *Glyptosomus* and genus *Phylomerinthus*: *G. costipennis* Schoenherr, 1847: **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—protibia, male; *P. cinereus* Boheman, 1842: **D**—habitus, dorsal view, female; **E**—rostrum, female, dorsal view; **F**—protibia, female. Scales bar: 1 mm (**A**, **D**).

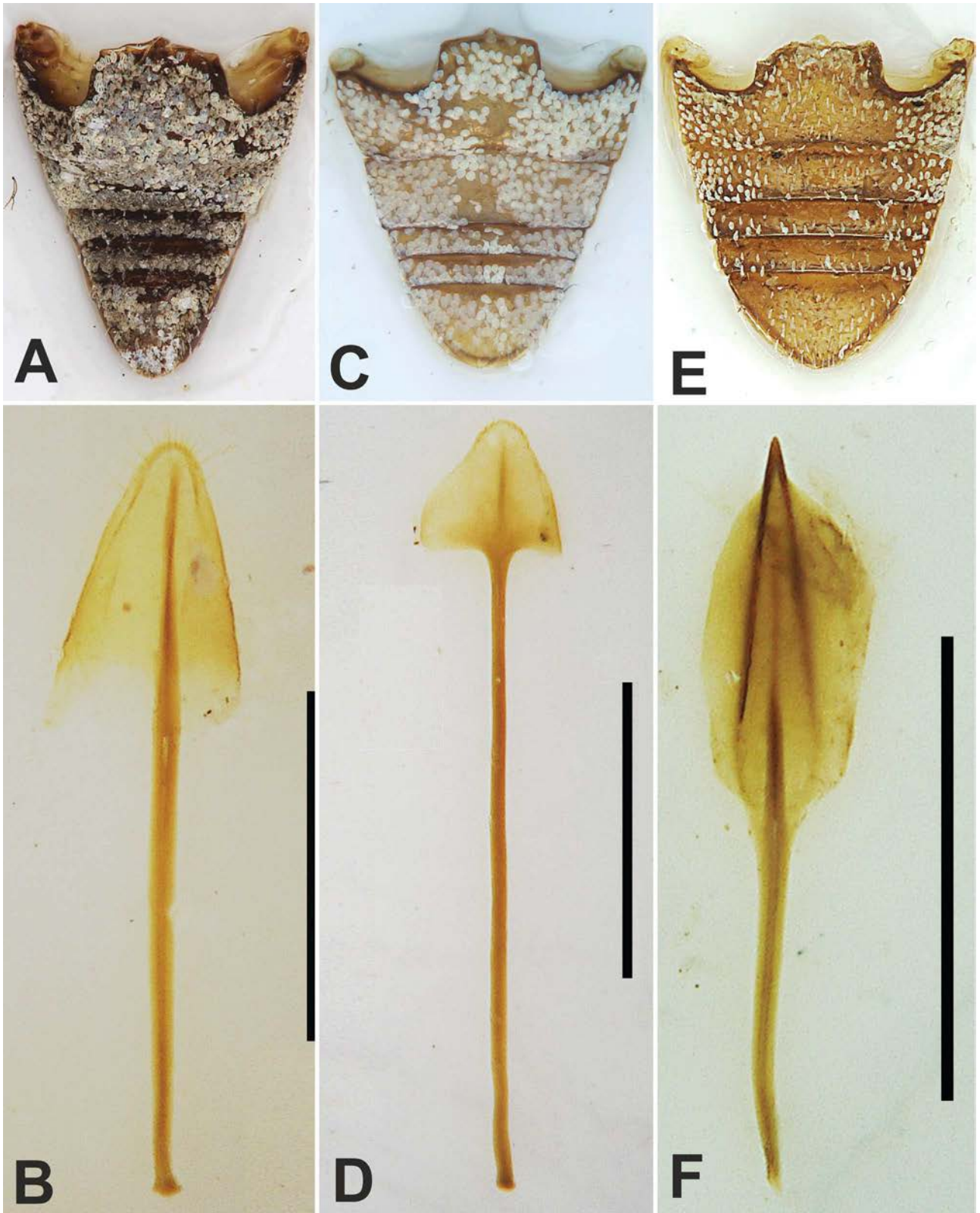


FIGURE 2. Differential characters between genera *Glyptosomus*, *Lalagetes* and *Phylomerinthus*: *G. costipennis* Schoenherr, 1847: **A**—ventrites, female; **B**—female sternite VIII; *L. subfasciatus* Boheman, 1842: **C**—ventrites, female; **D**—female sternite VIII; *P. convergens* (Voss, 1962): **E**—ventrites, female; *P. cinereus* Boheman, 1842: **F**—female sternite VIII; Scales bar: 0.5 mm (**B, D, F**).

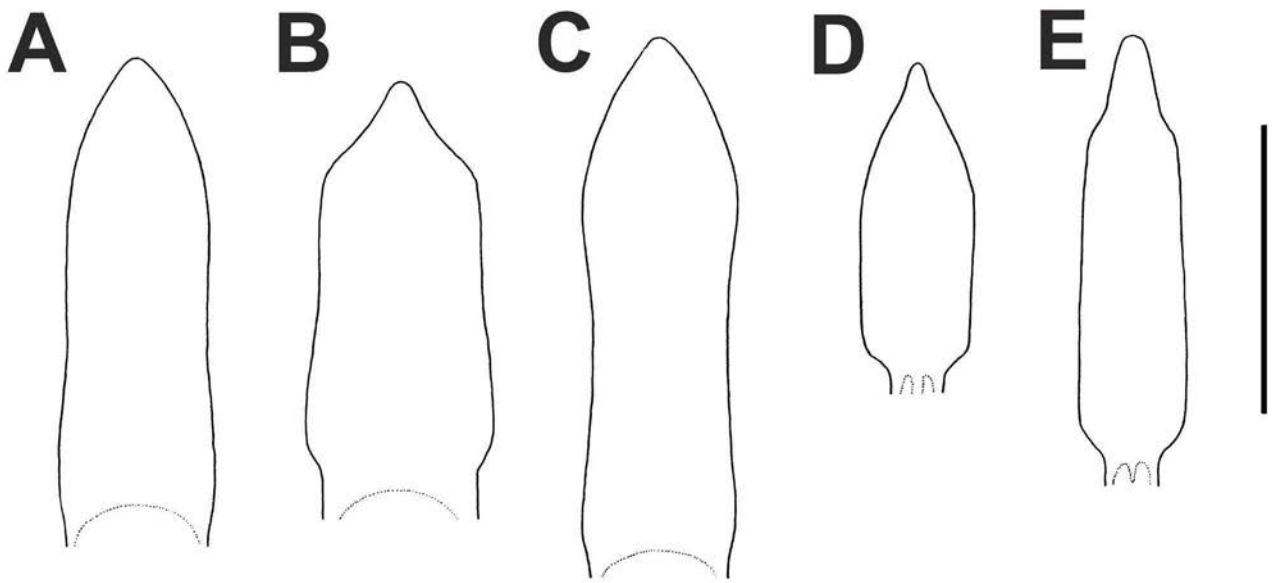


FIGURE 3. Apex of penis. **A**—*Lalagetes andersoni* sp. nov.; **B**—*Lalagetes howdenorum* sp. nov.; **C**—*Lalagetes sarkae* sp. nov.; **D**—*Lalagetes subfasciatus* Boheman, 1842; **E**—*Lalagetes zitae* sp. nov. Scales bar: 0.25 mm.

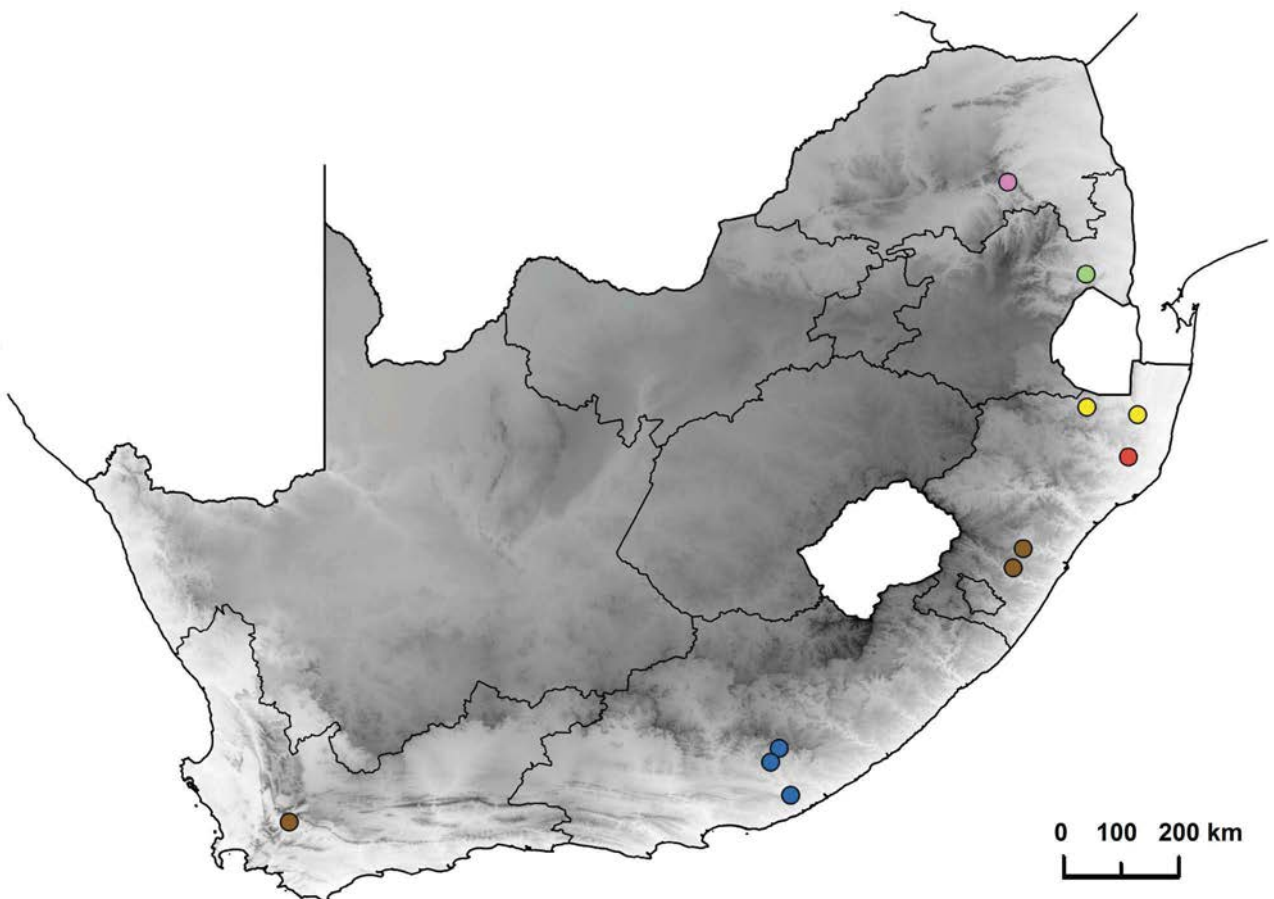


FIGURE 4. Distribution of *Lalagetes* species in South Africa; *Lalagetes andersoni* sp. nov. (green round); *Lalagetes howdenorum* sp. nov. (pink round); *Lalagetes sarkae* sp. nov. (yellow rounds); *Lalagetes seminulum* Fähræus, 1871 (red round); *Lalagetes subfasciatus* Boheman, 1842 (blue rounds); *Lalagetes zitae* sp. nov. (brown rounds).

Rostrum (Figs 5B–C, 6B–C, 7B–C, 8B–C, 9B–C, 10B–C) more slender in males than in females, in both sexes $1.1\text{--}1.3 \times$ as wide as long, at base $1.05\text{--}1.15 \times$ as wide as at apex, with straight or slightly concave sides, weakly tapered anteriorly. Epifrons wide to narrow, at apical half subparallel, at basal half weakly enlarged posteriorly, at base narrower than distance between eyes, flat, in lateral view slightly separated from head by clearly defined transverse sulcus; when cleared of scales with very slender median and lateral longitudinal carina, median one interrupted by slender and short fovea, and with shallow, longitudinal, ill-defined depressions along the median carina; in lateral view tooth-like separated from vertex by very slender and deep, arched to V-shaped, clearly defined sulcus; vertex densely finely longitudinally striate from anterior border of pronotum to transverse sulcus or only at anterior part. Epistome V-shaped, posteriorly sharply carinate, squamose. Frons short, glabrous, leaving very narrow glabrous stripe along epistome, with 3–4 pairs of slender, long setae. Antennal scrobes (Figs 5A, 6A, 7A, 8A, 9A, 10A) dorsally narrowly pit-shaped or furrow-shaped, visible at anterior half; in lateral view furrow-shaped, slender, glabrous, dorsally placed, deflected from dorsal border of rostrum, weakly curved, directed to middle of eye, separated from it by squamose stripe somewhat shorter than diameter of eye, with ventral edge slightly more developed than dorsal one. Eyes moderately large, strongly convex and prominent from head, slightly asymmetric, widest behind midlength; in lateral view subcircular to short-oval, dorsally placed. Gena and lateral parts of subgena densely squamose, middle part of subgena sparsely squamose, narrow transverse stripe between gena and subgena glabrous. Mandibles trisetose, squamose, small. Submentum with pair of long, slender setae.

Antennae (Figs 5A, 6A, 7A, 8A, 9A, 10A) slender; scapes $1.1 \times$ as long as funicles, $4.6\text{--}6.1 \times$ as long as wide, slightly exceeding anterior border of pronotum, almost straight, gradually enlarged apically at apical quarter, at apex at most $1.2 \times$ as wide as clubs; funicles 6–7 segmented; segments 1 and 2 slender and long, conical, funicle 1 longer and wider than segment 2; segments 3–7 longer than wide; at most segment 7 isodiametric; clubs spindle-shaped, with segment 1 largest.

Pronotum (Figs 5A, 6A, 7A, 8A, 9A, 10A) $1.5\text{--}1.8 \times$ as broad as long, in males more slender than in females, widest at posterior third, distinctly more tapered anteriorly than posteriorly, with rounded sides, weakly constricted behind anterior border. Disc regularly convex, without keels or furrows, in lateral view weakly convex, behind anterior border flattened. When cleared of scales disc matt, densely, finely and regularly punctured by small shallow punctures with very slender edges between them, narrow to wider stripe behind anterior border unpunctured, smooth, shiny, distinctly separated from punctured part. Base straight. Anterior border in lateral view straight, without ocular lobes or anteriorly directed setae or scales. Procoxal cavities contiguous, round, nearer to anterior than posterior border; procoxae subglobular. Scutellum dorsally not visible.

Elytra (Figs 5A, 6A, 7A, 8A, 9A, 10A) short-oval to globular, $1.05\text{--}1.2 \times$ as long as wide, in males more slender than in females, widest at midlength with distinctly rounded sides, without developed, humeral or posthumeral calli, in lateral view distinctly convex, posterior declivity slightly overhanging apex. Base straight, equally wide as pronotal base; elytra 10-striate, intervals wide, slightly convex; striae very narrow. When cleared of scales intervals shiny, unpunctured; striae distinctly punctured, narrow. Mesocoxae semiglobular, narrowly separate, mesosternal process narrow, about as wide as fifth to sixth of mesocoxa diameter. Metacoxae short transverse, separated by distance shorter than their width.

Legs (Figs 5A, 6A, 7A, 8A, 9A, 10A). Femora unarmed, medially slightly inflated. Protibiae (Figs 5D, 6D, 7D, 8D, 9D, 10D) moderately slender, $5.5\text{--}6.6 \times$ as long as wide, double sinuated at inner side and straight at lateral side, at short apical part mesally distinctly enlarged with very short mucro; apex rounded with fringe of very short and fine yellowish setae. Mesotibiae with oval, glabrous apical surface, with short mucro. Metatibiae with small, oval, glabrous apical surface, without corbels, fringed mesally by dense, short, fine yellowish setae and laterally by dense, long, fine, translucent yellowish setae, amucronate. Tarsi moderately slender; segment 1 conical, long and slender, but shorter than segment 2 and 3 combined; segment 2 isodiametric to slightly transverse; segment 3 bilobed, $1.3\text{--}1.7 \times$ as wide as segment 2; onychium equally long to $1.1 \times$ longer than segment 3, weakly enlarged distad. Claws fused at basal quarter, weakly divergent.

Abdomen ventrally subtriangular, isodiametric to $1.1 \times$ longer than broad; ventrite 1 in middle shorter than ventrite 2–4 combined and less than twice as long as ventrite 2, laterally about as long as ventrite 2; ventrite 2 as long or longer than ventrites 3 and 4 combined; ventrite 5 apically short, subtruncate in males and longer and subtriangular in females; suture between ventrites 1 and 2 weakly arched, narrow and fine, other sutures straight, broad, and deep. Ventrites (Fig. 2C) densely covered by rounded, isolated appressed scales and several inconspicuous semiappressed, subspatulate short setae. Metaventral process obtuse, at most as wide as transverse diameter of metacoxa.

Sexual dimorphism. Males are externally distinguished from females by more slender rostrum, pronotum and elytra, longer erect elytral setae and also by shorter, subtrapezoidal ventrite 5.

Male genitalia. Penis (Figs 3A–E, 5E, 6E, 7E, 9E, 10E) small to medium sized, well sclerotised, temones $1.5\text{--}2.8 \times$ as long as body of penis and $1.6\text{--}2.3 \times$ longer than tegminal manubrium; tegmen with manubrium $1.3\text{--}2.5 \times$ longer than diameter of ring; ring complete, with short and weakly sclerotised parameres, distinctly connected at base. Sternite IX with spiculum gastrale moderately short and robust, posteriorly with fused basal arms, in species with long temones anteriorly enlarged to large, subrounded plate, in species with short temones anteriorly curved and tapered.

Female genitalia. Gonocoxites moderately long, regularly tapered apicad, with very short apical styli with tuft of 3–4 fine setae. Sternite VIII (Fig. 2D) with very long and slender apodeme, $4.7\text{--}5.6 \times$ as long as length of plate, terminating inside basal half of plate, plate short and small, subtriangular, with clearly visible basal and apical margin, the later armed with very short, fine setae. Spermatheca crescentic, differing between the species.

Biology. Unknown, there are no notes about collecting methods on the locality labels. Reproduction of all species amphigonic.

Distribution. South Africa, known from Western and Eastern Cape, KwaZulu-Natal, Limpopo and Mpumalanga (Fig. 4).

Included species. Two species originally described in genus *Lalagetes* and four species newly described below.

Remarks. The genus *Lalagetes* is distinguished from all other Afrotropical Embrithini genera by its small size up to 2.5 mm, rostrum and head separated by narrow transverse sulcus, frons short and glabrous, epistome large and distinct, clearly visible dorsally, posthumeral calli not developed, protibiae long and slender, $5.5\text{--}6.7 \times$ as long as wide and metatibiae lacking corbels with apical surface glabrous. *Lalagetes* shares these characters only with the genus *Phylomerinthus*. It is possible to distinguish both genera by the characters stated in the key. The following key includes the genus *Glyptosomus*, where we transfer several species originally described under the genus *Lalagetes*.

1. Frons densely squamose (Fig. 1B). Metatibiae with at least partly squamose apical surface and slender to wide corbels. Protibiae (Fig. 1C) short and robust, $3.9\text{--}5.2 \times$ as long as wide, apically armed with 7–9 short spines. Posthumeral calli (Fig. 1A) differently developed, visible in dorsal or dorso-lateral view. Ventrite 1 in middle longer than ventrite 2–4 combined, ventrite 2 as long as ventrite 3 or 4 (Fig. 2A). Female sternite VIII (Fig. 2B) with umbrella shaped plate lacking pointed tip and sclerites, with ill-defined posterior border. Size 2.7–5.4 mm. *Glyptosomus* Schoenherr*
*Note. We used for illustration type species of *Glyptosomus*, *G. costipennis* Schoenherr, 1847. Ridge-shaped elevations on odd intervals is a conspicuous character of *G. costipennis*, but not a character typical for genus *Glyptosomus* as a whole.
- 1' Frons glabrous (Figs 1E, 5B, 6B, 7B, 8B, 9B, 10B). Metatibiae with glabrous apical surface, lacking corbels. Protibiae (Figs 1F, 5D, 6D, 7D, 8D, 9D, 10D) long and slender, $5.5\text{--}6.7 \times$ as long as wide, apically fringed with short, fine setae. Posthumeral calli (Figs 1D, 5A, 6A, 7A, 8A, 9A, 10A) not developed. Ventrite 1 in middle shorter than ventrite 2–4 combined, ventrite 2 as long or longer than ventrites 3 and 4 combined (Figs 2C, E). Female sternite VIII (Figs 2D, F) with narrow plate either with clearly developed posterior border or lacking it, then with sharply pointed tip and longitudinal sclerites. Size at most 3.3 mm. 2
2. Epifrons at base distinctly narrower than space between eyes, between scrobes $0.40\text{--}0.55 \times$ as wide as rostral width at the same place (Fig. 1E). Metatibiae with long and slender mucro. Ventrites glabrous to sparsely squamose, integument predominant (Fig. 2E). Ventrite 2 shorter than ventrites 3 and 4 combined, suture between ventrite 1 and 2 straight (Fig. 2E). Sternite VIII in females (Fig. 2F) with large, umbrella-shaped plate, reaching almost half of its length, with longitudinal sclerites and prominent sclerotised tip and with apodeme short and robust. Size 2.0–3.3 mm *Phylomerinthus* Schoenherr
- 2' Epifrons at base slightly narrower than space between eyes, between scrobes $0.70\text{--}0.80 \times$ as wide as rostral width at the same place (Figs 5B, 6B, 7B, 8B, 9B, 10B). Metatibiae amucronate. Ventrites densely squamose, integument completely covered by scales (Fig. 2C). Ventrite 2 longer than ventrites 3 and 4 combined, suture between ventrite 1 and 2 sinuose (Fig. 2C). Sternite VIII in females (Fig. 2D) with small, subtriangular plate, reaching fifth to sixth of its length, without sclerites and prominent sclerotised tip and with apodeme long and slender. Size 1.8–2.5 mm *Lalagetes* Schoenherr

***Lalagetes andersoni* sp. nov.**

(Figs 3A, 5A–F)

Type locality. South Africa, Mpumalanga, Kaapmuiden.

Type material. Holotype: ♂, S. [South] AFRICA, TVL [Mpumalanga], Kaapmuiden, 4-7.XII.1984, H. & A. Howden [lgt.] (SANC). Paratypes: 2 ♂♂ 5 ♀♀, 48 specimens (undetermined sex), the same data as holotype (CMNC, SANC, BMNH, TMSA, RBSC).

Description (Figs 3A, 5A–F). Body length males 1.94–2.19 mm, females 2.25–2.34 mm, holotype 2.13 mm. Body (Fig. 5A) brownish to dark brownish, only antennal clubs blackish. Elytra with two types of appressed rounded scales, 1: greyish brown, large, partly imbricate, concealing integument, creating two transverse stripes before and behind midlength and longitudinal stripe on interval 7; 2: brownish to dark brownish, smaller, well isolated, leaving narrow intervals, in males 3, in females 4 across width of one interval. Pronotum and head with rostrum with rounded scales slightly smaller than those on elytra, densely covered integument, brownish, with greyish scales creating longitudinal wide stripes at middle and lateral parts of pronotum and in lateral parts of head with rostrum, finely striate. Perpendicularly erect elytral setae slender, lancet-shaped, pointed apicad, at midlength narrower than diameter of one bigger appressed scale, distance between two setae shorter than length of one seta, slightly shorter behind base than at apical declivity, in males distinctly, in females slightly longer width of one interval; scapes at apical half and outer side of tibiae with moderately long, semierect, slender but subspatulate whitish setae, exceeding outline.

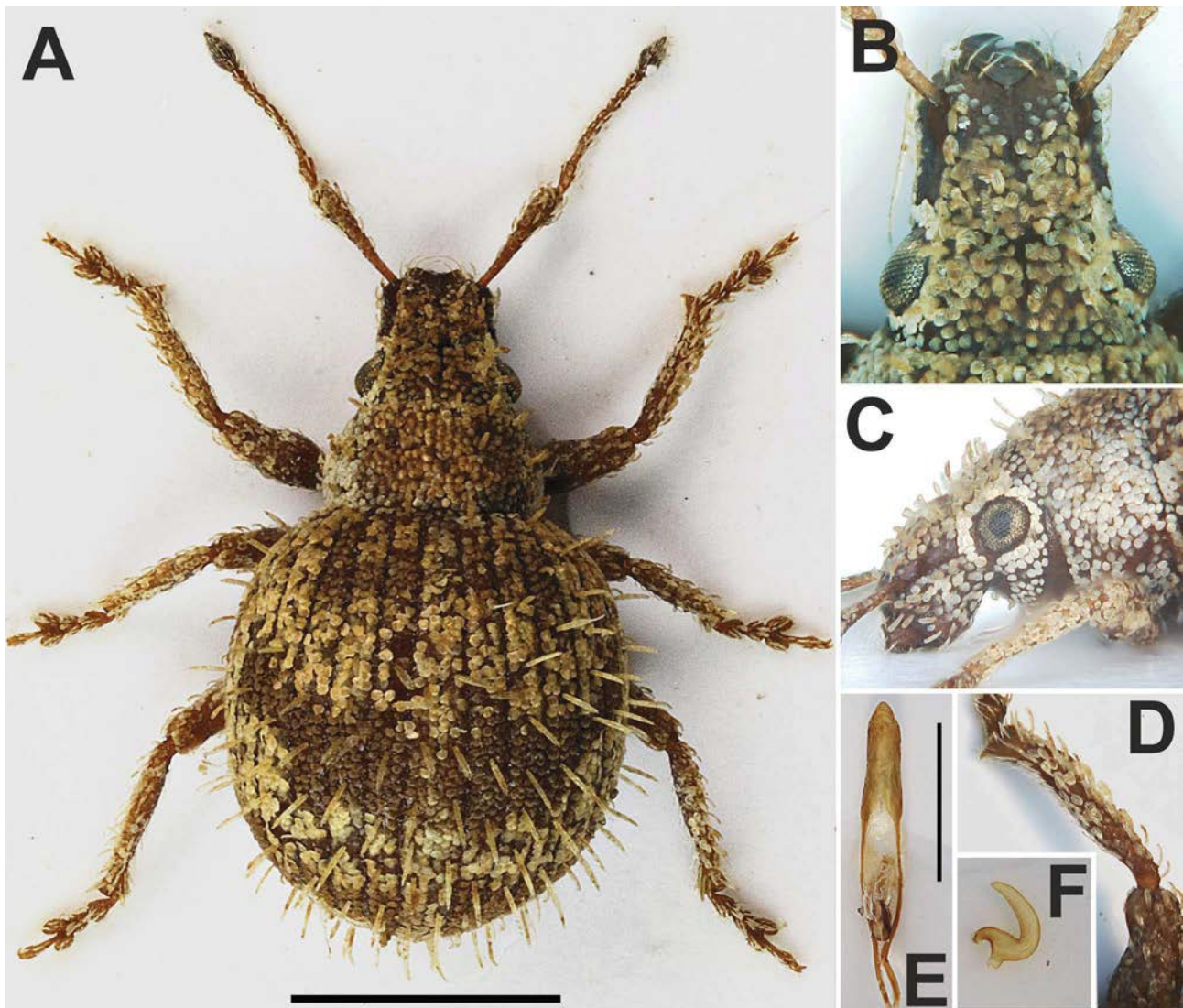


FIGURE 5. *Lalagetes andersoni* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—aedeagus; **F**—spermatheca. Scales bars: 1 mm (**A**), 0.5 mm (**E**) and 0.3 mm (**F**).

Rostrum (Figs 5A–C) in males 1.08–1.12, in females 1.22–1.27 × as wide as long, widest at base, in both sexes at base 1.08–1.18 × as wide as at apex, with straight sides. Epifrons wide, widest at base and here only slightly narrower than space between eyes, tapered anteriorly with straight sides; when cleared of scales matt, rough, with very slender longitudinal lateral carinas and shallow indistinct fovea at middle. Vertex irregularly finely longitudinally striate mainly at anterior half. Antennal scrobes dorsally visible as narrow furrows along the whole length.

Antennae (Fig. 5A). Antennal scape straight, gradually enlarged at apical third, at apex $1.1\text{--}1.2 \times$ as wide as club. Segments 1 and 2 very slender and long; segment 1 $2.0\text{--}2.3 \times$ as long as wide and $1.1 \times$ as long as segment 2, which is $2.5\text{--}2.7 \times$ as long as wide; segments 3–6 $1.3\text{--}1.4 \times$ as long as wide; segment 7 $1.1 \times$ as long as wide; club $2.1\text{--}2.3 \times$ as long as wide.

Pronotum in males $1.67\text{--}1.79$, in females $1.77\text{--}1.86 \times$ as wide as long.

Elytra in males $1.07\text{--}1.11$, in females $1.05\text{--}1.09 \times$ as long as wide; when cleared of scales striae creating regular narrow rows.

Legs (Figs 5A, D). Tarsal segment 2 isodiametric; segment 3 $1.3 \times$ as wide as long and $1.7\text{--}1.8 \times$ as wide as segment 2; onychium equally long as segment 3 to $1.1 \times$ longer.

Male genitalia (Figs 3A, 5E). Penis medium sized, slightly longer than metatarsus, ventrally widest at base, along the whole length with weakly concave sides, weakly enlarged to apical fifth, apex subtriangular. In lateral view almost straight, tip shortly elongated, rounded. Temonos $1.4\text{--}1.7 \times$ as long as penis.

Female genitalia. Gonocoxites with small and short apical styli, about isodiametric. Sternite VIII with apodeme $4.6\text{--}5.0 \times$ as long as plate, plate slightly wider than long, subtriangular. Spermatheca (Fig. 5F) with moderately large corpus, ramus short and wide, about isodiametric, nodulus longer than wide, distinctly curved.

Biology. Unknown.

Distribution. South Africa, Mpumalanga (Fig. 4).

Derivation of name. The new species is cordially dedicated to Robert S. Anderson (Canadian Museum of Nature, Ottawa), who loaned us interesting material of terricolous entomines for present and also further studies.

Differential diagnosis. This species is morphologically very similar to *L. sarkae* sp. nov., but is easily distinguishable from it mainly by funicle 7-segments, penis with weakly concave sides, tip laterally shortly elongated, rounded and spermatheca with nodulus curved. Among species with 7-segmented funicles it is most similar to *L. zitae* sp. nov., from which it can be distinguished by appressed scales on elytra isolated and on pronotum flat, moderately large penis with subtriangular apex and short temones and spermatheca with nodulus curved.

Lalagetes howdenorum sp. nov.

(Figs 3B, 6A–F)

Type locality. South Africa, Limpopo, Malta Forest, 21 km W. Trichardtsdal.

Type material. Holotype: ♂, S. AFRICA. Tvl. [South Africa, Limpopo], Malta Forest, 21 km W. Trichardtsdal, 23.XII.1985, 940 m, H. & A. Howden (SANC). Paratypes: 5 ♀♀, the same data as holotype (CMNC, BMNH).

Description (Figs 3B, 6A–F). Body length male 2.08 mm, females 2.13–2.31 mm, holotype 2.08 mm. Body (Fig. 6A) dark brownish; antennae and legs paler, reddish brown, clubs blackish, very short basal part of clubs brownish. Elytra with large, rounded appressed slightly imbricate scales, finely longitudinally striate, 3–4 across width of one interval; pronotum and head with rostrum with smaller appressed scales than those on elytra, distinctly depressed at middle. Perpendicularly erect setae on elytra slender, lancet-shaped, pointed apicad, at midlength distinctly narrower than diameter of one appressed scale, distance between two setae about equal to length of one seta, weakly longer than width of interval; pronotum and head with rostrum with similar setae, but shorter and slightly wider; scapes and outer side of femora and tibiae with subspatulate setae, on tibiae somewhat longer than on scapes and femora. Body vestiture greyish to light brownish, with indistinct, not contrast, light brownish transverse stripe on inner 6 intervals at midlength and on inner 8 intervals at posterior declivity.

Rostrum (Figs 6A–C) in females $1.27\text{--}1.30 \times$ as wide as long, widest at base and moderately tapered anteriorly, at base $1.17\text{--}1.18 \times$ as wide as at apex, with slightly concave sides. Epifrons narrow, at base distinctly narrower than distance between eyes, at base almost equally wide as at apex, with weakly concave sides; when cleared of scales slightly shallowly depressed, matt, with narrow carina at lateral border and one short median at basal half; vertex distinctly longitudinally striate along the whole length. Antennal scrobes dorsally pit-shaped at anterior half.

Antennae (Fig. 6A). Antennal scape weakly regularly curved at midlength, evenly enlarged at apical part, at apex equally wide as club. Segments 1 and 2 long and slender, conical; segment 1 $2.2\text{--}2.3 \times$ as long as wide and $1.5\text{--}1.6 \times$ as long as segment 2, which is $2.2\text{--}2.4 \times$ as long as wide; segments 3, 4 and 6 $1.2\text{--}1.3 \times$ as long as wide; segment 5 $1.1\text{--}1.2 \times$ as long as wide, segment 7 isodiametric; club $2.0\text{--}2.1 \times$ as long as wide.

Pronotum in male 1.52, in females 1.48–1.55 × as wide as long.

Elytra in male 1.08, in females 1.11–1.19 × as long as wide; when cleared of scales with striae creating deepened lines.

Legs (Figs 6A, D). Tarsal segment 2 isodiametric; segment 3 1.3–1.4 × as wide as long and 1.6–1.7 × as wide as segment 2; onychium 0.8–0.9 × as long as previous segment.

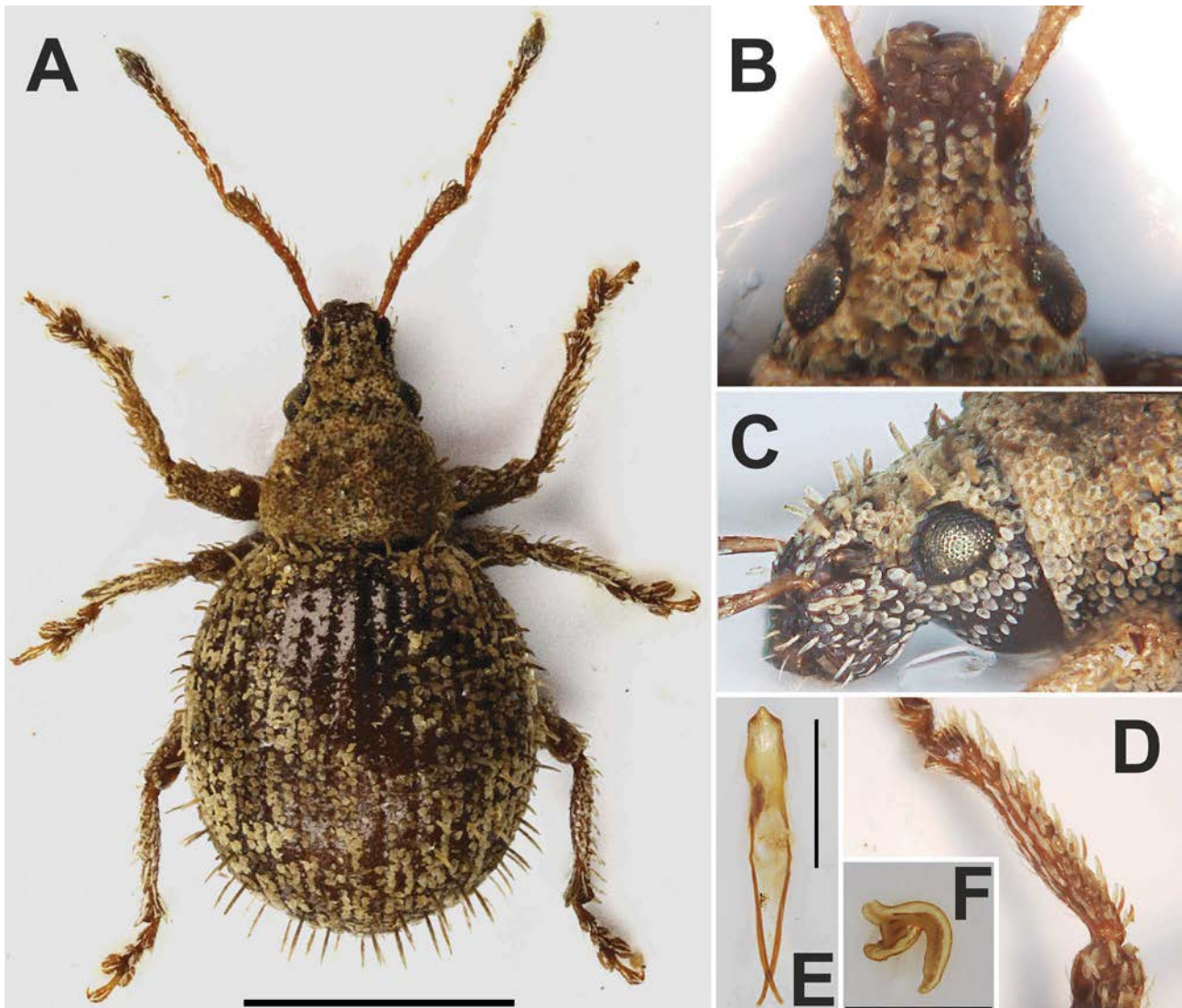


FIGURE 6. *Lalagetes howdenorum* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—aedeagus; **F**—spermatheca. Scales bars: 1 mm (**A**), 0.5 mm (**E**) and 0.3 mm (**F**).

Male genitalia (Figs 3B, 6E). Penis about as long as metatarsus, ventrally widest at base, weakly tapered anteriorly with weakly concave sides, apex subtriangular with concave sides. Penis in lateral view weakly curved, slender, with apical part S-shaped. Temones twice as long as body of penis.

Female genitalia. Gonocoxites with very short, hardly visible styli, about as long as wide. Sternite VIII with apodeme 5.4–6.2 × as long as plate; plate subtriangular, twice as wide as long. Spermatheca (Fig. 6F) with large, subtriangular corpus and with ramus and nodulus about equally long, oval, distant from each other.

Biology. Unknown.

Distribution. South Africa, Limpopo (Fig. 4).

Derivation of name. Named after collectors of the species, the late Anne T. and Henry F. Howden of Ottawa, Canada.

Differential diagnosis. By its slender pronotum and very narrow epifrons this species is similar only to *L. seminulum*, from which it can be distinguished by elytral setae slender, lancet-shaped, apically pointed, plate of sternite VIII distinctly wider than long and oval nodulus, distant from ramus.

***Lalagetes sarkae* sp. nov.**

(Figs 3C, 7A–F)

Type locality. South Africa, KwaZulu-Natal, Ithala Game Reserve, 27°30' S, 31°20' E.

Type material. Holotype: ♂, R. S. Africa [South Africa], Natal [KwaZulu-Natal]: Itala [Ithala] Game Reserve, 27°30' S/31°20' E, 27.-29.i.1994, leg. U. Göllner (TMSA). Paratypes: 10 ♂♀, the same data as holotype (MFNB, TMSA); 1 spec., RSA (NE) [South Africa, North East], KwaZulu-Natal, Ubombo Mountain Nat. Res., 27.6100 S/32.0802 E, 30.11.2012, 110 m, beating, leg. R. Ruta (MNHWS).

Description (Figs 3C, 7A–F). Body length males 2.00–2.06 mm, females 2.25–2.38 mm, holotype 2.06 mm. Body (Fig. 7A) dark brownish; antennae and legs paler, reddish brown, only apical half of clubs dark brownish. Elytra with large, rounded, appressed isolated scales, indistinctly longitudinally striate, in males 3, in females 4 across width of one interval; pronotum and head with rostrum with similar, but slightly smaller appressed scales, distinctly longitudinally striate. Perpendicularly erect elytral setae slender, lancet-shaped, pointed apicad, at midlength distinctly narrower than diameter of one appressed scale, distance between two setae shorter length of one seta, in odd intervals longer than in even ones, in males almost twice as long as width of one interval, in females distinctly longer than width of one interval; pronotum and head with rostrum with distinctly shorter setae than those on elytra, slightly wider; scapes and outer side of femora and tibiae with subspatulate, moderately long whitish setae, scapes with semiappressed, tibiae with semierect setae. Body vestiture greyish white with weak pearly sheen, with wide light to darker brownish transverse stripe at inner 6 intervals at elytral midlength and more slender and shorter stripe at posterior declivity and two wide, indistinct longitudinal stripes at pronotal disc, sometimes hardly distinct.

Rostrum (Figs 7A–C) in males 1.17–1.18, in females 1.20–1.25 × as wide as long, widest at base, in both sexes at base 1.04–1.08 × as wide as at apex, with straight sides. Epifrons wide, widest at base, weakly tapered anteriorly with slightly concave sides; when cleared of scales slightly shallowly depressed, matt, laterally edged with narrow carina and with slender median longitudinal carina, interrupted at middle by shallow fovea. Vertex finely longitudinally striate at anterior half. Antennal scrobes dorsally narrowly pit-shaped at anterior third.

Antennae (Fig. 7A) with scape distinctly enlarged apicad, at apex 1.2 × as wide as club. Segments 1 and 2 slender, long, conical; segment 1 2.0–2.2 × as long as wide and 1.2 × as long as segment 2, which is 2.7–3.0 × as long as wide; segment 3 1.9–2.1 × as long as wide; segments 4 and 5 1.1 × as long as wide; segment 6 1.2 × as long as wide. Club 1.9–2.0 × as long as wide.

Pronotum in males 1.69–1.71, in females 1.75–1.80 × as wide as long.

Elytra in males 1.09–1.15, in females 1.04–1.10 × as long as wide; when cleared of scales with striae shallow, with separated fine punctures.

Legs (Figs 7A, D). Tarsal segment 2 isodiametric; segment 3 1.2–1.3 × as wide as long and 1.4–1.5 × as wide as segment 2; onychium 1.1 × as long as segment 3.

Male genitalia (Figs 3C, 7E). Penis medium sized, weakly longer than metatarsus, ventrally widest at apical fifth and at base, along the whole length with distinctly concave sides, apex subtriangular, tip rounded. Penis in lateral view weakly curved, almost regularly tapered apicad. Temonies 1.5 × as long as penis.

Female genitalia. Gonocoxites with very small and indistinct apical styli, about isodiametric. Sternite VIII with apodeme 4.5 × as long as plate, plate isodiametric, subtriangular. Spermatheca (Fig. 7F) with large subtriangular corpus, ramus short and wide, inconspicuous, nodulus perpendicular to it, long and straight, tube-shaped, about 3 × as long as wide.

Biology. Unknown.

Distribution. South Africa, KwaZulu-Natal (Fig. 4).

Derivation of name. The second author cordially dedicates this new species to his wife Šárka, for her support in his work and life. Without her understanding and amazing food services due to his health problems, he is not able to concentrate so easily and work hard in such a huge insect world.

Differential diagnosis. This is the only *Lalagetes* species with 6-segmented antennal funicles.

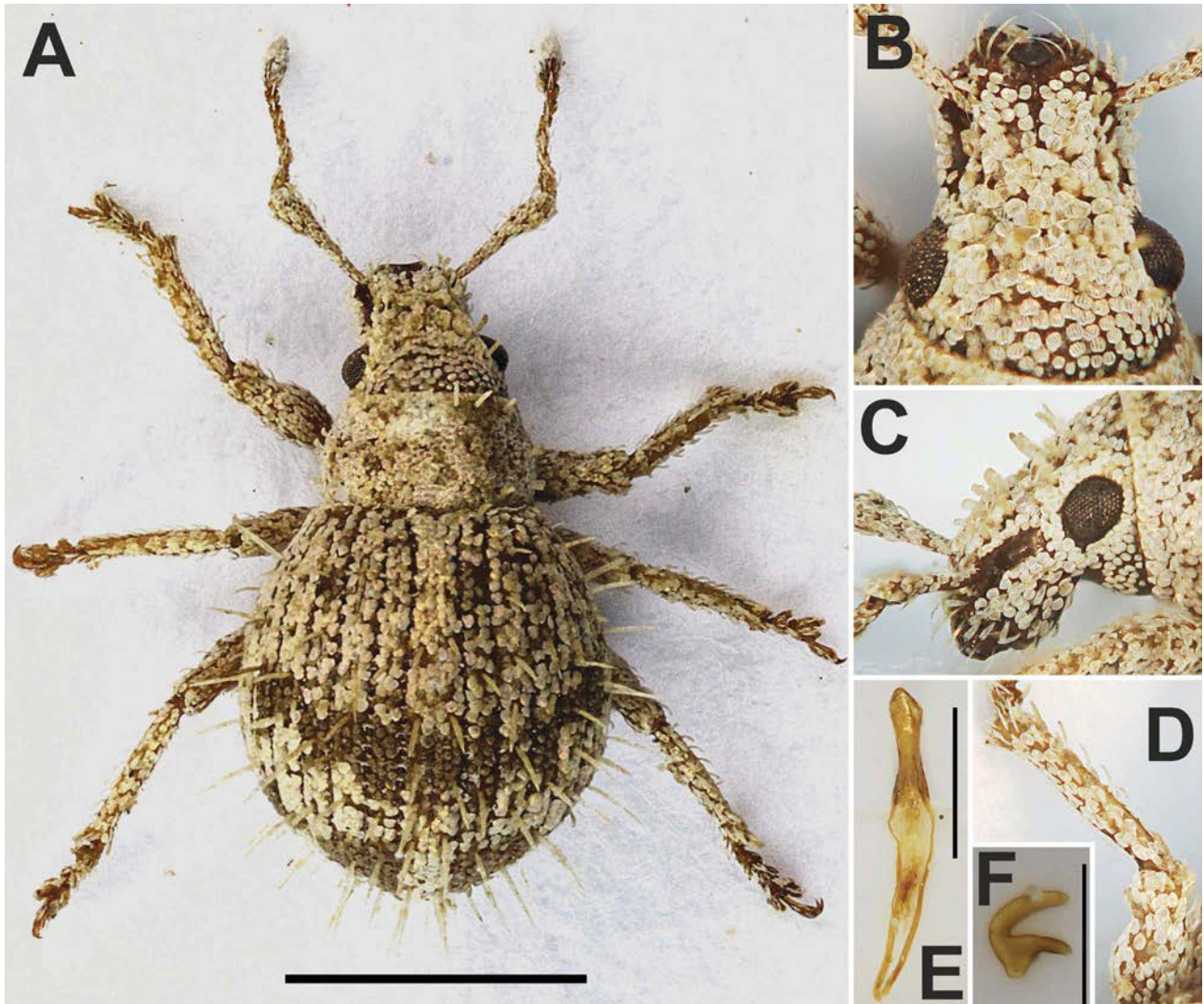


FIGURE 7. *Lalagetes sarkae* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—aedeagus; **F**—spermatheca. Scales bars: 1 mm (**A**), 0.5 mm (**E**) and 0.3 mm (**F**).

***Lalagetes seminulum* Fåhraeus, 1871**

(Figs 8A–E)

Lalagetes seminulum Fåhraeus, 1871: 31 (original description).

Lalagetes seminulum: Lona 1937: 357 (catalogue).

Type locality. Caffraria [South Africa, Eastern Cape].

Type material. Lectotype (here designated), 1 spec. (NHRS): ‘Caffraria [p] / I. Vahlb. [p] / Type. [p] / Typus [red, p] / seminulum Boh. [hw] / seminulum Bohem. n. sp. [hw] / 6494 E91 + [blue, p] / NHRS-JLKB 000020764 [p] / LECTOTYPUS *Lalagetes seminulum* Fåhraeus, R. Borovec & J. Skuhrovec desig. 2017’ [red, p].

Additional material examined. 1 ♀, ‘[South Africa, KwaZulu-Natal], Hluhluwe Game Reserve Zululand, 1. Dez. [December] 1971, leg. Zumpt’ (MFNB).

Redescription (Figs 8A–E). Body length 1.97–2.31 mm, lectotype 1.97 mm.

Body (Fig. 8A) dark brownish; antennae and legs paler, reddish brown, including clubs. Elytra with moderately large, dense, isolated rounded appressed scales, finely longitudinally striate, 3–4 across width of one interval; pronotum and head with rostrum with similar, but slightly smaller, in middle depressed appressed scales. Elytral setae semiperpendicular, subspatulate, apically rounded, at apex only indistinctly more slender than

diameter of one appressed scale, distance between two setae about as long as length of one seta, slightly shorter width of one interval; scapes and outer side of tibiae with semiappressed, short, inconspicuous, subspatulate whitish setae. Elytral vestiture with irregular, moderately large, transverse greyish white and dark brownish spots, pronotum with two wide longitudinal, dark brownish stripes.

Rostrum (Figs 8A–C) in females 1.12–1.14 × as wide as long, widest at base, at base 1.12 × as wide as at apex, with weakly concave sides. Epifrons narrow, widest at base, tapered anteriorly with concave sides. Antennal scrobes dorsally pit-shaped at anterior half.

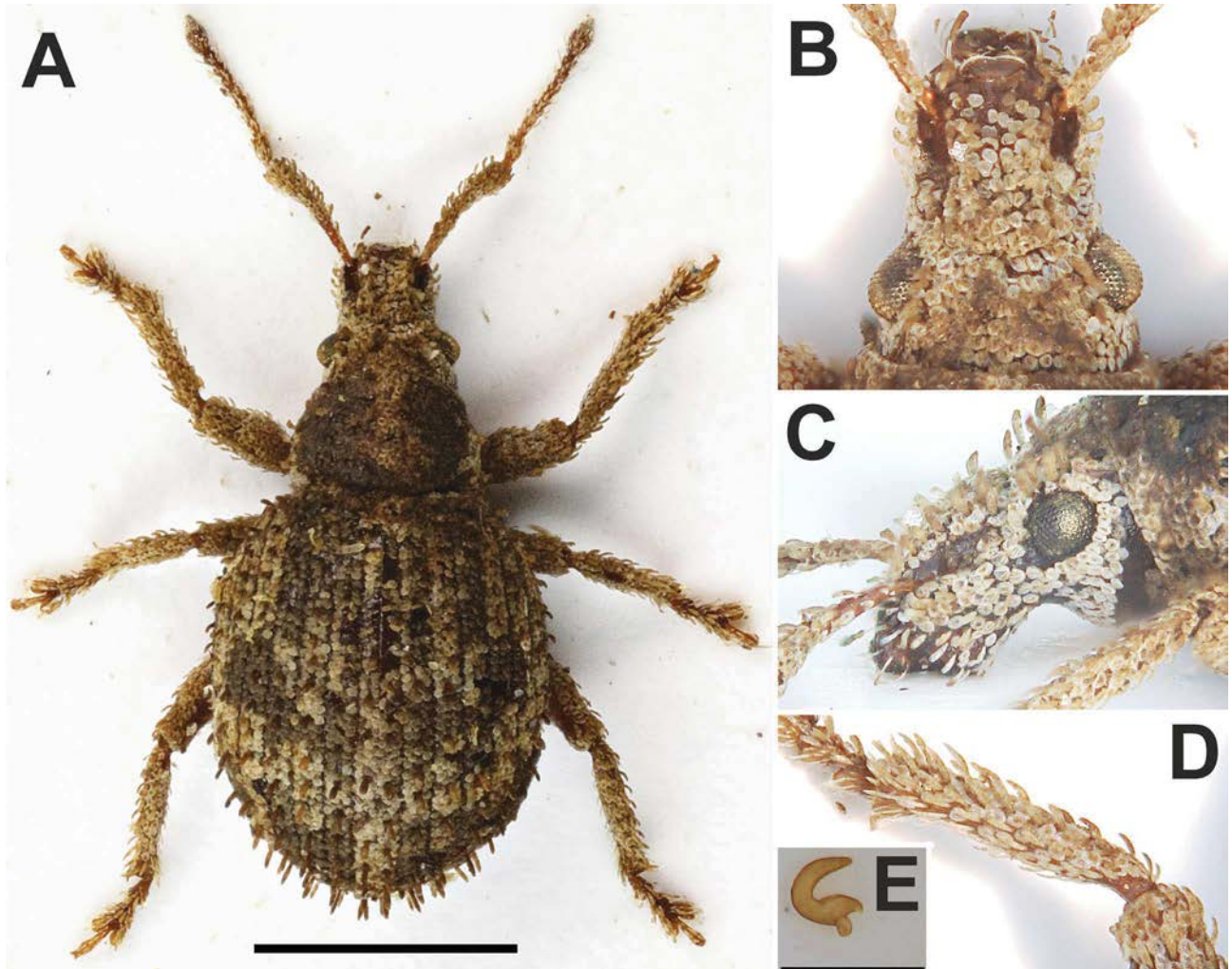


FIGURE 8. *Lalagetes seminulum* Fåhræus, 1871. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—spermatheca. Scales bars: 1 mm (**A**), and 0.3 mm (**E**).

Antennae (Fig. 8A). Antennal scape moderately enlarged apicad, at apex 1.1 × as wide as club. Segments 1 and 2 long and slender, conical; segment 1 1.8 × as long as wide and 1.2–1.3 × as long as segment 2, which is twice as long as wide; segments 3–6 1.1 × as long as wide; segment 7 isodiametric; club 1.8–1.9 × as long as wide.

Pronotum in females 1.47–1.52 × as wide as long.

Elytra in females 1.18–1.19 × as long as wide; when cleared of scales with striae creating deep lines.

Legs (Figs 8A, D). Tarsal segment 2 1.2–1.3 × as wide as long; segment 3 1.2–1.3 × as wide as long and 1.2–1.3 × as wide as segment 2; onychium equally long as segment 3.

Male genitalia. Penis unknown.

Female genitalia. Gonocoxites with very small and short, hardly visible styli. Sternite VIII with apodeme 4.8 × as long as plate; plate subtriangular, isodiametric. Spermatheca (Fig. 8E) with moderately large rounded corpus, ramus and nodulus equally long but of different shape, ramus oval, weakly longer than wide, nodulus subtriangular with slightly curved tip, about as long as wide.

Biology. Unknown.

Distribution. South Africa, KwaZulu-Natal (Fig. 4).

Differential diagnosis. By its slender pronotum and narrow epifrons this species is similar only to *L. howdenorum* sp. nov., from which it is distinguished by elytral setae short and subspatulate, apically rounded, plate of sternite VIII in females isodiametric and subtriangular nodulus, placed just next to ramus.

Remarks. Fåhræus (1871) described this species from “Caffraria”, but he did not specify more precise details of the locality or the number of specimens, he had at his disposal. The lectotype is a pinned, well preserved specimen, lacking right antennal funicle with club and complete right posterior leg.

***Lalagetes subfasciatus* Boheman, 1842**

(Figs 3D, 9A–F)

Lalagetes subfasciatus Boheman, 1842: 125 (original description).

Lalagetes subfasciatus: Lona 1937: 357 (catalogue); Alonso-Zarazaga & Lyal 1999: 172 (catalogue).

Type locality. Caput Bonae Spei [South Africa, probably Western Cape, Cape Peninsula].

Type material examined. Lectotype (here designated), 1 spec. (NHRS): ‘Typus [red, p] / Cap. b. sp. [Caput Bonae Spei] Drége [hw] / NRM Sthlm Loan 2758/08 [green, p] / LECTOTYPUS *Lalagetes subfasciatus* Boheman, R. Borovec & J. Skuhrovec desig. 2017’ [red, p].

Additional material examined. 8 spec., ‘ZA [South Africa]: E [Eastern] Cape—Seymour, Katrivierdam, 32°34′03″S, 26°44′78″E, 780 m, 12.XI.2006, E. Colonnelli lgt.’ (ECRI); 3 spec., ‘ZA [South Africa]: E [Eastern] Cape, road N2—25 km W Peddie, 33°16′05″S, 26°55′45″E, 280 m, 7.XI.2006, E. Colonnelli lgt.’ (ECRI); 1 ♀, ‘South Africa, C. P. [Cape Province, Eastern Cape], Fort Beaufort, 32°46′S, 26°38′E, 1.xii.1983, collected on *Grewia occidentalis*, R. Oberprieler lgt.’ (SANC); 1 ♂, ‘[South Africa], CP [Cape Province, Eastern Cape], Fort Beaufort, November 1952, H. K. Munro lgt.’ (SANC).

Redescription (Figs 3D, 9A–F). Body length males 1.88–1.97 mm, females 2.25–2.91 mm, lectotype 2.91 mm. Body (Fig. 9A) dark brownish; antennae and legs reddish brown, only antennal clubs, or at least apical half of clubs blackish. Elytra with moderately large, rounded, appressed isolated scales, in males 3–4, in females 4–5 across width of one interval; pronotum and head with rostrum with similar appressed scales, but distinctly depressed in middle. Perpendicularly erect elytral setae in males longer than width of one interval, slender, lancet-shaped, pointed apicad, at midlength slightly narrower than diameter of appressed scale, distance between two setae a bit longer length of one seta; in females the same, only shorter, at most as long as width of one interval; scapes with short, inconspicuous setae; outer side of tibiae with somewhat long, semiappressed setae. Body vestiture greyish white, sometimes with weak pearly sheen, from unicoloured specimens to specimens with weakly V-shaped, wide, transverse stripe at inner 4–6 intervals and small spots at posterior declivity and two wide, curved, longitudinal stripes on pronotum from pale to dark brownish scales.

Rostrum (Figs 9A–C) in males 1.18–1.27, in females 1.25–1.29 × as wide as long, widest at base, in both sexes at base 1.08–1.15 × as wide as at apex, mainly in males with weakly concave sides. Epifrons moderately wide, at anterior half subparallel-sided, at basal half weakly enlarged posteriad; when cleared of scales, epifrons with slender longitudinal median carina interrupted at middle by deep, distinct, longitudinal fovea, slightly shallowly depressed along carina, densely punctured by longitudinal punctures creating only very narrow edges between them, matt, weakly carinate at lateral edges; vertex densely finely longitudinally striate from anterior border of pronotum to transverse sulcus. Antennal scrobes dorsally narrowly pit-shaped at anterior half.

Antennae (Fig. 9A) with scape at apex slightly narrower than club. Segments 1 and 2 very slender, conical; segment 1 1.9–2.0 × as long as wide and 1.3–1.4 × as long as segment 2, which is 1.8–1.9 × as long as wide; segments 3 and 4 1.2 × as long as wide; segments 5 and 6 1.1 × as long as wide; segment 7 isodiametric. Club 1.8–1.9 × as long as wide.

Pronotum in males 1.53–1.62, in females 1.59–1.63 × as wide as long.

Elytra in males 1.13–1.16, in females 1.11–1.13 × as long as wide; when cleared of scales with striae creating deepend lines.

Legs (Figs 9A, D). Tarsal segment 2 1.4 × as wide as long; segment 3 1.2–1.3 × as wide as long and 1.4 × as wide as segment 2; onychium equally long as segment 3.

Male genitalia (Figs 3D, 9E). Penis small, distinctly shorter than metatarsus, in ventral view widest at anterior

third, in basal two thirds with slightly rounded sides, at apical third subtriangular with slightly concave sides; in lateral view ventral side almost straight, dorsal side distinctly curved, tip slender and elongated. Temones $2.8 \times$ as long as penis.

Female genitalia. Gonocoxites with very small and short styli, about isodiametric, almost indistinct. Sternite VIII (Fig. 2D) with apodeme $4.5\text{--}4.7 \times$ longer than plate; plate subtriangular, about isodiametric. Spermatheca (Fig. 9F) with slender corpus, ramus long and straight, tube-shaped, about $3\text{--}4 \times$ longer than wide, longer than nodulus, which is short, curved, with tip subparallel with ramus.

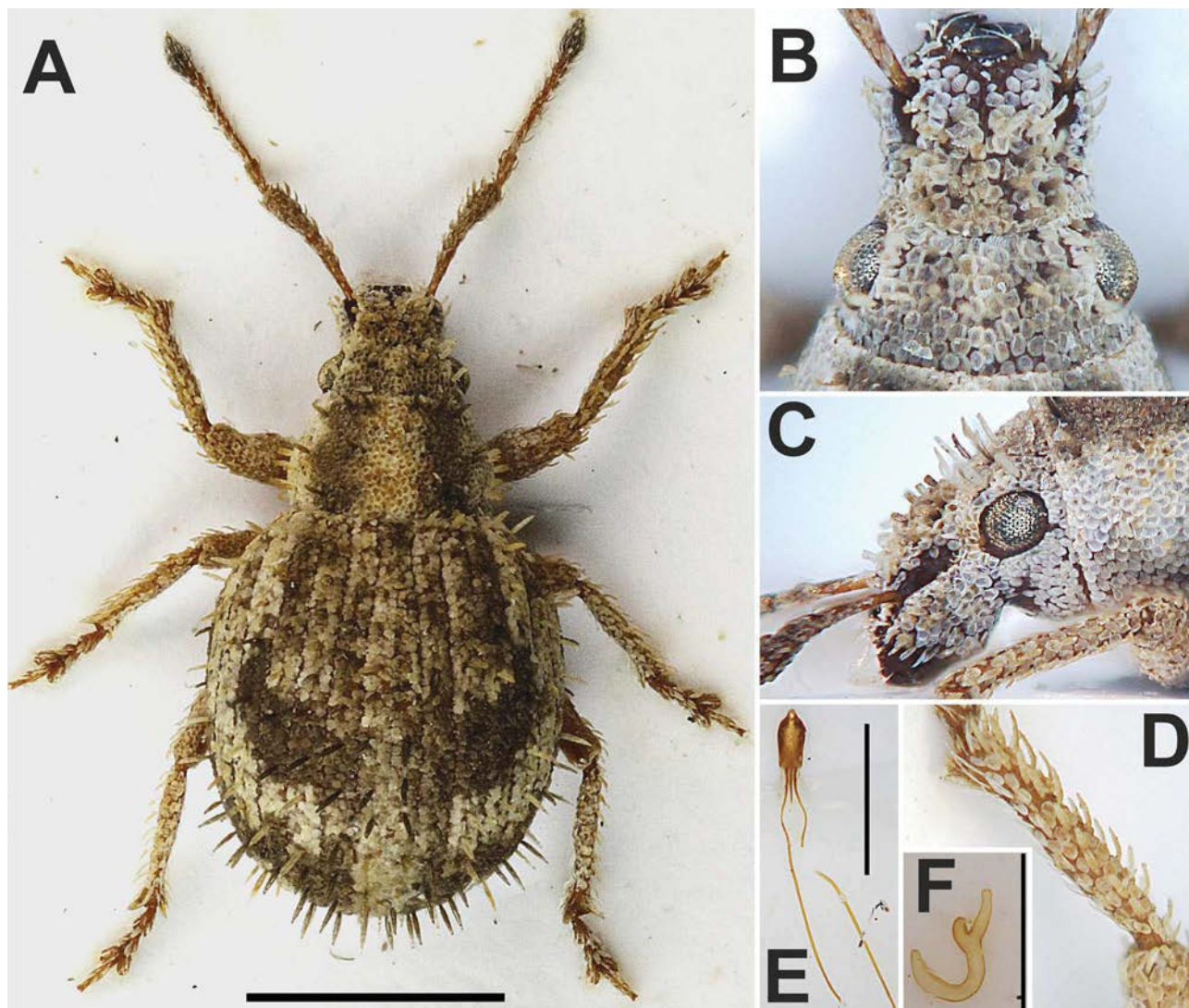


FIGURE 9. *Lalagetes subfasciatus* Boheman, 1842. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—aedeagus; **F**—spermatheca. Scales bars: 1 mm (**A**), 0.5 mm (**E**) and 0.3 mm (**F**).

Biology. Unknown, one specimen was collected from *Grewia occidentalis* (Malvaceae).

Distribution. South Africa, Eastern Cape (Fig. 4).

Differential diagnosis. Among species with wider epifrons and 7-segmented funicles easily separated by funicle segment 1 distinctly longer than segment 2, scape at apex slightly narrower than club, rostrum in males with concave sides and spermatheca with ramus distinctly longer than nodulus.

Remarks. Boheman (1842) described this species from “Cap. Bonae Spei. Dom. Drège”. The lectotype is pinned, well preserved specimen, only lacking right anterior tibia with tarsus and complete left posterior leg.

***Lalagetes zitae* sp. nov.**

(Figs 3E, 10A–F)

Type locality. South Africa, KwaZulu-Natal, Indaleni, Dist. Richmond.

Type material. Holotype: ♂, [South Africa] Natal [KwaZulu-Natal], Indaleni, Dist. Richmond, X-XII-[19]54, Coll. Mus. Congo, ex coll. Breuning (RMCA). Paratypes: 1 ♂, 2 ♀♀, the same data as holotype (RMCA); 1 ♂, [South Africa, KwaZulu-Natal], Pietermaritzburg, NP [National Park], March 1949, H. K. Munro [lgt.], (SANC); 1 ♀, [South Africa, Western Cape], Worcester, CP [Cape Province], April 1949, H. K. Munro [lgt.], (SANC).

Description (Figs 3D, 9A–F). Body length males 1.81–2.06 mm, females 2.31–2.50 mm, holotype 1.89 mm. Body (Fig. 10A) brownish to dark brownish, elytra sometimes paler than pronotum and head with rostrum; antennae and legs reddish brown, only antennal clubs blackish. Elytra with large, rounded appressed scales, imbricate, in males 3, in females 4 across width of one interval; pronotum and head with rostrum with similar, slightly smaller scales, depressed in the middle. Perpendicularly erect elytral setae slender, lancet-shaped, pointed apicad, at midlength distinctly narrower than diameter of one appressed scale, distance between two setae slightly shorter than length of one seta, in males distinctly, in females slightly longer width of one interval; inner side of scapes and outer side of tibiae with long, semierect, subspatulate whitish setae. Body vestiture greyish white or weakly light brownish, elytra with two light brownish, weakly V-shaped transverse stripe on elytra, at midlength seized inner 5–6 intervals, at posterior declivity seized inner 7 intervals; pronotum with two indistinct, large light brownish longitudinal stripes.

Rostrum (Figs 10A–C) in males 1.22–1.25, in females 1.32–1.34 × as wide as long, widest at base, in both sexes at base 1.06–1.08 × as wide as at apex, with straight sides. Epifrons wide, widest at base, tapered anteriorly with weakly concave sides; when cleared of scales matt, rough, with slender longitudinal carinas at lateral edges and at middle, median carina interrupted by long, shallow fovea. Vertex densely finely longitudinally striate from anterior border of pronotum to transverse sulcus. Antennal scrobes dorsally narrowly pit-shaped at anterior half.

Antennae (Fig. 10A). Antennal scape distinctly enlarged apicad, at apex 1.2–1.3 × as wide as club. Segments 1 and 2 very slender, long and conical; segment 1 1.8–2.0 × as long as wide and 1.1 × as long as segment 2, which is 2.0–2.3 × as long as wide; segments 3–7 1.3–1.4 × as long as wide; club 2.1 × as long as wide.

Pronotum in males 1.57–1.67, in females 1.63–1.75 × as wide as long.

Elytra in males 1.14–1.22, in females 1.12–1.18 × as long as wide; when cleared of scales with striae creating deep lines.

Legs (Figs 10A, D). Tarsal segment 2 isodiametric; segment 3 1.2–1.3 × as wide as long and 1.5–1.6 × as wide as segment 2; onychium equally long as segment 3.

Male genitalia (Figs 3E, 10E). Penis small, distinctly shorter than metatarsus, in ventral view widest at base, at basal three quarters weakly evenly tapered apicad with almost straight sides, apical part tapered with concave sides, tip rounded. Penis in lateral view with ventral side almost straight and dorsal side curved, apex lengthened at apical quarter. Temones 2.4–2.6 × as long as penis.

Female genitalia. Gonocoxites with styli weakly longer than wide, clearly visible. Sternite VIII with apodeme 4.2–4.8 × as long as plate, plate subtriangular, as long as wide or slightly longer than wide. Spermatheca (Fig. 10F) with slender corpus, ramus long, slender, tube-shaped, about 3 × as long as wide and weakly longer than nodulus; nodulus slender, slightly more than twice as long as wide.

Biology. Unknown.

Distribution. South Africa, KwaZulu-Natal and Western Cape (Fig. 4). This species is native to the eastern part of South Africa, the specimen from Western Cape is apparently introduced.

Derivation of name. The first author dedicates this new species to his wife Zita, who does not clear up his desk and who tolerates his prolonged absences while studying weevils. Without her understanding he is not able to finish examination of extensive South African entomine material.

Differential diagnosis. *Lalagetes zitae* sp. nov. is the most similar to *L. andersoni* sp. nov., from which it is distinguished mainly by the brownish appressed scales imbricate on elytra and depressed on pronotum, very small penis with long temones and spermatheca with nodulus straight.

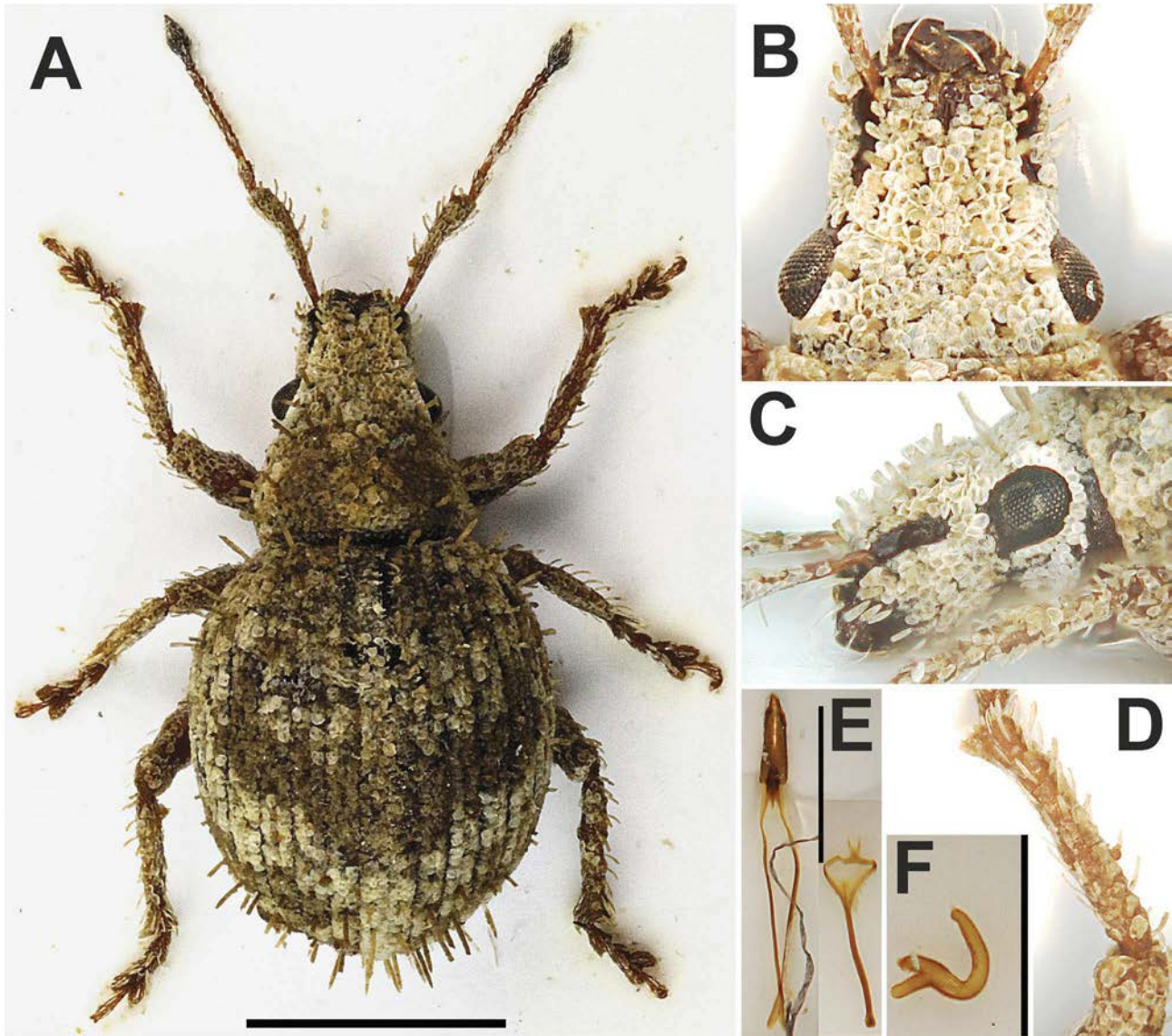


FIGURE 10. *Lalagetes zitae* sp. nov. **A**—habitus, dorsal view, female; **B**—rostrum, female, dorsal view; **C**—rostrum, female, lateral view; **D**—protibia, female; **E**—aedeagus; **F**—spermatheca. Scales bars: 1 mm (**A**), 0.5 mm (**E**) and 0.3 mm (**F**).

Key to *Lalagetes* species

1. Epifrons at base distinctly narrower than distance between anterior border of eyes, at midlength $0.56\text{--}0.64 \times$ as wide as rostrum in the same place (Figs 6A, 8A). Pronotum narrower, $1.47\text{--}1.55 \times$ as wide as long (Figs 6A, 8A). 2
- Epifrons at base weakly narrower than distance between anterior border of eyes, at midlength $0.69\text{--}0.73 \times$ as wide as rostrum in the same place (Figs 5A, 7A, 9A, 10A). Pronotum wider, $1.53\text{--}1.80 \times$ as wide as long (Figs 5A, 7A, 9A, 10A). 3
2. Elytral setae subspatulate, apically rounded, slightly shorter width of one interval (Fig. 8A). Brownish clubs narrower than apex of scapes (Fig. 8A). Funicle segments 3 and 4 $1.1 \times$ as long as wide (Fig. 8A). Plate of sternite VIII in females isodiametric. Nodulus of spermatheca subtriangular, close to ramus (Fig. 8F). Size 2.0–2.3 mm. *L. seminulum* Fähræus
- Elytral setae lancet-shaped, apically pointed, slightly longer width of one interval (Fig. 6A). Blackish clubs equally wide to apex of scapes (Fig. 6A). Funicle segments 3 and 4 $1.2\text{--}1.3 \times$ as long as wide (Fig. 6A). Plate of sternite VIII in females twice as wide as long. Nodulus of spermatheca oval, distant from ramus (Fig. 6F). Size 2.1–2.3 mm. *L. howdenorum* sp. nov.
3. Antennal funicle 6-segmented (Fig. 7A). Funicle segments 2 and 3 long, segment 2 $2.7\text{--}3.0 \times$, segment 3 $1.9\text{--}2.1 \times$ as long as wide (Fig. 7A). Spermatheca with nodulus long, straight, tube-shaped (Fig. 7F). Size 2.0–2.4 mm. *L. sarkae* sp. nov.
- Antennal funicle 7-segmented (Figs 5A, 9A, 10A). Funicle segments 2 and 3 usually shorter, segment 2 at most $2.7 \times$, segment 3 at most $1.4 \times$ as long as wide (Figs 5A, 9A, 10A). Spermatheca with nodulus short or distinctly curved (Figs 5F, 9F, 10F). 4
4. Funicle segment 1 $1.4 \times$ as long as segment 2; segment 2 $1.8\text{--}1.9 \times$ as long as wide (Fig. 9A). Scapes at apex slightly narrower

- than clubs (Fig. 9A). Rostrum in males with concave sides (Fig. 9B). Spermatheca with ramus distinctly longer than nodulus (Fig. 9F). Size 1.9–2.4 mm *L. subfasciatus* Boheman
- Funicle segment 1 1.1 × as long as segment 2; segment 2 2.0–2.7 × as long as wide (Figs 5A, 10A). Scapes at apex wider than clubs (Figs 5A, 10A). Rostrum in males with straight sides (Figs 5B, 10B). Spermatheca with ramus shorter or slightly longer than nodulus (Figs 5F, 10F). 5
5. Small brownish elytral appressed scales imbricate (Fig. 10A). Pronotal appressed scales depressed (Fig. 10A). Penis very small with apex narrowly rounded, temones 2.4–2.6 × as long as body of penis (Figs 3E, 10E). Gonocoxites with styli longer than wide. Spermatheca with nodulus straight (Fig. 10F). Size 1.8–2.5 mm *L. zitae* sp. nov.
- Small brownish elytral appressed scales well isolated (Fig. 5A). Pronotal appressed scales flat (Fig. 5A). Penis moderately large with apex subtriangular, temones 1.5–1.8 × as long as body of penis (Figs 3A, 5E). Gonocoxites with styli isodiametric. Spermatheca with nodulus curved (Fig. 5F). Size 1.9–2.3 mm *L. andersoni* sp. nov.

Check list of *Lalagetes* species

<i>L. andersoni</i> sp. nov.	South Africa, Mpumalanga
<i>L. howdenorum</i> sp. nov.	South Africa, Limpopo
<i>L. sarkae</i> sp. nov.	South Africa, KwaZulu-Natal
<i>L. seminum</i> Fåhraeus, 1871	South Africa, KwaZulu-Natal
<i>L. subfasciatus</i> Boheman, 1842	South Africa, Eastern Cape
<i>L. zitae</i> sp. nov.	South Africa, KwaZulu-Natal, Western Cape

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Four new *Tapinomorphus* Hartmann species from Angola, Zambia and Zimbabwe (Coleoptera: Curculionidae: Entiminae: Sciaphilini)

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Abstract

Four new *Tapinomorphus* species are described and illustrated: *Tapinomorphus angolanus* sp. nov. from Angola, *T. kudrnai* sp. nov. from Zambia, *T. latipennis* sp. nov. and *T. verunkae* sp. nov. from Zimbabwe. This brings the total number of species in the genus to 20. Habitus images and illustrations of important characters are provided.

Key words: Weevils, taxonomy, new species, South Africa, species discovery

Introduction

Tapinomorphus Hartmann, 1904 (Sciaphilini Sharp, 1891; type species *Tapinomorphus metallicus* Hartmann) is an Entiminae genus of a small sized species. Since its description it has been treated only by Marshall (1940, 1953), Voss (1962) and Borovec & Skuhrovec (2017). Prior to the current study the genus included 16 species, all described from Kenya, Tanzania and the Democratic Republic of Congo. Undoubtedly some species originally assigned to the genus *Dysommatus* Marshall, 1933 (Peritelini Lacordaire, 1863) from the Democratic Republic of Congo also belong to *Tapinomorphus*; transfer of these species and redefinition of the both genera will be a subject of another paper. Surprisingly, species in the genus *Tapinomorphus* occur further south of its current distribution area; four species of the genus were collected in Angola, Zambia and Zimbabwe. The aim of this paper is the description of these new taxa.

Material and methods

Body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of the elytra, excluding the rostrum. Width/length ratio of the rostrum was measured as maximum width at base versus maximum length to the base of the mandibles in dorsal view. Width/length ratios of pronotum, elytra, antennal and tarsal segments were taken at the maximum width and length of the respective parts in dorsal view. Female genitalia were embedded in Solakryl BMX (Medika, Prague); male genitalia were mounted dry on the same card as the respective specimen. The terminology of the rostrum and the genitalia follows Oberprieler *et al.* (2014).

Acronyms for depositories of the material are as follows:

NHMUK Natural History Museum, London, United Kingdom, Maxwell Barclay;
RMCA Royal Museum of Central Africa, Tervuren, Belgium, Marc de Meyer;
TMSA Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa, Ruth Müller.

Taxonomy

All four newly described species are assignable to the genus *Tapinomorphus* Hartmann, 1904 on the following set of characters: epifrons at base almost as wide as space between eyes, clearly separated from head by narrow transverse sulcus; frons glabrous and declivous; antennal scrobes laterally placed, well edged, furrow-shaped; elytra dorsally lacking humeral calli; procoxae touching anterior border of pronotum; metatibiae lacking corbels, with glabrous apical surface; claws connate; metaventral process very wide; abdominal ventrite 2 as wide as ventrite 3 or 4, with suture between ventrite 1 and 2 straight. *Tapinomorphus* is well definable among Afrotropical region genera with “brachyderine” type of antennal scrobes, which means scrobes laterally placed, in profile furrow-shaped and curved down. *Dysommatus* and genera related to it belong to entimines with “otiorhynchine” form of scrobes, so scrobes dorsally to subdorsally placed, in profile directed towards eyes and enlarged posteriad. Relationships of these genera, with species transfers, will be addressed in a subsequent paper.

Tapinomorphus angolanus Borovec & Nakládal, sp. nov.

<http://zoobank.org/urn:lsid:zoobank.org:act:7E018BCE-10B0-493C-8419-9E4712C0C140>

(Figs 1, 5–8)

Type locality. Angola, Bruco.

Type material. Holotype. ♂, ‘Angola [Namibe], Bruco, 26.ii-2.iii.1972, damp leaf litter by stream’ (BMNH).

Description. Body length of holotype 2.51 mm. Body brown, basal half of scapes, funicles, apical third of tibiae and tarsi paler, yellowish brown (Fig. 1). Dorsal part of body and femora and tibiae densely covered by oval appressed scales, finely longitudinally striate, leaving narrow spaces with visible integument, 3 scales across the width of one interval. Elytra with one row of conspicuous, subspatulate erect setae, before the rounded tip weakly wider than diameter of one appressed scale, distance between setae separated by 2–3 times length of one seta; pronotum with very short and wide, densely irregularly scattered setae; head with rostrum with longer and slender, sparsely scattered setae; femora and tibiae with short, slender, semiappressed setae; scapes at inner side with long and sparse, erect setae; funicles with fine, semierect, piliform whitish setae; clubs and tibiae with short setae.

Rostrum (Figs 5, 6) slender and moderately long, widest at base, at base $1.12 \times$ as wide as long and $1.17 \times$ as at apex, basal part tapered apicad, then about parallel-sided; laterally distinctly convex, well separated from the head by transverse sulcus and curved down to frons at antennal insertion. Epifrons widest at base, here equally wide as space between inner edge of eyes, distinctly tapered anteriorly with concave sides, dorsally flat, posteriorly separated from head by straight transverse sulcus. Frons short and wide, glabrous, posteriorly separated from epifrons by straight but not carinated line. Epistome not developed. Scrobe dorsally visible as very slender furrow along the entire length, weakly curved; laterally weakly enlarged posteriad, curved, with dorsal border directed to ventral border of eye but not reaching it and ventral border directed downward, not reaching lower part of rostrum. Eyes small, convex, weakly prominent from outline of head; laterally very near to dorsal part of head. Head long, behind eyes equally long as diameter of eyes; vertex slightly convex.

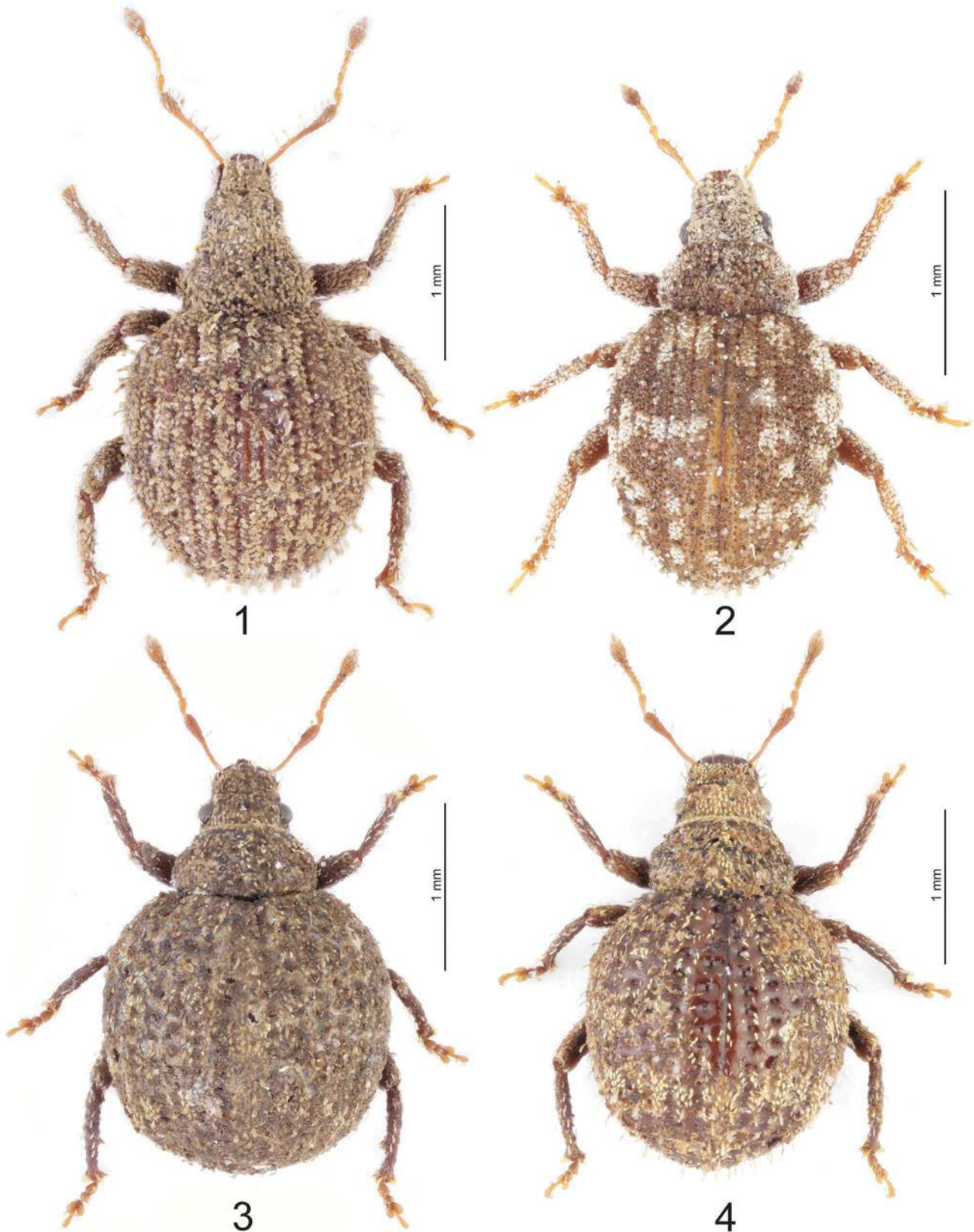
Antennae very slender; scape $1.4 \times$ as long as funicle, at apex distinctly more slender than club, very slender in basal two thirds, in apical third evenly weakly enlarged apicad, at apex narrower than club, weakly curved at midlength and at apical third; funicle 5-segmented. Segments 1 and 2 long and slender (1 is enlarged at tip), equally long; segment 1 twice as long as wide and equally long as segment 2, which is $2.7 \times$ as long as wide; segments 3–5 isodiametric, segment 5 slightly larger than previous two; club $1.8 \times$ as long as wide.

Pronotum (Fig. 1) $1.48 \times$ as wide as long, small in relation to elytra, $0.52 \times$ as wide as elytra, narrow, widest in basal third with rounded sides, distinctly more tapered anteriorly than posteriorly, behind anterior border weakly constricted; disc regularly convex; base weakly arched.

Elytra short oval (Fig. 1), $1.09 \times$ as long as wide, widest at midlength with distinctly regularly rounded sides, at apex broadly rounded. Striae under vestiture distinctly roughly punctate, about as wide as intervals; interstriae without tubercles or elevations. Subhumeral bumps weakly developed, visible only in dorso-lateral view.

Abdominal ventrites short and wide (Fig. 7), $1.24 \times$ as wide as long, glabrous, ventrite 1 punctured, the others smooth; ventrite 1 at middle more than twice as long as ventrite 2; ventrite 2 at middle about equal in length to ventrites 3 and 4 combined. Suture between ventrites 1 and 2 straight. Metaventral process obtuse, distinctly wider than transverse diameter of metacoxa.

Femora unarmed. Protibiae with outer edge straight and inner edge distinctly enlarged, apex subtruncate with fringe of short, sparse setae. Metatibiae at inner edge with one distinct, brownish, blunt spine at midlength, distinctly enlarged on inner edge at apex. Tarsal segment 2 $1.2 \times$ as wide as long; segment 3 $1.3 \times$ as wide as long and $1.3 \times$ as wide as segment 2; onychium slender and long, $1.6 \times$ as long as segment 3. Claws fused in basal half.



FIGURES 1–4. Dorsal habitus. 1. *Tapinomorphus angolanus* sp. nov.; 2. *T. kudrnai* sp. nov.; 3. *T. latipennis* sp. nov.; 4. *T. verunkae* sp. nov.

Penis (Fig. 8) ventrally parallel-sided, at apical quarter evenly tapered apicad, subtriangular; laterally widest in basal third, curved, evenly tapered apicad.

Derivation of name. Named after the country of Angola.

Biology. The holotype was collected from damp leaf litter.

Differential diagnosis. *Tapinomorphus angolanus* **sp. nov.** is easily distinguished from almost all other *Tapinomorphus* species by antennal funicle 5-segmented, while all other species have funicle 7-segmented. The only exception is *T. divergens* Voss, 1962 described from Tanzania, which also has funicle 5-segmented but that character was overlooked by Voss in his original description, based on poorly mounted type specimens, and also *T. kudrnai* Borovec & Nakládal, **sp. nov.** described below. A key to the three species with 5-segmented funicle is presented below.

Except for its 5-segmented funicle, *T. angolanus* Borovec & Nakládal, **sp. nov.** is characterized by pronotum very small in comparison to elytra, moderately slender rostrum and elytra with rows of long subspatulate setae. *T. kidundaensis* Voss, 1962 also has pronotum very small in comparison to elytra, but *T. angolanus* Borovec & Nakládal, **sp. nov.** can be distinguished from that species, described from Tanzania, by absence of humps on elytra (vs. elytra with small longitudinal humps on intervals 3, 5 and 7 in *T. kidundaensis*), rostrum slender and long, $1.1 \times$ as wide as long (vs. $1.5 \times$ in *T. kidundaensis*) and erect elytral subspatulate setae distinctly enlarged apically (vs. slender, parallel-sided, not enlarged apically in *T. kidundaensis*). Elytra without humps and elevated intervals, not conspicuously prominent eyes and elytra with conspicuous rows of long subspatulate setae make *T. angolanus* **sp. nov.** similar to *T. setipennis* Voss, 1962 described from Tanzania. From *T. setipennis* it is easily distinguishable by rostrum without laterally prominent pterygiae (vs. pterygiae well developed, distinctly prominent laterally in *T. setipennis*), pronotum small in comparison to elytra, $0.5 \times$ as wide as elytra (vs. $0.6 \times$ in *T. setipennis*) and first two funicle segments equally long (vs. first segment distinctly longer than second in *T. setipennis*).

***Tapinomorphus kudrnai* Borovec & Nakládal, sp. nov.**

<http://zoobank.org/urn:lsid:zoobank.org:act:B1905A3B-EEF7-4B24-BCCC-1FFC7BF9160D>

(Figs 2, 9–12)

Type locality. Zambia, Chipoma Falls, 25 km SW Chinsali.

Type material. Holotype: ♂, 'Zambia, Northern pr., Chipoma falls, 25 km SW Chinsali, 5.-6.12.2002, A. Kudrna Jr. lgt.' (TMSA).

Description. Body length of holotype 2.05 mm. Body brown, scapes, funicles, tibiae and tarsi somewhat paler, yellowish brown. Elytra with rounded, longitudinally finely striolate appressed scales, 4 scales across width of one interval (Fig. 2). Pronotum, head with rostrum, femora with tibiae with more slender, long oval appressed scales, almost concealing integument. Elytra with one regular row of semiappressed, inconspicuous, wide, almost rounded scales, longitudinally finely striolate, about as long as half the width of one interval, distinctly wider than diameter of one appressed scale, distance between setae separated by three times length of one seta. Pronotum, head with rostrum, femora and tibiae with short, slender, semiappressed, hardly visible setae. Scapes at inner side with group of erect, moderately long, slender, subspatulate setae; funicles with short, semierect, piliform setae. Vestiture brownish; elytra with irregularly scattered small spots from greyish scales, pronotum with greyish scales in lateral parts, head and rostrum with dominant greyish scales.

Rostrum (Figs 9, 10) at short basal part enlarged apicad, then evenly distinctly tapered apicad with straight sides, $1.18 \times$ as wide as long, at base $1.13 \times$ as wide as at apex; laterally distinctly convex, weakly curved down before antennal insertion, conspicuously separated from head by transverse sulcus. Epifrons widest at base, distinctly evenly tapered apicad with straight sides, flat, with shallow longitudinal median furrow, separated from head by distinct shallow transverse sulcus. Frons long, posteriorly reaching antennal insertion, matt, flat. Epistome not developed. Scrobe dorsally visible as very narrow furrow, slightly constricted at the middle; laterally furrow-shaped, well edged, weakly curved, directed below eyes and not touching them. Eyes moderately large, prominent from outline of head, laterally placed above at middle of head. Head short and wide; vertex with shallow longitudinal median furrow.

Antennae slender; scape $1.4 \times$ as long as funicle, curved at midlength, in basal half very slender, in apical half evenly enlarged apicad, at apex weakly narrower than club. Funicle 5-segmented; segment 1 $1.9 \times$ as long as wide

and $1.7 \times$ as long as segment 2, which is $1.7 \times$ as long as wide; segment 3 isodiametric; segment 4 $1.2 \times$ as wide as long; segment 5 $1.4 \times$ as wide as long; club $1.7 \times$ as long as wide.

Pronotum (Fig. 2) short and wide, $1.61 \times$ as wide as long, $0.63 \times$ as wide as elytra, widest at basal quarter with distinctly rounded sides, more tapered anteriorly than posteriorly; base V-shaped; disc distinctly regularly convex with coarse punctures.

Elytra short oval (Fig. 2), $1.15 \times$ as long as wide, with distinctly rounded sides and broadly rounded at apex. Striae punctate, narrower than intervals; interstriae without bumps or elevations. Subhumeral bumps weakly developed, visible only in dorso-lateral view.

Abdominal ventrites short and wide, $1.12 \times$ as wide as long, glabrous, shiny, ventrite 1 indistinctly punctured, the others smooth; ventrite 1 at middle about three times as long as ventrite 2; ventrite 2 at middle only slightly longer than ventrite 3 or 4. Suture between ventrites 1 and 2 sinuose. Metaventral process distinctly wider than transverse diameter of metacoxa.

Femora unarmed. Protibiae with outer edge straight and inner edge distinctly enlarged, apex rounded with fringe of very fine yellowish setae. Metatibiae with inner edge without spines or teeth, weakly enlarged at apex. Tarsal segment 2 $1.7 \times$ as wide as long; segment 3 $1.4 \times$ as wide as long and $1.4 \times$ as wide as segment 2; onychium long and slender, $1.7 \times$ as long as segment 3; claws fused in basal third, then weakly divorced.

Female genitalia. Spermatheca (Fig. 12) with very slender and small cornu, irregularly curved; corpus rounded; ramus isodiametric, subquadratic; collum tapered apicad, weakly curved at apex. Sternite VIII (Fig. 11) with plate narrow, arrow-shaped, with long tip exceeding anterior margin and long sclerites almost reaching base of plates; apodeme terminated at basal third. Gonocoxites flat, tapered apicad, with long apical styli with tuft of setae.

Etymology. The new species is dedicated to its collector, Arnošt Kudrna (Faculty of Science University of South Bohemia, České Budějovice), specialist of Cicindelidae.

Biology. Unknown.

Differential diagnosis. *Tapinomorphus kudrnai* Borovec & Nakládal, **sp. nov.** is easily distinguishable from all other *Tapinomorphus* species by 5-segmented funicles, a character state shared only with *T. angolanus* Borovec & Nakládal, **sp. nov.** and *T. divergens* Voss. It can be distinguished from *T. angolanus* Borovec & Nakládal, **sp. nov.** by many characters, for example by short and wide rostrum, $1.18 \times$ as wide as long (vs. $1.12 \times$ in *T. angolanus* Borovec & Nakládal, **sp. nov.**), short and wide pronotum, $1.61 \times$ as wide as long (vs. $1.48 \times$ in *T. angolanus* Borovec & Nakládal, **sp. nov.**), segment 1 of funicle distinctly longer than segment 2 (vs. equally long in *T. angolanus* Borovec & Nakládal, **sp. nov.**), short, rounded semiappressed setae on elytra (vs. long, slender, subspatulate setae in *T. angolanus* Borovec & Nakládal, **sp. nov.**) and others. In the similar shape of rostrum *T. kudrnai* Borovec & Nakládal, **sp. nov.** somewhat resembles *T. latipennis* Borovec & Nakládal, **sp. nov.**, from which it can be distinguished (except for its funicle segment number) by elytra short oval, $1.15 \times$ as long as wide (vs. elytra rounded, flat, about as long as wide in *T. latipennis* Borovec & Nakládal, **sp. nov.**) and sternite VIII in females with plate pointed with two longitudinal sclerites (vs. plate not pointed and without sclerites in *T. latipennis* Borovec & Nakládal, **sp. nov.**).

***Tapinomorphus latipennis* Borovec & Nakládal, sp. nov.**

<http://zoobank.org/urn:lsid:zoobank.org:act:3D888157-9681-4DFD-9342-2554E1458B65>

(Figs 3, 13–18)

Type locality. Zimbabwe, Manicaland, Vumba Mt. Bunga forest.

Type material. Holotype: ♂, 'Zimbabwe; Manicaland, Vumba Mt. Bunga forest, 19.07 S – 32.47 E, 29.11.2006; E-Y: 3739, sifting and under bark, leg. Gussmann; Müller' (TMSA). Paratypes: 3 ♂♂ 5 ♀♀, the same data as holotype (TMSA); 5 ♂♂, 'I.R.S.A.C.-MUS. R.A.C., S. Rhodesia [Zimbabwe]: Chipinga, 1200 à 1300 m. VII.1960, N. Leleup [lgt.], Humus dans résidu forêt ombrophile' (RMCA).

Description. Body length 2.27–2.63 mm, holotype 2.34 mm. Body brownish to dark brownish, antennae, short apical part of tibiae and tarsi paler, reddish brown to yellowish brown (Fig. 3). Elytra irregularly densely covered by short oval appressed scales, 4–5 scales across width of one interval, scales not completely covering integument, creating very slender transverse stripe from denser scales at middle and also at anterior and posterior third. Each interval with one inconspicuous regular row of semiappressed oval setae only weakly bigger than appressed ones, hardly visible in lateral view, distance between setae separated by about three times length of one seta.

Rostrum (Figs 13, 14) $1.28\text{--}1.33 \times$ as wide as long, widest at base and regularly tapered anteriorly with almost straight sides, at base $1.16\text{--}1.24 \times$ as wide as at apex; laterally weakly convex, somewhat curved down before antennal insertion, well separated from head by transverse sulcus. Epifrons very wide and moderately short, flat, as wide at base as space between inner edge of eyes, regularly tapered apicad with slightly concave sides, posteriorly separated from head by straight, slender, well edged sulcus. Frons glabrous, short and wide, longitudinally weakly depressed, posteriorly clearly separated from epifrons by straight line, without carina. Epistome not developed. Scrobe dorsally visible along the entire length as very slender furrow, slightly curved; laterally furrow-shaped, glabrous, slightly curved and directed below eye, not touching it, not reaching lower part of rostrum. Eyes small, convex, somewhat protruding from outline of head; laterally subcircular, very near to dorsal border of head. Vertex wide, weakly convex.

Antennae slender, scape $1.3 \times$ as long as funicle, at apex weakly narrower than club, slightly exceeding anterior border of pronotum, very slender in basal half, at midlength weakly curved, in apical half evenly enlarged apicad, at apex narrower than club. Funicle 7-segmented, segment 1 $1.8\text{--}2.1 \times$ as long as wide and $1.7\text{--}2.0 \times$ as long as segment 2, which is $1.6\text{--}1.7 \times$ as long as wide; segments 3–5 isodiametric to $1.1 \times$ as wide as long; segment 6 $1.1 \times$ as wide as long; segment 7 $1.2 \times$ as wide as long; club $1.9 \times$ as long as wide.

Pronotum (Fig. 3) very wide and short, $1.76\text{--}1.93 \times$ as wide as long, $0.50\text{--}0.54 \times$ as wide as elytra, widest behind midlength, with distinctly rounded sides, anteriorly conspicuously more tapered than posteriorly. Disc regularly convex, under scales vestiture shiny, smooth, coarsely punctate; punctures only slightly smaller than those on elytral disc, space between them very narrow, much less than diameter of the punctures. Base V-shaped.

Elytra (Fig. 3) rounded, flat, as wide as long, lens-shaped, $1.04 \times$ as long as wide to $1.06 \times$ as wide as long. Disc, inner seven intervals regularly weakly convex, without any hump or elevated interval, intervals 7 and 8 create longitudinal blunt but distinct edge, outer interstriae thus placed ventrally. Striae coarsely punctate with punctures large, subsquare and very dense; intervals very slender, narrower than half diameter of puncture. Interval 8 with small subhumeral bump, visible in dorso-lateral view. Base V-shaped.

Femora unarmed. Protibiae at their short apex slightly curved inside, apex rounded with fringe of moderately long but fine yellowish setae. Metatibiae in males with conspicuous brownish pointed spine between midlength and apical third, curved apically and with two very small dark brownish teeth between spine and base; females with spine much smaller, only somewhat bigger than teeth. Tarsi with segment 2 $1.6\text{--}1.7 \times$ as wide as long; segment 3 $1.3\text{--}1.4 \times$ as wide as long and $1.5\text{--}1.6 \times$ as wide as segment 2; onychium $1.2\text{--}1.3 \times$ as long as segment 3. Claws fused in basal half.

Abdominal ventrites short and wide, glabrous, $1.18\text{--}1.24 \times$ as wide as long, ventrite 1 behind metacoxa equal in length to ventrite 2, metaventral process obtuse, distinctly wider than transverse diameter of metacoxa.

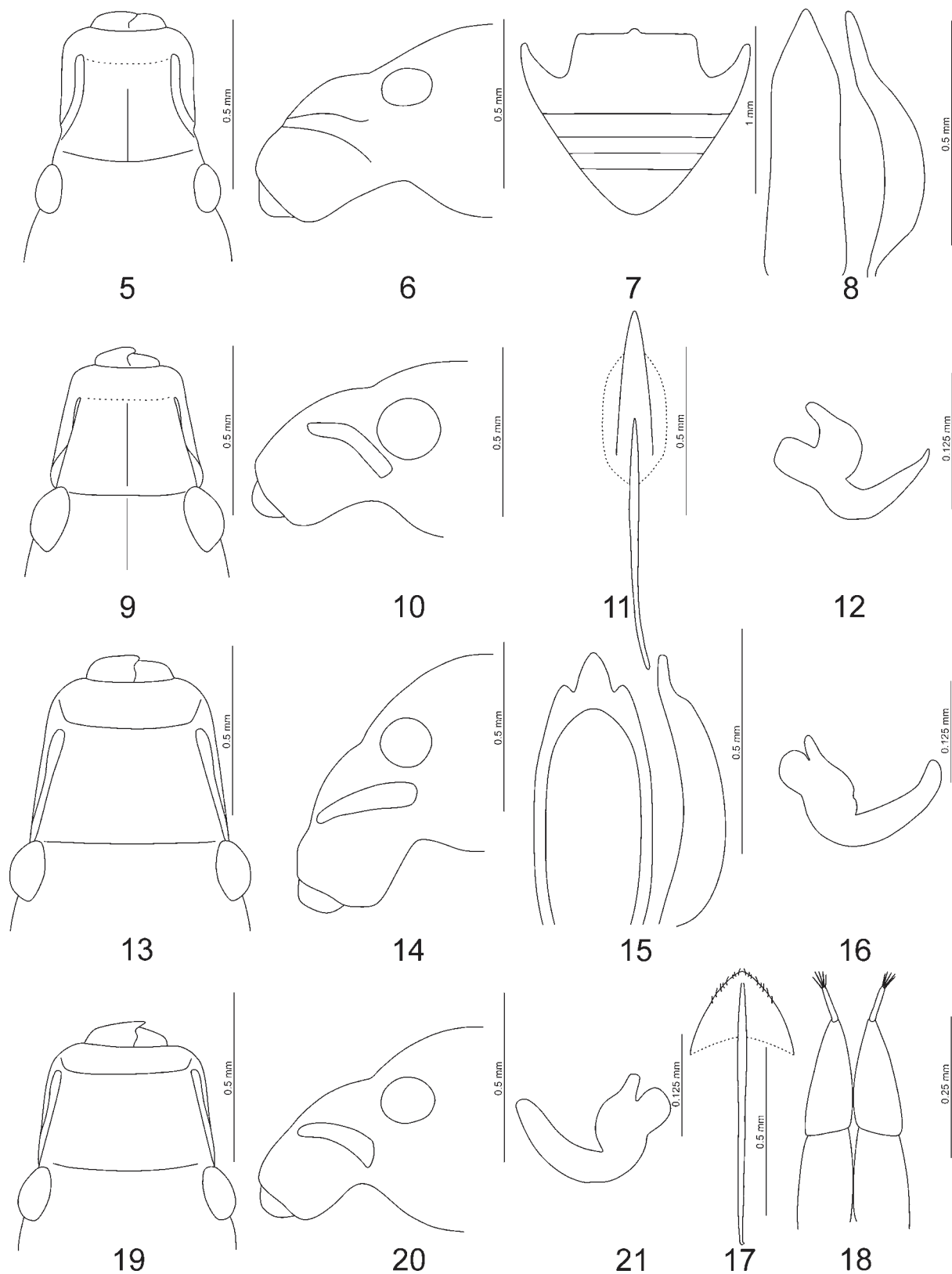
Penis (Fig. 15) ventrally widest at midlength with weakly but regularly rounded sides, triangular with two small teeth at base; laterally regularly curved and equally wide, tip lengthened.

Sternite VIII in females (Fig. 17) with plate umbrella-shaped, but weakly subtriangular, with well-developed anterior margin and posterior margin membranous; apodeme about five times as long as plate, terminated just inside of plate, near the apex. Gonocoxites (Fig. 18) with hemisternites evenly tapered apicad, subtriangular, with long and slender apical styli with tuft of setae. Spermatheca (Fig. 16) with irregularly curved cornu; corpus rounded; ramus rounded, about isodiametric; collum tube-shaped, slender, about equally long but much slenderer than ramus.

Etymology. The Latin name, meaning “with wide elytra”, refers to the obvious wide and flat body including elytra.

Biology. Type material was collected by sifting of litter in forest or collected under bark.

Differential diagnosis. *Tapinomorphus latipennis* Borovec & Nakládal, **sp. nov.** is easy to separate from all other *Tapinomorphus* species by rostrum with very wide, densely squamose epifrons, at base as wide as distance between anterior borders of eyes, moderately short frons posteriorly contrastly separated from epifrons, female sternite VIII with plate umbrella-shaped, not pointed apically without longitudinal sclerites and also unusually flat and wide, lens-shaped elytra.



FIGURES 5–21. Structural details. 5–8. *Tapinomorpha angolanus* **sp. nov.** 5. head with rostrum, dorsal view; 6. head with rostrum, lateral view; 7. abdominal ventrites; 8. penis dorsal and lateral view. 9–12. *T. kudrnai* **sp. nov.** 9. head with rostrum, dorsal view; 10. head with rostrum, lateral view; 11. female sternite VIII; 12. spermatheca. 13–18. *T. latipennis* **sp. nov.** 13. head with rostrum, dorsal view; 14. head with rostrum, lateral view; 15. penis dorsal and lateral view; 16. Spermatheca; 17. female sternite VIII; 18. gonocoxites. 19–21. *T. verunkae* **sp. nov.** 19. head with rostrum, dorsal view; 20. head with rostrum, lateral view; 21. spermatheca.

***Tapinomorphus verunkae* Borovec & Nakládal, sp. nov.**

http://zoobank.org/urn:lsid:zoobank.org:act:8D372B78-4E99-4AB0-843A-54AAFF178BE5

(Figs 4, 19–21)

Type locality. Zimbabwe, Mt. Selinda, forêt de Chirinda.

Type material. Holotype: ♀, 'I.R.S.A.C.-MUS.R.A.C., S. Rhodesia [Zimbabwe]: Mt. Selinda, forêt de Chirinda, 1300 m. VII.1960, N. Leleup [Igt.], Récolté dans l'humus' (RMCA). Paratypes: 3 ♀♀, the same data as holotype (RMCA).

Description. Body length 2.25–2.44 mm, holotype 2.44 mm. Because the species is extremely similar to the previous one, *T. latipennis* sp. nov., the following descriptive part states only measurement and characters different from the description of *T. latipennis* sp. nov.

Elytra with irregularly sparsely scattered drop-shaped appressed scales, 4 scales across width of one interval. Each interval with one regular row of erect setae, setae weakly enlarged apicad, before the tip about as wide as one appressed scale, slightly longer than half the width of one interval, distance between setae separated by about twice their length (Fig. 4).

Rostrum (Figs 19, 20) 1.38–1.46 × as wide as long, at base 1.14–1.23 × as wide as at apex. Funicle 7-segmented, segment 1 2.1–2.3 × as long as wide and 1.7–1.9 × as long as segment 2, which is 1.7–1.8 × as long as wide; segments 3–5 isodiametric; segment 6 1.2–1.3 × as wide as long; segment 7 1.3–1.4 × as wide as long; club 1.8–1.9 × as long as wide. Pronotum very wide and short, 1.67–1.88 × as wide as long, 0.53–0.59 × as wide as elytra. Elytra rounded, flat, 1.02–1.05 × as long as wide. Intervals slender, about as narrow as half diameter of puncture. Tarsi with segment 2 1.3–1.4 × as wide as long; segment 3 1.3–1.4 × as wide as long and 1.4–1.6 × as wide as segment 2; onychium 1.3–1.4 × as long as segment 3. Spermatheca as in Fig. 21.

Etymology. In 2017, a small, beautiful daughter named Veronika Nakládalová was born to the junior author. In the Czech language, “Verunka”, is often used as a diminutive of the first name of “Veronika”. The species was named in her honor and the specific name *verunkae* is derived from this diminutive.

Biology. Type material was collected by sifting of forest litter.

Differential diagnosis. *Tapinomorphus verunkae* Borovec & Nakládal, sp. nov. is by general habitus, mainly by rounded and flat elytra, short and wide pronotum, rostrum with very wide, densely squamose epifrons and sternite VIII in females not pointed apically without longitudinal sclerites similar only to *T. latipennis* Borovec & Nakládal, sp. nov. From this species it can be distinguished mainly by elytra with erect setae, slightly longer than half of width of one interval, in lateral view 3–4 × as long as setae on pronotum (vs. semiappressed setae, about as long as a quarter of width of one interval, in lateral view equally long as setae on pronotum in *T. latipennis* Borovec & Nakládal, sp. nov.), rostrum shorter, 1.38–1.46 × as wide as long (vs. rostrum longer, 1.28–1.33 × as wide as long in *T. latipennis* Borovec & Nakládal, sp. nov.), and smaller punctures in elytral striae with intervals about as narrow as half diameter of puncture (vs. striae with bigger punctures with intervals very slender, narrower than half diameter of puncture in *T. latipennis* Borovec & Nakládal, sp. nov.).

Key to *Tapinomorphus* with 5-segmented funicle

1. Semiappressed setae on elytra short, inconspicuous, about as long as half the width of one interval, hardly visible in lateral view. Funicle segment 1 1.7 × as long as segment 2. Pronotum wider, 1.6 × as wide as long. Small species, 2.1 mm long. Zambia. *T. kudrnai* Borovec & Nakládal sp. nov.
- Erect setae on elytra long, conspicuous, distinctly longer than half the width of one interval, significant in lateral view. Funicle segments 1 and 2 equally long. Pronotum more slender, 1.5 × as wide as long. Larger species, 2.5 mm long. 2
2. Rows of erect elytral setae on all intervals. Rostrum more slender, 1.12 × as wide as long. Pronotum small in relation to elytra, 0.52 × as wide as elytra. Elytra short oval, 1.09 × as long as wide, with distinctly rounded sides. Penis subparallel-sided, with apex evenly tapered, apically, subtriangular, pointed. Angola. *T. angolanus* Borovec & Nakládal, sp. nov.
- Rows of erect elytral setae only on alternate intervals. Rostrum wider, 1.45 × as wide as long. Pronotum wider in relation to elytra, 0.66 × as wide as elytra. Elytra oval, 1.24 × as long as wide, subparallel-sided. Penis from base tapered apically, tip shortly obtuse. Tanzania. *T. divergens* Voss

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***Haptomerus maculosus*, a new species of the tribe Myorhinini from Zambia (Coleoptera: Curculionidae: Entiminae)**

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Abstract

The new species *Haptomerus maculosus* Borovec & Nakládal, **sp. n.** is described, illustrated and compared with its related species. A key to all *Haptomerus* species is presented. New data for other species of *Haptomerus* are presented. The relationships of *Haptomerus* species are discussed with particular attention to the relationships of species from the Afrotropical region and those from southern Europe.

Key words: Coleoptera, Curculionidae, Entiminae, Myorhinini, *Haptomerus*, Afrotropical region

Introduction

The tribe Myorhinini Marseul, 1863, not long ago redefined by Oberprieler (1995), includes entimine weevils with a mostly long and thin rostrum, and all species are probably specialised to live on grasses (Poaceae). The tribe includes 25 genera known mainly from the Afrotropical region, with only a few from the southern part of the Palaearctic and Oriental regions (Alonso-Zarazaga & Lyal 1999). The majority of the species are locally distributed or are known solely from their type localities. Each genus includes only a small number of species, hence *Haptomerus* Faust, 1889, of which nine species are currently known (8 Afrotropical, 1 Palaearctic) (Borovec, unpublished data), represents the most speciose genus of the tribe. In the present article, another new species of this genus from Zambia is described, and information on type material as well as on rather scarce additional specimens is presented.

Material and methods

The body length of all specimens was measured in dorsal view from the anterior margin of the eyes to the apex of the elytra, excluding the rostrum. Photos of adults were taken with a Canon EOS 550D camera using an MP-E 65 mm macro lenses and stacked using the CombineZM and GIMP2 software programs. The terminology of the rostrum and the genitalia follows Oberprieler *et al.* (2014).

Label data of type material are cited *verbatim*, separate labels are indicated by a slash (/). Author's remarks and comments are set in square brackets. [p]—the preceding data were printed, [hw]—ditto, hand-written.

The material is deposited in the following collections, with the name of the curator given:

BMNH Natural History Museum, London, United Kingdom (formerly British Museum of Natural History);
Maxwell V. L. Barclay;

BMSC Bořivoj Malec collection, Šumperk, Czech Republic;

MWWP Marek Wanat collection, Wrocław, Poland;

RBSC Roman Borovec collection, Sloupno, Czech Republic;
SMDG Staatliches Museum für Tierkunde, Dresden, Germany; Olaf Jäger.

Systematics

Haptomerus Faust, 1889

Haptomerus Faust 1889: 142; Marshall 1908: 23; Hustache 1921: 42; Marshall 1958a: 124; Marshall 1958b: 712; Hoffmann 1959: 164; Voss 1960: 13; Osella & Lodos 1979: 76; Alonso-Zarazaga 1983: 311; Oberprieler 1995: 166; Osella *et al.* 1998: 231; Alonso-Zarazaga & Lyal 1999: 163; Borovec 2013: 293.

Type species, by original designation: *Myorhinus lepidus* Brullé, 1832.

Haptomerus is one of few genera of Myorhinini with species in the Mediterranean subregion as well as in the Afrotropical region (Osella *et al.* 1998). Two species are known from southern Europe: *H. lepidus* (Brullé, 1832) from Greece and Italy (Borovec 2013) and one yet undescribed species from Portugal (Borovec, unpublished data). *Haptomerus* is much more speciose in the Afrotropical region, encompassing eight species: *H. aeneus* Hustache, 1921 (Kenya), *H. affinis* Voss, 1960 (South Africa: North West), *H. angolanus* Marshall, 1958 (Angola), *H. brevitarsis* Voss, 1962 (Democratic Republic of Congo), *H. confusus* Marshall, 1958 (Cameroon), *H. limis* (Gyllenhal, 1836) (South Africa: Eastern Cape, KwaZulu-Natal, Free State), *H. mashunus* Marshall, 1908 (Zimbabwe) and *H. natalis* Marshall, 1908 (South Africa: KwaZulu-Natal).

Faust (1889) originally described the genus in the tribe Tanyrhynchini Schoenherr, 1826, but Oberprieler (1995) later transferred it to Myorhinini, specifically to the *Myorhinus*-group of genera, and it was also listed in this tribe by Alonso-Zarazaga & Lyal (1999) and Borovec (2013).

Haptomerus maculosus Borovec & Nakládál, sp. n.

(Figures 1–10)

<http://zoobank.org/urn:lsid:zoobank.org:act:7063051A-4961-4093-A48B-35BCE654D370>

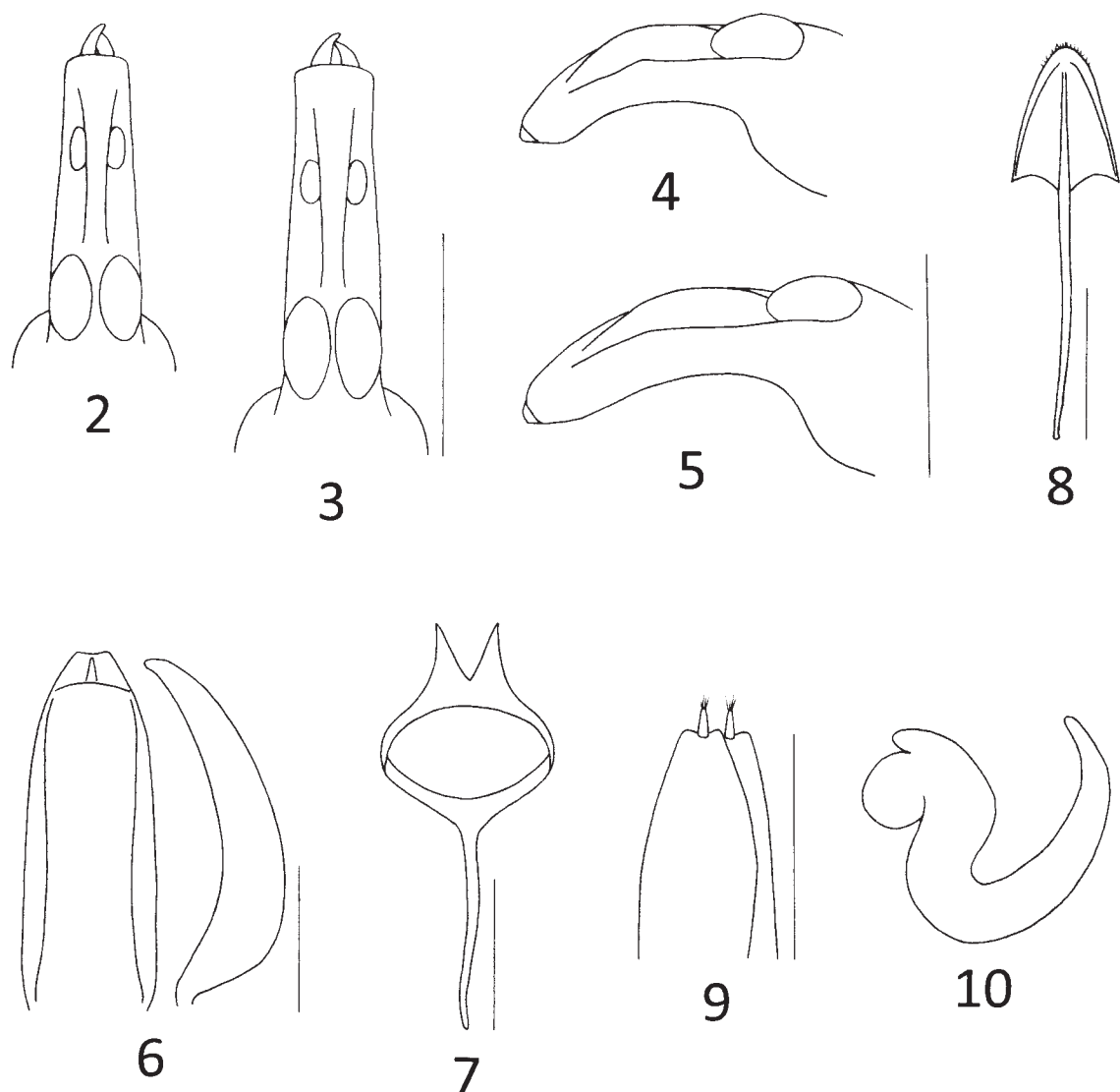
Description. Body length males 2.84–3.25 mm, females 3.74–4.03 mm, holotype 2.97 mm.

Body blackish, tibiae and tarsi brownish, antennae also brownish in partly teneral holotype. Elytra with appressed brownish and whitish scales, the latter with green and partly also pearly sheen. Brownish scales long, oval, hardly visible on blackish integument, not completely covering it, 4–5 across interstrial width. Whitish scales forming three conspicuous transverse stripes: basal stripe across interstriae 3–8, middle stripe across on 2–8 and posterior stripe across 2–7 (in male only across 5–7), female also with longitudinal stripe on interstriae 8 and 9 before apex of elytra. Whitish scales short, oval, wider than brownish ones, 5–6 across interstrial width, completely covering integument. Pronotum with two slender longitudinal stripes of appressed, whitish scales with greenish sheen, on disc with long, oval, brownish, appressed scales, both types directed mesad. Head behind eyes and also rostrum in basal half dorsally with sparse, long, oval, whitish scales with greenish lustre. Femora and tibiae sparsely covered by long, oval, appressed, whitish scales with greenish lustre.

Rostrum in male 2.08–2.17 × longer than wide at base, in female 2.57–2.62 ×; in dorsal view widest at base, evenly tapering anteriorly with almost straight sides, only in apical part with indistinctly concave sides, at base 1.33–1.40 × wider than at apex, before antennal insertions glabrous, finely, sparsely, indistinctly punctate. Rostrum in lateral view regularly curved, subparallel-sided, in basal half weakly thicker than in apical half, tapering shortly just before antennal insertions. Epifrons well edged along its whole length, laterally carinate, longitudinally grooved, very narrow, in basal half about as wide as quarter of rostral width, between antennal insertions about as wide as scapes at apex and weakly narrower than clubs, before antennal insertions weakly broadening anteriorly. Antennal scrobes dorsal, situated just before middle of rostrum, forming deep, long, oval fossae; laterally evanescent posteriorly and continued anteriorly, ventral border continued to ventral border of eyes, dorsal border coalescent with dorsal border of rostrum. Basal half of head very short, hemispherical; eyes placed on anterior, narrow part of head, dorsally flat, not protruding from outline of rostrum, very close together, space between them extremely narrow, narrower than scapes at base; laterally eyes protruding from dorsal outline of rostrum and head.



FIGURE 1. Dorsal habitus of *Haptomerus maculosus* sp. n.



FIGURES 2–10. Structural details of *Haptomerus maculosus* sp. n. 2. head with rostrum in male, dorsal view. Scale = 1.00 mm; 3. head with rostrum in female, dorsal view. Scale = 1.00 mm; 4. head with rostrum in male, lateral view. Scale = 1.00 mm; 5. head with rostrum in female, lateral view. Scale = 1.00 mm; 6. penis, dorsal and lateral view. Scale = 0.25 mm; 7. tegmen, dorsal view. Scale = 0.25 mm; 8. Sternite VIII of female, dorsal view. Scale = 0.50 mm; 9. ovipositor, dorsal view. Scale = 0.50 mm; 10. spermatheca. Scale = 0.25 mm.

Antennae very slender and long. Scapes exceeding anterior border of eye, $1.1\text{--}1.2 \times$ longer than funicle, straight, very slender, widened only at itself apex, at apex $0.6 \times$ as wide as club; funicles with segment 1 $3.6\text{--}4.5 \times$ longer than wide and $1.8\text{--}1.9 \times$ longer than segment 2, which is $2.2\text{--}2.6 \times$ longer than wide; segments 3–6 $1.5\text{--}1.7 \times$ longer than wide; segment 7 $1.3\text{--}1.5 \times$ longer than wide; clubs long oval, $1.8\text{--}1.9 \times$ longer than wide.

Pronotum $1.37\text{--}1.45 \times$ wider than long, widest at midlength, sides distinctly rounded, anteriorly conspicuously narrower than posteriorly; base straight; disc regularly vaulted, integument shiny, regularly coarsely punctate, intervals between punctures shorter than their diameter; anterior borders laterally straight.

Scutellum very small, almost invisible.

Elytra long oval, in male $1.21\text{--}1.24 \times$ longer than wide, in female $1.29 \times$, with humeral calli absent, apically pointed, with regularly rounded sides, widest before midlength; laterally distinctly vaulted. Striae distinctly punctate, moderately wide; interstriae almost flat, wider than striae.

Abdominal ventrites short and wide, subtriangular, evenly tapered apicad; ventrite 1 in the middle 3–4 × longer than ventrite 2, behind metacoxae slightly longer than ventrite 2; ventrite 2 short, only slightly longer than ventrite 3 or 4. Suture 1 straight, fine; sutures 2 and 3 straight, deep and wide. Ventrites sparsely covered with long, oval, appressed scales. Metaventral process obtuse, slightly shorter than transverse diameter of metacoxa.

Legs moderately robust. Femora adentate. Protibiae 7.3–7.5 ×, metatibiae 7.0 × longer than width at middle, equal in both sexes; protibiae with inner side distinctly sinuate and lateral side straight, inner side in apical half with 6 brownish denticles of different sizes, at apex rounded, enlarged inside, fringed with fine yellowish setae; metatibiae with inner side armed with 4–6 brownish denticles, smaller than those on protibiae, apical surface large, glabrous, corbels absent. Tarsi with segment 1 long, conical, 1.7–1.8 × longer than wide, distinctly thinner than segment 3; segment 2 isodiametric; segment 3 1.5–1.6 × wider than long and 1.7–1.8 × wider than segment 2; onychium as long as segment 3; claws of unequal length, connate at base, more robust in female than in male.

Penis in dorsal view almost subparallel-sided, roundly tapering in apical third, apical portion short, obtuse, with short shallow concavity; in lateral view thickest at base, weakly evenly narrowing apicad, curved, short apical part weakly curved ventrally. Tegmen with manubrium about 1.5 × longer than diameter of ring; parameres short, weakly sclerotised, joined at base. Sternite IX apically curved and tapered.

Female genitalia. Sternite VIII with slender, umbrella-shaped plate, distinctly longer than wide; apodeme about twice as long as plate, widest in middle, terminated near top of plate. Gonocoxites short and wide, weakly sclerotised, subtrapezoidal, at apex obtuse with short, slender, setose styli. Spermatheca with long, slender and curved cornu and slender corpus; ramus rounded, slightly wider than long; nodulus small, bump-shaped, curved anteriorly.

Material examined. Holotype: ♂, ‘N. W. Rhodesia [Zambia], Namwala, 18.III.1913, H. C. Dollman [lgt.]’ (BMNH). Paratypes: 12 ♂♂, ♀♀, the same data as holotype (BMNH); 2 ♂♂, 1 ♀, 5 spec., ‘ZAMBIA, 15 km E Serenje, Centr. pr., 13°12’82” N, 30°21’29” E, 19.-22.xii.2009, 1400 m, leg. F. Kantner’ (RBSC, MWWP).

Etymology. The species is named for its conspicuous elytra spots formed by the transverse setal stripes; the name is a Latin adjective.

Bionomy. Unknown.

Differential diagnosis. This is an unusual species in the genus *Haptomerus*, easily distinguishable from all others by its blackish elytra with three contrasting and conspicuous whitish transverse stripes. All other known *Haptomerus* species have the elytral vestiture unicolorous or with longitudinal stripes. The second unique feature of *H. maculosus* is its rostrum, which in dorsal view evenly tapers apicad, being distinctly thicker at the base than at the apex. The only species with a similar rostrum is *H. angolanus*, from which *H. maculosus* can be distinguished as stated below in the key:

Key to *Haptomerus* species

1. Elytra with conspicuous, long, sparse, piliform erect setae *H. natalis* Marshall
- Elytra without any erect setae 2
2. Body lacking appressed scales, integument metallic blue; rostrum short, 1.3–1.4 × longer than wide; epifrons between antennal scrobes 0.8–0.9 × as wide as width of rostrum at the same place. *H. aeneus* Hustache
- Body with distinct appressed scales, integument if partly visible brown to black without metallic sheen; rostrum long, 2.2–4.2 × longer than wide; epifrons between antennal scrobes 0.3–0.5 × as wide as width of rostrum at the same place. 3
3. Funicle segment 2 1.2–1.4 × longer than segment 1; appressed scales on elytra and pronotum unicolorously bright green with metallic sheen *H. lepidus* (Brullé)
- Funicle segment 1 1.4–1.6 × longer than segment 2; appressed scales on pronotum and elytra grey or brown, if greenish, then form only spots 4
4. Rostrum in dorsal view distinctly evenly tapered from base to apex; elytra with distinct transverse stripes or longitudinal stripes on intervals 3 and 5 5
- Rostrum in dorsal view parallel-sided or even slightly enlarged apicad at anterior part; elytra without stripes or with darker longitudinal stripe at intervals 2–4. 6
5. Elytra with three conspicuous transverse stripes; disc of pronotum and elytra with long, oval, sparse, dark brownish, appressed scales; funicle segments 1 1.8–1.9 × longer than segment 2; tarsal segments 3 and onychia equally long
- Elytra with distinct longitudinal stripe at basal half of interstria 3, interrupted longitudinal stripe on interstria 5 and complete stripe on external interstriae; disc of pronotum and elytra with rounded, dense, pale brownish, appressed scales; funicle segments 1 1.4–1.6 × longer than segment 2; tarsal segments 3 1.5 × longer than onychium. *H. maculosus* Borovec & Nakládal, sp. n.
- Elytra with distinct longitudinal stripe at basal half of interstria 3, interrupted longitudinal stripe on interstria 5 and complete stripe on external interstriae; disc of pronotum and elytra with rounded, dense, pale brownish, appressed scales; funicle segments 1 1.4–1.6 × longer than segment 2; tarsal segments 3 1.5 × longer than onychium. *H. angolanus* Marshall

6. Onychium very short, 0.4 × as long as tarsal segment 3; elytra with rounded appressed scales, small brownish and twice bigger greyish. *H. brevitarsis* Voss
 - Onychium long, at least 0.8 × as long as tarsal segment 3; elytra with rounded appressed scales of equal size or with differently sized, then oval to long oval 7
7. Apical part of rostrum densely squamose; elytral striae linear, very slender, many times narrower than wide interstriae; appressed scales completely covering integument on pronotum *H. limis* (Gyllenhal)
 - Apical part of rostrum glabrous, shiny; elytral striae distinctly punctured, almost as wide as narrow interstriae; appressed scales sparsely covering pronotum, integument visible 8
8. Punctures on elytra form regular striae; elytra with spots of denser appressed scales on short base of intervals 3 and 7 with 8, and small spots at apical third of intervals 3–7 or 5–7 *H. mashunus* Marshall
 - Elytra irregularly punctate, punctures confused, not forming striae; elytra with somewhat denser stripes on intervals 3 and 7. *H. confusus* Marshall

Note. I did not examine *H. affinis* Voss. In its original description this species is compared with *H. mashunus*, and according to Voss, it differs by the interocular space somewhat wider than rostrum between antennal scrobes; rostrum in apical part not flattened, squamose and only weakly curved.

***Haptomerus aeneus* Hustache, 1921**

Haptomerus aeneus Hustache, 1921: 42.

Material examined. 1 specimen (RBSC): Uganda, Buvuma Island, Vumba bay, iii.1968, E. Vertriest lgt.

Remarks. This is a very unusual species by its glabrous, metallic blue body and short rostrum with wide vertex and epifrons. The species is here newly recorded for Uganda.

***Haptomerus angolanus* Marshall, 1958**

Haptomerus angolanus Marshall, 1958a: 124.

Material examined. 1 female (BMNH): Type [p, rounded with red border] / Cuchi, Menongue, S.E.ANGOLA, Padre Eduardo, Dec. 1950 [p] / *Haptomerus angolanus* Mshl., TYPE ♀ [hw].

Remarks. This small species is easily distinguishable from all others by its evenly tapered rostrum and by its elytra having a contrasting longitudinal stripe on the third interstria, consisting of dense, whitish, rounded, appressed scales.

***Haptomerus brevitarsis* Voss, 1962**

Haptomerus brevitarsis Voss, 1962: 228.

Material examined. 1 female (SMDG): Congo belge [Democratic Republic of Congo]: P.N.U. [Parc National de L'Upemba], Gr. [Grande] Kafwe affl. Dr. Ludwa (affl. Dr. Lufira, 1 780 m, 5.iii.1948, Mis. G. F. De Witte lgt.

Remarks. The species was described from Mukana-Lusinga in the Democratic Republic of the Congo. It can easily be recognised by its extremely short onychia, being only 0.4× as long as the tarsal segment 3.

***Haptomerus confusus* Marshall, 1958**

Haptomerus confusus Marshall, 1958b: 712.

Material examined. 2 specimens (BMNH): Cotype [p, rounded with yellow margin] / Bamenda 17.12.55 [p] / Exped. Mus. G. Frey, Nigeria-Kamerun, Bechyne 1955-56 [p] / *Haptomerus confusus*, Mshl., TYPE ♂ [hw, ♀ in second specimen].

Remarks. This species, described from Bamenda in Cameroon, is most similar to *H. mashunus* in its body size

and shape but distinguishable by its irregularly punctate elytra, distinct granulate pronotum and parallel-sided rostrum.

***Haptomerus limis* (Gyllenhal, 1836)**

Myorhinus limis Gyllenhal, 1836: 532.

Haptomerus limis: Schenkling & Marshall 1931: 5; Osella *et al.* 1998: 231.

Material examined. 1 ♂, South Africa, Eastern Cape mer., Peddie env., 33 03.6 S, 27 12.8 E, 150 m, 24.xi.2015, M. Košťál lgt. (RBSC); 5 spec., South Africa, KwaZulu-Natal, Pietermaritzburg, Schwarze, 1910 (SMDG); 5 spec., South Africa, Orange Free State, 8.iv.1928 (BMNH).

Remarks. This species was described from Caffraria (South Africa) and is readily distinguishable from all other *Haptomerus* species by its rostrum apically squamose, not being dorsally carinate or sulcate.

***Haptomerus mashunus* Marshall, 1908**

Haptomerus mashunus Marshall, 1908: 24. Schenkling & Marshall 1931: 5.

Haptomerus mashuanus (lapsus): Osella *et al.* 1998: 231.

Material examined. 2 specimens (BMNH): 1 ♂ 1 ♀, Type [p, rounded with red margin] / Salisbury, Mashonaland, Jan. 1906, G. A. K. Marshall, 1909-39. [hw] / *Haptomerus mashunus*, Mshl. TYPE ♂ [hw, Marshall's handwriting, ♀ in second specimen]. 1 spec., Mashonaland [Zimbabwe], Salisbury, G. A. K. Marshall (BMNH); 2 spec., Mashonaland [Zimbabwe], Salisbury, March 1906, G. A. K. Marshall (BMNH); 90 spec., Nyasaland [Malawi], Plateau on Mlanji Mt., 6,000-7,000 ft. [1 830-2 130 m], 1-2 May 1910, S. A. Neave [lgt.] (BMNH); 1 ♀, Malawi, Dedza, 19.-22.iii.2000, B. Malec lgt. (BMSC).

Remarks. Specimens from the Mlanje Plateau of Malawi have a smoother, shinier and less distinctly punctate pronotum and elytra, but in all other characters they agree with the type specimens from Salisbury. The species is here newly recorded for Malawi.

***Haptomerus natalis* Marshall, 1908**

Haptomerus natalis Marshall, 1908: 25. Schenkling & Marshall 1931: 5; Osella *et al.* 1998: 231.

Material examined. 1 specimen, Type HT [p, rounded with red border] / Estcourt, Natal, G. A. K. Marshall [p] / *Haptomerus natalis*, Mshl., TYPE [hw].

Remarks. This is an easily recognisable species by its small size (length less than 2 mm) and the long, erect setae on the elytra and the very short rostrum, 1.2 × longer than wide in the male and 1.5 × in the female.

Relationships of *Haptomerus*

The relationships of *Haptomerus* from the Afrotropical region and from southern Europe have not been addressed, it being assumed that only one genus existed (e.g. Marshall 1908, Osella *et al.* 1998); however, Oberprieler (1995) has stated that “African species of *Haptomerus* are not congeneric with those of Europe”, and “the African members of *Haptomerus* differ from the Palearctic ones in possessing a rostral groove and are thus presumably derived from a different ancestor, presumably an African member of Peritelini“. Evaluation of the transverse groove separating the rostrum from the remaining part of the head is difficult in the view of the fact that the eyes are dorsally almost contiguous along their inner margins and the space between the epifrons and eyes is thus only extremely short. A transverse sulcus is not clearly visible in *Haptomerus* as in similar Afrotropical genera having a clear sulcus, such as *Nastomma* Marshall, 1908 or *Ephimerostylus* Faust, 1895. In several species the sulcus is

more visible, as for example in *H. limis*, or in some species almost invisible, as in *H. brevitarsis*. The only species with a wide vertex, *H. aeneus*, where evaluation of this character is clear, clearly lacks this sulcus. In assessment of other characters, Afrotropical *Haptomerus* are similar to European species in the very slender space between antennal insertions, rostrum laterally denuded of scales, slender mandibles, dorsal border of scrobe coalescent with dorsal border of rostrum in lateral view and reaching ventral border of eye, eyes very dorsally placed, nearly contiguous, first tarsal segment enlarged, abdominal ventrites with ventrite 2 slightly longer than ventrite 3 or 4 with suture between ventrite 1 and 2 straight, metaventral process narrower than transverse diameter of metacoxa, female sternite VIII with plate narrowly subtriangular with membranous posterior margin and ovipositor with short apical styli. All these characters make both Mediterranean and Afrotropical *Haptomerus* related. Contrary to these synapomorphies, at least *H. aeneus* differs by a wide vertex, a wide epifrons mainly due to space between antennal insertions and eyes completely placed in the elongated part of the head. The elongation of the head is evident to a different degree among all *Haptomerus* species. In *H. limis* and *H. maculosus* sp. n. almost the entire eye portion of the head is narrowed and elongate, while in *H. aeneus* the entire eye portion including the portion behind the eyes is elongate, so the head and rostrum together form a cylindrical tube and only the short posterior part of head enlarged. While *Haptomerus* is easily possible to separate from the similar genus *Apsis* Germar, 1820 by the edentate femora, suture between ventrites 1 and 2 straight and ovipositor with styli (*Apsis* has all femora distinctly dentate, suture between ventrites 1 and 2 conspicuously sinuate and ovipositor lacking styli), its position with respect to the more recently described *Parhaptomerus* Osella & Lodos, 1979 is still unclear. *Parhaptomerus* was described based only on several characters such as punctation of striae, vaulting of elytral interstriae or ratio between tarsal segments 1 and 3, which differs also among all *Haptomerus* species. The only two characters which could be used to distinguish the genera are the suture between ventrite 1 and 2 slightly sinuate in *Parhaptomerus* (straight in *Haptomerus*) and eyes placed on narrow, elongate part of head (but this character varies in *Haptomerus*). Additional material of *H. aeneus* or species related to it can help to resolve what species belong in *Haptomerus*, and also its relationship to *Parhaptomerus*, as well as the status of the Afrotropical and European species.

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Ellimenistes humeralis Marshall, 1947 and its allies (Coleoptera: Curculionidae: Entiminae: Embrithini)

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Abstract

The *Ellimenistes humeralis* Marshall, 1947 species group is defined. *Ellimenistes humeralis* is redescribed, three new species belonging to this species group are described, illustrated and keyed: *E. janaki* Borovec & Nakládal, **sp. nov.**, *E. marshalli* Borovec & Nakládal, **sp. nov.** and *E. raucus* Borovec & Nakládal, **sp. nov.**, all from South Africa, Eastern Cape. A lectotype of *Ellimenistes humeralis* Marshall, 1947 is designated. The diagnosis of the genus *Ellimenistes* is completed with illustrations of the female genitalia provided for the first time.

Key words: Entiminae, Embrithini, *Ellimenistes*, taxonomy, Afrotropical region

Introduction

The genus *Ellimenistes* was described by Boheman in 1843 and belongs to the tribe Embrithini Marshall, 1942 (Oberprieler 1995, Borovec & Oberprieler 2013). At present it includes 40 species, described at the end of the 19th century, and in the first half of the 20th century. The latest species described was published by Marshall in 1953. The genus has never been revised, although comprises a moderately large number of species. Furthermore, no identification key was ever published. The genus is only known from South Africa, Namibia and Mozambique (Alonso-Zarazaga & Lyal 1999), with the majority of species living in South Africa, mainly in the southern and western parts.

Taxonomic position of *Ellimenistes* Boheman, 1843

The genus *Ellimenistes* is a moderately well defined genus within the Embrithini by its small body size, rostrum separated from head by a slender transverse sulcus, a very slender epifrons between antennal insertions, a very long and slender antennal scape and funicle, and wide squamose metatibial corbels. The present definition of the genus allows for the placement of the majority of species, but there is also a group of species not showing typical characters of the rostrum and antennae. For this reason it makes sense to complete the definition of the genus by addition of a description of the female sternite VIII, which is different from all other Embrithini genera. This character allows for the placement of atypical species which also belong to *Ellimenistes*. The female sternite VIII of species of *Ellimenistes* has a long and slender apodeme, 3.5–4.0× as long as the small subtriangular plate, with slender but developed anterior as well as posterior margins (Figs 20–23). All other Embrithini genera known to the first author have a large, umbrella-shaped plate of sternite VIII with ill-defined posterior margin and apodeme at most twice as long as plate (Fig. 24). The relationship of *Ellimenistes* with the similar genus *Cosmorhinus* Schoenherr, 1826, including three described species, remains unclear. Both genera are differentiated by the rostrum

with a transverse sulcus between head and rostrum in *Ellimenistes*, or rostrum continuous with head in *Cosmorhinus* (Lacordaire 1863). But if the dorsal space of the dorsal part of the head of *Cosmorhinus* is cleaned from appressed scales, a slender transverse sulcus is also present in *Cosmorhinus*, only slightly visible or hidden under scales. Even more the female genitalia from the only dissected female of the species *C. cervinus* Boheman, 1843 (a specimen from Eastern Cape, compared with syntype of *C. cervinus* deposited in Schoenherr's collection in Naturhistoriska Riksmuseet, Stockholm, Sweden), shows an identical sternite VIII as it was characterised above for the *Ellimenistes* species (Fig. 25). Hence the relationships of these two genera must be reviewed by a deeper study of the morphological structures of *Cosmorhinus* species and also by examining the type species of the genus, *C. cristirostris* Schoenherr, 1826, which was unfortunately not available for the present study.

A very exceptional species compared to all known members of *Ellimenistes* is *E. humeralis* Marshall, 1947, due to its shorter and more robust antennae and subhumeral calli visible in dorsal view. This peculiar species is joined by three new species with a similar appearance. Their description is the aim of the present article. Marshall himself noted on a small label below one specimen of one of these newly described species—*E. marshalli* **sp. nov.**—the following: ‘Not *Ellimenistes*, funicle subhum. tubercle’. But instead he described a similar looking species as *E. humeralis* within the genus *Ellimenistes* and stated in his description: ‘the general facies rather suggests that of *Trachyphloeus*’. While all other *Ellimenistes* species have very long scapes, reaching clearly behind midlength of pronotum when folded, 11–12× as long as at apex wide and funicle segment 2 long and slender, 3.5–6.5× longer than wide and usually twice or more longer than segment 1, *E. humeralis* and three similar species have scapes not reaching to midlength of pronotum, 6–8× as long as at apex wide and funicle segment 2 less than 3× longer than wide, equally long as funicle 1 or even shorter. *Ellimenistes humeralis* and *E. marshalli* **sp. nov.** even have distinct subhumeral calli on base of intervals 7 and 8, which helps to differentiate these two species from all other members of *Ellimenistes*. However, based on the female terminalia, these four species can be kept in the genus *Ellimenistes*, and they form the group of species being probably more related to a terricolous way of life than the others, which are mostly floricolous species. Terricolous species of entimines in general have the tendency for shorter and more robust antennae and legs, as it can be seen in terricolous species of Afrotropical genera such as *Afrophloeus* Borovec & Oberprieler, 2013, or *Nama* Borovec & Meregalli, 2013. Strong soil encrustations of the bodies of all type specimens of *E. janaki* **sp. nov.** and *E. raucus* **sp. nov.** also support this hypothesis.

Material and methods

Body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of the elytra, excluding the rostrum. The width/length ratio of the rostrum was measured as the maximum width at base versus the maximum length from anterior border of eyes to the base of the mandibles. Width/length ratios of pronotum, elytra, antennal and tarsal segments were taken at the maximum width and length of the respective parts in dorsal view. Female genitalia were embedded in Solakryl BMX (Medika, Prague); male genitalia were mounted dry on the same card as the respective specimen. Habitus images were taken with a Canon EOS 5D mark II in combination with a Canon MP-E65 1-5× macro lens. The resulting images were focus stacked by Zerene Stacker and post-processed in Adobe Photoshop CC 2015. The terminology of the rostrum and the genitalia follows Oberprieler *et al.* (2014).

The material is deposited in the following collections (identified by the acronyms):

- JJRC Jirí Janák collection, Rtyň nad Bílinou, Czech Republic;
- BMNH Natural History Museum, London, United Kingdom (British Museum of Natural History); Maxwell Barclay;
- RBSC Roman Borovec collection, Sloupno, Czech Republic;
- TMSA Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa; Ruth Müller.

Taxonomy

Ellimenistes humeralis Marshall, 1947

(Figs 1, 4, 7, 16, 20, 26)

Ellimenistes humeralis Marshall, 1947: 198.

Type locality. South Africa, Eastern Cape, Alexandria.

Type material examined. Lectotype (here designated), 1 spec. (BMNH): ‘Type [p, rounded, red margin] / [South Africa, Eastern Cape] Alexandria May 1946 Acc. PE. 232 [hw, green margin] / Destroying seadling chicory [hw] / *Ellimenistes humeralis*, Mshl. TYPE ♂ [hw, Marshall’s handwriting] / Pres by Imp. Inst. Ent. B. M. 1947-354 [p] / LECTOTYPUS *Ellimenistes humeralis* Marshall, R. Borovec desig. 2018’ [red, printed]. Paralectotypes: 1 ♀ (BMNH), ‘Cotype [p, rounded, yellow margin] / [South Africa, Eastern Cape] Alexandria May 1946 Acc. PE. 232 [hw, green margin] / *Ellimenistes humeralis*, Mshl. COTYPE ♀ [hw, Marshall’s handwriting] / Pres by Imp. Inst. Ent. B. M. 1947-354 [p] / PARALECTOTYPUS *Ellimenistes humeralis* Marshall, R. Borovec desig. 2018’ [red, printed]; 1 ♀ (BMNH), ‘[South Africa, Eastern Cape] Alexandria May 1946 Acc. PE. 232 [hw, green margin] / G. A. K. Marshall Coll. B. M. 1950-255 [p] / *Ellimenistes humeralis*, Mshl. COTYPE ♂ [hw, Marshall’s handwriting] / PARALECTOTYPUS *Ellimenistes humeralis* Marshall, R. Borovec desig. 2018’ [red, printed].

Redescription. Body length 3.56–3.74 mm, lectotype 3.72 mm. Elytra with small dense appressed scales, 6–7 across width of one interval, scales rounded, indistinctly striolate, isolated. Each elytral interval with one regular, inconspicuous row of semiappressed, subspatulate setae, apically rounded, distinctly striolate, at base only slightly longer than diameter of one appressed scale, at apical declivity as long as a third to quarter the width of interval and weakly wider than diameter of one appressed scale, distance of two setae 2–3× longer their length. Pronotum and head with rostrum with dense, short, irregularly scattered spatulate appressed setae. The whole antennae and legs densely covered by rounded appressed setae and semiappressed slender setae. Elytra light brownish or dark brownish, with several small spots from greyish scales.

Rostrum (Figs 4, 7) 1.13–1.18× wider than long, narrowest at base, weakly enlarged apicad with slightly rounded sides; laterally distinctly convex, angularly separated from head by transverse sulcus. Epifrons at apical half subtriangular, conspicuously tapered posteriad with slightly convex sides, at middle as wide as quarter to fifth of rostral width, at basal part weakly enlarged posteriad, distinctly narrower than space between eyes; dorsally with longitudinal median furrow. Epistome V-shaped, small, posteriorly narrowly carinated. Frons very narrow, create narrow stripe along the epistome. Scrobes dorsally open, pit-shaped; laterally furrow-shaped, narrow, weakly curved, directed to middle of eyes, separated from them by wide squamose space. Eyes moderately large, distinctly vaulted and distinctly prominent from outline of head. Vertex tapered anteriorly with convergent striae, hidden by scales.

Antennal scape 1.2× longer than funicle, curved at basal half, at short apical part evenly enlarged, at apex equally wide as club. Funicle with segments 1 and 2 equally long and wide, conical, 2.3–2.4× longer than wide; segments 3 and 4 1.3–1.4× longer than wide; segments 5 and 6 isodiametric; segment 7 1.2× wider than long; club 2.0–2.2× longer than wide.

Pronotum (Fig. 1) 1.73–1.81× wider than long, subtrapezoidal, widest at base, evenly tapered anteriorly with anterior border distinctly narrower than posterior one, behind anterior border constricted. Disc pulvinate and acinose, with slender longitudinal furrow at basal half and slender keels at basal third before elytral interval 5 and 7. Base V-shaped, posteriorly elongate. Pronotum laterally flat, lowered at anterior third.

Elytra (Fig. 1) oval, 1.19–1.22× longer than wide, with slightly rounded sides and broadly rounded apex, sinuate at base; striae narrow, intervals wide and flat, intervals 3, 5, 7 and 8 behind base elevated, dorsally with angular projection on interval 7, prominent laterally and another behind it on interval 8. Elytra laterally weakly regularly vaulted.

Protibia short and robust, externally straight, internally at apex distinctly enlarged inside, fringed with dense row of very short, brownish spines. Metatibia with apical surface squamose and with wide and significant, densely squamose corbel, fringed externally and internally by row of very short spines. Tarsal segment 2 1.2–1.3× wider than long; segment 3 1.4–1.5× wider than long and 1.4–1.5× wider than segment 2; onychium 1.6–1.7× longer than segment 3; claws solidly fused at basal half.

Male terminalia unknown.

Spermatheca (Fig. 16) with slender and irregularly curved cornu; corpus large, rounded, elongate; ramus small and short, rounded, curved downwards; nodulus slender and very long, about 6× longer than wide, U-shaped curved with apical half curved downwards, tightly pressed along the body. Sternite VIII (Fig. 20) with long and slender apodeme lacking transverse anterior bar and small, regularly triangular plate with slender but developed anterior and posterior margins and slender longitudinal median sclerite, fringed at apex with fine setae. Gonocoxites (Fig. 26) flat, slender, evenly tapered apicad with slender apical styli with setae.

Biology. The type specimens were collected destroying seedling chicory (Marshall 1947).

Differential diagnosis. Among *Ellimenistes* species with funicle segments 1 and 2 equally long this species is easily recognized by rostrum narrowest at base, eyes distinctly prominent and setae at posterior elytral declivity appressed, short as a third of width of elytral interval.

Remarks. The species was described based on six specimens. It has never been collected again since the time of the description. The lectotype is pinned by a thin and short pin with a rectangular label, not remounted, lacking right antenna, right anterior tarsus and complete left middle leg. Both paralectotypes were remounted and dissected by the first author. Deposition of other three paralectotypes is unclear. They were not found in Marshall's collection in The Natural History Museum. Marshall in his original description stated "Received from the Division of Entomology, Pretoria". They could be deposited either in the South African National Collection of Insects or in the Ditsong National Museum of Natural History.

***Ellimenistes janaki* Borovec & Nakládal, sp. nov.**

(Figs 2, 5, 8, 10, 13, 17, 21, 27)

<http://zoobank.org/urn:lsid:zoobank.org:act:43FCE218-4C3A-4956-8EAA-4F778DBF6928>

Type locality. South Africa, Eastern Cape, Ntsubane forest.

Type material. Holotype: ♂, 'S. Afr. [South Africa], Transkei [Eastern Cape], Ntsubane forest, 31.27 S–29.44 E, 25.11.1988; E-Y: 2579, forest floor litter, leg. Endrödy-Younga' (TMSA). Paratypes: 1 ♀, the same data as holotype, but '25.11.1987, E-Y: 2537, fungi & for. litter' (TMSA); 1 ♂ 2 ♀♀, 'South Africa, Eastern Cape, Mbotyi Forest, 31°27' S, 29°44' E, 1.-3.xii.2006, forest litter, J. Janák lgt.' (JJRC, RBSC).

Description. Body length 3.47–3.86 mm, holotype 3.86 mm. Elytra with moderately large appressed scales, 5 across one interval, scales rounded, weakly striolate, slightly imbricate. Each interval with one regular row of semierect setae, distinctly bent backwards, slender, parallel-sided, slightly longer than half the width of one interval, equally long at basal as well as at apical part. Pronotum and head with rostrum densely irregularly scattered with equal semierect setae as those on elytra, only somewhat shorter. Antennae and legs with dense appressed scales and with distinct, semierect, slender, bristle-shaped setae. Elytra with spots of dark brownish and light greyish brown scales, light scales create irregular transverse stripes.

Rostrum (Figs 5, 8) short and wide, 1.41–1.44× wider than long, widest at base, slightly tapered anteriorly with indistinctly concave sides; laterally weakly convex and shallowly separated from the head. Epifrons at apex narrow, twice as wide as club, weakly tapered posteriorly, narrowest at midlength and here occupied a third of rostral width, at basal half slightly enlarged posteriorly, at base distinctly narrower than space between eyes; dorsally shallowly longitudinally deepened. Epistome V-shaped, small, posteriorly narrowly carinate. Frons glabrous, very narrow, create narrow stripe along the epistome. Scrobes dorsally open, pit-shaped; laterally short, subtriangular, directed towards eyes, separated from them by wide squamose space equal to their length. Eyes small, widest slightly behind midlength, hardly prominent from outline of head, with low supraocular longitudinal tubercle. Vertex weakly tapered anteriorly, shallowly deepened.

Antennae with scape 1.4× longer than funicle, curved at basal third and evenly enlarged at its tip, at apex as wide as club. Funicle with segment 1 the largest, conical, 1.7–1.8× longer than wide and 1.8–2.0× longer than segment 2, which is 1.4–1.5× longer than wide; segments 3–7 isodiametric; club 2.3–2.5× longer than wide.

Pronotum (Fig. 2) 1.34–1.43× wider than long, widest at basal third with rounded sides, distinctly more tapered anteriorly than posteriorly. Disc with ill-defined, shallow longitudinal median furrow, hardly visible with appressed scales. Base straight. Pronotum laterally convex.

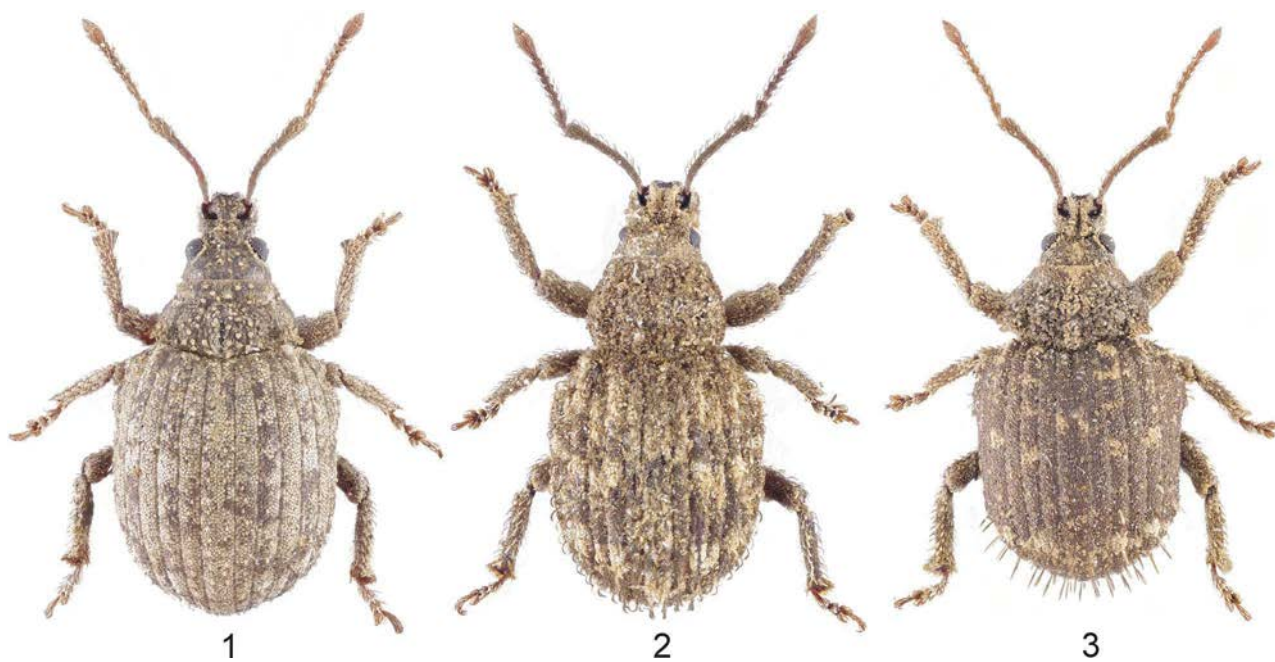
Elytra (Fig. 2) oval, 1.22–1.26× longer than wide, with weakly rounded sides and obliquely subtruncate

humeral calli. Intervals 3, 5 and 7 weakly more elevated along the whole length, intervals 7 and 8 without angular projection behind the base. Elytra laterally weakly regularly convex.

Protibia short and robust, apex externally straight and internally distinctly widened inside and mucronate, apex fringed by dense row of yellowish setae. Metatibia with apical surface subtriangular, glabrous and shiny and with distinct, wide, densely squamose corbel, separated externally and internally by dense fringe of short yellowish setae, distinctly longer in inner fringe. Tarsi with segment 2 1.5–1.6× wider than long; segment 3 1.3–1.4× wider than long and 1.5–1.6× wider than segment 2; onychium 1.3–1.4× longer than segment 3; claws solidly fused at basal half.

Penis (Fig. 10) slightly widest at base, tapered apicad with slightly concave sides, apex regularly pointed with slightly convex sides; laterally weakly regularly curved, widest at midlength, evenly tapered apicad without separated tip; temones 1.7× longer than body of penis. Tegmen (Fig. 13) with slender ring and short, slender, pointed parameres, distinctly shorter than diameter of ring; tegminal manubrium short, 1.6× longer than diameter of ring. Sternite IX with slender apical plate.

Spermatheca (Fig. 17) with very short and wide, curved, pointed cornu; corpus small, rounded; ramus tube-shaped, twice longer than wide, at base distinctly curved downwards and pressed to corpus; nodulus perpendicularly directed upwards, straight or weakly curved, tube shaped, 3.0–3.5× longer than wide, widest at base and slightly evenly tapered apicad, longer than cornu. Sternite VIII (Fig. 21) with plate subtriangular, almost as wide as long, at apex distinctly constricted, with distinctly concave sides. Gonocoxites (Fig. 27) as in *E. humeralis*.

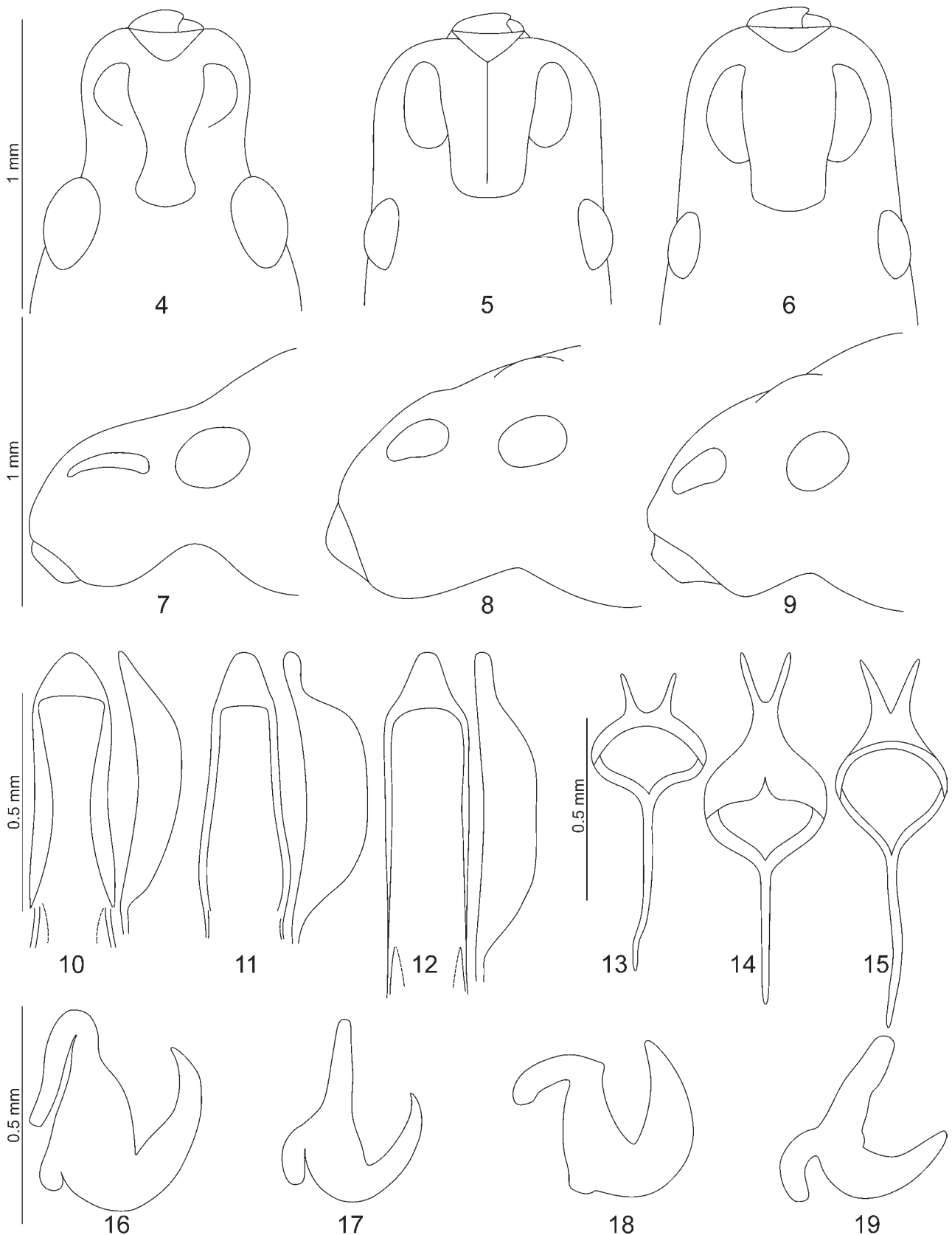


FIGURES 1–3. Dorsal habitus of *Ellimenistes* Boheman. 1. *E. humeralis* Marshall; 2. *E. janaki* sp. n.; 3. *E. marshalli* sp. n.

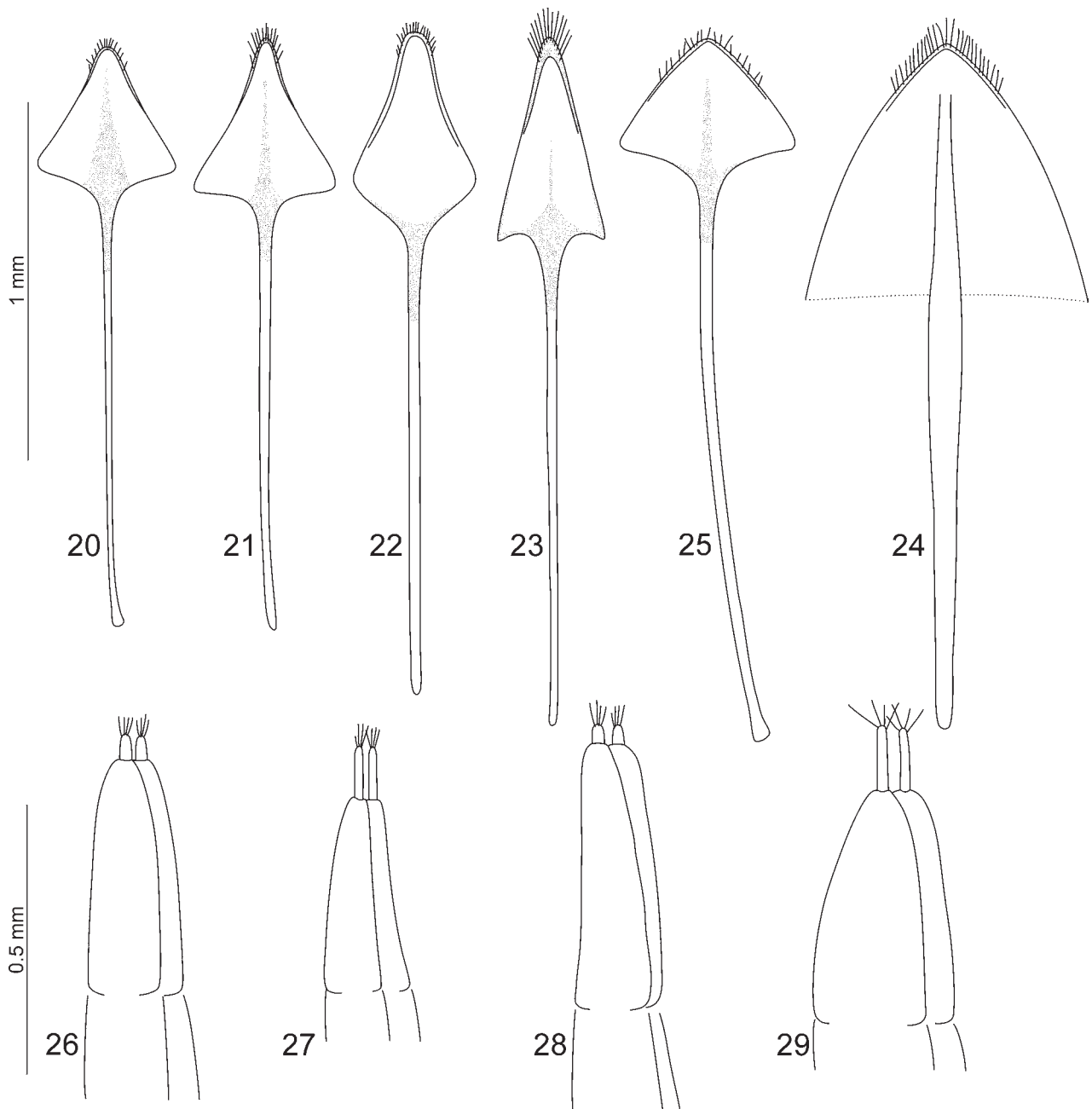
Biology. The type material was sifted from forest floor litter.

Etymology. The new species is dedicated to the long-standing friend of the first author, Jiří Janák (Rtyně nad Bílínou, Czech Republic), excellent specialist of Staphylinidae, who provided us with extensive sifted material of small terricolous weevils from South Africa.

Differential diagnosis. Among species with funicle segment 1 not longer than segment 2 this species is easily separated by rostrum widest at base and tapered anteriorly, semierect elytral setae distinctly bent backwards, slender pronotum widest at basal third with straight base and elytra without angular projection behind base. The only similar species sharing these characters is *E. raucus* sp. nov., from which it can be distinguished by the characters stated below in the key.



FIGURES 4–19. Structural details of *Ellimenistes* Boheman. Figs 4–6, head with rostrum, dorsal view: 4. *E. humeralis* Marshall; 5. *E. janaki* sp. n.; 6. *E. raucus* sp. n. Figs 7–9, head with rostrum, lateral view: 7. *E. humeralis* Marshall; 8. *E. janaki* sp. n.; 9. *E. raucus* sp. n. Figs 10–12, penis, ventral and lateral view: 10. *E. janaki* sp. n.; 11. *E. marshalli* sp. n.; 12. *E. raucus* sp. n. Figs 13–15, tegmen, dorsal view: 13. *E. janaki* sp. n.; 14. *E. marshalli* sp. n.; 15. *E. raucus* sp. n. Figs 16–19, spermatheca: 16. *E. humeralis* Marshall; 17. *E. janaki* sp. n.; 18. *E. marshalli* sp. n.; 19. *E. raucus* sp. n.



FIGURES 20–29. Structural details of *Ellimenistes* Boheman, *Cycliscus* Schoenherr and *Cosmorhinus* Schoenherr. Figs 20–25, sternite VIII of female, dorsal view: 20. *Ellimenistes humeralis* Marshall; 21. *E. janaki* sp. n.; 22. *E. marshalli* sp. n.; 23. *E. raucus* sp. n.; 24. *Cycliscus caecicollis* Boheman; 25. *Cosmorhinus cervinus* Boheman. Figs 26–29, ovipositor, dorsal view: 26. *Ellimenistes humeralis* Marshall; 27. *E. janaki* sp. n.; 28. *E. marshalli* sp. n.; 29. *E. raucus* sp. n.

***Ellimenistes marshalli* Borovec & Nakládal, sp. nov.**

(Figs 3, 11, 14, 18, 22, 28)

<http://zoobank.org/urn:lsid:zoobank.org:act:CA16AB12-4E4C-46AF-8FBA-D8AA3F354BF8>

Type locality. South Africa, Eastern Cape, Port Elizabeth.

Type material. Holotype: ♂, ‘[South Africa, Eastern Cape], Algoa Bay [Port Elizabeth now], Cape Col., Dr. Brauns [lgt.]’ (BMNH). Paratypes: 3 ♂♂, the same data as holotype (BMNH); 1 ♂, ‘[South Africa, Eastern Cape] Capland, Algoa Bay [Port Elizabeth now], 1.12.[18]95, Dr. Brauns [lgt.]’ (BMNH); 1 ♂ 1 ♀, ‘[South Africa, Eastern Cape], Algoa Bay [Port Elizabeth now], Capland, Dr. Brauns [lgt.]’ (BMNH).

Description. Body length 3.44–4.16 mm, holotype 3.51 mm. Elytra with moderately large appressed scales, 5–6 across one interval, scales rounded, slightly striolate, slightly imbricate. Each elytral interval with one regular row of setae, very different in shape and length: 1. disc with inconspicuous, semiappressed, subspatulate setae, apically rounded, weakly striolate, faintly longer and wider than one appressed scale, and 2. apical declivity with conspicuous erect setae, slender, parallel-sided, apically subtruncate, slightly longer than width of one interval, distance of two setae equal to their length. Pronotum and head with rostrum with dense, short, irregularly scattered spatulate appressed setae. The whole antennae and legs densely covered by rounded appressed setae and semiappressed slender setae. Elytra with dark blackish brown and light brownish small spots, intervals 3 and 5 also with several spots of greyish scales.

Rostrum and head as in *E. humeralis* (Figs 4, 7), only 1.19–1.25× wider than long.

Antennae with scape 1.2× longer than funicle, curved at basal third and weakly enlarged at apical part, at apex 1.2× as wide as club; funicle segments 1 and 2 conical, equally wide, segment 2 1.1× longer than segment 1; segment 1 2.1× longer than wide; segment 2 2.3–2.4× longer than wide; segment 3 1.3–1.4× longer than wide; segment 4 1.2–1.3× longer than wide; segments 5–7 isodiametric; club 2.0–2.2× longer than wide.

Pronotum (Fig. 3) as in *E. humeralis*, 1.64–1.71× wider than long.

Elytra (Fig. 3) 1.14–1.18× longer than wide, oval, subparallel-sided with straight sides, apically broadly rounded, at base sinuate; striae narrow, intervals wide and flat, intervals 3 and 5 behind base elevated and anteriorly exceeding the base, intervals 7 and 8 with a distinct basal projection, distinctly prominent laterally, projection on interval 8 shortly behind that on interval 7. Elytra laterally weakly regularly vaulted.

Tibiae as in *E. humeralis*. Tarsi with segment 2 1.3–1.4× wider than long; segment 3 1.3–1.4× wider than long and 1.2× as wide as segment 2; onychium 1.4× longer than segment 3; claws solidly fused at basal half.

Penis (Fig. 11) short and slender, widest at base, tapered apicad with concave sides, apex narrowly rounded; laterally weakly regularly curved, wide, evenly tapered apicad, tip elongate, drop-shaped; temones 2.6–2.8× longer than body of penis. Tegmen (Fig. 14) with wide ring and distinct, basally shortly connected parameres, tegminal manubrium short, 1.4× longer than diameter of ring. Sternite IX with slender apical plate.

Spermatheca (Fig. 18) with regularly curved cornu and elongate, apically tapered and slightly curved corpus; ramus very short, rounded, hump-shaped; nodulus tube-shaped, twice longer than wide, weakly curved, half as long as cornu. Sternite VIII (Fig. 22) and gonocoxites (Fig. 28) as in *E. humeralis*, only plate of sternite VIII with concave sides.

Biology. Unknown.

Etymology. The newly described species is dedicated to the excellent expert of South African entomines, Guy Anstruther Knox Marshall (1871–1959), who described several new *Ellimenistes* species and who made a big contribution to the knowledge of that genus.

Differential diagnosis. Among species of the *E. humeralis* group this species is easily distinguishable by setae at posterior elytral declivity conspicuous, erect, about as long as width of one interval.

***Ellimenistes raucus* Borovec & Nakládal, sp. nov.**

(Figs 6, 9, 12, 15, 19, 23, 29)

<http://zoobank.org/urn:lsid:zoobank.org:act:93C2DAC3-BB1F-4FD3-855A-1CC89A870030>

Type locality. South Africa, Eastern Cape, Silaka Forest Reserve.

Type material. Holotype: ♂, 'S. Afr. [South Africa], Transkei [Eastern Cape], Silaka For. Reserve, 31.33 S–29.30 E, 24.11.1987; E-Y: 2533, indig. forest litter, leg. Endrödy-Younga' (TMSA). Paratypes: 1 ♂ 1 ♀, the same data as holotype (TMSA).

Description. Body length 3.72–4.16 mm, holotype 4.16 mm. As this newly described species is very similar to *E. janaki* sp. nov., with dorsal habitus as in Fig. 2, the following description only provides characters differing in these species:

Rostrum (Figs 6, 9) moderately longer, 1.23–1.28× wider than long. Scrobes in profile shorter than distance between scrobe and eye.

Antennal funicle with segment 1 the largest, conical, 1.5–1.6× longer than wide and 1.3–1.4× longer than segment 2, which is 1.5–1.6× longer than wide; segments 3–7 1.1× longer than wide.

Pronotum (as in Fig. 2) 1.39–1.47× wider than long.

Elytra (as in Fig. 2) long oval, 1.26–1.29× longer than wide, odd intervals indistinctly more elevated than even ones.

Penis (Fig. 12) moderately long, slender, subparallel-sided, slightly widest at apical quarter; apex regularly tapered apicad with slightly concave sides and narrowly rounded tip; in profile with ventral side almost straight and dorsal side convex, apex lengthened, rounded at a tip. Tegmen (Fig. 15) with slender ring and long, pointed parameres, almost as long as diameter of ring, connected at their basal half and forming here short basal plate.

Spermatheca (Fig. 19) with short and wide, curved, pointed cornu; corpus small; ramus tube-shaped, more than twice longer than wide, at midlength distinctly curved downwards, not pressed to corpus; nodulus directed upwards, almost straight, tube shaped, 3.5× longer than wide at midlength, widest at base and slightly evenly tapered apicad, slightly longer than cornu. Sternite VIII (Fig. 23) with plate subtriangular, 1.8× longer than wide, with straight sides. Gonocoxites (Fig. 29) flat, evenly tapered apicad with long slender apical styli with setae.

Biology. The type material was collected from native forest litter.

Etymology. The Latin name, meaning “rough, coarse”, refers to not smooth aspect of body vestiture.

Differential diagnosis. *Ellimenistes raucus* **sp. nov.** is very similar to *E. janaki* **sp. nov.**, both species can be distinguished by the characters given below in the key.

Key to the species of the *Ellimenistes humeralis* group

1. Rostrum narrowest at base (Fig. 4). Elytra with laterally prominent projections behind the base (Fig. 3). Funicle segments 1 and 2 equally long. Eyes big, conspicuously prominent from outline of head (Fig. 4). Scrobes laterally furrow-shaped (Fig. 7). Pronotum 1.6–1.8× wider than long, widest at base, base V-shaped (Fig. 3). Raised elytral setae at apical declivity longer than at basal half. Ramus of spermatheca shorter than wide (Figs 16, 18). 2
- Rostrum widest at base (Fig. 5). Elytra without laterally prominent projections behind the base (Fig. 2). Funicle segment 1 twice longer than segment 2. Eyes small, barely prominent from outline of head (Fig. 5). Scrobes laterally subtriangular (Fig. 8). Pronotum 1.3–1.4× wider than long, widest at basal third, base straight (Fig. 2). Raised elytral setae equally long at basal and apical part. Ramus of spermatheca twice longer than wide (Figs 17, 19) 3
2. Setae at posterior elytral declivity appressed, as short as one third of width of an elytral interval (Fig. 1). Elytra with rounded sides (Fig. 1). Appressed elytral scales isolated. Spermatheca with nodulus about 6× longer than wide, U-shaped curved (Fig. 16) *E. humeralis* Marshall
- Setae at posterior declivity erect, as long as width of one interval (Fig. 3). Elytra with almost straight sides (Fig. 3). Appressed elytral scales slightly imbricate. Spermatheca with nodulus twice longer than wide, perpendicularly curved (Fig. 18) *E. marshalli* **sp. nov.**
3. Rostrum shorter, 1.41–1.44× wider than long (Fig. 5), in profile distance between scrobe and eye equally long as scrobe (Fig. 8). Funicle segment 1 1.8–2.0× longer than segment 2; segments 3–7 isodiametric. Penis widest at base, with sides before apex slightly convex (Fig. 10). Tegmen with parameres distinctly shorter than diameter of ring, separated (Fig. 13). Plate of female sternite VIII widely subtriangular, apically constricted (Fig. 21). Spermatheca with ramus pressed to corpus (Fig. 17) *E. janaki* **sp. nov.**
- Rostrum longer, 1.23–1.28× wider than long (Fig. 6), in profile distance between scrobe and eye longer than scrobe (Fig. 9). Funicle segment 1 1.3–1.4× longer than segment 2; segments 3–7 1.1× longer than wide. Penis widest at apical quarter with sides before apex slightly concave (Fig. 12). Tegmen with parameres almost as long as diameter of ring, connected at their basal half (Fig. 15). Plate of female sternite VIII narrowly subtriangular, without apical constriction (Fig. 23). Spermatheca with ramus deviated from corpus (Fig. 19) *E. raucus* **sp. nov.**

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Three New South African Embrithini (Coleoptera: Curculionidae: Entiminae)

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Abstract

Three new species of Embrithini from South Africa are described: *Heisonyx griseoviridis* sp. nov., *H. oberprieleri* sp. nov., and *Porpacus wanati* sp. nov. The male of *Heisonyx giustocaroli* Borovec, Colonnelli & Osella, 2009 is newly described.

Key words: Coleoptera, Curculionidae, Entiminae, Embrithini, taxonomy, new species, South Africa

Introduction

The terricolous entimine weevil fauna of South Africa is far from thoroughly explored, despite the publication of a long series of papers, mainly by Marshall (e.g. 1923, 1947), devoted mainly to South African broad-nosed weevils. Two more recent revisions on this topic were published by Borovec *et al.* (2009, 2014) continuing research based on material either recently collected or deposited in European and South African museums. This paper contributes knowledge to the recently revised genera *Heisonyx*, Marshall, 1947 and *Porpacus* Schoenherr, 1842, by adding three newly described species. It also provides the first description of the male of *Heisonyx giustocaroli* Borovec, Colonnelli & Osella, 2009.

Materials and methods

The body length of specimens was measured in profile, from the anterior border of the eyes to the apex of the elytra excluding the rostrum, as is customary for curculionids. Rostral length and width were measured in dorsal view, the length from the anterior border of the eyes to the anterior margin of the epistome and the breadth at its maximum breadth. Pronotal and elytral length and breadth are the maximums, measured in dorsal view, respectively. Dissected female genitalia are embedded in Solakryl BMX on the same mounting card as the weevil, dried male genitalia are glued to the same mounting card as the weevil. The terminology for the rostrum and genitalia follows Oberprieler *et al.* (2014). Labels of the studied specimens are reported verbatim, and additional information is reported in square brackets.

Acronyms for depositories of the material are as follow:

BMNH	Natural History Museum, London, United Kingdom (British Museum of Natural History);
MNHW	Museum of Natural History, Wrocław University, Poland;
RBSC	Roman Borovec collection, Sloupno, Czech Republic;
SANC	South African National Collection of Insects, Pretoria, South Africa;
TMSA	Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa.

Taxonomy

Heisonyx giustocaroli Borovec, Colonnelli & Osella, 2009

(Figs 6, 7)

Heisonyx giustocaroli Borovec, Colonnelli & Osella, 2009: 851.

Additional material examined. South Africa: Western Cape: 1 ♀, Hermanus, 30.iv.1943, H. P. V. Heerden lgt. (SANC); 1 ♂ 1 ♀, Grabouw, xi.1987, under *Plantago lanceolata*, M. Kuipe lgt. (SANC); 7 ♂♂♀♀, ca. 3-4 miles E of Philippi, Cape Flats, 180 feet, 4.viii.1954, grassy flood pools with Algae, Hydrodictyon and Aponsgeton, J. Balfour-Browne lgt. (BMNH); 2 ♀♀, South Africa, Eastern Cape, Angola, Tampa, Hulla District, 15.vi.1954, ca. 4000 ft., drying pools in sandy river bed, foul water, J. Balfour-Browne lgt. (BMNH).

Remarks. The original description was based on a single female specimen from Kirstenbosch in the Western Cape. There is no illustration of the spermatheca, and due to there being no male specimen, there is also no illustration of the male genitalia. Being able to examine additional material of the species has allowed me to complete the missing data for this species:

Body length: 2.38–3.07 mm.

Male genitalia. Ventral aspect of the penis (Fig. 6) broadest at the base, tapering slightly anteriorly, with concave sided and regularly subtriangular apex; lateral aspect curved, broadest in anterior third, tapering abruptly towards the apex.

Female genitalia. Spermatheca (Fig. 7) with a slender curved cornu; slender corpus; subsquared ramus; and slender nodulus which tapers distinctly apically. Gonocoxites elongate, tapering evenly apically, obtuse apically with long slender styli bearing setae. Sternite VIII with umbrella-shaped translucent plate; apodeme about 1.5× longer than plate, broadest at mid-length, terminating near apical part of plate.

Heisonyx griseoviridis sp. nov.

(Figs 1, 8–13)

<http://zoobank.org/urn:lsid:zoobank.org:act:D9CADAA0-B5E2-4881-98A9-42ACB846DC58>

Type locality. South Africa, Gauteng, Esselen Park.

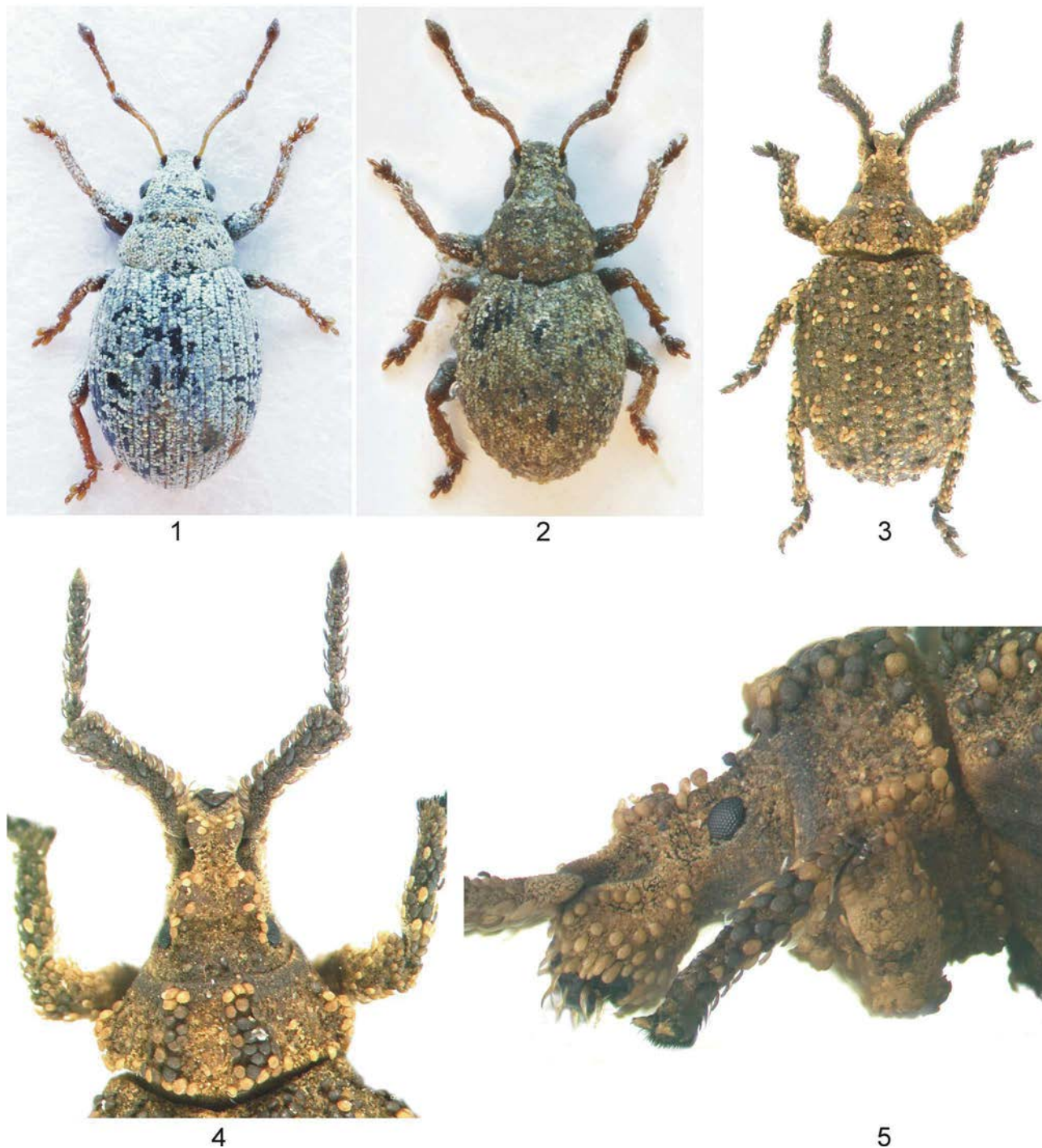
Type material. Holotype: ♂, '[South Africa, Gauteng], Esselen Park, TP., Feb., 1948, K. H. Munro [lgt.]' (SANC). Paratypes: 6 ♂♂♀♀, the same data as holotype (SANC); 2 spec., the same data as holotype (BMNH). Esselen Park is a locality situated north of Kempton Park, 26°02'8.63"S 28°14'51.56"E (Elizabeth Grobbelaar, pers. comm.).

Description. Body length 1.69–1.98 mm, holotype 1.81 mm. Integument blackish, antennae and legs rusty reddish, medial part of femora and antennal clubs in some specimens dark brownish. The whole body, except antennal funicles and clubs and dorsal and ventral surfaces of tarsi, densely covered by regularly rounded, greenish grey, appressed scales with an indistinct metallic green sheen (Fig. 1). Scales finely longitudinally striate, partially imbricate, concealing integument completely, slightly larger on elytra than on other parts of the body with 3–4 spanning the width of one interval. Elytra with one regular row of short, inconspicuous, semi-appressed, subspatulate greyish setae, setae slightly longer than diameter of one appressed scale and about equally broad, distance between two setae 3–4× longer than the length of one seta; pronotum and head, including rostrum, with setae similar to those on elytra, but shorter, irregularly scattered and hardly visible even in lateral view; scapes, femora and tibiae with short, slender, semi-appressed, inconspicuous setae; funicles and tarsi with sparse greyish piliform setae; clubs finely setose with dense appressed and sparse erect setae.

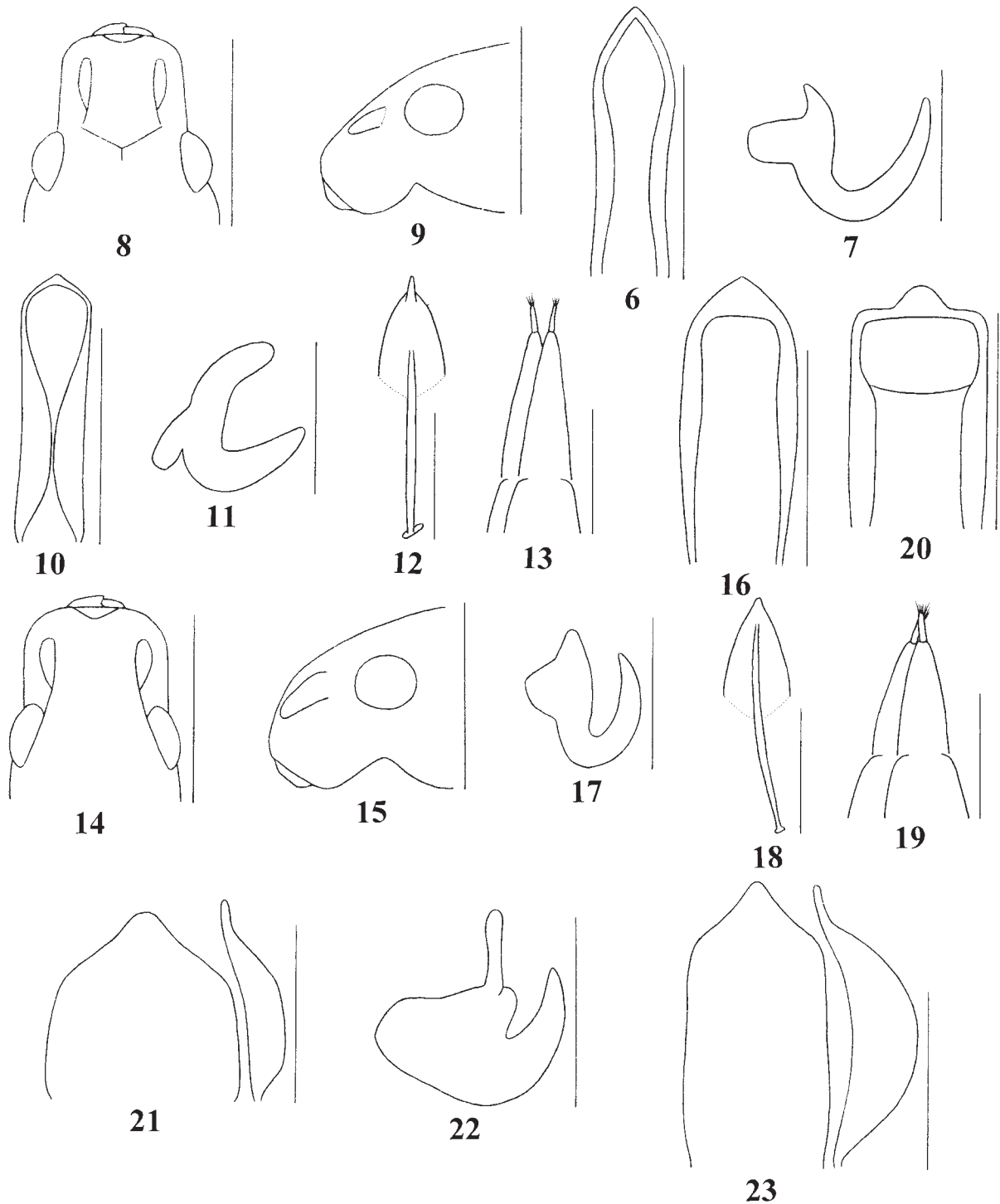
Rostrum (Figs 8, 9) slender and short, 1.28–1.39× broader than long, broadest basally, base 1.15–1.19× broader than apex, tapering evenly anteriorly with straight sides; domed laterally, separated slightly from head by a narrow transverse sulcus. Epifrons narrow and small, almost isodiametric, almost flat, 0.4–0.5× breadth of rostrum at the same place, significantly narrower than space between anterior margins of eyes basally with indistinctly concave sides, well separated from head by a slender, V-shaped transverse sulcus. Antennal scrobes distinctly visible dorsally in anterior half of rostrum, narrowly reniform; short and narrow laterally, furrow-shaped, indistinctly curved and enlarged posteriorly, directed towards middle of eyes and separated from them by a wide squamose

stripe. Eyes medium-sized, distinctly domed, projecting prominently from outline of head; circular in lateral view, placed in dorsal half of rostrum. Head wide and short, forming a regular dome.

Antennae slender (Fig. 1). Scapes slender, distinctly curved before mid-length, $6.3\text{--}6.6\times$ longer than apical breadth, regularly enlarged in apical quarter, slightly narrower than clubs apically. Funicle 7-segmented; segments 1 and 2 conical, long and slender; segment 1 $1.8\text{--}2.0\times$ longer than broad and $1.4\text{--}1.6\times$ longer than segment 2, segment 2 $1.6\text{--}1.7\times$ longer than broad; segments 3–6 $1.1\text{--}1.2\times$ broader than long; segment 7 $1.2\times$ broader long; clubs $1.7\text{--}1.8\times$ longer than wide.



FIGURES 1–3. Dorsal habitus: 1—*Heisonyx griseoviridis* sp. n.; 2—*H. oberprieleri* sp. n.; 3—*Porpacus wanati* sp. n. Figs 4, 5, *Porpacus wanati* sp. n.: 4—pronotum, head with rostrum and antennae, dorsal view. 5—pronotum, head with rostrum, lateral view.



FIGURES 6–23. Structural details of *Heisonyx* Marshall and *Porpacus* Schoenherr. Figs 6, 7, *Heisonyx giustocaroli* Borovec, Colonnelli & Osella: 6. penis, dorsal view. Scale = 0.25 mm; 7. spermatheca. Scale = 0.125 mm. Figs 8–13, *H. griseoviridis* sp. n.: 8. head with rostrum, dorsal view. Scale = 0.50 mm; 9. head with rostrum, lateral view. Scale = 0.50 mm; 10. penis, dorsal view. Scale = 0.25 mm; 11. spermatheca. Scale = 0.125 mm; 12. sternite VIII of female, dorsal view. Scale = 0.50 mm; 13. ovipositor, dorsal view. Scale = 0.25 mm. Figs 14–19, *H. oberprieleri* sp. n.: 14. head with rostrum, dorsal view. Scale = 0.25 mm; 15. head with rostrum, lateral view. Scale = 0.25 mm; 16. penis, dorsal view. Scale = 0.25 mm; 17. spermatheca. Scale = 0.125 mm; 18. sternite VIII of female, dorsal view. Scale = 0.50 mm; 19. ovipositor, dorsal view. Scale = 0.25 mm. Fig. 20, *H. jelineki* Borovec, Colonnelli & Osella: penis, dorsal view. Scale = 0.25 mm. Figs 21, 22, *Porpacus wanati* sp. n.: 21. penis, dorsal view. Scale = 0.50 mm; 22. spermatheca. Scale = 0.50 mm. Fig. 23, *P. muelleriae* Borovec, Colonnelli & Osella: penis, dorsal view. Scale = 0.50 mm.

Pronotum (Fig. 1) breadth, 1.51–1.59× broader than long, broadest in basal quarter with rounded sides, tapering distinctly anteriorly, constricted behind anterior margin; disc regularly domed; base indistinctly arched.

Elytra (Fig. 1) oval, 1.26–1.31× longer than broad, broadest at mid-length, distinctly rounded laterally and apically. Intervals broad, flat; striae narrow, line-shaped.

Tibiae moderately robust; protibiae 5.3–5.6× longer than breadth at mid-length, outer margin straight, inner margin sinuate, obliquely subtruncate near apex, enlarged towards the inside and fringed with a sparse row of fine, short, whitish setae and a single brownish mucro. Apical surface of metatibiae glabrous, fringed externally by fine, short, whitish setae; metatibial corbels indistinct. Tarsi short; segment 2 1.2–1.3× broader than long; segment 3 1.2–1.3× broader than long and 1.6–1.8× broader than segment 2; onychium short, 0.6× the length of segment 3; claw single, long, and yellow reddish.

Penis (Fig. 10) moderately long, ventral aspect broadest basally, tapering evenly and indistinctly anteriorly, apex slightly enlarged, rounded, with a small rounded medial tip; lateral aspect with ventral margin almost straight, dorsal margin indistinctly and evenly curved, tapering evenly apically.

Female genitalia. Spermatheca (Fig. 11) with curved cornu; slender corpus; ramus and nodulus perpendicular to each other, ramus slightly longer than broad, oval; nodulus distinctly longer than broad and distinctly longer than ramus, curving distinctly backwards. Gonocoxites (Fig. 13) long, tapering evenly apically with elongate slender apical styli bearing setae. Sternite VIII (Fig. 12) with long slender plate, apex elongate and more distinctly sclerotised, and longitudinal more distinctly sclerotised arms medially; apodeme broadest at mid-length, terminating before mid-length of plate, slightly longer than plate.

Derivation of name. The newly described species takes its name from the unusual colour of its body vestiture.

Biology. Unknown.

Differential diagnosis. This is an unusual species, not only amongst species with 7-segmented funicles, but amongst all *Heisonyx* species. It can, however, easily be separated and differs from all other *Heisonyx* species by: the body vestiture which is greenish-grey with a green metallic sheen; the slender, isodiametric epifrons which is significantly narrower basally than distance between the anterior margins of the eyes; and the protibiae which only have one mucro. All three of these characters in *H. griseoviridis* sp. nov. are very similar to *Phaylomerinthus pallipes* (Fåhræus, 1871), *P. viridulus* (Fåhræus, 1871) and one undescribed species of *Phaylomerinthus*, which occur in KwaZulu-Natal. *Heisonyx griseoviridis* sp. nov. can easily be separated from all of them by having a single tarsal claw whereas *Phaylomerinthus* species all have two equally long claws. It can also easily be separated from the first *Phaylomerinthus* species by having much shorter elytral setae, and from the latter two species by its differently shaped penis.

***Heisonyx oberprieleri* sp. nov.**

(Figs 2, 14–19)

<http://zoobank.org/urn:lsid:zoobank.org:act:BDE8F681-DAE6-4792-931F-D9EB0D65FD9A>

Type locality. South Africa, Western Cape, Knysna.

Type material. Holotype: ♂, 'SOUTH AFRICA, C.P. [Western Cape], Knysna, 34.02S 23.03E, 26.xi.1983, R. Oberprieler [lgt.]' (SANC). Paratypes: 1 ♂ 2 ♀♀, the same data as holotype (SANC).

Description. Body length males 1.73–1.76 mm, females 2.05–2.13 mm, holotype 1.76 mm. Integument blackish, antennal scapes and funicles and tibiae rusty reddish. Elytra densely covered by rounded appressed scales which are finely longitudinally striate, 4–5 across the width of one interval, completely concealing the integument. Pronotum, head including rostrum, antennal scapes, femora and tibiae densely covered by almost identical appressed scales. Colour of vestiture varying from pale grey to brownish with an indistinct greenish sheen (Fig. 2); two specimens with a whitish spot behind the scutellum and a slender, V-shaped transverse stripe in anterior third. Elytra each with one regular row of sparse, semi-appressed, subspatulate setae, about the length of half the width of one interval; pronotum and head, including rostrum, with similar setae to those on elytra, but slightly shorter and irregularly scattered. Scapes, femora and tibiae with semi-appressed, sparse, slender, elongate-ovate setae. Funicles and tarsi with inconspicuous, short, semi-appressed setae.

Rostrum (Figs 14, 15) short, in males 1.47–1.53× and in females 1.63–1.69× wider than long, tapering slightly anteriorly with sides almost straight, basally 1.02–1.05× wider than apically, laterally domed, and separated from

head by shallow transverse sulcus. Epifrons in very short basal part tapering distinctly anteriorly, slightly rounded to straight laterally, narrow, 0.6× the width of the rostrum at the same place, indistinctly longitudinally impressed along the midline. Antennal scrobes pit-shaped dorsally, distinctly visible in apical two thirds; in lateral view slightly curved, enlarged posteriorly, but not reaching eyes, the dorsal borders of the scrobes directed towards the dorsal border of eyes and their ventral borders directed to the middle of eyes. Eyes large, slightly larger in males than in females, dorsally convex, protruding slightly from outline of the head, in males about three quarters the length of the rostrum; laterally placed in the dorsal half of the head. Head short and broad, flat.

Antennae moderately robust (Fig. 2). Scapes distinctly curved at mid-length, 4.0–4.3× longer than apical breadth, regularly enlarged in apical third, as broad as clubs apically. Funicles 7-segmented, segment 1 robust, conical, 1.4–1.5× longer than broad, 1.6–1.8× longer than segment 2, which is slender and 1.3–1.4× longer than broad; segments 3–5 1.2–1.3× broader than long; segment 6 1.3× broader than long; segment 7 1.3–1.4× broader than long; clubs 1.8–2.0× longer than broad.

Pronotum (Fig. 2) 1.33–1.44× broader than long, broadest behind the middle, tapering more anteriorly than posteriorly; disc regularly domed; base indistinctly arched.

Elytra (Fig. 2) oval, 1.27–1.29× longer than broad, broadest at mid-length, distinctly rounded laterally in dorsal view, tapering apically, indistinctly concave just behind the base. Intervals almost flat, broad; sutural interval at base tapering distinctly; striae narrow and line-shaped.

Tibiae robust, protibiae 4.8–5.0× longer than breadth at mid-length, inner edge distinctly sinuate, rounded apically with a fringe of fine, sparse, brownish, bristle-shaped setae and 3 short, brownish, hook-shaped mucros at the internal angle, the medial one being slightly longer than the other two. Apical surface of metatibiae glabrous, fringed externally by short stout setae; metatibial corbel very slender, almost indistinct. Tarsi short; segment 2 1.4× wider than long; segment 3 1.3× times wider than long and 1.6× wider than segment 2; onychium 0.8× the length of segment 3; claw single, long, brownish.

Dorsal aspect of penis (Fig. 16) sub-parallel and indistinctly convex laterally, apex tapering evenly for a short distance apically, subtriangular; lateral aspect slender, evenly curved and parallel-sided, only tapering apically.

Female genitalia. Spermatheca (Fig. 17) with slender curved cornu and large corpus; ramus and nodulus subtriangular, ramus twice as broad as nodulus, which is about as long as broad. Gonocoxites (Fig. 19) elongate, tapering apically, apical styli long and slender, apically setose. Sternite VIII (Fig. 18) with plate long and slender, subtriangular; apodeme moderately broad, greatest breadth at mid-length, terminating just before the apex of plate.

Derivation of name. The newly described species is dedicated to Rolf G. Oberprieler (CSIRO Canberra, Australia), collector of the type material, an excellent expert on Curculionoidea of the Afrotropical and Australian regions.

Biology. Unknown.

Differential diagnosis. The 7-segmented funicle of *H. oberprieleri* sp. nov. is similar to *H. giustocaroli*, *H. jelineki* Borovec, Colonnelli & Osella, 2009 and *H. viticollis* Marshall, 1947. *Heisonyx oberprieleri* can be distinguished from *H. viticollis* by funicle segment 1 which is 1.6–1.8× as long as segment 2, segment 2 is 1.3–1.4× as long as broad (*H. viticollis* has segment 1 twice as long as segment 2, segment 2 is isodiametric) and onychium 0.8× the length of segment 3 which has a brownish claw (*H. viticollis* has onychium 1.2× the length of segment 3 which has a blackish claw). It is possible to distinguish *H. oberprieleri* sp. nov. from *H. giustocaroli* mainly because it has a single claw (*H. giustocaroli* has a long slender claw with a trace of a second rudimentary claw at its base) and its rostrum is separated from the rest of the head by a very fine, indistinct line (*H. giustocaroli* has the rostrum separated from the rest of the head by a deep transverse sulcus). *Heisonyx oberprieleri* sp. nov. is thus most similar to *H. jelineki*, from which it can be distinguished mainly by the very differently shaped penis:

1. Funicle segment 2 in males 1.6–1.8×, in females 2.0–2.1× longer than broad. Apex of protibiae armed with fine, short, whitish setae. Apex of penis broadly obtuse, triangularly sharpened in the middle (Fig. 20)..... *H. jelineki* Borovec, Colonnelli & Osella
- Funicle segment 2 in both sexes 1.3–1.4× longer than wide. Apex of protibiae armed with brownish, bristle-shaped setae. Penis tapering evenly apically and regularly subtriangular (Fig. 16)..... *H. oberprieleri* sp. nov.

***Porpacus wanati* sp. nov.**

(Figs 3–5, 21, 22)

<http://zoobank.org/urn:lsid:zoobank.org:act:37FF105A-0D9B-436B-9EFC-DB27E7B9E970>

Type locality. South Africa, Western Cape, Anysberg Nature Reserve, Vrede.

Type material. Holotype: ♂, ‘RSA (S) [South Africa, South], W [Western] Cape, Anysberg Nat. Res., Vrede, 33.4660S/20.5871E, 30.11.2013, karoo vegetation, night coll. & lamp, leg. M. Wanat’ (TMSA). Paratypes: 16 ♂♂♀♀, the same data as holotype (MNHW, RBSC); 2 spec., the same data as holotype, but 1.12.2013 (MNHW); 1 ♂, ‘S[outh]. Afr[ica], Western Cape, Anysberg Nature Res., 33°29.556S, 20°34.077E, 11.XII.2008, at night, leg. R. Lyle, D. du Plessis’ (TMSA).

Description. Body length 5.63–6.51 mm; holotype 6.25 mm. Integument (Fig. 3) brownish to blackish. Elytra covered by irregularly oval, flat, imbricate and appressed scales with somewhat indistinct structure. Head including rostrum and pronotum densely covered by erect, cup-shaped scales, with a honeycomb-like appearance. Antennae, except the clubs, and the legs entirely covered by small appressed scales. Dorsal part of body with semi-appressed, short, oval, conspicuous setae, slightly longer than broad, on elytra slightly longer than half the breadth of one elytral interval; elytra with one regular row of setae on interval 1 and two irregular rows on intervals 3, 5 and 7; setae clustered on tubercles at the base of intervals 3, 5 and 7 and on tubercles at elytral declivity of intervals 3 and 5. Elytral interval 7 with a row of small setal clusters on small tubercles along its whole length. Even intervals with a row of distinctly sparser semi-appressed setae. Pronotum with semi-erect setae, similar in shape to those on the elytra, clustered in broad longitudinal stripes on the medial longitudinal ridges, tapering slightly anteriorly, 3–4 across the breadth of one ridge; and forming one slender row on lateral ridges. Semi-erect setae on head and rostrum slightly smaller than those on the elytra, clustered at the base of the rostrum, on the tips of the epifrons elevations, and in the anterior half of epifrons, creating a slender row above the eyes. Antennal scapes very densely covered by slender, elongate, semi-perpendicular setae; funicles with similar, conspicuous, but somewhat shorter and more slender semi-erect setae; clubs finely and densely setose. Legs densely covered by elongate-ovate semi-erect setae, shorter and narrower on tarsal segments, with several bristle-shaped setae in inner edges of tibiae.

Rostrum (Figs 4, 5) 1.12–1.17× longer than broad, subquadrate, tapering slightly anteriorly in posterior half, enlarging slightly anteriorly in anterior half, base and apex equally broad; in lateral view slightly domed, with two flat, longitudinal tubercles at base. Epifrons elevated from base, no prominent teeth basally, but base slightly elevated dorso-laterally and as broad as the interocular space, tapering strongly and sinuously anteriorly before widening again, towards the apex with rounded sides, and a shallow, median, longitudinal furrow along its whole length. Epifrons between antennal insertions 0.5 × the breadth of the rostrum in the same place, and 1.3–1.5× the breadth of the antennal scapes apically. Epifrons separated from interocular space by straight, transverse, shallow sulcus basally. Scrobes invisible dorsally; lateral aspect furrow-shaped, curved, slightly enlarged posteriorly, and squamose. Head above eyes with flat, indistinct, longitudinal tubercles; interocular space broad, shallowly and evenly impressed. Eyes small, not protruding prominently from outline of head dorsally, positioned at about the middle of the head height laterally.

Antennae (Fig. 4) very stout, scapes 1.2–1.3× longer than funicles, broad, curved in a conspicuous S-shape in basal third, subparallel-sided in anterior two thirds, 1.9–2.2× broader than clubs apically. Funicles about the same breadth along their whole length, clubs very small slightly narrower than apical funicle segments. Segment 1 1.3–1.4× longer than broad; segment 2 2.1–2.4× longer than broad and 1.4–1.6× longer than segment 1; segment 3 1.1–1.2× longer than broad; segments 4–7 1.1× broader than long; clubs 1.6–1.7× longer than broad.

Pronotum (Figs 4, 5) very short and broad, 2.15–2.48× broader than long, breadth greatest in basal third with rounded sides, narrowing gradually anteriorly with concave sides; base indistinctly bisinuate. Disc with two medial, subtriangular, longitudinal ridges, broadest basally and tapering anteriorly, not protruding from anterior and posterior margins, split longitudinally by a deep, broad, parallel-sided furrow. Sublateral ridges absent; lateral ridges consisting of a short lobe, large and rounded basally, dorso-ventrally flattened, indistinctly prominent from outline of pronotum; pronotum shallowly impressed between median and lateral ridges. Pronotum with a flat dorsal surface in lateral view, only the anterior border slightly impressed.

Elytra (Fig. 3) short, oval, angular, 1.25–1.35× longer than broad, sides sloping obliquely to angular shoulders and then parallel posteriorly of the middle, broadly rounded apically. Striae wide, distinctly punctate, intervals 3, 5 and 7 slightly more elevated than evenly numbered intervals, and interval 9 with a small tubercle posteriorly of the

humeral calli. Intervals 3, 5 and 7 with distinct tubercles on the declivity, interval 7 with small, indistinct tubercles along its entire length.

Tibiae short, protibiae 4.6–5.1× longer than breadth at mid-length, inner margin bisinuate, rounded apically with a fringe of small blackish spines, mucronate, arcuate laterally, enlarged mesally. Apical surface of metatibiae densely squamose; metatibial corbels distinct, squamose, armed by dense fringe of short blackish spines laterally and mesally. Tarsi broad, segment 2 1.4–1.6× broader than long; segment 3 1.6–1.8× broader than long and 1.1–1.2× broader than segment 2; onychium 1.8–2.2× longer than segment 3; claws fused basally.

Penis (Fig. 21) short and broad, slightly broader basally, tapering evenly anteriorly with slightly rounded sides, the short apical part pointed with a slight concavity before apex, tip broadly rounded; lateral aspect broad, elongate towards the apex which is straight.

Female genitalia. Spermatheca (Fig. 22) robust, with short, slightly curved cornu; ramus robust, broad and short, slightly broader than elongate subtrapezoidal nodulus, which is as broad and long as ramus. Tube of nodulus slender, pipe-shaped, slightly longer than ramus and obliquely attached. Gonocoxites tapering evenly apically, with short, slender apical stylus bearing apical setae. Sternite VIII with well sclerotised umbrella-shaped plate, slender, longer than broad; apodeme medium-sized, terminating near apex of plate.

Derivation of name. Species dedicated to its collector, Marek Wanat (Wrocław University, Poland), an eminent specialist on weevils, mainly Apionidae, who loaned me very interesting material of small Entiminae collected in South Africa.

Biology. All type material was collected at night from karoo vegetation.

Differential diagnosis. The new species is very similar to *P. muellerae* Borovec, Colonnelli & Osella, 2014 in that the epifrons lacks the horn-like basal prominences in dorsal view, the pronotum is very broad, more than 2.1× broader than long, and has medial and lateral longitudinal ridges. It differs from that species by following set of characters:

1. Smaller size 4.4–5.2 mm. Rostrum shorter, 1.04–1.06× broader than long. Epifrons slightly broader than one third of rostrum breadth at the same place. Pronotum 2.47–2.63× broader than long, distinctly prominent lateral lobes in basal half. Funicles broader, segment 2 1.6–1.7× longer than broad; segment 3 1.6–1.7× broader than long, segments 4–7 with breadth double the length. Penis long and slender (Fig. 23). *P. muellerae* Borovec, Colonnelli & Osella
- Larger size 5.6–6.5 mm. Rostrum elongate, 1.12–1.17× longer than broad. Epifrons at mid-length 0.5× the breadth of the rostrum at the same place. Pronotum 2.15–2.48× broader than long, indistinctly prominent lobes in basal half. Funicles more slender, segment 2 2.1–2.4× longer than broad, segment 3 1.1–1.2× longer than wide, segments 4–7 1.1× broader than long. Penis short and wide (Fig. 21). *P. wanati* **sp. nov.**

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Ephimerostylus loebli, a new species from Tanzania (Coleoptera, Curculionidae, Myrorhinini)

ROMAN BOROVEC

Abstract

A new species of weevil from Tanzania, *Ephimerostylus loebli* n. sp., is described, illustrated and compared with the related species. Lectotypes of the following two species are designated: *Ephimerostylus debilis* Marshall, 1950 and *E. nyasicus* Marshall, 1950.

Key words: Zambia, Entiminae, lectotype designation, key to species, distribution

Introduction

Ephimerostylus Faust, 1895 is a genus of Myrorhinini (OBERPRIELER 1995, ALONSO-ZARAZAGA & LYAL 1999) containing the largest known species of the tribe. It is known from the eastern and southeastern parts of Africa, from Eritrea, Ethiopia, Malawi, Tanzania, Zambia and Zimbabwe. The genus contains six known species, including the species described in the present paper, and species described by FAUST (1895), MARSHALL (1908, 1950) and VOSS (1965). The genus is defined by the absence of metatibial corbels, rostrum separated from head by a slender transverse sulcus, eyes subdorsal with a very slender space between them, antennal insertion very close to rostral apex and tarsal claws connate.

Material and Methods

Photographs of adults were taken with a Canon EOS 550D camera with an MP-E 65 mm macro lens and stacked using CombineZM and GIMP2 softwares. Body length was measured in dorsal view from the anterior margin of the eyes to the apex of the elytra, excluding the rostrum.

The terminology of the rostrum and the genitalia follows OBERPRIELER et al. (2014). The lectotypes and paralectotypes are designated in order to stabilize the nomenclature in this genus according to Article 74.7.3 of the Code (ICZN 1999).

Exact label data of type material are cited: Separate labels are indicated by slash (/). Author's remarks

and comment are in square brackets. [p] – the preceding data were printed, [hw] – were handwritten.

The material is deposited in the following collections (identified by abbreviations):

BMNH = Natural History Museum, London, United Kingdom (formerly British Museum of Natural History), Maxwell V.L. Barclay.

NMPC = Národní muzeum, Praha, Jiří Hájek.

RBSC = Roman Borovec collection, Sloupno, Czech Republic.

Results

Ephimerostylus loebli n. sp.

Figs 1-6

Type material. Holotype: ♂, 'TANZANIA, Mkomazi G. R. [Game Reserve], Ibaya Camp, Burnt Grassland, Sweep net, 7.IV. [19]95, J. G. Davies [lgt.]' (BMNH).

Description. Body length: holotype 4.69 mm. Body dark brownish, antennae and tibiae with tarsi paler, reddish brown (Fig. 1). Elytra with appressed regularly rounded scales, 5 across the width of one interval, greyish green with weak pearly sheen creating very dense longitudinal stripes on interval 3 and 5-7 and at apical half of intervals 2 and 4, and identical but sparse greyish brown scales on interval 1 and basal half of intervals 2 and 4; intervals 8-10 at basal two thirds glabrous. Pronotum with dense longitudinal stripes from greyish green appressed scales: short and



Fig. 1. *Ephimerostylus loebli* n. sp., habitus (Scale 1 mm).

very slender middle stripe at basal half and wide lateral along the whole length; disc between longitudinal stripes sparsely covered with smaller light brownish scales, not concealing integument. Head and dorsal part of rostrum with sparse, long oval brownish appressed scales, much smaller than elytral ones, leaving slender interspaces; ventral part of rostrum glabrous. Antenna glabrous with inconspicuous, short, semierect fine whitish setae. Femora with long oval but wide, tibiae with slender appressed scales, tibiae with dense, short, semierect whitish setae, only inner border of protibiae with dense longer setae; tarsi with long whitish semierect setae. Elytra with one regular row of erect, white, slender setae, slightly enlarged apicad, slightly longer than half the width of one interval, distance of two setae longer than length of one seta; pronotum with very short brownish semierect setae, visible only in lateral view.

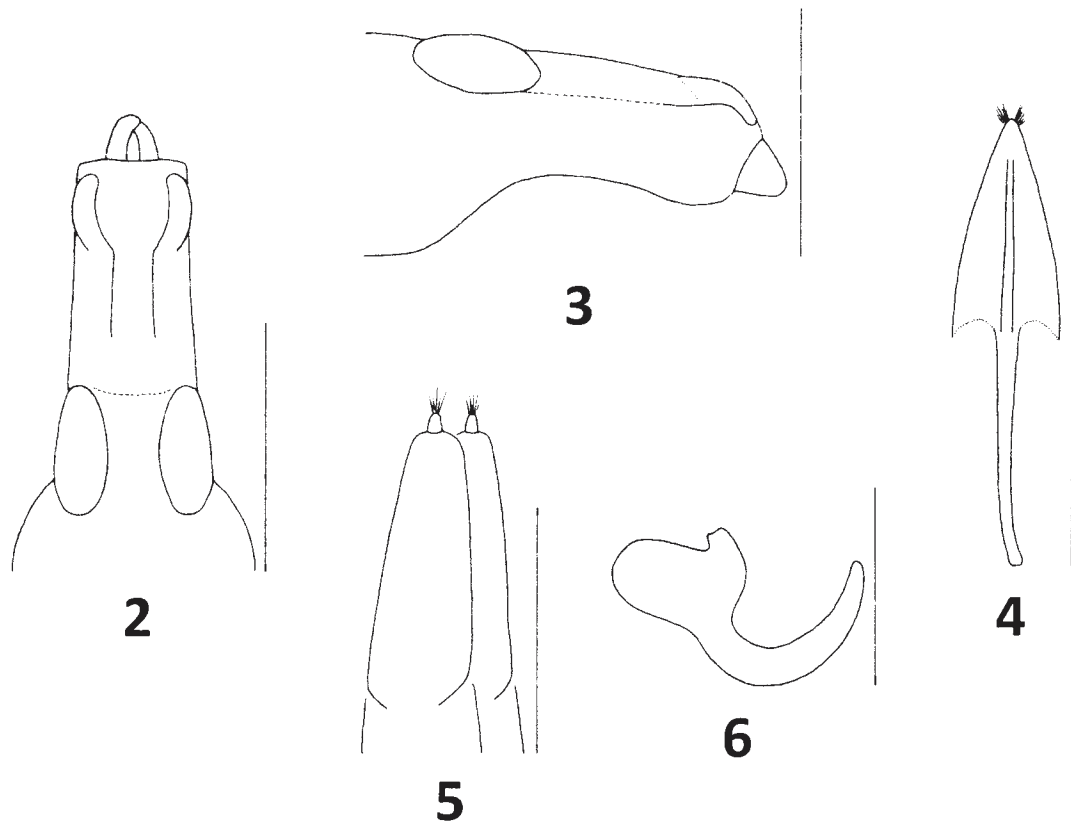
Rostrum (Figs 2, 3) widest at base, cone-shaped, slightly tapered anteriorly with straight sides, with flat eyes at its base, from anterior border of eyes to apex $1.79\times$ as long as at apex wide, at base $1.08\times$ as wide as at apex; laterally straight and equally wide along the whole length, only at its apex distinctly declined anteriorly. Epifrons narrow, narrowest just behind antennal insertion and here narrower than third of width of rostrum, weakly enlarged posteriorly with straight sides, borders ill-defined. Frons glabrous, shiny. Epistome not developed. Antennal insertions dorsally placed, narrowly reniform, bordering frons, space between them at middle wider than half of width of rostrum; laterally short, opened posteriorly, with ventral border weakly keel-shaped and creating straight slender ridge connecting scrobes with ventral part of eyes and creating border between squamose and glabrous halves of rostrum. Head very short and wide; eyes subdorsal, moved to basal part of rostrum, flat, in dorsal view not prominent from outline of head, space between them narrow as width of clubs, longitudinally deepened; eyes in lateral view placed in dorsal half of head.

Antennae long and slender; scapes exceeding anterior border of pronotum, very slender, straight, enlarged only in short its apical part and here $0.7\times$ as wide as clubs, $1.4\times$ as long as funicles. Funicle segment 1 $4.8\times$ as long as wide and $1.7\times$ as long as segment 2, which is $3.1\times$ as long as wide; segment 3 $2.5\times$ as long as wide; segment 4 $2.3\times$ as long as wide; segments 5 twice as long as wide; segment 6 $1.5\times$ as long as wide; segment 7 $1.1\times$ as long as wide; clubs spindle-shaped, twice as long as wide.

Pronotum $1.27\times$ as wide as long, widest just behind midlength, with distinctly rounded sides; anterior border weakly narrower than posterior one; base straight. Disc regularly and strongly vaulted, under vestiture glabrous and smooth, not punctured. Anterior borders of pronotum straight, without ocular lobes. Pronotum in lateral view strongly vaulted. Scutellum not visible.

Elytra long and slender, $1.42\times$ as long as wide, with distinctly rounded shoulders, widest just behind them, with weakly rounded sides, tapered posteriorly, apically narrowly tapered. Striae distinctly punctured, intervals flat, bearing regular longitudinal row of the same punctures as striae. Elytra vaulted in lateral view.

Femora edentate. Tibiae moderately slender; protibiae with straight lateral edge and weakly sinuate inner edge, apical part slightly curved inside; apex rounded, fringed with short dense whitish setae, enlarged inside, mucronate. Metatibiae with apical surface glabrous, without corbels. Tarsi slender; segment 1 long and slender, twice as long as wide and distinctly slenderer at apex than segment 3; segment 2 $1.3\times$ as long as wide; segment 3 $1.4\times$ as wide as long and $1.8\times$ as wide as segment 2; onychium $1.1\times$ as long as segment 3; claws solidly fused at basal half.



Figs 2-6. *Ephimerostylus loebli* n. sp. **2** – Head with rostrum, dorsal view (Scale 0.5 mm). **3** – Head with rostrum, lateral view (Scale 0.5 mm). **4** – Sternite VIII of female, dorsal view (Scale 0.25 mm). **5** – Ovipositor, dorsal view (Scale 0.25 mm). **6** – Spermatheca (Scale 0.25 mm).

Abdominal ventrites 1.2× as long as wide, sparsely covered with piliform setae, only in slender lateral stripe with appressed long oval scales. Ventrite 1 at middle distinctly longer, behind metacoxa equally long as segment 2; segment 2 slightly longer than segment 3 or 4 and distinctly shorter than segments 3 and 4 combined. Suture between ventrite 1 and 2 fine and narrow, straight. Metaventral process obtuse, about as wide as transverse diameter of metacoxa.

Male genitalia unknown.

Female genitalia. Sternite VIII (Fig. 4) with short apodeme, enlarged at midlength and terminated near apex of plate, apodeme about as long as plate; plate subtriangular, longer than wide with almost straight sides, with slender apical margin and ill-defined basal margin, with two separated, anteapical tufts of short setae. Gonocoxites (Fig. 5) flat, moderately long, tapered apicad and apically rounded with short styli, bearing fine setae. Spermatheca (Fig. 6) with very slender and regularly curved cornu; ramus more robust than remaining parts, slightly longer than wide, apically broadly rounded; nodulus very short and slender, isodiametric, tube-shaped.

Etymology. This species is dedicated to my colleague and friend, Dr Ivan Löbl, a Slovakian Entomologist who has lived for the majority of his life in Switzerland, and a well known specialist on Scaphidiinae (Staphylinidae), and one of the two editors of the Catalogue of Palaearctic Coleoptera.

Biology. The holotype was collected by sweeping from recently burnt grassland, according to locality label.

Differential diagnosis. *Ephimerostylus loebli* n. sp. is easily distinguishable from all other *Ephimerostylus* species, mainly by the short antennal segments in comparison to the very long and slender segments, including clubs, in other species, but also by the shorter raised elytral setae, even slightly widened apicad, shorter setae on the inner side of the tibiae and also elytra without longitudinal glabrous stripes, in comparison to very long, piliform setae on the elytra and the inner side of the tibiae and elytra with longitudinal glabrous stripes on elytra in other species. Characters to distinguish the newly described *E. loebli* n. sp. from all other species of the genus are given in the key below.

Key to *Ephimerostylus* species

- 1 Body lacking appressed scales. Elytra without erect setae. Distribution: Ethiopia.....
.....*E. theryi* Faust, 1895
- Body with oval or slender piliform appressed scales. Elytra with short to long, semierect to erect setae.....2
- 2 Small species, body length 2.7-3.5 mm. Funicle segments 3-7 isodiametric. Antennal scapes reaching posterior margin of eyes. Distribution: Tanzania.....*E. setosulus* Voss, 1965
- Larger species, body length at least 4.7 mm. Funicle segments 3-6 distinctly longer than wide. Antennal scapes exceeding anterior margin of pronotum.....3
- 3 Head behind eyes as long as longitudinal length of eyes. Appressed elytral setae narrow, piliform. Eyes dorsally almost touching, distance between them distinctly narrower than basal part of scapes. Distribution: Tanzania.....
.....*E. debilis* Marshall, 1950
- Head behind eyes distinctly shorter than longitudinal length of eyes. Appressed elytral setae rounded. Eyes dorsally separated, distance between them distinctly wider than basal part of scapes.....4
- 4 Elytra with semierect setae slightly enlarged apicad, shorter than width of one interval. Elytra without glabrous longitudinal stripes. Inner side of all tibiae with short setae, shorter than width of tibia. Last funicle segment slightly longer than wide. Club twice as long as wide, distinctly wider than last funicle segments. Distribution: Tanzania.....
.....*E. loebli* n. sp.
- Elytra with erect slender, piliform setae, longer than width of one interval. Elytra with glabrous longitudinal stripes on intervals 1, 4 and 5 or 2, 4 and 6. Inner side of all tibiae with setae distinctly longer than width of tibia. Last funicle segment distinctly longer than wide. Club 5× as long as wide, almost as wide as last funicle segments....5
- 5 Pronotum with big, low, flattened, separated granules. Elytra with basal margin narrowly carinate and with outer angles shortly laterally projecting. Elytra with glabrous longitudinal stripes on intervals 2, 4 and 6, in males more visible than in females. Distribution: Malawi.....
.....*E. nyasicus* Marshall, 1950
- Pronotum without or at most with several small granules. Base of elytra not carinate, not laterally projecting. Elytra with glabrous longitudinal stripes on intervals 1, 4 and 5. Distribution: Zimbabwe, Zambia.....*E. elegans* Marshall, 1908

Remarks on additional *Ephimerostylus* species*Ephimerostylus debilis* Marshall, 1950

Ephimerostylus debilis MARSHALL 1950: 150.

Ephimerostylus debilis: VOSS 1965: 312.

Type material examined. Lectotype (here designated): ♂ (BMNH), Type [p, rounded with red margin] / L Rukwa Area, 3,700 ft, 4-38, D. G. MacInnes. [p] / *Ephimerostylus debilis*, Mshl. TYPE ♂ [hw, Marshall's handwriting] / Pres. By Com. Inst. Ent. B.M.1948-/32 [p] / Lectotypus, *Ephimerostylus debilis* Marshall, R. Borovec design. 2018 [p, red].

Paralectotype: 1 ♀ (BMNH), Cotype [p, rounded with yellow margin] / D. G. MacInnes. 3-38, Mbeya T.T. 4500 ft. [p] / *Ephimerostylus debilis*, Mshl. COTYPE ♀ [hw, Marshall's handwriting] / Pres. By Com. Inst. Ent. B.M.1948-/32 [p] / Paralectotypus, *Ephimerostylus debilis* Marshall, R. Borovec design. 2018 [p, red].

Remarks. Body length of lectotype 6.13 mm, of paralectotype 7.13 mm.

Ephimerostylus nyasicus Marshall, 1950

Ephimerostylus nyasicus MARSHALL 1950: 150.

Ephimerostylus nyasicus: VOSS 1965: 312.

Type material examined. Lectotype (here designated): ♀ (BMNH), Type [p, rounded with red margin] / Nyasaland. Blantyre. About 3,000 ft. 7-11 Apl. 1910, S. A. Neave [p] / *Ephimerostylus nyasicus*, Mshl. TYPE ♂ [sic!] [hw, Marshall's handwriting] / Pres. By Com. Inst. Ent. B.M.1948-/312 [p] / Lectotypus, *Ephimerostylus nyasicus* Marshall, R. Borovec design. 2018 [p, red]. Remark: Marshall used the incorrect sex symbol; actually, it is a female specimen.

Paralectotype: 1 ♂ (BMNH), Cotype [p, rounded with yellow margin] / Nyasaland. Road Mlanji to Zomba, 2,000-3,000 ft. 6-7 May 1910. S. A. Neave. [p] / *Ephimerostylus nyasicus*, Mshl. COTYPE ♂ [hw, Marshall's handwriting] / Pres. By Com. Inst. Ent. B.M.1948-/312 [p] / Paralectotypus, *Ephimerostylus nyasicus* Marshall, R. Borovec design. 2018 [p, red].

Remarks. Body length of lectotype 7.81 mm, of paralectotype 6.75 mm.

Ephimerostylus elegans Marshall, 1908

Ephimerostylus elegans MARSHALL 1908: 32.

Ephimerostylus elegans: VOSS 1965: 312.

Additional material examined. 2 specimens, Zambia, Lusaka, xii.1984, H. Burda lgt. (NMPC, RBSC).

Remarks on distribution. The species was described from Zimbabwe (Harare and Gwibi river). It is here-with recorded for the first time for the fauna of Zam-bia.

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***Eudraces barclayi* sp. nov., with some notes on the genus *Eudraces* Marshall (Coleoptera: Curculionidae: Entiminae: Myorhinini)**

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Abstract

Eudraces barclayi sp. n. is described from South Africa, illustrated and compared with other species of the genus. *Echinocnemodes* Voss, 1962 is proposed as a new junior synonym of *Eudraces* Marshall, 1926. *Holcolaccus sparsus* (Voss, 1959) is proposed as a new combination from *Eudraces* Marshall, 1926. *Eudraces zumpti* Voss, 1959 is a new junior synonym of *Eremnus angustirostris* Marshall, 1937. A lectotype is designated for *Eudraces flavirostris* Marshall, 1926. A key to the known *Eudraces* species is given.

Key words: Coleoptera, Curculionidae, Entiminae, Myorhinini, *Eudraces*, taxonomy, South Africa

Introduction

Marshall (1926) described *Eudraces* for two newly described species from KwaZulu-Natal and Limpopo: *E. faurei* and *E. flavirostris*. Later, the genus was augmented by Marshall (1938) with the description of *E. munroi* from Gauteng, and Voss (1959) with the description of *E. sparsus* from Mpumalanga and KwaZulu-Natal and *E. zumpti* from Gauteng. The genus thus included five species native to northeastern South Africa. However, the study of type material as well as some other material deposited in the Natural History Museum, London leads to the transfer of several *Eudraces* species to other genera and, conversely, the description of one new *Eudraces* species. Moreover, newly identified material enlarges the known occurrence range of the genus to East Africa, Democratic Republic of Congo and Tanzania.

Material and methods

Body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of the elytra, excluding the rostrum. Width/length ratio of the rostrum was measured as maximum width at base versus maximum length to the base of the mandibles. Width/length ratios of pronotum, elytra, antennal segments and tarsomeres were taken at the maximum width and length of the respective parts in dorsal view. Female genitalia were embedded in Solakryl BMX (Medika, Prague); male genitalia were mounted dry on the same card as the respective specimen. The terminology of the rostrum and the genitalia follows Oberprieler *et al.* (2014).

Labels of the studied type specimens are reported as written, a slash separates labels, and additional information is reported in square brackets. Lectotypes were selected when necessary for taxonomic purposes, according to Art. 74.7.3 of the Code (ICZN 1999).

Acronyms for depositories of the material are as follows:

BMNH Natural History Museum, London, United Kingdom (British Museum of Natural History) (M. Barclay);

GOVI	Giuseppe Osella collection, Verona, Italy;
MKBC	Michael Košťál collection, Brno, Czech Republic;
NHMB	Naturhistorisches Museum, Basel, Switzerland (E. Sprecher);
NMBH	National Museum, Bloemfontein, South Africa (B. Muller);
NMPC	Národní museum, Praha, Czech Republic (J. Hájek);
RBSC	Roman Borovec collection, Sloupno, Czech Republic;
SANC	National Collection of Insects, Pretoria, South Africa (R. Stals);
TMSA	Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa (R. Müller).

Systematics

Eudraces Marshall, 1926

Eudraces Marshall 1926: 258 (original description), type species: *Eudraces faurei* Marshall, 1926 by original designation. Gender masculine.

Eudraces: Schenkling & Marshall 1931: 7 (catalogue); Marshall 1938: 184 (species description); Voss 1959: 411 (species description); Oberprieler 1988: 10 (note); Oberprieler 1995: 165 (note); Alonso-Zarazaga & Lyal 1999: 163 (catalogue).

Echinocnemodes Voss 1962: 223 (original description), **syn. nov.**, type species: *Echinocnemodes fallaciosus* Voss, 1962 by original designation.

Echinocnemodes: Oberprieler 1995: 166 (note); Alonso-Zarazaga & Lyal 1999: 163 (catalogue).

Marshall (1926) described the genus *Eudraces* as closely allied to *Tanyrhynchus* Schoenherr, 1826, a genus currently listed in Tanyrhynchini Schoenherr, 1826, but at the time of the description both genera were in the subfamily Tanyrhynchinae. Oberprieler (1995) transferred *Eudraces* to Myorhinini Marseul, 1863, the same place where it is also placed in the catalogue of families and genera of Curculionoidea (Alonso-Zarazaga & Lyal 1999). In the Myorhinini, it is possible to distinguish it by the following set of characters: metatibial corbels absent, scapes exceeding anterior margin of eyes, rostrum continuous with the head, not separated from head by transverse sulcus, eyes laterally placed, space between them distinctly wider than space between the bases of the antennae, femora unarmed, ventral part of rostrum denuded of scales, ocular lobes weakly developed and tarsal claws free.

Eudraces barclayi spec. n.

(Figs 1, 2–9)

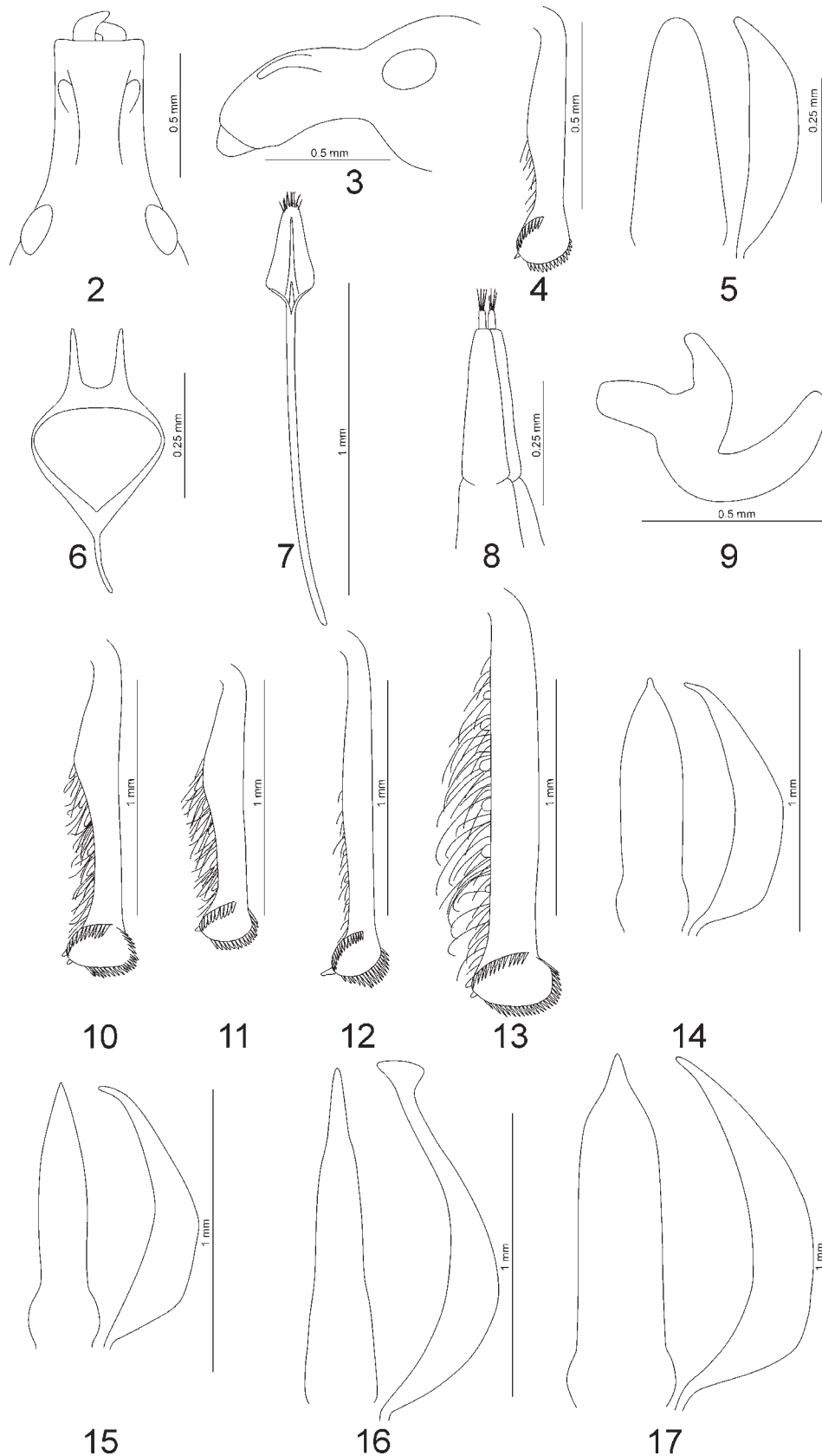
Type material. Holotype: ♂, 'SOUTH AFRICA, Transvaal [Gauteng], N. Pretoria Dist., 29.I.1928, Prof. J. C. Faure [lgt.]' (BMNH). Paratypes: 12 ♂♂♀♀, the same data as holotype (BMNH); 1 ♂ 2 ♀♀, '[South Africa, North West] Vryburg (Bech.1.), 1893, E. Simon [lgt.]' (BMNH); 1 ♀, '[South Africa, Gauteng], Pretoria, Tvl. (Pta.-Noord), Jan. [January] 1961, H. v. Schalkwyk [lgt.]' (SANC); 1 ♂, '[South Africa, Northern Cape], Kimberley, KP., 29-1-1971, H. van Schalkwyk en A. Pienaar [lgt.]' (SANC); 1 ♂, 'S. Africa, O.F.S. [South Africa, Free State], Wesselsdam 379, Boshof, SE 2825 Ba, 15–16 Feb. [February] 1978, A. Strydom [lgt.]' (NMBH).

Description. Body length 2.28–2.74 mm, holotype 2.38 mm. Vestiture. Body (Fig. 1) reddish brown, antennae and legs slightly paler, yellowish red, elytra in several specimens darker, brownish. Elytra densely covered by regularly rounded appressed scales, unicoloured bright green with weak goldish sheen, 4–5 across one interval width. Pronotum and head with rostrum densely covered by rounded appressed scales, distinctly smaller than elytral ones, hidden integument, greenish or disc of pronotum and anterior half of rostrum pinkish beige or greyish with metallic sheen. Body ventrally sparsely covered by drop-shaped appressed scales with weak greenish sheen. Scapes and funicles with semiappressed, sparse, greyish slender subspatulate setae, clubs finely and densely setose with several sparse, longer erect fine setae. Femora with long oval appressed greyish scales, tibiae with semiappressed subspatulate greyish setae, tarsi with semiappressed piliform setae.

Rostrum (Figs 2, 3) in comparison with other Myorhinini moderately short and robust, 1.27–1.36× as long as at base wide, widest at base and here 1.43–1.54× as wide as at apex, in posterior half tapered apicad, with distinctly concave sides, in anterior half parallel-sided, only around antennal scrobes slightly enlarged, dorsally densely squamose, only in short apical part somewhat scales sparser. Rostrum in lateral view curved, enlarged in anterior



FIGURE 1. Dorsal habitus of *Eudraces barclayi* sp. n.



FIGURES 2–17. Structural details of *Eudraces* Marshall. 2–9. *E. barclayi* sp. n. 2. head with rostrum, dorsal view; 3. head with rostrum, lateral view; 4. right metatibia; 5. penis, ventral and lateral view; 6. tegmen, dorsal view; 7. sternite VIII of female, dorsal view; 8. ovipositor, dorsal view; 9. spermatheca. 10–13. right metatibia. 10. *E. fallaciosus* (Voss); 11. *E. faurei* Marshall; 12. *E. flavirostris* Marshall; 13. *E. munroi* Marshall. 14–17. penis, ventral and lateral view. 14. *E. fallaciosus* (Voss); 15. *E. faurei* Marshall; 16. *E. flavirostris* Marshall; 17. *E. munroi* Marshall.

half around antennal scrobes, significantly separated from head by deep saddle-shaped indentation, laterally and ventrally glabrous. Epifrons narrowest at midlength of rostrum and here slightly wider than clubs, anteriorly enlarged with convex sides, in anterior half 0.6× as wide as rostrum in the same place, evanescent posteriorly. Antennal scrobes dorsally in the form of two deep long oval fossae carinated anteriorly and evanescent posteriorly, placed about at anterior third of rostrum. Scrobes laterally very dorsally placed, narrow, furrow-shaped, with distinct ventral edge which is significantly curved, dorsal border copies dorsal border of rostrum, not well edged, scrobes anteriorly and posteriorly evanescent. Head very short and wide, laterally distinctly vaulted. Eyes laterally placed, space between them wide almost as base of rostrum and 1.1–1.2× as wide as rostrum at apex; moderately small, vaulted, weakly prominent from outline of head; laterally oval, not reaching dorsal border of head, placed in dorsal half of head.

Antennae long and slender. Scapes somewhat exceeding posterior border of eyes when folded posteriorly, 1.2× as long as funicle, about straight, only at apical fifth mallet-shaped enlarged, slightly narrower than clubs. Funicle 7-segmented; segments 1 and 2 slender and long, conical, segment 1 2.1–2.3× as long as wide and 1.5–1.7× as long as segment 2, which is 1.8–1.9× as long as wide; segments 3–7 1.3–1.4× as long as wide; clubs slender, 2.7–3.1× as long as wide, at base weakly constricted.

Pronotum (Fig. 1) wide, 1.68–1.76× as wide as long, widest at basal third with distinctly rounded sides, anteriorly significantly more tapered than posteriorly, behind anterior border weakly constricted; base weakly arched; disc regularly vaulted; anterior borders laterally weakly concave. Scutellum invisible.

Elytra (Fig. 1) short oval, 1.16–1.21× as long as wide, widest at midlength, with distinctly rounded sides, apically rounded; laterally distinctly vaulted. Striae narrow, line-shaped; intervals flat, wide.

Abdominal ventrite at middle 1.5×, behind metacoxa as long as ventrite 2; ventrite 2 equally long as ventrites 3 and 4 combined; ventrite 5 in males short, broadly rounded. Suture 1 fine and sinuose, the others wide and deep. Ventrites glabrous and finely punctate. Metaventral process obtuse and narrow, half as wide as transverse diameter of metacoxa.

Femora adentate. Protibiae 6.0–6.6× as long as wide at midlength, equal in both sexes; protibiae distinctly scooped at inner edge in anterior half with 5–6 brownish small spines, apes rounded with fringe of brownish setae, mucronate. Metatibiae (Fig. 4) denticulate as protibiae; apical surface glabrous; corbels not developed. Tarsal segment 1 1.7–1.9× as long as wide, distinctly narrower than segment 3; segment 2 1.2–1.3× as long as wide; segment 3 1.3–1.4× as wide as long and 1.7–1.9× as wide as segment 2; onychium 0.9× as long as segment 3; claws free, separated, brownish.

Male terminalia. Penis (Fig. 5) weakly sclerotised, moderately short, widest at base, distinctly evenly tapered apically, apex narrow, regularly tapered; laterally irregularly curved, at apical quarter curved inside, tapered. Tergites equally long as body of penis. Tegmen (Fig. 6) with slender ring and long parameres, their base distant, manubrium short, slightly shorter than parameres. Sternite IX anteriorly tapered and curved.

Female terminalia. Sternite VIII (Fig. 7) with small narrow plate, subtriangular, with well visible apical and basal margin, with apodeme terminated inside and tuft of fine setae at apex. Gonocoxites (Fig. 8) of ovipositor slender, evenly tapered apically, with moderately long apical styli. Spermatheca (Fig. 9) with weakly curved, somewhat short cornu; rounded corpus; ramus straight, longer than wide, nodulus equally long but more slender, obliquely placed to ramus, tapered apically with tip curved inside.

Derivation of name. The newly described species is dedicated to Maxwell Barclay (BMNH) who was able to discover material of this species in the collection of the Natural History Museum and who helped the senior author many times by providing him with material important for his studies.

Differential diagnosis. This species is unusual among all known *Eudraces* species, and is very easily separated from all others based on the following set of unique characters: body small, less than 3 mm (at least 3.3 mm in all other *Eudraces* species), elytra in both sexes wide, short oval (slender to very slender in males, elliptical to ovate in females of all other *Eudraces* species) and rostrum robust and short, laterally slightly longer than pronotum, distinctly wider than profemora at middle (slender and long, distinctly longer than pronotum, as wide as profemora at middle in all other *Eudraces* species).

Using the characters noted above to distinguish and define genera in Myrorhinini, as used already by Marshall (1908) and Oberprieler (1995), *E. barclayi* sp. n. belongs to *Eudraces*. On the other hand it is different from all other species of the genus not only by a shorter and more robust rostrum (mainly in dorsal view) but also by the female sternite VIII, which has small slender subtriangular plate with well distinguished basal border, an

exceptional form in all Myorhinini genera and almost identical with that of *Ellimenistes* Boheman, 1843 (Embrithini Marshall, 1942). All other *Eudraces* species have sternite VIII with the plate moderately large, umbrella-shaped, with an ill-defined basal margin. Marshall had already attached a label 'Eudraces? sp.n.' to one of the paratype specimens of *E. barclayi* **sp. nov.**, and I cannot justify erection of a new genus for this unusual *Eudraces* species, based only on the female genitalia and the short, more robust rostrum.

***Eudraces fallaciosus* (Voss, 1962), comb. nov.**

(Figs 10, 14)

Echinocnemodes fallaciosus Voss 1962: 223 (original description).

Echinocnemodes fallaciosus: Alonso-Zarazaga & Lyal 1999: 163 (catalogue).

Type locality. Mukana-Lusinga [Democratic Republic of Congo].

Type material. Not examined.

Additional material examined. 2 ♂♂, Democratic Republic of Congo, Kambulu, 20.xii.1949, A. H. Newton (BMNH); 1 ♂, Tanzania, Kiwula, Mbeya, 22.iii.1963, swept under *Pinus radiata*, T. Jones & W. Wilkinson lgt. (BMNH).

Remarks. Voss (1962) described the genus *Echinocnemodes* as monotypic, without any differential diagnosis, but he listed it in the subfamily Tanyrrhynchinae and compared it in the key with other Myorhinini genera, mainly with *Anathresa* Marshall, 1908, due to its having free tarsal claws. The description and also the key clearly define the main characters of the genus and also using the figure supporting the description, I have no doubt material I was able to examine from Democratic Republic of Congo and Tanzania is conspecific with *Echinocnemodes fallaciosus*. *Echinocnemodes* is in all generic characters identical to the genus *Eudraces* and is hence here placed in synonymy with it. Voss probably did not know *Eudraces*, a genus described later than the other Myorhinini genera and not given in Marshall's key to the genera of the tribe (Marshall 1908); Voss did not use *Eudraces* in his key to Myorhinini genera completing the genus description. *Eudraces fallaciosus* is a different species, very similar to *E. faurei*, from which it can be distinguished by characters stated in the key.

***Eudraces faurei* Marshall, 1926**

(Figs 11, 15)

Eudraces faurei Marshall 1926: 258 (original description).

Eudraces faurei: Schenkling & Marshall 1931: 7 (catalogue); Marshall 1938: 185 (note); Voss 1959: 413 (note).

Type locality. N. Transvaal: Woodbush [South Africa, Limpopo].

Type material. Syntype: 1 ♀, 'Cotype [p] ♂ [p, rounded, with yellow margin] / S. AFRICA, M. Transvaal, Woodbush, IV.1924, Prof. J. C. Faure [hw] / *Eudraces faurei*, Mshl., COTYPE ♀ [hw, Marshall's handwriting]' (BMNH).

Additional material examined. 1 ♂ 1 ♀, South Africa, Limpopo, Woodbush, iv.1924, Prof. T. C. Faure lgt. (BMNH).

***Eudraces flavirostris* Marshall, 1926**

(Figs 12, 16)

Eudraces flavirostris Marshall 1926: 260 (original description).

Eudraces flavirostris: Schenkling & Marshall 1931: 7 (catalogue); Marshall 1938: 185 (note); Voss 1959: 412 (note); Oberprieler 1995: 165 (note).

Type locality. Natal: Greytown [South Africa, KwaZulu-Natal].

Type material. Lectotype (here designated): 1 ♂, 'Type [p] ♂ [hw, rounded, with red margin] / Natal [p] /

NATAL, Greytown, P. M. Handley, eating pears [hw, Marshall's handwriting] / Pres. By Imp. Bur. Ent. Brit. Mus. 1924-520 [p] / *Eudraces flavirostris*, TYPES. ♂♀. Mshl. [hw, Marshall's handwriting] / Lectotype *Eudraces flavirostris* Marshall, R. Borovec design. 2016 [p, red]' (BMNH). Paralectotype: 1 ♀, the same data as lectotype, only 'Type ♀' (BMNH).

Additional material examined. 3 spec., South Africa, KwaZulu-Natal, Maritzburg, 1912, Cl. Fuller leg. (BMNH); 2 spec., South Africa, KwaZulu-Natal, Natal Weza, Ngele Forest, 30°31' S, 29°41' E, 7.-8.xii.2005, 1200-1550 m, indigo forest, M. Biondi leg. (GOVI); 2 spec., South Africa, KwaZulu-Natal, Howick, Karidoof Range, 29°19.1' S, 30°15.5' E, 23.xi.2006, 1 325 m, P. Bulirsch leg. (NMPC); 39 spec., South Africa, KwaZulu-Natal centr., Boston env. pr. Pietermaritzburg, 29°40.1' S, 30°04.7' E, 1 450 m, 21.xi.2015, M. Košťál lgt. (MKBC, RBSC); 4 spec., South Africa, Orange Free State, Witzieshoek, 200 m, 24.ii.1929, Dr. Hugh Scott lgt. (BMNH).

Remarks. Lectotype and paralectotype are well preserved complete specimens, glued on the same square label, male lectotype left, female paralectotype right.

***Eudraces munroi* Marshall, 1938**

(Figs 13, 17)

Eudraces munroi Marshall 1938: 184 (original description).

Eudraces munroi: Voss 1959: 412 (note); Oberprieler 1995: 159 (note).

Type locality. Transvaal: Pretoria [South Africa, Gauteng].

Type material. Syntype: 1 ♀, 'Type [p, rounded, with red margin] / In beating, net in veldt grass [hw] / Pretoria, Transvaal [p] 12.Mar. 1926 H. K. Munro [hw, with green margin] / *Eudraces munroi*, Mshl., TYPE [hw, Marshall's handwriting]' (BMNH).

Additional material examined. 2 spec., South Africa, Pretoria, iv.1949, A. L. Capener lgt. (BMNH); 2 spec., South Africa, Pretoria, xii.1921, Prof. J. C. Faure lgt. (BMNH); 1 spec., South Africa, Pretoria, 4.i.1922 (BMNH).

***Eremnus angustirostris* Marshall, 1937**

Eremnus angustirostris Marshall, 1937: 470 (original description).

Eudraces zumpti Voss 1959: 411 (original description), **syn. nov.**

Type locality. Orange Free State: Frankfort, Bothaville [South Africa, Free State].

Type material of *Eudraces zumpti*. Paratype: 1 ♀, 'Type [red, p] / Johannesburg 29.1.53 [p] / Süd Afrika, leg. Zumpt [p] / *Eudraces zumpti* n. sp. [hw], E. Voss det., 1928 [p] / *Eremnus angustirostris* (Marshall), R. Borovec det. 2017 [p]' (NHMB).

Additional material examined. 1 ♂ 1 ♀, South Africa, Pretoria (BMNH); 1 ♂ 1 ♀, South Africa, Transvaal (BMNH).

Remarks. Voss (1959) described *Eudraces zumpti* from to five specimens from "Johannesburg, 29.I.1953, Zumpt leg.". The type material is conspecific with a very unusual species of *Eremnus* Schoenherr, 1823, *E. angustirostris* Marshall, 1937, with which *E. zumpti* is here synonymised. *Eremnus angustirostris* is distinguished from *Eudraces* mainly by its laterally scaled rostrum, in dorsal view with laterally prominent antennal insertion very near to apex of rostrum.

***Holcolaccus sparsus* (Voss, 1959), comb. nov.**

Eudraces sparsum Voss 1959: 412 (original description).

Type locality. Sabie [Sabie, South Africa, Mpumalanga], Tonget bei Durban [South Africa, KwaZulu-Natal].

Type material. Paratype: 1 ♀, 'Type [red, p] / Sabie, N. O. Trans. S. A., Leg. Frey I.1952 [p] / *Eudraces sparsum* n. sp. [hw], E. Voss det., 1928 [p] / (*Holcolaccus sparsus* (Voss), R. Borovec det. 2017 [p]' (NHMB).

Additional material examined. 1 ♂ 4 ♀♀, South Africa, Eastern Cape or., Transkei, Ungie env., 31°17.7' S, 28°06.4' E, 1 450 m, 23.xi.2015, M. Košťál lgt. (RBSC, MKBC); 1 ♀, South Africa, Mpumalanga, Uitsoek, 25°15' S, 30°34' E, 12.xii.1986, high altitude grassveld, grassnetting, Endrödy-Younga lgt. (TMSA).

Remarks. Voss (1959) described this species based on two specimens from “N. O. Transvaal [Mpumalanga, Sabie], Sabio, I.1952, Frey leg.” and “Natal [KwaZulu Natal], Tongset bei Durban, I.1952, Frey leg.”. The paratype specimen, as well as other studied and dissected material belongs, based on the rostrum laterally covered by piliform setae, scrobes in lateral view not continuing backwards, anterior border of pronotum lacking ocular lobes and female sternite VIII with arrow-shaped, narrow and long plate, with median part strongly sclerotised, narrowly subtriangular, apically exceeding as slender, sharp tip, laterally with weakly sclerotised, translucent “wings” to the genus *Holcolaccus* Marshall, 1953 (Oosomini Lacordaire, 1863), which is considered monotypic, with the only described species *H. viridulus* Marshall, 1953. However, *Holcolaccus* also includes five undescribed species, and will be revised in a future paper.

Key to *Eudraces* species

1. Rostrum short and robust, slightly longer than pronotum, at base distinctly wider than profemora at midlength. Elytra short oval, 1.1–1.2× as long as wide. Funicle segment 2 short, 1.8–1.9× as long as wide. Small species, 2.3–2.7 mm long. *E. barclayi* sp. n.
- Rostrum long and slender, distinctly longer than pronotum, at base as wide as profemora at midlength. Elytra elliptic to ovate, 1.4–1.8× as long as wide. Funicle segment 2 long and slender, 3.1–4.2× as long as wide. Larger species, 3.3–5.5 mm long. 2
2. Elytra at disc with semierect setae, well visible in lateral view, setae longer than half the width of one interval. Metatibiae of males indistinctly denticulate, without long setae at inner side (Fig. 12). Penis laterally with conspicuously widened, drop-shaped tip (Fig. 16). Size 3.8–4.8 mm *E. flavirostris* Marshall
- Elytra at disc with semiappressed to appressed setae, hardly visible in lateral view, setae shorter than half the width of one interval. Metatibiae of males distinctly denticulate, with grooming brush on inner side comprising long setae (Figs 10, 11, 13). Penis laterally evenly tapered apicad (Figs 14, 15, 17). 3
3. Larger species, 5.3–5.5 mm. Rostrum robust, in lateral view at base 1.5× as wide as diameter of eyes. Metatibiae in males on inner side with indistinct incurvation, with spines apically rounded (Fig. 13). *E. munroi* Marshall
- Smaller species, at most 4.0 mm long. Rostrum slender, in lateral view equally wide or only slightly wider than diameter of eyes. Metatibiae in males deeply incurved, with spines pointed (Figs 10, 11). 4
4. Rostrum in lateral view with dorsal border weakly regularly curved at place of antennal insertion. Antennal insertion in males at apical quarter of rostrum. Penis in ventral view evenly tapered apicad with straight sides (Fig. 15). Size 3.4–3.5 mm. *E. faurei* Marshall
- Rostrum in lateral view with dorsal border hump-shaped at place of antennal insertion. Antennal insertion in males at apical third of rostrum. Penis in ventral view before tip with weakly concave sides (Fig. 14). Size 3.3–4.0 mm. *E. fallaciosus* (Voss)

Check list of *Eudraces* species

<i>E. barclayi</i> sp. n.	South Africa: Gauteng, North West, Free state, Northern Cape
<i>E. faurei</i> Marshall, 1926	South Africa: Limpopo
<i>E. fallaciosus</i> (Voss, 1962) comb. n.	Democratic Republic of Congo, Tanzania
<i>E. flavirostris</i> Marshall, 1926	South Africa: KwaZulu-Natal, Orange Free State
<i>E. munroi</i> Marshall, 1938	South Africa: Gauteng

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On the genus *Pseudocneorhinus* (Coleoptera, Curculionidae, Entiminae), with descriptions of five new species from China

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Abstract

Species of the genus *Pseudocneorhinus* occurring in or near China are reviewed, with description of five new species, *Pseudocneorhinus angustus* **sp. nov.**, *P. glaber* **sp. nov.**, *P. blavaci* **sp. nov.**, *P. obliquehumeralis* **sp. nov.**, and *P. setosicallus* **sp. nov.** from the provinces of Beijing, Gansu, Shaanxi, Sichuan, and Zhejiang. They are illustrated and compared with similar species, and a key is provided to all presently known species of the genus. Lectotypes of the following species are designated: *Callirhopalus subcallosus* Voss, 1956 [current name *Pseudocneorhinus subcallosus* (Voss, 1956)] and *P. squamosus* Marshall, 1934. *Pseudocneorhinus squameus* Morimoto, 2015 is confirmed for the fauna of China.

Keywords

New taxa, parthenogenetic, taxonomy, Trachyploeini, weevil

Introduction

The genus *Pseudocneorhinus* Roelofs, 1873 has been transferred between tribes several times. The genus was originally placed in Leptopsides Lacordaire, 1863 (Roelofs 1873), and subsequently in the tribes Eremnini Lacordaire, 1863 (Schenkling and

Marshall 1931), Callirhopalini sensu Voss, 1956 (Morimoto 1962, Chao and Chen 1980), Pseudocneorhinini Kôno, 1930 (Morimoto 1989, Han et al. 2000, Morimoto et al. 2015) and Trachyphloeini Gistel, 1848 (Zherikhin and Egorov 1991, Egorov et al. 1996, Alonso-Zarazaga and Lyal 1999, Borovec 2009, 2013, Alonso-Zarazaga et al. 2017), where it is retained in this study. Alonso-Zarazaga et al. (2017) listed 14 species from China, the Russian Far East, Japan, and Korea. Species are found in a warm step-pic habitat, forest litter, and also in high mountains.

Together with the species newly described herein, the genus increases to 19 species known from the same area, with *Pseudocneorhinus bifasciatus* Roelofs, 1880 having been introduced into the USA (Wheeler and Boyd 2005). The latter is comparatively well studied, with known biology, larva, and pupa (for example Allen 1959, Zepp 1978). Males are known only in nine species and the others are assumed to be parthenogenetic. Marshall (1934) and Voss (1956) studied regional collections from China, Han et al. (2000) and Han and Yoon (2000) from South Korea and Morimoto et al. (2015) from Japan.

The genus was recently redescribed by Borovec (2009). *Pseudocneorhinus* is related to genera *Rhinodontus* Faust, 1890 and *Rhinodontodes* Voss, 1967 sharing with them the ocular lobe in the lateral part of anterior pronotal margin, but it differs from both by the ocular lobe without setae, the rostrum lacking a lengthened epistome in females, the antennal scape exceeding the posterior border of eye and the apex of the protibia not enlarged laterally. The present study reviews the extensive material held by the Institute of Zoology at the Chinese Academy of Sciences Beijing, the Natural History Museum London, and the Zoological Institute Saint Petersburg, but also from some private collections. Previously published keys to the species of *Pseudocneorhinus* included those to the Korean (Han et al. 2000) and Japanese faunas (Morimoto et al. 2015), but no key to all the species has been published since Marshall's (1934) review of the genus, in which the number of recognised species is half that recognised in the current paper; a full key is given below. In addition, illustrations of diagnostically important internal structures are provided.

Materials and methods

Body length was measured in profile from the anterior margin of the eyes to the apex of the elytra, excluding the rostrum. All other measurements were taken in dorsal view: rostral length between anterior margins of eyes and anterior margin of epistome, rostral width as maximum width, pronotal and elytral length along midline, and their widths as maximum extension across. Dissected female genitalia were embedded in Solakryl BMX. Dried male genitalia were glued on the same mounting card as the insect. The terminology for rostrum and terminalia follows Oberprieler et al. (2014).

Photos of adults were taken with a Canon EOS 7D digital camera with an MP-E 65 mm macro lens and combined using CombineZP software. All habitus photos were edited with Adobe Photoshop CS3. Line drawings were made using a camera Lucida mounted on a Rathenow microscope. Maps were prepared with Simplemappr (Shorthouse 2010).

Available types of species hitherto described were studied, and lectotypes were selected when necessary according to Article 74.7.3 of the Code of Zoological Nomenclature.

Acronyms for depositories of the material are as follows:

BMNH	The Natural History Museum, London, United Kingdom [formerly British Museum (Natural History)];
CGTS	Christoph Germann collection, Rubigen, Switzerland;
GOVI	Giuseppe Osella collection, Verona, Italy;
IZCAS	Institute of Zoology, Chinese Academy of Sciences;
JSPC	Jiří Skuhrovec collection, Praha, Czech Republic;
MKBC	Michael Košťál collection, Brno, Czech Republic;
MMTI	Massimo Meregalli collection, Torino, Italy;
NHRS	Naturhistoriska Riksmuseet, Stockholm, Sweden;
NMPC	Národní muzeum, Prague, Czech Republic;
PBSP	Piotr Białooki, Sopot, Poland;
PKSC	Petr Kresl collection, Spůle, Czech Republic;
RBSC	Roman Borovec collection, Sloupno, Czech Republic;
SMTD	Senckenberg Naturhistorische Sammlungen Dresden, Germany;
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany;
UMO	University Museum, Oxford, United Kingdom;
ZFMK	Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany;
ZIN	Zoological Institute of the USSR Academy of Sciences, Saint Petersburg, Russia.

Taxonomy

Pseudocneorhinus Roelofs, 1873

Pseudocneorhinus Roelofs, 1873: 177 (original description).

Pseudocneorhinus: Alonso-Zarazaga and Lyal 1999: 183 (catalogue); Han et al. 2000: 33 (Korean fauna); Borovec 2003: 31 (note); Borovec 2009: 76 (redescription of genus); Morimoto et al. 2015: 322 (Japanese fauna); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Pseudocneorhinus angustus sp. nov.

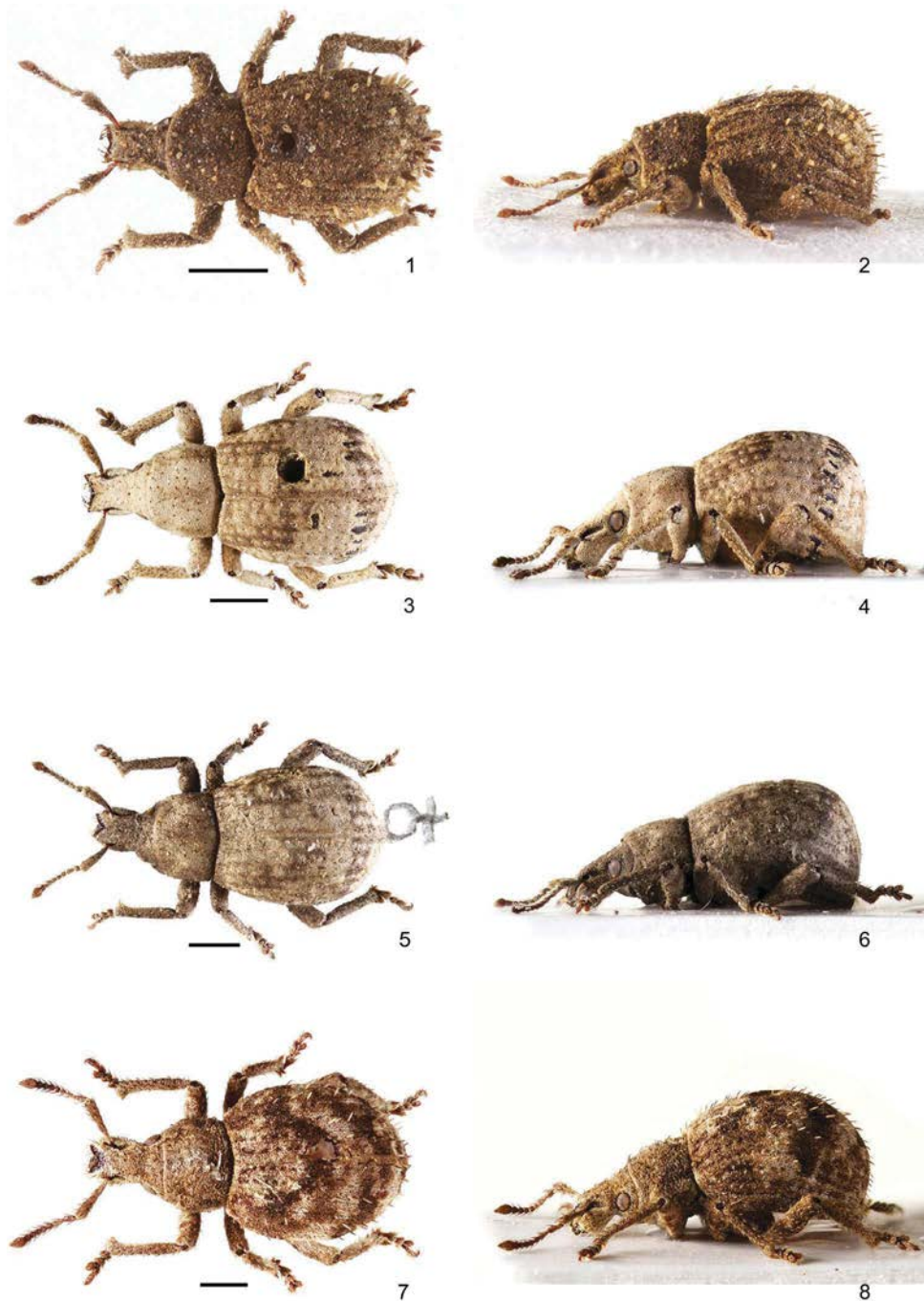
<http://zoobank.org/61DDA9DF-3031-4340-812E-8135D54416C7>

Figs 1, 2, 31

Type locality. Valley of Fubianhe river (China: Sichuan).

Material examined. Holotype. CHINA – **Sichuan Prov.** ♂; valley of Fubianhe river; 2 Aug. 1893; Potanin leg.; ZIN.

Paratype. CHINA – **Sichuan Prov.** 1 ♂; same data as for holotype; 5 Aug. 1893; ZIN.



Figures 1–8. Habitus of *Pseudocneorhinus* species **1, 2** *Pseudocneorhinus angustus* sp. nov., male, paratype, dorsal and lateral view **3, 4** *P. glaber*, sp. nov., male, holotype, dorsal and lateral view **5, 6** *P. glaber* sp. nov., female, paratype, dorsal and lateral view **7, 8** *P. hlavaci* sp. nov., female, holotype, dorsal and lateral view. Scale bars: 1 mm.

Description. Body length: Holotype 3.41 mm, paratype 3.50 mm.

Body (Figs 1, 2) blackish, basal half of antennal scape, funicle and tarsi reddish brown, mucro and claws reddish. Appressed scales covering antennae, head, pronotum, elytra and legs, except antennal club; scales on elytra small, irregularly angular, with indistinct depression in the middle; 4–6 scales across interval width, somewhat sparse, narrowly separate; scales light brownish with V-shaped transverse stripe from greyish scales on elytral declivity. Raised elytral setae conspicuous, erect, long and wide, spatulate, positioned in single dense row only on odd intervals, with short longitudinal clumps of intervals 3 and 5 on declivity; setae white greyish and blackish, alternating irregularly. Semierect setae on pronotum, head and rostrum half as long and wide as elytral ones, irregularly scattered. Antennae and legs except for basal half of scape with semierect moderately long setae, prominent from outline.

Rostrum (Figs 1, 2) long and slender, $1.09\text{--}1.11 \times$ as long as wide, abruptly widened from base to basal one-fourth, then weakly tapered anteriorly, with straight sides. Epifrons somewhat tapered from base to apex, with straight sides, longitudinally depressed along the whole length. Epistome short and wide, apices distinctly wider than anterior part of epifrons, separated from frons by indistinct slender carina. Frons squamose with three pairs of stout, yellowish setae. Antennal scrobe in dorsal view almost invisible; in lateral view curved, short, directed towards eyes. Rostrum in lateral view strongly convex, indistinctly separated from head by shallow transverse depression. Eyes hardly prominent from outline of head.

Antennae slender with robust scape. Scape as long as funicle, weakly curved, regularly but distinctly enlarged apically in apical half, at apex $1.4\text{--}1.6 \times$ as wide as club. Funicle segment 1 as long as and slightly wider than segment 2, both conical; segment 1 twice as long as wide; segment 2 $2.3\text{--}2.4 \times$ as long as wide; segments 3 and 4 $1.1\text{--}1.2 \times$ as long as wide; segments 5 and 6 isodiametric; segment 7 $1.1\text{--}1.2 \times$ as wide as long; club $1.7\text{--}1.8 \times$ as long as wide.

Pronotum (Figs 1, 2) $1.26\text{--}1.27 \times$ as wide as long, with weakly rounded sides, widest at midlength, more tapered anteriorly than posteriorly. Disc regularly convex. Anterior border in lateral view sinuose, ocular lobes well developed. Base weakly convex.

Elytra (Figs 1, 2) slender, elongate oval, $1.25\text{--}1.29 \times$ as long as wide, widest behind midlength, not wider at shoulders. Striae distinct, weakly curved on elytral disc. Even intervals wider and more elevated than odd intervals, mainly in basal part and on elytral declivity. Base straight laterally, sinuate only in middle between third intervals. Elytra in lateral view moderately convex.

Protibiae rounded at apex, with fringe of very short yellowish setae, mucronate. Inner side of all tibiae without teeth. Metatibial corbels squamose. Tarsi robust; segment 2 $1.2\text{--}1.3 \times$ as wide as long; segment 3 $1.3\text{--}1.4 \times$ as wide as long and $1.3\text{--}1.4 \times$ as wide as segment 2; onychium $1.1\text{--}1.2 \times$ as long as segment 3. Claws fused in basal half.

Penis (Fig. 31) short with weakly rounded sides; apex distinctly tapered, subtriangular with concave sides. Penis in lateral view short and wide, obtuse with slender elongated apex in ventral side.

Female genitalia unknown.

Biology. Unknown.

Distribution. China: Sichuan (Fig. 52).

Etymology. The name is a Latin adjective meaning narrow and used to refer to the unusually slender elytra.

Differential diagnosis. *Pseudocneorhinus angustus* is similar to *P. hirsutus* (Formánek, 1916) and *P. squamosus* Marshall, 1934 in having distinctly enlarged antennal scapes, squamose frons, only medially (between third intervals) sinuate elytral base and small body size. It is possible to distinguish it from both these species by raised setae confined to odd intervals (*P. hirsutus* and *P. squamosus* have setae on all intervals), rostrum 1.1 × longer than wide (*P. hirsutus* and *P. squamosus* have rostrum isodiametric), epifrons tapered apicad with straight sides (*P. hirsutus* and *P. squamosus* have epifrons parallel-sided, at base weakly concave), epistome with apices distinctly wider than anterior part of epifrons (*P. hirsutus* and *P. squamosus* have epistome with apices distinctly narrower than anterior part of epifrons) and elytra slender, interval 1 at declivity much wider than on the disc (*P. hirsutus* and *P. squamosus* have elytra wider with interval 1 equally wide along the whole length). Other similar species with raised setae only on odd intervals are *P. alternans* Marshall, 1934, *P. setosicallus* sp. nov. and *P. subcallosus* (Voss, 1956). *P. angustus* can be distinguished from all these three species by smaller body size, long and wide spatulate raised elytral setae and apically distinctly enlarged scapes (apex wider than club). *Pseudocneorhinus angustus* is most similar to *P. setosicallus* because of long erect setae on the elytra; they can be distinguished by the characters specified in the key below.

***Pseudocneorhinus glaber* sp. nov.**

<http://zoobank.org/C3880FA1-F1EA-4050-835D-9588C617CA3D>

Figs 3–6, 32, 37

Type locality. Anji County, Longwang Mountain (China: Zhejiang).

Material examined. Holotype. CHINA – Zhejiang Prov. ♂; Anji, Longwangshan [安吉龙王山]; 450 m a.s.l.; 16 May 1996; H. Wu leg. [吴鸿]; IZCAS, IOZ(E)1965363.

Paratypes. CHINA – Zhejiang Prov. 2 ♂♂; same data as for holotype; IZCAS, IOZ(E)1965355, IOZ(E)1965364; 1 ♀; same data as for holotype; IZCAS, IOZ(E)1786461; 1 ♂; same data as for holotype; 600 m a.s.l.; 13 Jun. 1996; W.Z. Li leg. [李文柱]; IZCAS, IOZ(E)1965354; 1 ♂; same data as for holotype; 11 Jun. 1996; W.Z. Li leg. [李文柱]; IZCAS, IOZ(E)1965353; 14 ♂♂; Lin'an, West Tianmushan, Longwangshan Gang [临安西天目山龙王山岗]; 30°13.027'N, 119°24.929'E; 1452 m a.s.l.; 25 Jul. 2011; N. Yang leg. [杨妮]; IZCAS, IOZ(E)1965337–1965345, IOZ(E)1965347–1965349, IOZ(E)1965351, IOZ(E)1965362; 4 ♀♀; same data as for preceding; IZCAS, IOZ(E)1965346, IOZ(E)1965350, IOZ(E)1965352, IOZ(E)1965361; 1 ♂; Lin'an, West Tianmushan, skyline drive [临安西天目山盘山公路]; 600 m a.s.l.; 26 Jul. 2011; N. Yang leg. [杨妮]; IZCAS, IOZ(E)1965336;

1 ♂; Lin'an, West Tianmushan, Xiaoshilin [临安西天目山小石林]; 1450 m a.s.l.; 30 Jul. 2011; N. Yang leg. [杨妮]; IZCAS, IOZ(E)1965335; 1 ♂; West Tianmushan, Xianrending [西天目山仙人顶]; 1500 m a.s.l.; 6 Jun. 1998; H. Wu leg. [吴鸿]; IZCAS, IOZ(E)1798071; 1 ♀; West Tianmushan, Sanliting [西天目山三里亭]; 25 Aug. 1998; H. Wu leg. [吴鸿]; IZCAS, IOZ(E)1798081; 1 ♀; West Tianmushan, Kaishan Laodian [西天目山开山老殿]; 1050 m a.s.l.; 23 Jun. 1998; H. Wu leg. [吴鸿]; IZCAS, IOZ(E)1798094; 1 ♂; West Tianmushan, Sanmuping [西天目山三亩坪]; 30 Jul. 1998; H. Wu leg. [吴鸿]; IZCAS, IOZ(E)1798099; 3 ♂♂; Lin'an City, Qingliangfeng county, Shunxi village [临安市清凉峰镇顺溪村]; 30°03.041'N, 118°56.550'E; 400 m a.s.l.; 9 Aug. 2008; J. Yang leg. [杨娟]; IZCAS, IOZ(E)1965311, IOZ(E)1965312, IOZ(E)1965356; 2 ♂♂; same data as for preceding; 10 Aug. 2008; IZCAS, IOZ(E)1965313, IOZ(E)1965314; 1 ♀; same data as for preceding; IOZ(E)1965357; 2 ♂♂; West Qianqingtang [西千顷塘]; 30°18.023'N, 119°07.037'E; 1140 m a.s.l.; 6 Aug. 2008; J. Yang leg. [杨娟]; beat sheet [振布]; IZCAS, IOZ(E)1965315, IOZ(E)1965320; 2 ♀♀; same data as for preceding; IZCAS, IOZ(E)1965358, IOZ(E)1965360; 9 ♂♂; same data as for preceding; 7 Aug. 2008; IZCAS, IOZ(E)1965316, IOZ(E)1965321–1965323, IOZ(E)1965326, IOZ(E)1965329, IOZ(E)1965330, IOZ(E)1965333, IOZ(E)1965359; 10 ♀♀; same data as for preceding; IZCAS, IOZ(E)1965317–1965319, IOZ(E)1965324, IOZ(E)1965325, IOZ(E)1965327, IOZ(E)1965328, IOZ(E)1965331, IOZ(E)1965332, IOZ(E)1965334.

Description. Body length: 4.63–5.19 mm, holotype 4.75 mm.

Body (Figs 3–6) blackish, mucro and fringe of setae on protibia yellowish to reddish, claws brownish. Appressed scales covering antennae, head, pronotum, elytra and legs, except antennal club; scales on dorsal part of body small, irregularly angular, depressed in the middle, 8–9 scales across elytral interval width, narrow separate; scales light greyish with feeble pearly sheen, on elytra with slender transverse dark brownish stripe at anterior third and wider dark brownish stripe at apical third. Semiappressed elytral setae inconspicuous, strongly inclined, piliform to bristle-shaped, about as long as half of width of elytral interval, visible only in apical part or at base of elytra. Pronotum and head capsule and rostrum with identical semiappressed setae, these sparse and irregularly scattered, on pronotum directed transversely. Antennae and legs except for basal half of scape with semierect moderately long setae, prominent from outline.

Rostrum (Figs 3–6) in males longer and more slender than in females, in males 1.17–1.20 × as long as wide, in females 1.04–1.07 × as long as wide, regularly enlarged from base to midlength, then tapered anteriorly with regularly rounded sides. Epifrons tapering from base to midlength and widened again with slightly rounded sides at basal and apical half, at apex narrower than at base, longitudinally widely and shallowly depressed. Epistome V-shaped, long, conspicuous, separated by slender carina from frons, in females at apex narrower than epifrons at apex, in males lengthened and curved along anterior border of rostrum, wider than epifrons at apex. Frons as a very narrow glabrous strip along epistome, bearing four pairs of stout and long apical setae, obliquely directed anteriorly. Scrobe in dorsal view invisible; in lateral view narrow, subparallel-

sided, long, weakly curved, directed towards middle of eyes. Rostrum in lateral view somewhat convex, in males longer and more slender than in females, separated from head by shallow transverse depression. Eyes hardly prominent from outline of head.

Antennae slender, funicle 1.2 × as long as scape. Scape slender, gradually and regularly enlarged apicad, at apex as wide as club. Funicle segments 1 and 2 conical, long, funicle segment 1 slightly longer and wider than segment 2, the both 1.6–1.7 × as long as wide; segments 3 and 4 1.1 × as long as wide; segments 5 and 6 isodiametric; segment 7 1.1–1.2 × as long as wide.

Pronotum (Figs 3–6) 1.26–1.31 × as wide as long, widest at basal third, with distinctly rounded sides, more strongly tapered anteriorly than posteriorly. Disc regularly convex. Base weakly convex. Pronotum in lateral view moderately convex, ocular lobes well developed.

Elytra (Figs 3–6) 1.21–1.31 × as long as wide, ovoid, widest at apical third; shoulders absent, elytra at base hardly wider than base of pronotum, behind base with straight to slightly concave sides. Striae wide and distinct, punctate, punctures wide and completely hidden by appressed scales; intervals weakly convex, odd intervals slightly more so than even ones, equally wide, weakly wider than striae. Elytra in lateral view distinctly convex.

Protibiae rounded at apex, with fringe of short and fine yellowish setae, mucronate, inner margin with 3–4 very small black, almost indistinct teeth. Metatibiae not denticulate; metatibial corbels densely squamose. Tarsi short, segment 2 1.4–1.5 × as wide as long; segment 3 1.4–1.5 × as wide as long and 1.4–1.5 × as wide as segment 2; onychium 0.7–0.8 × as long as segment 3. Claws solidly fused in basal half, almost parallel-sided in apical half.

Penis (Fig. 32) short and wide, in ventral view slightly and regularly enlarged apicad, with straight sides, apex triangular with small triangular ends on sides; in lateral view almost straight, distinctly enlarged apicad, apex slender, elongate, dorsal border lengthened, lobe-like.

Female genitalia. Sternite VIII umbrella-shaped with short apodeme. Gonocoxites flat, subtriangular, with long apical styli, laterally prominent, armed with setae. Spermatheca (Fig. 37) with cornu long and regularly curved; corpus enlarged oval, ramus and nodule not differentiated.

Biology. Unknown.

Distribution. China: Zhejiang (Fig. 52).

Etymology. The Latin name, meaning smooth and without setae, refers to body with barely visible, inconspicuous, short piliform semi-appressed setae.

Differential diagnosis. *Pseudocneorhinus glaber* has inconspicuous elytral vestiture consisting of short, piliform setae that are semi-appressed and barely visible at apex and base in lateral view; all other species have elytra with conspicuous, moderate to very long setae of various widths and shapes, which are always more or less erect and well visible even in dorsal view. *Pseudocneorhinus glaber* resembles also species of the genus *Rhinodontodes* in having a long rostrum and medially constricted epifrons, but the epistome does not exceed the outline of the rostrum and the protibiae are straight.

***Pseudocneorhinus hlavaci* sp. nov.**

<http://zoobank.org/AD7ABB15-DC0A-4A7C-8D41-B7A0A247E8FE>

Figs 7, 8, 38

Type locality. Dongling Mountains, Xiaolongmen, Liu Lang Yu (China: Beijing).

Material examined. Holotype. CHINA – **Beijing** ♀; Dongling Mountains, Xiaolongmen, Liu Lang Yu; 39°58.2'N, 115°25.8'E; 1400 m a.s.l.; 15 Jun. 2001; J. Cooter & P. Hlaváč leg.; Litter; BMNH.

Paratypes. CHINA – **Beijing** 1 ♀; same data as for holotype; BMNH; 1 ♀; Xiaolongmen forestry station, Nan'gou [小龙门林场南沟]; 1140 m a.s.l.; 30 May–2 Jun. 2001; X.D. Yu leg. [于晓东]; *Larix* forest, pitfall trap [落叶松林, 杯诱]; IZCAS, IOZ(E)1965213; 2 ♀♀; Mentougou, Xiaolongmen [门头沟小龙门]; 39°57.6'N, 115°25.8'E; 1164–1210 m a.s.l.; 5 Jul. 2011; K.Y. Zhang leg. [张魁艳]; IZCAS, IOZ(E)1965297, IOZ(E)1965301; 1 ♀; same data as for preceding; G.X. Qiao & J. Chen leg. [乔格侠, 陈军]; IZCAS, IOZ(E)1965300; 1 ♀; Xiaolongmen forestry station, Nan'gou [小龙门林场南沟]; 1140 m a.s.l.; 18–21 Jul. 1999; X.D. Yu leg. [于晓东]; *Larix* forest, pitfall trap [落叶松林, 杯诱]; IZCAS, IOZ(E)1965194; 1 ♀; Xiaolongmen [小龙门]; 1200–1350 m a.s.l.; 19 Aug. 1999; W.P. Xie leg. [谢为平]; IZCAS, IOZ(E)1965309; 1 ♀♀; Dongling Shan, 100 km W of Beijing; 1500 m a.s.l.; 12–15 Jun. 2000; Z.d. Jindra leg.; NMPC; 3 ♀♀; same data as for preceding; RBSC; 1 ♀; same data as for preceding; UMO.

Description. Body length: Holotype 5.25 mm, paratype 4.95–5.56 mm.

Body (Figs 7, 8) blackish, only antennal club and basal part of first tarsal segment, mucro, fringe of setae at apex of protibia, and claws reddish. Appressed scales on body dense, hiding integument, oval, weakly imbricate, finely longitudinally striate, 5–6 scales across interval width; scales dark brownish with small light brownish spots irregularly scattered on elytra. Raised elytral setae semierect, slender, lanceolate, somewhat shorter than width of one elytral interval, with single sparse, regular row on each interval, setae greyish and blackish, alternating irregularly. Semierect setae on pronotum somewhat shorter than elytral ones, sparse, irregularly scattered. Semiappressed setae on head and rostrum half as long as pronotal setae. Antennae and legs except of basal half of scape with semierect moderately long setae, prominent in outline.

Rostrum (Figs 7, 8) long, 1.09–1.13 × as long as wide, regularly distinctly enlarged from base to antennal insertion, then rounded around apex, without abrupt widening at base. Epifrons tapered from base to midlength and widened again, at apex as wide as at base, longitudinally depressed, with somewhat swollen borders. Epistome V-shaped, long, conspicuous, separated by slender carina from frons, at apex as wide as epifrons in narrowest part. Frons glabrous, V-shaped, as a strip along epistome, bearing five pairs of stout, long apical setae, obliquely directed anteriorly. Scrobe in dorsal view visible only in apical part as slender furrow; in lateral view narrow, short, curved, directed towards eye. Rostrum in lateral view somewhat convex, long and slender, separated from head by shallow transverse depression. Eyes weakly prominent from outline of head.

Antennae slender. Scape as long as funicle, straight, weakly and regularly enlarged to apex, at apex only slightly wider than club. Funicle segment 1 as long as and only slightly wider than segment 2, both conical; segment 1 1.7–1.8 × as long as wide; segment 2 1.9–2.0 × as long as wide; segment 3 1.2 × as long as wide; segment 4 1.1 × as long as wide; segments 5 and 6 isodiametric; segment 7 1.1 × as wide as long; club 1.6–1.7 × as long as wide.

Pronotum (Figs 7, 8) 1.42–1.47 × as wide as long, regularly convex on the disc, widest at midlength, with weakly rounded sides, more strongly tapered anteriorly than posteriorly. Base indistinctly convex, almost straight. Pronotum in lateral view convex, ocular lobes well developed.

Elytra (Figs 7, 8) regularly oval, 1.19–1.24 × as long as wide, widest at midlength; shoulders regularly rounded. Striae distinct; intervals almost flat, equally wide and convex. Elytra in lateral view distinctly convex.

Protibiae rounded at apex, with fringe of short and fine reddish setae, mucronate, on inner margin with 4–5 black, very small and indistinct teeth. Metatibiae with 1–3 black, very small and indistinct teeth in apical half; metatibial corbels squamose. Tarsi robust, segment 2 1.1–1.2 × as wide as long; segment 3 1.4–1.5 × as wide as long and 1.5–1.6 × as wide as segment 2; onychium equally long to 1.1 × as long as segment 3. Claws fused in basal half.

Male genitalia unknown.

Female genitalia. Sternite VIII umbrella-shaped with short apodeme. Gonocoxites flat, weakly sclerotised with short apical styli, armed with setae. Spermatheca (Fig. 38) with cornu long and regularly curved; ramus short twice as wide as long; nodulus short as ramus, half as wide as ramus, returned.

Biology. The specimens were sifted from forest litter.

Distribution. China: Beijing (Fig. 52).

Etymology. The newly described species is dedicated to the collector, our friend Peter Hlaváč (Prague, Czech Republic), well-known specialist of Staphylinidae (Pselaphinae, Scydmaeninae) and also Curculionidae.

Differential diagnosis. *Pseudocneorhinus hlavaci* is most similar to *P. sellatus* Marshall, 1934 in terms of size, overall shape, regular intervals, and dorsal contour of rostrum (i.e., evenly enlarged apically, base not abruptly widened). It is easily distinguishable from it by elytral setae conspicuous and semierect, rostrum slightly longer than wide with straight sides in basal half and epifrons without longitudinal carina.

***Pseudocneorhinus obliquehumeralis* sp. nov.**

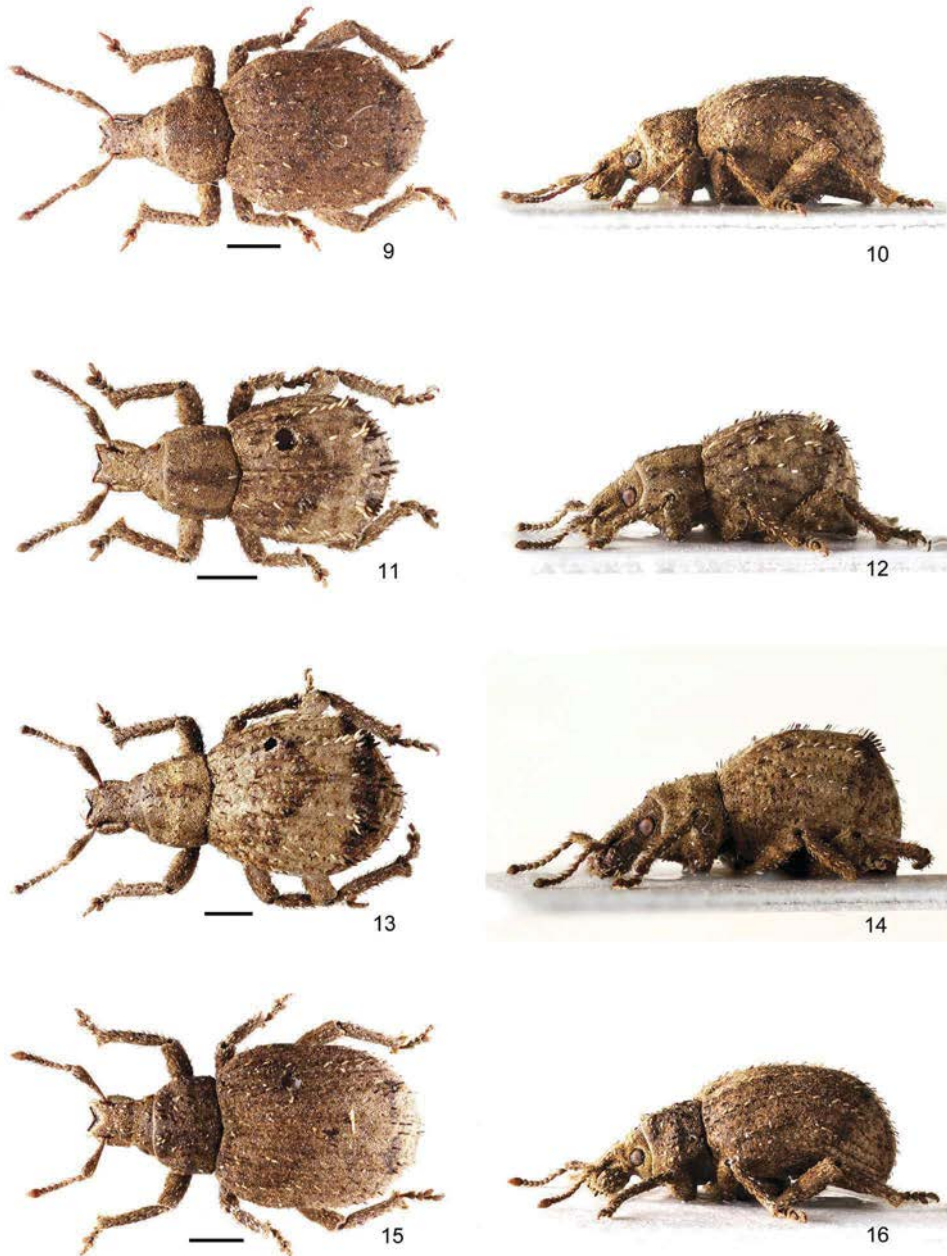
<http://zoobank.org/A6963E03-622F-4F29-92ED-355101704F84>

Figs 9, 10

Type locality. Xinglongshan b. Yuzhong, loc. Yangzhai (China: Gansu).

Material examined. Holotype. CHINA – Gansu Prov. ♀; Xinglongshan b. Yuzhong, Yangzhai; 2500–3000 m a.s.l.; 22–26 Jul. 1993; Heinz leg.; SMNS.

Paratype. CHINA – Shaanxi Prov. 1 ♀; Qing Ling Shan mts., road Baoji – Taibai vill., Pass 40 km S Baoji; 21–23 Jul. 1998; Z. Jindra leg.; RBSC.



Figures 9–16. Habitus of *Pseudocneorhinus* species **9, 10** *P. obliquehumeralis* sp. nov., female, paratype, dorsal and lateral view **11, 12** *P. setosicallus* sp. nov., male, holotype, dorsal and lateral view **13, 14** *P. setosicallus* sp. nov., female, paratype, dorsal and lateral view **15, 16** *P. alternans*, female, dorsal and lateral view. Scale bars: 1 mm.

Description. Body length: holotype 5.31 mm, paratype 5.44 mm.

Body (Figs 9, 10) blackish, only very short basal part of scape, club, mucro, and claws brownish and fringe of short setae at apex of protibiae yellowish. Appressed scales

on body except pronotum, head capsule, rostrum and club imbricate, oval, small, finely longitudinally striate; 6–7 scales across interval width. Pronotum, head capsule and rostrum with appressed scales assembling on margins, irregularly tricuspid, narrowly separate. Club finely setose. Scales light brownish, elytra with narrow, transverse dark brownish stripe V-shaped at anterior third and straight at declivity. Elytra with narrow, subspatulate, longitudinally finely striate setae, appressed on disc, semiappressed on declivity, forming regular dense row on each odd interval, and very sparse, hardly visible row on even intervals, about as long as half width of one interval, light grey brownish, on even intervals dark brownish. Pronotum, head capsule and rostrum with identical appressed setae, on pronotum orientated transversely, on rostrum longitudinally, sparsely irregularly scattered. Scape and femora with moderately long semierect setae; funicle, tibiae. and tarsi with identical semierect setae, prominent from outline.

Rostrum (Figs 9, 10) short and wide, $1.02\text{--}1.04 \times$ as wide as long, narrowest at base, regularly moderately enlarged apicad with almost straight sides. Epifrons in basal almost two thirds tapered anteriorly, in anterior third slightly enlarged again, in both parts with weakly convex sides, longitudinally shallowly depressed. Epistome V-shaped, moderately sized, separated by slender carina from frons, at apex distinctly narrower than apical part of epifrons. Frons as very slender glabrous strip along epistome, bearing 3–4 pairs of long, stout setae, obliquely directed anteriorly. Scrobe in dorsal view visible as very slender furrow in apical part; in lateral view short, weakly curved, narrow, directed towards middle of eyes. Rostrum in lateral view weakly convex, separated from head by shallow transverse depression. Eyes weakly prominent from outline of head.

Antennae slender; scape slender, weakly curved, regularly enlarged apicad, at apex same width as club. Funicle $1.2\text{--}1.3 \times$ as long as scape; funicle segments 1 and 2 equally long, conical, segment 1 slightly wider than segment 2; segment 1 $1.5\text{--}1.6 \times$ as long as wide; segment 2 $1.8\text{--}2.0 \times$ as long as wide; segments 3 and 4 $1.2\text{--}1.3 \times$ as long as wide; segments 5 and 6 isodiametric, segment 7 $1.1 \times$ as wide as long.

Pronotum (Figs 9, 10) $1.53\text{--}1.58 \times$ as wide as long, widest at midlength, with moderately rounded sides, distinctly more tapered anteriorly than posteriorly. Disc regularly convex. Base V-shaped. Pronotum in lateral view almost flat, ocular lobes weakly developed.

Elytra (Figs 9, 10) $1.27\text{--}1.33 \times$ as long as wide, long-oval; shoulders angulate to base and to lateral margins, obliquely subtruncate; sides sub-parallel; apex broadly rounded. Striae punctate, punctures small, hidden by appressed scales. Stria 1 at base curved laterally, sutural interval at base enlarged. Odd intervals flat, wide; even intervals weakly elevated, intervals 3, 5 and 7 enlarged at declivity and with low but distinct longitudinal prominence, the biggest at interval 3. Base arched. Elytra in lateral view weakly convex.

Protibiae moderately slender, with straight lateral margin, rounded at apex, with fringe of short and fine yellowish setae, mucronate and not denticulate. Metatibiae with four very small, almost indistinct denticles at apical half; metatibial corbels densely squamous with two, equally long mucros, curved inside. Tarsi slender; segment 2 $1.1\text{--}1.2 \times$ as wide as long; segment 3 $1.3\text{--}1.4 \times$ as wide as long and $1.5\text{--}1.6 \times$ as wide

as previous segment; onychium 1.1 × as long as segment 3. Claws solidly fused in basal half, weakly separate in apical half.

Male genitalia unknown.

Female genitalia. Sternite VIII umbrella-shaped with short apodeme. Gonocoxites flat, moderately slender with long apical styli with setae, prominent laterally. Spermatheca not examined.

Biology. Unknown.

Distribution. China: Gansu, Shaanxi (Fig. 52).

Etymology. The Latin name, meaning with oblique shoulders, refers to obliquely subtruncate shoulders, angled to elytral base and sides.

Differential diagnosis. *Pseudocneorhinus obliquehumeralis* is similar to *P. alternans* by the following characters: oval elytra with distinct shoulders, slender antennal scapes, and raised elytral setae on odd intervals only. It can be distinguished from *P. alternans* by angular rather than regularly oblique shoulders, subdistally distinctly enlarged intervals 3 and 5 each with low longitudinal prominence, and more elongate funicular segments 3 and 4.

***Pseudocneorhinus setosicallus* sp. nov.**

<http://zoobank.org/D09575D3-9616-43A2-8C66-E315CEA8F149>

Figs 11–14, 33, 39

Type locality. Wanxian County, Wang'erbao Natural Reserve (China: Chongqing).

Material examined. Holotype. CHINA – **Chongqing** ♂; Wanxian county, Wang'erbao [万县王二包]; 1200 m a.s.l.; 27 May 1994; Y.W. Zhang leg. [章有为]; IZCAS, IOZ(E) 1786276.

Paratypes. CHINA – **Chongqing** 11 ♂♂; same data as for holotype; IZCAS, IOZ(E)1786279, IOZ(E)1786280, IOZ(E)1786282–1786286, IOZ(E)1786301, IOZ(E)1786302, IOZ(E)1786374, IOZ(E)1786375; 4 ♀♀; same data as for holotype; IZCAS, IOZ(E)1786278, IOZ(E)1786281, IOZ(E)1786287, IOZ(E)1786288; 2 ♂♂; same data as for holotype; J. Yao leg. [姚建]; IZCAS, IOZ(E)1786316, IOZ(E)1786317; 5 ♂♂; same data as for holotype; W.Z. Li leg. [李文柱]; IZCAS, IOZ(E)1786320, IOZ(E)1786321, IOZ(E)1786362–1786364; 3 ♀♀; same data as for preceding; IZCAS, IOZ(E)1786318, IOZ(E)1786319, IOZ(E)1786322; 2 ♂♂; same data as for holotype; X.K. Yang leg. [杨星科]; IZCAS, IOZ(E)1786334, IOZ(E)1786348; 3 ♀♀; same data as for preceding; IZCAS, IOZ(E)1786335, IOZ(E)1786349, IOZ(E)1786350; 12 ♂♂; same data as for preceding; 28 May 1994; IZCAS, IOZ(E)1786273, IOZ(E)1786274, IOZ(E)1786326, IOZ(E)1786327, IOZ(E)1786330, IOZ(E)1786331, IOZ(E)1786337–1786340, IOZ(E)1786342, IOZ(E)1786343; 8 ♀♀; same data as for preceding; IZCAS, IOZ(E)1786328, IOZ(E)1786329, IOZ(E)1786332, IOZ(E)1786333, IOZ(E)1786341, IOZ(E)1786345–1786347; 6 ♂♂; same data as for holotype; 28 May 1994; IZCAS, IOZ(E)1786304, IOZ(E)1786306, IOZ(E)1786307, IOZ(E)1786376–1786378;

5 ♀♀; same data as for preceding; IZCAS, IOZ(E)1786303, IOZ(E)1786305, IOZ(E)1786379–1786381; 2 ♂♂; same data as for preceding; W.Z. Li leg. [李文柱]; IZCAS, IOZ(E)1786324, IOZ(E)1965620; 1 ♀; same data as for preceding; IZCAS, IOZ(E)1786323; 1 ♀; same data as for preceding; J. Yao leg. [姚建]; IZCAS, IOZ(E)1786313; 2 ♀♀; same data as for holotype; 29 May 1994; W.Z. Li leg. [李文柱]; IZCAS, IOZ(E)1786365, IOZ(E)1786366; 1 ♂; same data as for preceding; J. Yao leg. [姚建]; IZCAS, IOZ(E)1786314; 1 ♂; same data as for preceding; 27 Sep. 1994; IZCAS, IOZ(E)1965239; 1 ♂; same data as for preceding; 1300 m a.s.l.; S.M. Song leg. [宋士美]; IZCAS, IOZ(E)1965257; 3 ♀♀; same data as for holotype; 28 Sep. 1994; J. Chen leg. [陈军]; IZCAS, IOZ(E)1965235, IOZ(E)1965236, IOZ(E)1965244; 2 ♂♂; same data as for holotype; 29 Sep. 1994; F.S. Li leg. [李法圣]; IZCAS, IOZ(E)1786372, IOZ(E)1786373; 1 ♂; same data as for preceding; J. Chen leg. [陈军]; IZCAS, IOZ(E)1965256; 1 ♂; same data as for holotype; 30 Sep. 1994; J. Yao leg. [姚建]; IZCAS, IOZ(E)1965254; 3 ♂♂; same data as for preceding; 1300 m a.s.l.; S.M. Song leg. [宋士美]; IZCAS, IOZ(E)1965237, IOZ(E)1965242, IOZ(E)1965262; 2 ♀♀; same data as for preceding; IZCAS, IOZ(E)1965258, IOZ(E)1965263; 7 ♂♂; same data as for holotype; 30 Sep. 1994; J. Chen leg. [陈军]; IZCAS, IOZ(E)1965232, IOZ(E)1965234, IOZ(E)1965240, IOZ(E)1965241, IOZ(E)1965243, IOZ(E)1965259, IOZ(E)1965261; 3 ♀♀; same data as for preceding; IZCAS, IOZ(E)1965233, IOZ(E)1965238, IOZ(E)1965255; 3 ♂♂; same data as for holotype; 22 May 1993; S.Y. Wang leg. [王書永]; IZCAS, IOZ(E)1786309, IOZ(E)1786367, IOZ(E)1786369; 2 ♀♀; same data as for preceding; IZCAS, IOZ(E)1786308, IOZ(E)1786368; 2 ♀♀; same data as for holotype; 10 Jul. 1993; R.Z. Huang leg. [黄润质]; IZCAS, IOZ(E)1786310, IOZ(E)1786311; 1 ♂; same data as for preceding; X.L. Chen leg. [陈小琳]; IZCAS, IOZ(E)1786371; 1 ♂; same data as for preceding; J. Yao leg. [姚建]; IZCAS, IOZ(E)1786315; 1 ♀; same data as for preceding; IZCAS, IOZ(E)1786312; 3 ♂♂; same data as for holotype; 13 Aug. 1993; X.K. Yang leg. [杨星科]; IZCAS, IOZ(E)1786275, IOZ(E)1786290, IOZ(E)1786299; 7 ♂♂; same data as for preceding; 14 Aug. 1993; IZCAS, IOZ(E)1786292, IOZ(E)1786293, IOZ(E)1786296, IOZ(E)1786298, IOZ(E)1786355, IOZ(E)1786358, IOZ(E)1786359; 12 ♀♀; same data as for preceding; IZCAS, IOZ(E)1786289, IOZ(E)1786294, IOZ(E)1786295, IOZ(E)1786300, IOZ(E)1786336, IOZ(E)1786344, IOZ(E)1786351–1786354, IOZ(E)1786356, IOZ(E)1786357; 1 ♂; same data as for holotype; 11 Jun. 1993; W.Z. Li leg. [李文柱]; IZCAS, IOZ(E)1786325; 1 ♂; same data as for holotype; 15 Aug. 1993; X.K. Yang leg. [杨星科]; IZCAS, IOZ(E)1786297; 2 ♀♀; same data as for preceding; IZCAS, IOZ(E)1786277, IOZ(E)1786291; 2 ♀♀; same data as for preceding; 1300 m a.s.l.; IZCAS, IOZ(E)1786360, IOZ(E)1786361; 1 ♂; same data as for preceding; B.W. Sun leg. [孙宝文]; IZCAS, IOZ(E)1786370. – **Sichuan Prov.** 1 ♀; Nanjiang; 21–23 May 2002; E. Kučera leg.; PBSP.

Description. Body length: 4.19–5.75 mm, holotype 5.38 mm.

Body (Figs 11–14) blackish, only short basal part of scape, mucro, fringe of setae at apex of protibia, and claws brownish. Appressed scales on body dense, hiding integument,

irregularly angular, small, 8–9 scales across interval width, with small depression in the middle, only narrowly separate. Scales light brownish, elytra in the middle with wide lighter transverse stripe, wider towards sides, elytral declivity with straight transverse dark brownish stripe. Elytra with conspicuous erect setae, longer than half of interval width, lanceolate, apically pointed, longitudinally finely striate, whitish and blackish, with one sparse row on each odd interval and only sporadic setae on even intervals. Setae denser on interval 1 on apical declivity, creating large and wide tuft of setae on prominence on elytral declivity on interval 3, consisting of 18–20 setae and smaller tuft on prominence on interval 5, consisting of 8–10 setae, anterior part of setae on prominence whitish, posterior part blackish. Semierect setae on pronotum and head with rostrum more slender and shorter than elytral setae, sparsely irregularly scattered. Antennae and legs except of basal half of scape with semierect moderately long setae, prominent from outline.

Rostrum (Figs 11–14) short and wide, in males slightly longer than in females, in males 1.03–1.06 × as long as wide, in females isodiametric, from base regularly enlarged to midlength, then tapered anteriorly with rounded sides. Epifrons with concave sides, narrowest at midlength, at apex narrower than at base, longitudinally depressed, with somewhat swollen borders. Epistome V-shaped, long, conspicuous, separated by slender carina from frons, in females slightly narrower at apex than apical part of epifrons, in males at apex wider than apical part of epifrons. Frons creating very slender glabrous strip along epistome, bearing five pairs of long, stout setae, obliquely directed anteriorly. Scrobe in dorsal view visible only in apical part as very slender furrow; in lateral view narrow, long, weakly curved, directed towards middle of eyes. Rostrum in lateral view somewhat convex, separated from head by shallow transverse depression. Eyes weakly prominent from outline of head.

Antennae slender. Scapes slender, regularly enlarged in basal half, parallel-sided in apical half, at apex as wide as club. Funicle 1.2–1.3 × as long as scape; funicle segment 1 as long as and as wide as segment 2, each 1.8–1.9 × as long as wide; segments 3–6 1.1 × as long as wide; segment 7 isodiametric.

Pronotum (Figs 11–14) 1.18–1.26 × as wide as long, widest at midlength, in basal half subparallel-sided, weakly tapered anteriorly, with rounded sides. Disc regularly convex. Base weakly convex. Pronotum in lateral view almost flat, ocular lobes well developed.

Elytra (Figs 11–14) 1.15–1.20 × as long as wide, ovoid in dorsal view, at base about as wide as base of pronotum, shoulders not developed; elytra distinctly enlarged posteriorly, widest at apical third. Striae distinctly punctate, punctures wide, completely hidden by appressed scales. Even intervals almost flat, odd intervals convex, intervals 3 and 5 at elytral declivity enlarged, forming short longitudinal prominence, on interval 3 larger than on interval 5. Elytra in lateral view distinctly convex.

Protibiae rounded at apex, with fringe of short and fine yellow-brownish setae, mucronate, not denticulate, with straight lateral margin. Metatibiae not denticulate; metatibial corbels densely squamose. Tarsi short, segment 2 1.2–1.3 × as wide as long; segment 3 1.5–1.6 × as wide as long and 1.5–1.6 × as wide as segment 2; onychium 0.8–0.9 × as long as segment 3. Claws solidly fused at basal half, almost parallel-sided at apical half.

Penis (Fig. 33) short and wide, in ventral view subparallel-sided with weakly concave sides, base and apex about equally wide, apex truncate with triangular point at the middle; in lateral view short and very wide, slightly curved, equally wide along the whole length with slender, moderately long elongate apex.

Female genitalia. Sternite VIII with plate umbrella-shaped and with short apodeme. Gonocoxites flat, moderately slender with long apical styli with setae, prominent laterally. Spermatheca (Fig. 39) with cornu short and wide, almost straight, corpus large, rounded; ramus subtriangular, about as long as wide, nodulus small, hump-shaped.

Biology. Unknown.

Distribution. China: Chongqing, Sichuan (Fig. 52).

Etymology. The Latin name, meaning with setae on prominence, refers to the conspicuous tuft of setae on prominence on the elytral declivity.

Differential diagnosis. *Pseudocneorhinus setosicallus* is similar to *P. alternans* and *P. subcallosus* because of its large size and erect setae on odd intervals. From *P. alternans*, currently known only from females, this species is easily separated mainly by having ovoid elytra without shoulders, with the greatest width in the apical third, long erect elytral setae, conspicuous longitudinal subapical prominence on intervals 3 and 5 bearing very dense tufts of whitish and blackish setae and by slender pronotum. From *P. subcallosus*, a species with very similar body shape, *P. setosicallus* is distinguishable by its long, lanceolate erect elytral setae, clearly visible in dorsal as well as in lateral view, while *P. subcallosus* has elytral setae appressed, subspatulate, barely visible only in lateral view. The subapical tuft on interval 3 consists of at least 15 setae in *P. setosicallus* but at most 10 in *P. subcallosus*. As stated below in the key, *P. setosicallus* also has a longer rostrum and second funicular segment. From *P. angustus*, a generally smaller species with similar long, conspicuously erect elytral setae, *P. setosicallus* is distinguishable by shorter, in basal half enlarged rostrum, at mid-length more constricted epifrons, narrower pronotum and other characters given in the key.

Other *Pseudocneorhinus* species examined

Pseudocneorhinus adamsi Roelofs, 1879

Figs 34, 40

Pseudocneorhinus adamsi Roelofs, 1879: liii (original description); Han et al. 2000: 34 (Korean fauna); Borovec 2009: 76 (check-list); Borovec 2013: 418 (catalogue); Morimoto et al. 2015: 338 (Japanese fauna); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Material examined. Other material. CHINA; 1 ♀; S. Manchuria, Chikuanshan; BMNH.

SOUTH KOREA; 25 ♂♂ ♀♀; Jinju, Witae, Sobae Mts.; 35°09.9'N, 127°49.4'E; 400 m a.s.l.; 16 May 2014; M. Košťál leg.; MKBC.

***Pseudocneorhinus alternans* Marshall, 1934**

Figs 15, 16, 41

Pseudocneorhinus alternans Marshall, 1934: 7 (original description); Borovec 2009: 76 (check-list); Voss 1956: 24 (note); Borovec 2013: 418 (catalogue); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Type material examined. The original description was based on material from “China: S. Kansu, 1 ♀, 26.vi.1930, 1 ♀, 4.x.30 (Dr. Hummel)”. There is one specimen lacking head with rostrum in Marshall’s collection (BMNH) pinned on very slender and short paper label. This specimen is labelled as follows: Cotype [printed, circular label with yellow margin] / Kina S. Kansu [printed] / Sven Hedins Exp. Ctr. Asien Dr Hummel [printed] / Pres. by Imp. Inst. Ent. B. M. 1934-130. [printed] / 4/10 [handwritten] / *Pseudocneorrhinus alternans* Mshl. COTYPE ♀ [Marshall’s handwriting]. We have not designated the examined syntype specimen as lectotype in the view of the fact that it is incomplete and the species was described from two specimens.

Material examined. Other material. CHINA – **Beijing** 1 ♀; Xiaolongmen forestry station, Nan’gou [小龙门林场南沟]; 1140 m a.s.l.; 25–28 Jun. 1999; X.D. Yu leg. [于晓东]; *Larix* forest, pitfall trap [落叶松林, 杯诱]; IZCAS, IOZ(E)1965163; 3 ♀♀; same data as for preceding; 30 May–2 Jun. 2001; IZCAS, IOZ(E)1965170–1965172; 2 ♀♀; Xiaolongmen forestry station, Nan’gou [小龙门林场南沟]; 1225 m a.s.l.; 18–21 Jul. 1999; X.D. Yu leg. [于晓东]; *Quercus wutaishanica* forest, pitfall trap [辽东栎林, 杯诱]; IZCAS, IOZ(E)1965165, IOZ(E)1965166; 1 ♀; Xiaolongmen [小龙门]; 1400 m a.s.l.; 14 Jun. 2001; S.Q. Ge leg. [葛斯琴]; IZCAS, IOZ(E)1965174; 1 ♀; North of Xiaolongmen forestry station [小龙门林场北]; 1190 m a.s.l.; 26–29 Jun. 1999; X.D. Yu leg. [于晓东]; *Pinus tabulaeformis* forest, pitfall trap [油松林, 杯诱]; IZCAS, IOZ(E)1965178; 1 ♀; Xiaolongmen, Dongling Mountains; 39°58.2’N, 115°25.8’E; 1400 m a.s.l.; 15 Jun. 2001; J. Cooter & P. Hlaváč leg.; Liu Lang Yu Litter; BMNH; 3 ♀♀; Xiaolongmen; 39°58.074’N, 115°25.882’E; ca 1100 m a.s.l.; 9–13 Jun. 2004; J. Cooter leg.; BMNH; 1 ♀; Xiaolongmen, National Forest Reserve, 120 km W Beijing; 1100 m a.s.l.; 27 May 2005; M. Ritschard leg.; CGTS. – **Heilongjiang Prov.** 1 ♀; Qing Yuan, S Lang Xian, ca 30 km; 46°47.002’N, 129°04.349’E; 500–600 m a.s.l.; 26 May 2004; J. Cooter leg.; stream side; BMNH

***Pseudocneorhinus bifasciatus* Roelofs, 1880**

Figs 17, 18, 35, 42

Pseudocneorhinus bifasciatus Roelofs, 1880: 12 (original description); Marshall 1934: 10 (note); Voss 1956: 24 (note); Han et al. 2000: 35 (Korean fauna); Han and Yoon 2000: 259 (note); Borovec 2009: 76 (check-list); Borovec 2013: 418 (catalogue); Morimoto et al. 2015: 327 (Japanese fauna); Alonso-Zarazaga et al. 2017: 403 (catalogue).



Figures 17–24. Habitus of *Pseudocneorhinus* species **17, 18** *Pseudocneorhinus bifasciatus*, male, dorsal and lateral view **19, 20** *P. hirsutus*, female, dorsal and lateral view **21, 22** *P. longisetosus*, female, dorsal and lateral view **23, 24** *P. minimus*, female, dorsal and lateral view. Scale bars: 1 mm.

Type material examined. This species was described from “Plusieurs individus, par M. Lewis, du Japon”. We have studied one female specimen, 5.06 mm long, deposited in Marshall’s collection (BMNH), with the labels: Type [printed, circular label with red margin] / Japan G. Lewis 1910-320. [printed] / bifasciatus [handwritten].

Material examined. Other material. CHINA – **Fujian Prov.** 1 ♀; Chong’an, Chengguan [崇安城关]; 240 m a.s.l.; 15 Jul. 1960; F.J. Pu leg. [蒲富基]; IZCAS, IOZ(E)1786483; 1 ♀; Chong’an, Xingcun, Tongmuguan [崇安星村桐木关]; 900 m a.s.l.; 10 Aug. 1960; Y. Zuo leg. [左永]; IZCAS, IOZ(E)1788386; 1 ♂; Jianyang, Huangkeng, Aotou [建阳黄坑坳头]; 950 m a.s.l.; 3 Jul. 1965; IZCAS, IOZ(E)1786480; 1 ♂; Jianyang, Huangkeng, Dazhulan [建阳黄坑大竹栏]; 900–1100 m a.s.l.; 7 May 1960; S.Q. Jiang leg. [姜胜巧]; IZCAS, IOZ(E)1788387; 1 ♀; Jianyang, Dazhulan [建阳大竹岚]; 4 Jul. 1965; IZCAS, IOZ(E)1788426; 1 ♂; Wuyi [武夷]; 27 Jun. 1982; K.C. Zhang leg. [张可池]; IZCAS, IOZ(E)1965245; 2 ♀♀; Jiangle, Longxishan [将乐龙栖山]; 800 m a.s.l.; 6 Aug. 1991; X.C. Zhang leg. [张晓春]; IZCAS, IOZ(E)17886463, IOZ(E)17886464; 1 ♂; Jiangle, Longxishan [将乐龙栖山]; 14 May 1991; R.Z. Zhang leg. [张润志]; IZCAS, IOZ(E)17886462; 3 ♀♀; Shaowu, Wushi [邵武乌石]; 6 Jun. 1965; IZCAS, IOZ(E)1786187, IOZ(E)1786189, IOZ(E)1786190; 1 spec.; Shaowu, Tachuland; 20 Jun. 1942; T. C. Maa leg.; BMNH; 6 ♀♀; Kuatun; Jun. 1946; Tschung Sen leg.; RBSC. – **Jiangsu Prov.** 1 spec.; Soochow; 18 Aug. 1965; P. M. Hammond leg.; BMNH. – **Zhejiang Prov.** 13 spec.; Chusan is.; J. J. Walker leg.; BMNH; 1 spec.; Chusan, Pwanche; BMNH. JAPAN; 5 spec.; G. Lewis leg.; BMNH.

Pseudocneorhinus hirsutus (Formánek, 1916)

Figs 19, 20, 43

Rhinodontus hirsutus Formánek, 1916: 33 (original description).

Pseudocneorhinus hirsutus: Marshall 1934: 8 (note); Borovec 2003: 49 (note); Borovec 2013: 418 (catalogue); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Material examined. Other material. CHINA – **Qinghai Prov.** 3 ♀♀; TIBET, Kuku-Nor; 3200 m a.s.l.; 1898; Hauser leg.; GOVI.

Pseudocneorhinus longisetosus Morimoto, 2015

Figs 21, 22, 44

Pseudocneorhinus longisetosus Morimoto, 2015: 339 (original description); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Material examined. Other material. RUSSIA; 8 ♀♀; Siberia or. mer., Primorje, Sichote – Alin Mts, Sokolči; 1–15 Jul. 1990; S. Kadlec & J. Voříšek leg.; JSPC, RBSC;

19 ♀♀; Siberia or. Mer., Primorje, Ussuri res.; 20 Jul. 1990; S. Kadlec leg.; RBSC; 1 ♀; Siberia or. mer., Primorje, Komarovka flum, Kamenushka env., 300 m a.s.l.; May 1992; Voříšek leg.; RBSC; 1 ♀; Siberia or. mer., Kamenushka at Ussuriysk; 2 Aug. 1992; J. Sawoniewicz leg.; RBSC; 1 ♀; Siberia or., Chechcir chrebet; 7 Jul. 1977; Gottwald leg.; RBSC; 4 ♀♀; USSR, Chabarovsk; 7 Jul. 1981; Mejzlík leg.; RBSC; 1 ♀; Khabarovsk; 4 Jul. 1977; Rataj leg.; MMTI.

***Pseudocneorhinus minimus* Roelofs, 1879**

Figs 23, 24, 45

Pseudocneorhinus minimus Roelofs, 1879: liii (original description); Marshall 1934: 7 (note); Han et al. 2000: 36 (Korean fauna); Borovec 2009: 76 (check-list); Borovec 2013: 418 (catalogue); Morimoto et al. 2015: 333 (Japanese fauna); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Type material examined. This species was described from an unspecified number of specimens from “Japon”. We have studied one probably female specimen, well preserved and 2.94 mm long, deposited in Marshall’s collection (BMNH), labeled as follows: Type [printed, circular label with red margin] / Japan G. Lewis 1910-320. [printed] / *minimus* [handwritten].

Material examined. Other material. CHINA – **Fujian Prov.** 1 ♀; Fenanina env., NW slope of Yunwu Shan; 1200 m a.s.l.; 3 Jun. 2000; Z. Jindra leg.; PKSC. JAPAN; 3 ♀♀; G. Lewis leg.; BMNH.

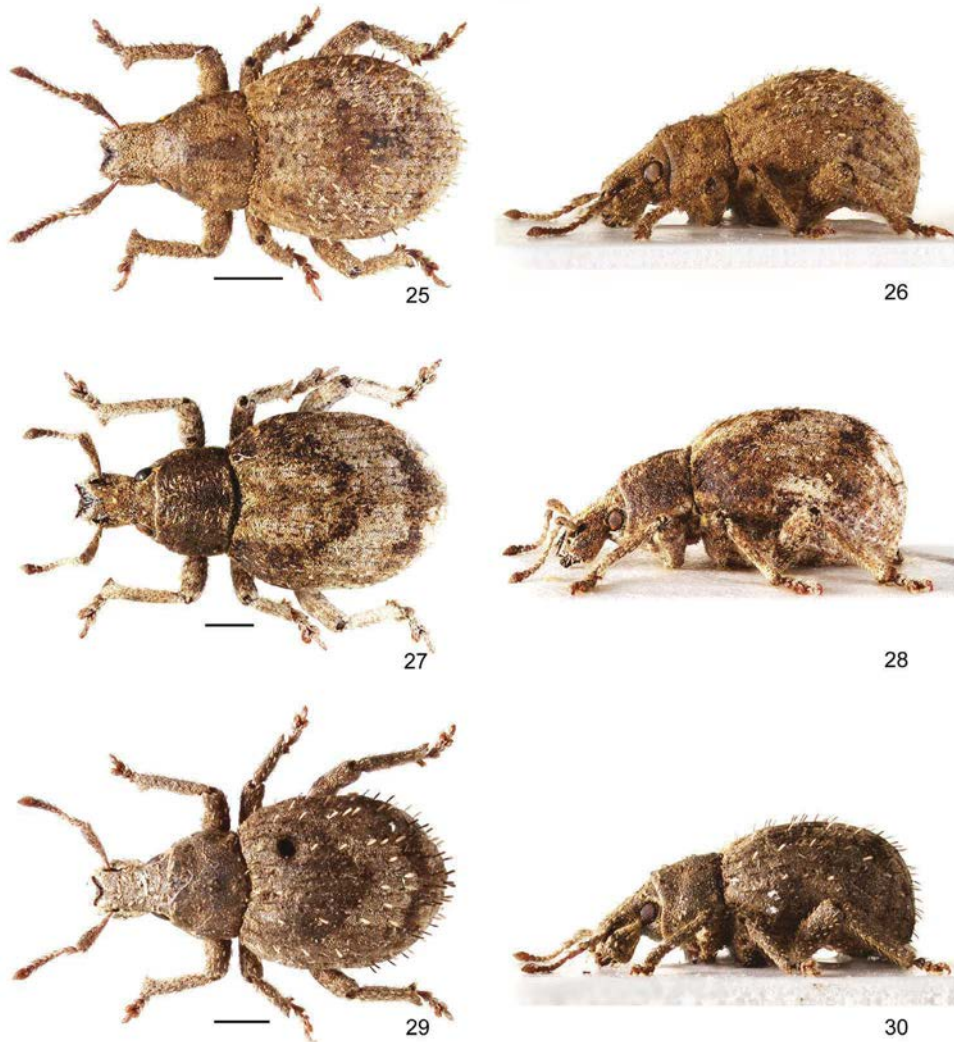
***Pseudocneorhinus obesus* Roelofs, 1873**

Figs 25, 26, 46

Pseudocneorhinus obesus Roelofs, 1873: 177 (original description); Marshall 1934: 9 (note); Voss 1956: 24 (note); Alonso-Zarazaga and Lyal 1999: 183 (catalogue); Han et al. 2000: 34 (Korean fauna); Borovec 2009: 76 (check-list); Borovec 2013: 418 (catalogue); Morimoto et al. 2015: 331 (Japanese fauna); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Type material examined. This species was described from “Quelques individus. Nagasaki”. There is one well preserved, 5.25 mm long, probably female specimen in Marshall’s collection (BMNH) below the name *Pseudocneorhinus obesus*, labeled as follows: Type H. T. [printed, circular label with red margin] / Japan G. Lewis 1910-320. [printed].

Material examined. Other material. JAPAN; 2 ♀♀; G. Lewis leg.; BMNH; 1 ♀; Honshu, Akira Mt., Fyokai-San; 1 Jun. 1972; Takizava leg.; MMTI.



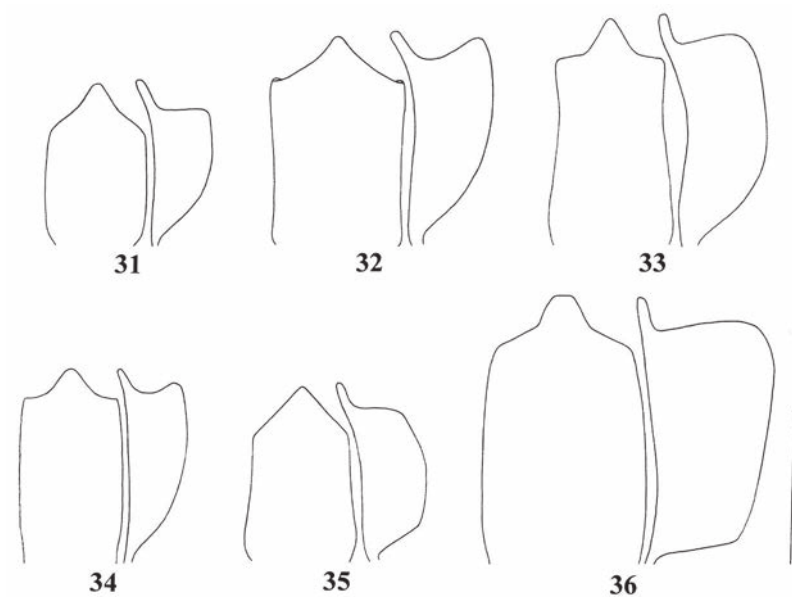
Figures 25–30. Habitus of *Pseudocneorhinus* species **25, 26** *Pseudocneorhinus obesus*, female, dorsal and lateral view **27, 28** *P. sellatus*, female, dorsal and lateral view **29, 30** *P. squameus*, female, dorsal and lateral view. Scale bars: 1 mm.

***Pseudocneorhinus sellatus* Marshall, 1934**

Figs 27, 28, 47

Pseudocneorhinus sellatus Marshall, 1934: 8 (original description); Borovec 2009: 76 (check-list); Borovec 2013: 418 (catalogue); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Material examined. Other material. CHINA – **Beijing**: 2 ♀♀; Mentougou, Xiaolongmen [门头沟小龙门]; 39°57.6'N, 115°25.8'E; 1164–1210 m a.s.l.; 5



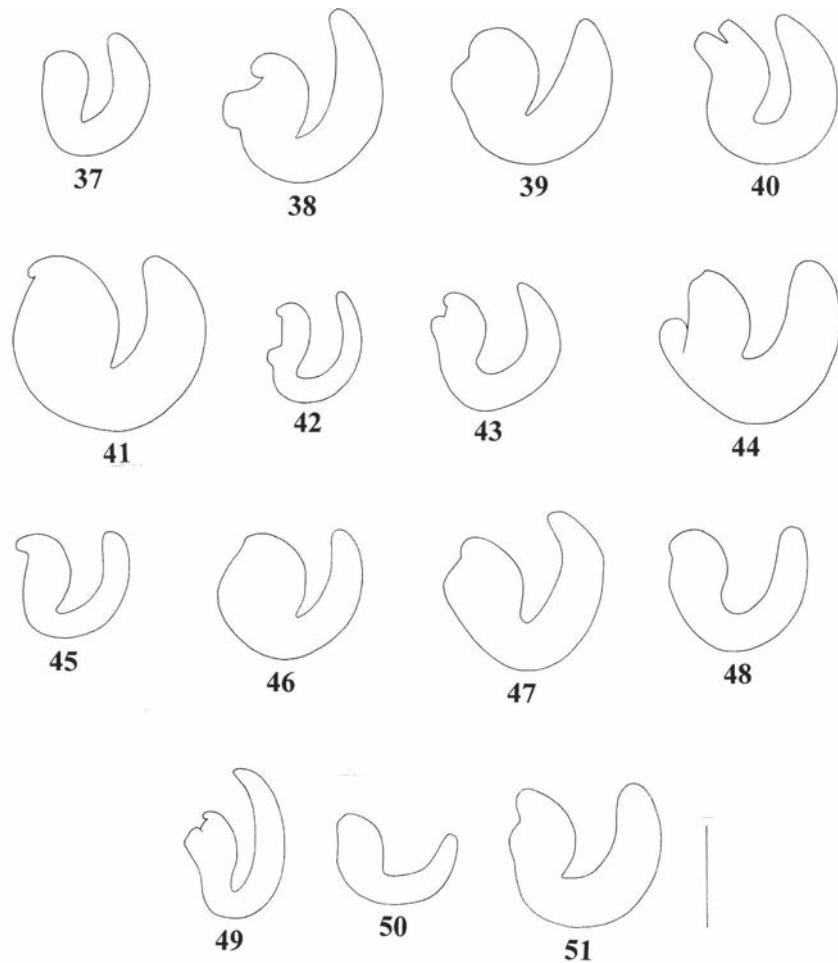
Figures 31–36. Penis in ventral and lateral view of *Pseudocneorhinus* species **31** *Pseudocneorhinus angustus* sp. nov. **32** *P. glaber* sp. nov. **33** *P. setosicallus* sp. nov. **34** *P. adamsi* **35** *P. bifasciatus* **36** *P. subcallosus*. Scale bar: 0.50 mm.

Jul. 2011; G.X. Qiao & J. Chen leg. [乔格侠, 陈军]; IZCAS, IOZ(E)1965155, IOZ(E)1965156; 1 ♀; same data as for preceding; K.Y. Zhang leg. [张魁艳]; IZCAS, IOZ(E)1965154; 1 ♀; Xiaolongmen forestry station, Nan'gou [小龙门林场南沟]; 19 Jul. 1999; T.H. Luo leg. [罗天宏]; heap of grass trap [堆诱]; IZCAS, IOZ(E)1965153; 1 ♀; North of Xiaolongmen forestry station [小龙门林场北]; 1190 m a.s.l.; 26–29 Jun. 1999; X.D. Yu leg. [于晓东]; *Pinus tabulaeformis* forest, pitfall trap [油松林, 杯诱]; IZCAS, IOZ(E)1965152; 2 ♀♀; Xiaolongmen [小龙门]; 20 Jul. 1999; H.Z. Zhou leg. [周红章]; IZCAS, IOZ(E)1965150, IOZ(E)1965151; 1 ♀; Xiaolongmen, Dongling Mts.; 39°58.2'N, 115°25.8'E; 1450 m a.s.l.; 13 Jun. 2001; J. Cooter leg.; BMNH; 2 ♀♀; Xiaolongmen, Dongling Mts., Liu Lang Yu; 39°58.2'N, 115°25.8'E; 1400 m a.s.l.; 6 Jun. 2001; J. Cooter leg.; BMNH; 18 ♀♀; Dongling Shan, 100 km W of Beijing; 1500 m a.s.l.; 12–15 Jun. 2000; Z. Jindra leg.; NMPC, PKSC, RBSC. – **Sichuan Prov.**; 1 ♀; Nanping, Juizhaigou; 7–12 Jun. 2009; E. Kučera leg.; RBSC.

Pseudocneorhinus setosus Roelofs, 1879

Fig. 48

Pseudocneorhinus setosus Roelofs, 1879: liii (original description); Marshall 1934: 9 (note); Voss 1956: 24 (note); Han et al. 2000: 35 (Korean fauna); Borovec 2009: 76 (check-list); Borovec 2013: 418 (catalogue); Morimoto et al. 2015: 334 (Japanese fauna); Alonso-Zarazaga et al. 2017: 403 (catalogue).



Figures 37–51. Spermatheca of *Pseudocneorhinus* species **37** *Pseudocneorhinus glaber* sp. nov. **38** *P. blavaci* sp. nov. **39** *P. setosicallus* sp. nov. **40** *P. adamsi* **41** *P. alternans* **42** *P. bifasciatus* **43** *P. hirsutus* **44** *P. longisetosus* **45** *P. minimus* **46** *P. obesus* **47** *P. sellatus* **48** *P. setosus* **49** *P. squameus* **50** *P. squamosus* **51** *P. subcallosus*. Scale bar: 0.25 mm.

Type material examined. This species was described from an unspecified number of specimens from “Japan”. We have studied one probably female specimen, well preserved and 4.88 mm long, deposited in Marshall’s collection (BMNH), with the labels: Type [printed, circular label with red margin] / Japan G. Lewis 1910-320. [printed] / Lewis [handwritten] / Pseudocn. setosus R. Japon L. [handwritten].

Material examined. Other material. CHINA – Fujian Prov. 1 ♀; Kuantun; Jun. 1946; Tschung Sen leg.; RBSC.

JAPAN; 1 ♀; Nagasaki; BMNH.

Remarks. Morimoto et al. (2015) split *P. setosus* to two species, *P. setosus* and his newly described *P. squameus*. Morimoto studied only Japanese material, but he cited for both species the original distribution of *P. setosus* – Japan, Korea and China. Material cited in

earlier literature must therefore be revised to check the identity of the specimens. The species can be distinguished by their elytral setae and also by the different shape of the spermatheca. However, we can not confirm that elytral setae are a stable distinguishing character, because material from places other than Japanese islands seems to be variable in this character, but the spermatheca seems to be useable. Based on the spermatheca, we can confirm the occurrence of the both species, *P. setosus* and *P. squameus*, in China.

***Pseudocneorhinus squameus* Morimoto, 2015**

Figs 29, 30, 49

Pseudocneorhinus squameus Morimoto, 2015: 336 (original description); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Pseudocneorhinus squamous (lapsus): Morimoto et al. 2015: 336 (Japanese fauna).

Material examined. Other material. CHINA – **Beijing**: 1 ♀; Mentougou, Xiaolongmen [门头沟小龙门]; 39°57.6'N, 115°25.8'E; 1164–1210 m a.s.l.; 5 Jul. 2011; G.X. Qiao & J. Chen leg. [乔格侠, 陈军]; IZCAS, IOZ(E)1965222; 5 ♀♀; Xiaolongmen, Dongling Mountains, Liu Lang Yu; 39°58.2'N, 115°25.8'E; 1400 m a.s.l.; 15 Jun. 2001; Litter; J. Cooter leg.; BMNH; 1 ♀; Xiaolongmen, Dongling Shan; 39°57.688'N, 115°26.342'E; 1150 m a.s.l.; 11 Jun. 2004; J. Cooter leg.; swept by stream; BMNH; 1 ♀; Dongling Shan, 100 km W of Beijing; 1500 m a.s.l.; 12–15 Jun. 2000; Z. Jindra leg.; PKSC. – **Hebei Prov.** 2 ♀♀; Chengde, Wuling (shan) Mts., Longtan Scenic Spot; 40°35.72'N, 117°27.4'E; 1365 m a.s.l.; 8 Aug. 2016; P. Kment leg.; NMPC. – **Shanxi Prov.** 1 ♀; Lüliang Shan, road Fangshan – Jiaocheng, Hengjian env.; 1000 m a.s.l.; 9 Jun. 2000; Z. Jindra leg.; PKSC.

***Pseudocneorhinus squamosus* Marshall, 1934**

Fig. 50

Pseudocneorhinus squamosus Marshall, 1934: 6 (original description); Borovec 2009: 76 (check-list); Borovec 2013: 418 (catalogue); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Type material examined. Marshall (1934) based the description on specimens from “China: S. Kansu, 1 ♂, 1 ♀, 4.x. (Dr. Hummel)”. We studied one female, 3.47 mm long, from Marshall’s collection (BMNH), recently remounted and dissected by the second author. Lectotype ♀, here designated, with the labels: Cotype [printed, circular label with yellow margin] / Kina S. Kansu [printed] / Sven Hedins Exp. Ctr. Asien Dr Hummel [printed] / Pres. by Imp. Inst. Ent. B. M. 1934-130. [printed] / 4/10 [handwritten] / *Pseudocneorhinus squamosus* Mshl. COTYPE ♀ [Marshall’s handwriting] / LECTOTYPUS *Pseudocneorhinus squamosus* Marshall, R. Borovec des. 2014 [red, printed].

***Pseudocneorhinus subcallosus* (Voss, 1956)**

Figs 36, 51

Callirhopalus [sic] *subcallosus* Voss, 1956: 23 (original description).*Pseudocneorhinus subcallosus*: Borovec 2009: 76 (check-list); Borovec 2013: 418 (catalogue); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Type material examined. Voss (1956) described this species based on six specimens from “Kwangtseh (10, 23–25.VII.1937), Shaowu (28.VII.1937)” without a type designation. We studied four of the specimens (ZFMK). Lectotype, here designated, with the labels: Kwangtseh-Fukien, J. Klapperich O, 23.7.1937 [violet, handwritten] / *Callirhopalus subcallosus* n. sp. [handwritten] / Holotypus *Callirhopalus subcallosus* n. sp. Voss 1949 [red, partly printed, partly handwritten] / LECTOTYPUS *Pseudocneorhinus subcallosus* Voss, R. Borovec des. 2019 [red, printed]. The other three have the following label data: one specimen with the same violet label as the holotype (without year) and labeled Paratypoid; one female with the same labels as the previous one but 24.7.1937; and one male with locality label Shaowu – Fukien, (500m) J. Klapperich 28.6.7.1937 and the same red “Paratypoid” label. Two specimens, one male and one female, were remounted by us. All these three specimens are designated here as Paralectotypes and provided with one more red and printed label PARALECTOTYPUS *Pseudocneorhinus subcallosus* Voss, R. Borovec des. 2019.

Key to the *Pseudocneorhinus* species

The following key separates the new species from all previously described ones. An asterisk (*) after the name means that species has not been studied by us and we know it only from the description.

- 1 Metatibiae clearly denticulate on almost whole inner margin. Elytra with distinct longitudinal prominence distally at end of interval 2, visible mainly in lateral view **2**
- Metatibiae not denticulate on inner margin, only in *P. adamsi* and *P. longisetosus* with 3–5 minute denticles in apical half on inner face. Interval 2 of elytra without longitudinal prominence **4**
- 2 Elytra in females as long as wide, in males slightly wider than long. Some intervals with two irregular rows of suberect setae. Size: 4.5–6.4 mm. Japan ***P. meshimanus* Morimoto***
- Elytra in both sexes slightly longer than wide. Each interval with regular row of suberect setae **3**
- 3 Space behind epistomal carina with round, iridescent scales. Elytra widest at anterior third. Size: 3.3–4.9 mm. China, Japan, Korea, Russia ***P. bifasciatus* Roelofs**
- Space behind epistomal carina without round, iridescent scales. Elytra widest at middle. Size: 3.6–4.2 mm. Korea ***P. sobeuksandoensis* Han & Yoon***

- 4 Dorsal part of body with inconspicuous, short, piliform, semiappressed greyish setae, hardly visible in lateral view, mainly at apical part of elytra (Figs 3–6). Size: 4.6–5.2 mm. China ***P. glaber* sp. nov.**
- Dorsal part of body with conspicuous short to long, piliform to spatulate, semierect to erect setae, clearly visible also in dorsal view (Figs 7–30)..... **5**
- 5 Scape distinctly widened distally, at apex distinctly wider than club and as wide as diameter of eye in lateral view **6**
- Scape moderately gradually widened distally, at apex as wide as or only slightly wider than club and conspicuously more slender than diameter of eye in lateral view **7**
- 6 Raised elytral setae wide, subtriangular, truncate at apex. Rostrum at base abruptly enlarged. Funicle segment 3 $1.1 \times$ as long as wide; segments 4 and 5 isodiametric. Onychium equally long as tarsal segment 3. Size: 3.0–3.5 mm. China ***P. squamosus* Marshall**
- Raised elytral setae slender, subspatulate, rounded at apex. Rostrum at base gradually enlarged. Funicle segments 3–5 wider than long. Onychium 1.2 – $1.3 \times$ as long as tarsal segment 3. Size: 3.5–3.8 mm. China ***P. hirsutus* (Formáněk)**
- 7 Raised elytral setae only on odd intervals or those on odd intervals more conspicuous, longer and distinctly denser (Figs 1, 11, 13). Odd intervals somewhat more elevated, at least on declivity **8**
- Raised elytral setae present equally on odd and even intervals (Figs 25–29). Odd intervals equally flat or convex **12**
- 8 Elytra ovoid, widest in posterior third, shoulders not defined (Figs 1, 11, 13). Metatibial corbel with one long and one short mucro **9**
- Elytra oval, sides sub-parallel, widest at midlength, with distinct shoulders (Figs 9, 15). Metatibial corbel with two subequal mucros **11**
- 9 Elytral setae inconspicuous, appressed, hardly visible mainly in lateral view. Rostrum $1.1 \times$ as wide as long. Funicle segment 2 more robust, 1.4 – $1.6 \times$ as long as wide. Size: 5.1–5.6 mm. China ***P. subcallosus* (Voss)**
- Elytral setae conspicuous, perpendicularly erect, clearly visible in dorsal and lateral view. Rostrum $1.1 \times$ as long as wide. Funicle segment 2 thinner, at least $1.8 \times$ as long as wide **10**
- 10 Smaller, 3.4–3.5 mm. Erect elytral setae half as wide as interval, spatulate (Fig. 1). Elytra more slender, 1.25 – $1.29 \times$ as long as wide (Fig. 1). Onychium 1.1 – $1.2 \times$ as long as segment 3. Scape with apex distinctly wider than club. Penis with larger, sharply pointed triangular apex (Fig. 31). China ***P. angustus* sp. nov.**
- Larger, 4.2–5.8 mm. Erect elytral setae one fourth as wide as interval, lanceolate (Figs 11, 13). Elytra wider, 1.15 – $1.20 \times$ as long as wide (Figs 11, 13). Onychium 0.8 – $0.9 \times$ as long as segment 3. Scape with apex as wide as club. Penis with smaller, rounded triangular apex (Fig. 33). China ***P. setosicallus* sp. nov.**
- 11 Shoulders regularly rounded (Fig. 15). Elytral intervals 3 and 5 at declivity slightly enlarged and elevated. Funicle segments 3 and 4 isodiametric. Size: 4.2–5.8 mm. China ***P. alternans* Marshall**

- Shoulders obliquely truncate (Fig. 9). Elytral intervals 3 and 5 at declivity distinctly enlarged with low longitudinal prominence. Funicle segments 3 and 4 1.2 × longer than wide. Size: 5.3–5.4 mm. China ... ***P. obliquehumeralis* sp. nov.**
- 12 Funicle segments 4 and 5 longer than wide **13**
- Funicle segments 4 and 5 wider than long..... **15**
- 13 Rostrum almost parallel-sided (Fig. 25). Funicle segments 5–7 longer than wide. Size: 3.7–5.0 mm. China, Korea, Japan, Russia..... ***P. obesus* Marshall**
- Rostrum with apex distinctly and regularly enlarged (Figs 11, 27). Funicle segments 5 and 6 isodiametric, segment 7 slightly wider than long **14**
- 14 Raised elytral setae inconspicuous, semiappressed, shorter than half width of interval (Fig. 27). Rostrum isodiametric, with weakly rounded sides (Fig. 27). Epifrons with longitudinal slender carina in middle. Size: 5.2–6.7 mm. China ...
..... ***P. sellatus* Marshall**
- Raised elytral setae conspicuous, semierect, shorter than interval wide (Fig. 7). Rostrum 1.1 × as long as wide, with straight sides in basal half (Fig. 7). Epifrons without longitudinal carina. Size: 5.3–5.6 mm. China..... ***P. blavaci* sp. nov.**
- 15 Elytra widest at middle (Fig. 23). Ocular lobes weakly developed. Size: 3.0–3.3 mm. China, Japan, Korea..... ***P. minimus* Roelofs**
- Elytra widest behind middle (Fig. 29). Ocular lobes well developed..... **16**
- 16 Setae on elytra squamiform, obtuse or truncate at tip, absent or much less numerous on intervals 4 and 6. Spermatheca with cornu long and slender, laterally extending beyond level of nodulus (Fig. 49). Size: 4.5–5.1 mm. China, Japan, Korea..... ***P. squameus* Morimoto**
- Setae on elytra much narrower, acuminate, present on all intervals. Spermatheca with cornu more robust, not extending beyond level of nodulus (Figs 40, 44) **17**
- 17 Metatibiae not denticulate on inner face. Epistome accompanied by narrow glabrous area. Size: 3.3–5.8 mm. China, Japan, Korea, Russia. ***P. setosus* Roelofs**
- Metatibiae with 3–5 minute denticles in apical half on inner face. Epistome accompanied by wide glabrous area..... **18**
- 18 Epistome shorter, almost rectangular posteriorly, posterior corners shortly and narrowly rounded. Spermatheca with ramus slightly larger than nodulus, placed next to it (Fig. 40). Size: 4.1–5.7 mm. China, Japan, Korea ... ***P. adamsi* Roelofs**
- Epistome longer, sharply triangular posteriorly. Spermatheca with ramus distinctly smaller than nodulus, placed at its base (Fig. 44). Size: 4.9–5.6 mm. Japan, Russian Far East ***P. longisetosus* Morimoto**

Discussion

There are 16 species of *Pseudocneorhinus* recorded from China, accounting for 84% of the species presently known in the Palearctic Region. All species inhabit elevations between 240 and 3200 m; most of them were found around 1000 m. Ten species are Chinese endemics, except *P. alternans* and *P. sellatus* with, apparently, highly

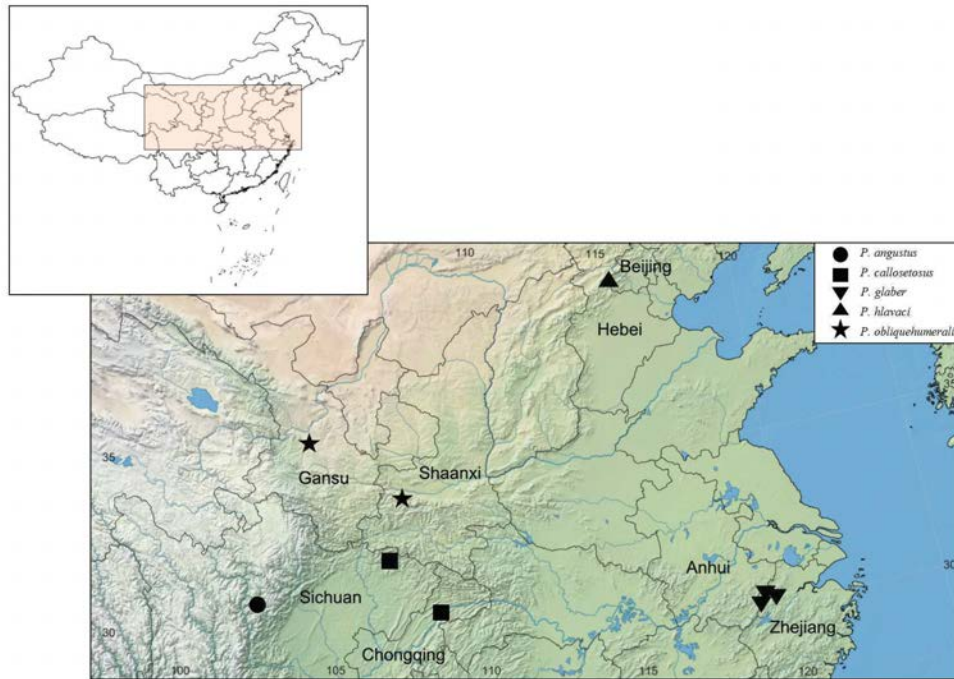


Figure 52. Geographical distribution of new species of *Pseudocneorhinus* in China.

restricted distributions. Only five species are widely distributed between China and eastwards into the Korean Peninsula, the Russian Far East and Japan. We recognize two main distributional ranges in China. One is a longitudinally wide corridor from Heilongjiang to Fujian provinces in the Northeast and the eastern coastal areas. The other is in the Southwest, mainly southern Kansu, southern Shaanxi, Chongqing, and Sichuan provinces. All new species described herein have been discovered in mountainous localities (Fig. 52).

Marshall (1934) stated that *Pseudocneorhinus hirsutus* was found at Kuku-Nor, Tibet. Alonso-Zarazaga et al. (2017) interpreted this locality as Xizang Autonomous Region. The specimens of *P. hirsutus* examined by us bear the label “China, THIBET, Kuku-Nor, 3200 m, 1898, Hauser lgt.” However, Kuku-Nor is the Mongolian name for Qinghai Lake, in Qinghai province. This means that Marshall (1934) referred to the Qinghai-Tibet Plateau rather than to a place in Xizang Autonomous Region. Consequently, the known occurrence of this species is corrected here to Qinghai, Kuku-Nor, which is possibly collected on the lakeside. Morimoto et al. (2015) reported *P. squameus* from China but gave no locality data from there. Here we confirm that *P. squameus* occurs in Beijing Municipality and Shanxi province. Other new records are Fujian province for *P. minimus* and Sichuan province for *P. sellatus*.

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On Chinese Trachyploeini with description of four new species (Coleoptera, Curculionidae, Entiminae)

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Abstract

Rhinodontodes alashanensis sp. nov., *Trachyploeosoma honza* sp. nov., *T. jirka* sp. nov., and *T. martin* sp. nov. are described from China, illustrated and compared with similar species. The genus *Rhinodontodes* and the species *Rhinodontodes subsignatus* Voss, 1967 and *Rhinodontus mongolicus* Borovec, 2003 are recorded from China for the first time. Keys to all Chinese genera of Trachyploeini, and to the Chinese species of *Rhinodontodes* and *Trachyploeosoma*, are provided.

Keywords

New taxa, taxonomy, *Rhinodontodes*, *Rhinodontus*, *Trachyploeosoma*, weevil

Introduction

The Trachyploeini Gistel, 1848 is a medium-sized tribe of entimines containing small wingless, terricolous species with body size 1.3–6.8 mm, having limited ability to migrate. They are mostly xerothermophilous, associated with steppe habitats, xeric grasslands, stony or sandy places, ranging to sandy semideserts (Borovec 2009). Only species of three genera from East Asia, *Pseudocneorhinus* Roelofs, 1873, *Trachyphilus* Faust,

1887 and *Trachyphloeosoma* Wollaston, 1869, are collected from forest litter (O'Brien 1984, Sawada et al. 1999, Morimoto 2015). The tribe is known primarily from the Palearctic region, with only several genera known also from North America, South Africa, and Oriental region, but the tribal position of South African Trachyphloeini must be clarified. In the Palearctic Region, the tribe is distributed from the Iberian Peninsula and north-western Africa up to Japan; the genera *Trachyphloeus* Germar, 1817 and *Romualdius* Borovec, 2009 occur in the whole of Europe and eastwards up to Kazakhstan, but the majority of genera have a much smaller area. At present, 13 genera with 363 species are known from the Palearctic region (Alonso-Zarazaga et al. 2017).

Chinese Trachyphloeini have not been mentioned in literature very often due their cryptic way of life and difficulties in their collection. The majority of the species of the tribe, 67%, are known from the western Palearctic region; 25% are known from Japan due Morimoto's revision of the genus *Trachyphilus* (Morimoto 2015), and only 8% are known from China (Alonso-Zarazaga et al. 2017). However, the Himalo-Chinese region is home to a distinctive, peculiar, and specific terricolous fauna of Trachyphloeini, although there are not as many species as in the western subregion. Study of material deposited in the Institute of Zoology in Beijing, as well as newly collected material by several specialists focused on litter associated beetles, has increased our knowledge of the Chinese fauna. The first part of the results of our examination of this very interesting material was published in a previous article (Ren et al., 2019); the present paper adds additional information about other genera of Trachyphloeini.

Materials and methods

The body length of specimens was measured in profile from the anterior margin of the eyes to the apex of the elytra, excluding the rostrum, as customary for curculionids. Rostral length was measured in dorsal view from the anterior margin of eyes to the anterior margin of the epistome and the rostral width was its maximum width. Pronotal and elytral length was measured along the mid-line length in dorsal view, width was the maximum width as measured in dorsal view. Entire abdomens were separated from the specimens and were macerated in 10% KOH for 7–10 days to remove soft tissues. They were then washed in distilled water. Internal abdominal segments were carefully separated from each other. Dissected female genitalia were embedded in Solakryl BMX, and dried male genitalia were glued to the same mounting card as the insect. The terminology of the rostrum and the terminalia follows Oberprieler et al. (2014).

Acronyms for depositories of the material are as follows:

- IZCAS** Institute of Zoology, Chinese Academy of Sciences;
- NMPC** Národní muzeum, Prague, Czech Republic;
- RBSC** Roman Borovec collection, Sloupno, Czech Republic;
- ZIN** Zoological Institute of the USSR Academy of Sciences, Saint Petersburg, Russia.

Taxonomy

Rhinodontodes Voss, 1967

Rhinodontodes Voss, 1967: 276 (original description); Alonso-Zarazaga and Lyal 1999: 183 (catalogue); Borovec 2003: 31 (note); Borovec 2009: 76 (redescription of the genus); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Remarks. The genus was described by Voss (1967) for a single species, *Rhinodontodes subsignatus* Voss, 1967, based on a single specimen from Mongolia. The holotype was later examined by Borovec (2003) and until recently was the only specimen of the genus known. We now have access to 21 more specimens of this genus, mainly from the collections of IZCAS and ZIN, and we are able to discuss characters used for the definition of *Rhinodontodes*. Voss described the genus as similar to *Rhinodontus* in its elongated epistome, but distinguishable by tarsomere 3 being wider than tarsomere 2, claws parallel in basal half, apical part of protibiae not distinctly enlarged laterally, rounded, without spines and narrower pronotum, $1.34\text{--}1.42 \times$ as wide as long, with anterior margin not distinctly narrower than posterior one. Borovec (2009) in his phylogenetic analysis of the tribe Trachyploeini confirmed *Rhinodontodes* as related to *Rhinodontus* and *Pseudocneorhinus*, sharing the character states of epistome projected anteriorly and ocular lobes with short setae with *Rhinodontus*, and having as an autapomorphy, rostrum continuous with head, not separated by any furrow. Some of the characters previously used to distinguish *Rhinodontodes* are not unique, in comparison with newly known *Pseudocneorhinus* described in Ren et al. (2019). Males of *P. bifasciatus* Roelofs, 1880 also have the epistome projected anteriorly (Borovec 2009: figs 55, 61), creating a striking tooth, and *P. glaber* Ren, Borovec, Zhang, 2019 also have weak ocular lobes with very short setae and, especially, have a long rostrum and epifrons constricted in the middle. These two species thus show characters very similar to the shape of the rostrum of *Rhinodontodes*. Thus, *Rhinodontodes* seems to be more closely related to *Pseudocneorhinus* than was previously assumed. Study of further material of both genera will confirm whether the two genera are separate or should be placed in synonymy. Presently, *Rhinodontodes* can be distinguished from *Pseudocneorhinus* mainly by the rostrum and head being on the same level and the protibiae being laterally weakly enlarged (Borovec 2009: fig. 58).

Rhinodontodes alashanensis sp. nov.

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Figs 1–4, 25–27, 52

Type locality. Alashan, Bayanhaotezhen (China: Inner Mongolia).

Material examined. Holotype. CHINA – Inner Mongolia Autonomous Region

• 1 ♂; Алашань, Дын-юань-ин, V.08 эк. Козлова [Alashan, Ding-yuan-ying (now

Bayanhaotezhen), v.1908, Kozlov's expedition]; *Pseudocneorhinus alashanicus* Typ. m.; G. Suvorov det.; ZIN. *Paratypes*. CHINA – **Inner Mongolia Autonomous Region** • 1 ♂ 1 ♀; same data as for holotype; ZIN.

Description. Body length: 3.94–4.31 mm, holotype 3.94 mm.

Body (Figs 1–4) dark brownish, epistome, mucros, and claws reddish brown, fringe of setae on protibiae yellowish. Appressed scales covering antennae, head, pronotum, elytra and legs, except antennal clubs; scales on elytra oval, wider than long, densely and finely longitudinally striate, very dense, imbricate, six or seven scales across interval width, light brownish on disc with small, irregularly scattered dark brownish and greyish spots and with light greyish stripe along lateral margins, occupying three lateral intervals and very short apical part of elytra. Pronotum and head with rostrum with oval appressed scales standing on their edges and visible only as special structure of narrow short lines, only short flat area behind frons with the same appressed scales as elytra. Semi-appressed elytral setae subspatulate to spatulate, in holotype more slender than in paratypes, approximately as long as half of width of one interval, densely and finely longitudinally striate, creating one regular row on each interval, distance between two setae $2 \times$ length of one seta. Pronotum and head with rostrum with almost identical semi-appressed setae, irregularly scattered, on pronotum transversely directed, on rostrum shorter than on elytra and longitudinally directed. Antennal scapes and femora with semi-appressed setae, funicles, tibiae and tarsi with semi-erect, moderately long setae, prominent from outline. Clubs densely and finely setose.

Rostrum (Figs 1–4, 25) $1.17\text{--}1.22 \times$ as long as wide, from base slightly, regularly enlarged apicad with straight sides, at apex only slightly wider than at base. Epifrons at basal third distinctly tapered apicad, then weakly enlarged apicad, in both parts with slightly convex sides, at apex distinctly narrower than at base, longitudinally shallowly depressed. Epistome long and conspicuous, distinct in dorsal and lateral view, as wide as apex of rostrum or slightly wider, separated from frons by very narrow carina, in females U-shaped, slender, lengthily exceeding anterior rostral margin, with tips directed anteriad, in males V-shaped, wider, less exceeding anterior rostral margin, with tips directed obliquely, laterally. Frons flat, squamose, bearing in lateral parts four or five pairs of stout apical setae, obliquely directed anteriad. Scrobes in dorsal view visible in apical third of rostrum as narrow furrows; in lateral view narrow, subparallel-sided, weakly curved, directed towards middle of eyes, visible as short furrow only in apical half of rostrum, in basal half with margins weakly indicated. Rostrum in lateral view somewhat convex, separated from head by shallow transverse depression. Eyes almost flat, hardly prominent from outline of head. Head distinctly enlarged basad.

Antennae slender; scapes faintly regularly curved, approximately equally long as funicles, at basal two thirds weakly and regularly enlarged apicad, at apical third enlarged somewhat more, at apex equally wide as clubs. Funicles with segments 1 and 2 conical, long, funicle segment 1 slightly longer and wider than segment 2, in males more slender than in females; in males funicle 1 $1.7\text{--}1.8 \times$ as long as wide; segment 2 $1.8\text{--}1.9 \times$ as long as wide; segment 3 $1.1 \times$ as long as wide; segments 4 and 5 isodiametric; segment 6 $1.1 \times$ as wide as long; segment 7 $1.4 \times$ as wide as long; in females

funicle 1 1.7–1.8 × as long as wide; segment 2 1.6–1.7 × as long as wide; segment 3 and 4 1.2 × as wide as long; segment 5 1.3 × as wide as long; segment 6 1.4 × as wide as long; segment 7 1.6 × as wide as long.

Pronotum (Figs 1–4) 1.34–1.36 × as wide as long, widest just behind the midlength, with rounded sides, more strongly tapered anteriorly than posteriorly, behind anterior margin weakly constricted. Disc regularly convex. Base arched. Pronotum in lateral view moderately convex, ocular lobes developed.

Elytra (Figs 1–4) 1.26–1.30 × as long as wide, oval, widest at midlength, with regularly rounded sides; shoulders regularly rounded; basal margin arched. Striae narrow, punctured, punctures hidden by appressed scales; stria 1 at base distinctly curved outwards, sutural interval at base distinctly enlarged. Interval almost flat, equally wide and elevated. Elytra in lateral view convex.

Protibiae moderately long and slender, mesally distinctly, laterally weakly enlarged, at apex rounded, with fringe of short and fine yellowish setae, mucronate, inner margin of protibiae and metatibiae with 2–3 very small, black, almost indistinct teeth; metatibial corbels densely squamose. Tarsi slender; tarsomere 2 1.2–1.3 × as wide as long; tarsomere 3 1.5–1.6 × as wide as long and 1.4 × as wide as tarsomere 2; onychium (tarsomere 5) 1.4–1.6 × as long as tarsomere 3. Claws fused at basal third, moderately and regularly divergent apically.

Penis (Fig. 26) short and wide, 1.91 × as long as wide, in ventral view at base and at apex approximately equally wide, parallel-sided with slightly concave sides; apex regularly rounded to small, regular triangular prolongation; in lateral view wide, regularly curved, subcrescent-shaped, with slender and short apical elongation.

Female genitalia. Sternite VIII umbrella-shaped with short apodeme. Gonocoxites not examined. Spermatheca (Fig. 28) with long, regularly and distinctly curved cornu; corpus large; ramus subsquare, nodulus smaller, subtriangular.

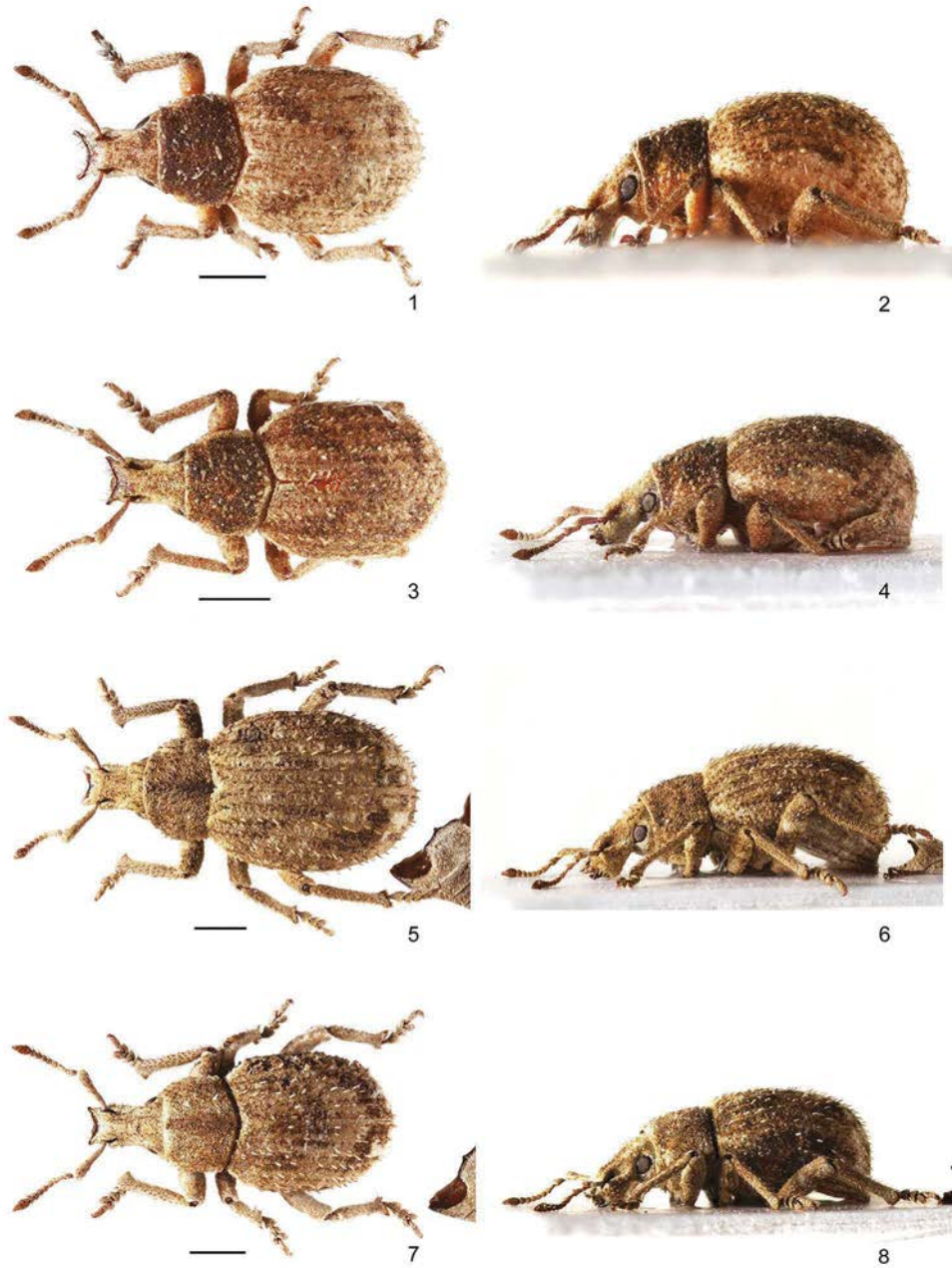
Biology. Unknown.

Distribution. China, Inner Mongolia (Fig. 52).

Etymology. Patronymic, name is derived from the name of type locality.

Differential diagnosis. *Rhinodontodes alashanensis* is similar to the only other known species of the genus, *R. subsignatus* Voss, 1967. It is possible to distinguish the two species by the following key:

- | | |
|---|---|
| 1 | Larger body size, 4.5–5.4 mm. Epistome short, with points narrower than rostrum at apex, in females V-shaped, moderately robust, slightly exceeding anterior margin of rostrum (Figs 5–8). Pronotum wider, 1.37–1.41 × as wide as long (Figs 5–8). Penis with long apical part (Fig. 27). China, Inner, Mongolia; Mongolia..... <i>R. subsignatus</i> Voss |
| – | Smaller body size, 3.9–4.3 mm. Epistome long, with tips as wide or wider than rostrum at apex, in females U-shaped, slender, distinctly exceeding anterior margin of rostrum (Figs 1–4). Pronotum narrower, 1.34–1.36 × as wide as long (Figs 1–4). Penis with short apical part (Fig. 26). China, Inner Mongolia..... <i>R. alashanensis</i> sp. nov. |



Figures 1–8. Habitus of species of *Rhinodontodes*: **1, 2** *R. alashanensis* sp. nov., female, paratype, dorsal and lateral view **3, 4** *R. alashanensis* sp. nov., male, holotype, dorsal and lateral view **5, 6** *R. subsignatus*, female, dorsal and lateral view **7, 8** *R. subsignatus*, male, dorsal and lateral view. Scale bars: 1 mm.

***Rhinodontodes subsignatus* Voss, 1967**

Figs 5–8, 27, 29, 52

Rhinodontodes subsignatus Voss, 1967: 277 (original description); Alonso-Zarazaga and Lyal 1999: 183 (catalogue); Borovec 2003: 49 (type examination); Borovec 2009: 76 (check-list); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Material examined. CHINA – **Inner Mongolia Autonomous Region** • 2 ♂♂ 2 ♀♀; 阿拉善左旗贺兰山水磨沟正沟 [Alxa Zuoqi, Helan Mountains, Shuimogou Zhenggou]; 27 Jul. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965104, IOZ(E)1965108, IOZ(E)1965105, IOZ(E)1965110; • 3 ♀♀; 阿拉善左旗贺兰山哈拉乌青树湾 [Alxa Zuoqi, Helan Mountains, Halawu, Qingshuwan]; 30 Jul. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965107, IOZ(E)1965109, IOZ(E)1965113; • 1 ♀; 阿拉善左旗贺兰山主峰峰顶 [Alxa Zuoqi, the main top of Helan Mountains]; 3134 m a.s.l.; 17 Aug. 2010; 38°49.8'N, 105°56.4'E; 林美英 [M.Y. Lin leg.]; IZCAS, IOZ(E)1965112; • 1 ♂; 阿拉善左旗贺兰山水磨沟正沟 [Alxa Zuoqi, Helan Mountains, Shuimogou Zhenggou]; 2025 m a.s.l.; 16 Aug. 2010; 38°55.8'N, 105°53.4'E; 林美英 [M.Y. Lin leg.]; IZCAS, IOZ(E)1965114 • 2 ♀♀; 阿拉善左旗贺兰山强岗岭 [Alxa Zuoqi, Helan Mountains, Qianggangling]; 8 Aug. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965106, IOZ(E)1965111; • 1 ♂ 1 ♀; 阿拉善左旗贺兰山古拉本 [Alxa Zuoqi, Helan Mountains, Gulaben]; 6 Aug. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965102, IOZ(E)1965101; • 1 ♀; 阿拉善左旗贺兰山北寺 [Alxa Zuoqi, Helan Mountains, Beisi]; 13 Aug. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965103; • 1 ♀; 阿拉善左旗贺兰山水磨沟 [Alxa Zuoqi, Helan Mountains, Shuimogou]; 25 Jul. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1941122.

MONGOLIA • 1 ♀; 40 km W Dalanzadgad, Gobi Gurvansaikhan NP, Yolyn am env.; 28–30 Jun. 2003; 1700–2000 m a.s.l.; Z. Jindra leg.; RBSC; • 2 ♀♀; Bayan-Chong, Aimak, Ich-Bogdo-Ula, srednegorie [central mountains]; 2500 m a.s.l.; 3 Jul. 1973; G. Medvedev leg.; ZIN.

Remarks. The eighteen specimens examined of *R. subsignatus* come from Mongolia and also from China, Inner Mongolia Autonomous Region. The four males and 11 females from China differ somewhat from the three females from Mongolia, which share with the holotype slender, subparallel-sided, semi-erect elytral setae, while material from Mongolia has wider, subspatulate, semi-appressed elytral setae. Mongolian and Chinese specimens are almost identical in all other characters thus we assume the shape of elytral setae is a variable character of the species. This is the first record of *R. subsignatus* from China (Fig. 52).

***Rhinodontus* Faust, 1890**

Rhinodontus Faust, 1890: 455 (original description); Alonso-Zarazaga and Lyal 1999: 183 (catalogue); Borovec 2003: 32 (genus revision); Borovec 2009: 76 (check-list); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Remarks. The genus is well defined and distinguished by apex of protibiae strikingly enlarged laterally, armed with wide spines, epistome long, rostrum short and wide, distinctly enlarged before eyes and body wide and robust. It was described as monotypic by Faust (1890) and studied later by Voss (1967) and Borovec (2003). *Rhinodontus* currently contains five valid species from China and Mongolia (Alonso-Zarazaga et al. 2017). Among material from IZCAS and ZIN we discovered specimens which add to our knowledge distribution of the species, which were previously known from only a limited number of specimens.

***Rhinodontus crassiscapus* Borovec, 2003**

Figs 9, 10, 30

Rhinodontus crassiscapus Borovec, 2003: 38 (original description); Borovec 2009: 76 (check-list); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Material examined. CHINA – **Qinghai Prov.** • 2 ♀♀; Ю. скл. хр. Бурхан-Будда: дол. оз. Алык-нор. 30.V.1900. Эксп. Козлова. [southern slope of the mountains Burchan-Buddha, valley of the lake Alake Hu. 30.v.1900; Kozlov's expedition]; ZIN.

Remarks. This species was described based on three females from China, Xinjiang and Gansu. This is the first additional locality since the original description.

Rhinodontus crassiscapus differs from all other species of the genus by its very short, distally thickened scape and by its long raised elytral setae being longer than one half of the interval width.

***Rhinodontus ignarus* Faust, 1890**

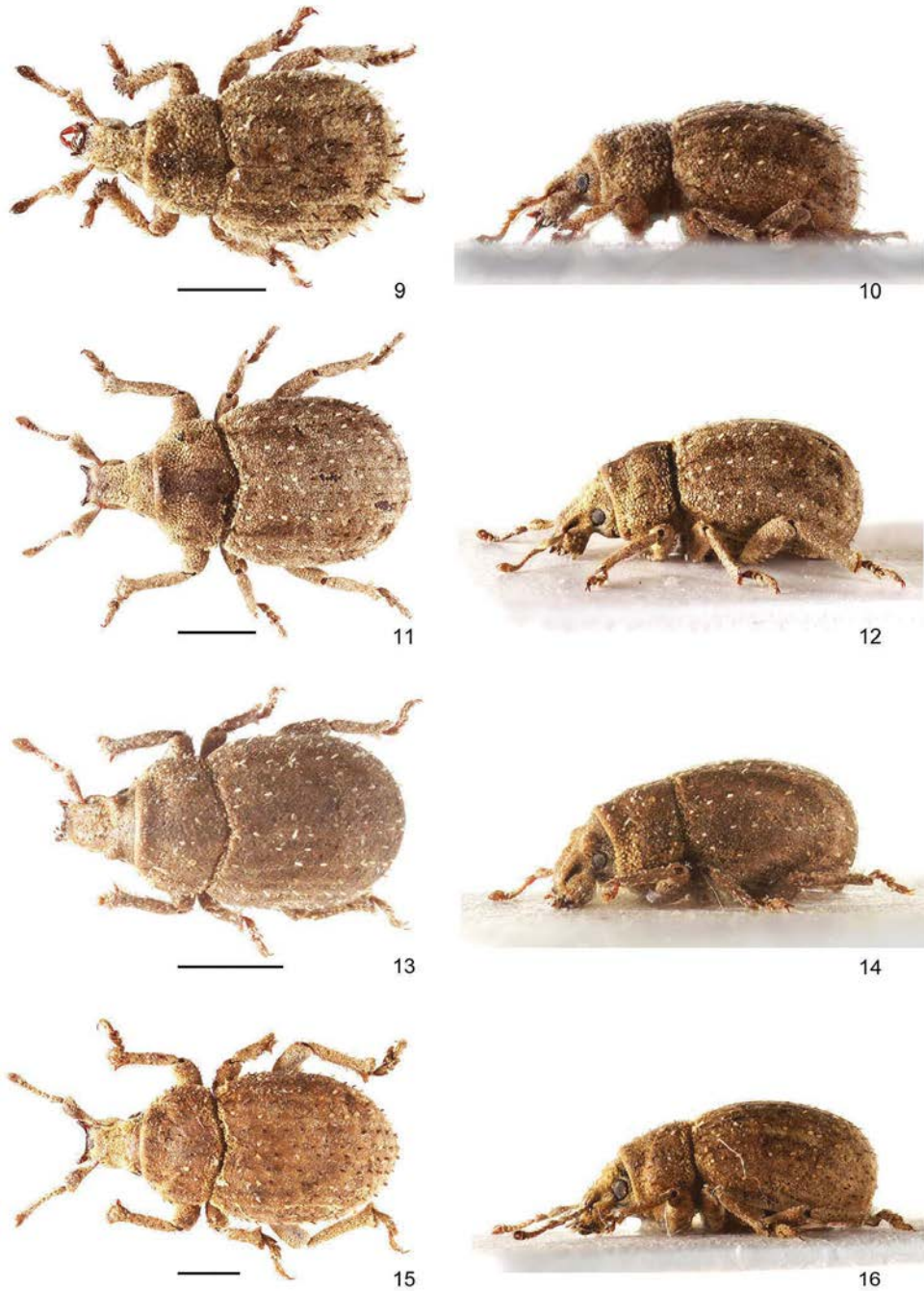
Figs 11, 12, 31, 32

Rhinodontus ignarus Faust, 1890: 455 (original description); Alonso-Zarazaga and Lyal 1999: 183 (catalogue); Borovec 2003: 32 (redescription); Borovec 2009: 76 (check-list); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Rhinodontus proximus centralis Voss, 1967: 276 (original description).

Material examined. CHINA – **Inner Mongolia Autonomous Region** • 2 ♀♀; 阿拉善左旗贺兰山哈拉乌青树湾 [Alxa Zuoqi, Helan Mountains, Halawu, Qingshuwan]; 30 Jul. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965140, IOZ(E)1965142; • 1 ♀; 阿拉善左旗贺兰山强岗岭 [Alxa Zuoqi, Helan Mountains, Qianggangling]; 8 Aug. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965141; • 6 ♀♀; 阿拉善左旗贺兰山哈拉乌主峰 [Alxa Zuoqi, Helan Mountains, the main top of Halawu]; 1 Aug. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965143–1965148.

MONGOLIA • 1 ♀, Centralnyi Aimak, Dzorgol-Khairkhan, 30 km NE Undzhul; 16 Jul. 1973; G. Medvedev leg.; ZIN; • 1 ♀, Centralnyi Aimak, Dzorgol-Khairkhan, Uver-Undzhul-UI hill; 16 Jul. 1973; G. Medvedev leg.; ZIN.



Figures 9–16. Habitus of species of *Rhinodontus*: **9, 10** *R. crassiscapus*, female, dorsal and lateral view **11, 12** *R. ignarus*, female, dorsal and lateral view **13, 14** *R. mongolicus*, female, dorsal and lateral view **15, 16** *R. proximus*, female, dorsal and lateral view. Scale bars: 1 mm.

Remarks. Nine females from China (Inner Mongolia) have the spermatheca with a shorter ramus and more slender collum and nine spines at the protibial apex in comparison with previously known material, including the type specimens, of the species having only eight spines. Due to the lack of males of this population we currently retain it as conspecific with *R. ignarus*.

***Rhinodontus mongolicus* Borovec, 2003**

Figs 13, 14, 33, 53

Rhinodontus mongolicus Borovec, 2003: 36 (original description); Borovec 2009: 76 (check-list); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Material examined. CHINA – **Inner Mongolia Autonomous Region** • 1 ♀; 阿拉善左旗贺兰山哈拉乌主峰 [Alxa Zuoqi, Helan Mountains, the main top of Halawu]; 1 Aug. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965118; • 1 ♀; 阿拉善左旗贺兰山强岗岭 [Alxa Zuoqi, Helan Mountains, Qianggangling]; 8 Aug. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965131; • 1 ♀; 阿拉善左旗贺兰山水磨沟正沟 [Alxa Zuoqi, Helan Mountains, Shuimogou Zhenggou]; 27 Jul. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965133; • 1 ♀; 阿拉善左旗贺兰山哈拉乌青树湾 [Alxa Zuoqi, Helan Mountains, Halawu, Qingshuwan]; 30 Jul. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965137; • 1 ♀; 阿拉善左旗贺兰山水磨沟 [Alxa Zuoqi, Helan Mountains, Shuimogou]; 25 Jul. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1941074.

MONGOLIA • 1 ♀; Uver Khangaiskyi Aimak, Arc-Bogdo Mts., 20 km S Khovda; 12–13 Aug. 1967; Kerzhner leg.; ZIN; • 1 ♀; Ara-Khangaiskyi Aimak, 20 km NE Tevshrulakh; 17 Jun. 1975; Emelianov leg.; ZIN; • 1 ♀; Uver Khangaiskyi Aimak, Orkhon, 15 km W Bat-Ulgyi; 22 Sept. 1981; Korolas leg.; ZIN.

Remarks. The species was described based on 17 females from Mongolia, Ulaan Baatar and these are the first additional specimens since the original description. This is also the first record of the species in China (Fig. 53). *Rhinodontus mongolicus* is very easy distinguishable from all other species of *Rhinodontus* by the prominent sulci covering eyes in dorsal view and by the slender antennal scape.

***Rhinodontus proximus* Voss, 1967**

Figs 15, 16, 34

Rhinodontus proximus Voss, 1967: 275 (original description); Borovec 2003: 34 (redescription); Borovec 2009: 76 (check-list); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Material examined. CHINA – **Inner Mongolia Autonomous Region** • 1 ♀; 阿拉善左旗贺兰山南寺雪岭子 [Alxa Zuoqi, Helan Mountains, Nansi, Xuelingzi]; 11 Aug. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1965149; • 4 ♀♀; 阿拉善左旗

水磨沟 [Alxa Zuoqi, Helan Mountains, Shuimogou]; 25 Jul. 2010; 黄鑫磊 [X.L. Huang leg.]; IZCAS, IOZ(E)1941092–1941095. – **Gansu Prov. [Kan-Ssu Prov.]** • 1 ♀; 1884; O. Potanin leg.; ZIN.

MONGOLIA • 1 ♀; Bayankhongor aym., Khangayan Nuruu Mts., Tsagaan-Ovoo 25 km W; 45°55.1'N, 101°10.4'E; 2050 m, a.s.l.; 8 Jun. 2013; M. Košťál leg.; MKBC; • 2 ♀♀; Uver Khangaisk Aimak, Arc-Bogdo Mts., 20 km S Khovda; 12–13 Aug. 1967; Kerzhner leg.; ZIN; • 2 ♀♀; Iuzhno-Gob. Aimak, Ukh-Shankhai; 12 Jun. 1972; ZIN; • 3 ♀♀; Iuzhno-Gob. Aimak, 25 km SW Bulgan; 5 Aug. 1971; ZIN; • 1 ♀; Iuzhno-Gob. Aimak, Navtgar-Ul hill, 35 km NW Iamat-Ul; 9 Aug. 1971; Emelianov leg.; ZIN; • 3 ♀♀; Vostochno-Gob. Aimak, Nomt-Ul hill, 30 km SSE Shokhoi-Nur lake; 26 Jun. 1971; Emelianov & Kozlov leg.; ZIN; • 1 ♀; Baian-Kchongor. Aimak, 20 km ESE Uldzint; 9 Jul. 1970; Emelianov leg.; ZIN; • 2 ♀♀; Iuzhno-Gob. Aimak, Tachilga-Ul hill, 35 km NNE Dalan-Deadagad; 10 Aug. 1971; Kerzhner leg.; ZIN; • 1 ♀; Centralnyi Aimak, Dzorgol-Khairkhan, Uver-Undzhul-Ul hill; 16 Jul. 1973; G. Medvedev leg.; ZIN; • 1 ♀; Iuzhno-Gob. Aimak, Khuryn-Khalkha-Nur, 25 km W Noën; 20 Jun. 1973; G. Medvedev leg.; ZIN.

Remarks. This species was described from four specimens from two localities in Mongolia, later recorded also from China. It is very similar to *R. ignarus*, but differs by possessing eight or nine spines at apex of protibia, tarsal claws connate only in the very short basal part, and also the more slender antenna.

***Rhinodontus sawadai* Borovec, 2003**

Figs 17, 18, 35

Rhinodontus sawadai Borovec, 2003: 40 (original description).

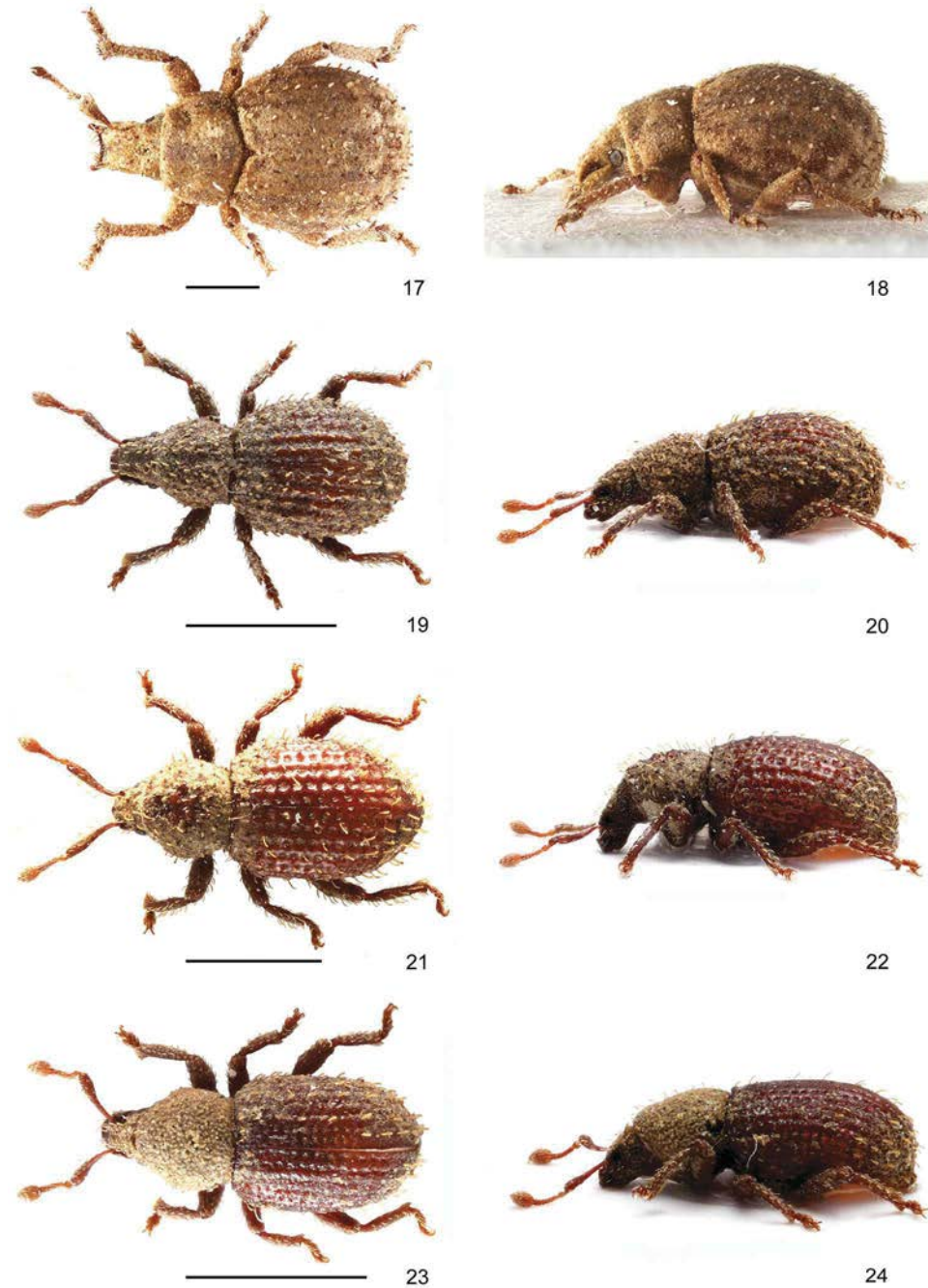
Rhinodontus sawadai: Borovec 2009: 76 (check-list); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Material examined. CHINA – **Xinjiang Autonomous Region** • 1 ♀; Polu; 13 May 1890; ZIN.

Remarks. This species was described based on three females from China, Xinjiang; this is the first additional specimen since the original description. *Rhinodontus sawadai* can be distinguished from other species of the genus by its wider rostrum, curved scape, missing prominences above eyes, and less enlarged outside apex of protibia.

***Trachyploeosoma* Wollaston, 1869**

Trachyploeosoma Wollaston, 1869: 414 (original description); Zimmerman 1956: 27 (review of genus); Alonso-Zarazaga and Lyal 1999: 183 (catalogue); Borovec 2009: 52 (redescription of genus); Borovec 2014: 11 (revision of genus); Morimoto 2015: 343 (review of Japanese species); Alonso-Zarazaga et al. 2017: 406 (catalogue).



Figures 17–24. Habitus of species of *Rhinodontus* and *Trachyphloeosoma*: **17, 18** *Rhinodontus sawadai*, female, dorsal and lateral view **19, 20** *Trachyphloeosoma honza* sp. nov., paratype, female, dorsal and lateral view **21, 22** *T. jirka* sp. nov., paratype, female, dorsal and lateral view **23, 24** *T. martin* sp. nov., paratype, female, dorsal and lateral view. Scale bars: 1 mm.



Figure 25. Head of *Rhinodontodes alashanensis*, sp. nov., dorsal view, arrows indicate the epistome.

Remarks. This genus was described by Wollaston based on material from the island of St. Helena. Additional species were described later, and the present number of valid species is five. The genus was redescribed and compared to all other Palearctic Trachyphloeini by Borovec (2009), then subsequently revised by Borovec (2014), based on material from China, Vietnam, Japan, Korea, and the Moluccas. Morimoto (2015), in his monography of Japanese Entiminae, surveyed the Japanese species of the genus. China is the most northwestern part of the range of the genus, and *Trachyphloeosoma* was first recorded from this country only in 2009 by Borovec, based on one male from Yunnan, and subsequently by Borovec (2014) based on several additional specimens of the same species. Following examination of some newly sifted material from China, and comparing this with Morimoto's (2015) review of the genus from the Japanese islands, we can state that the species collected in China are new to science. We can thus correct the name of the species so far recorded from China. This newly collected material from China was erroneously identified as *T. advena* Zimmerman, 1956 and was listed under this name in the Palearctic catalogue (Alonso-Zarazaga et al. 2017). After dissection and thorough examination, we are able to recognise the specimens as distinct from *T. advena* and belonging to three different species, which are described below.

***Trachyploeosoma honza* sp. nov.**

<http://zoobank.org/F296C5F2-B37B-4170-A85F-581BC127CD91>

Figs 19, 20, 36, 40, 42, 44, 48, 54

Trachyploeosoma advena: Borovec 2009: 78 (check-list); Borovec 2014: 12 (note); Alonso-Zarazaga et al. 2017: 406 (catalogue). **non** Zimmermann, 1956.

Type locality. China, Yunnan, Lunan.

Material examined. Holotype. CHINA – Yunnan Prov. • 1 ♂; Lunan – env., Stone Forest; 29 Jul. 1995; Z. Jindra leg.; NMPC. **Paratypes.** CHINA – Yunnan Prov. • 10 ♀♀; 14 km SE Tengchong, Renjiafen env.; 24°56.43'N, 98°35.52'E; 2145 m a.s.l.; (CH06) 23 Jun. 2016; J. Hájek & J. Růžička leg.; sift #05, border of old orchard, wet debris under trees; NMPC; • 2 ♀♀; same data as for preceding; RBSC; • 1 ♀; same data as for preceding; IZCAS; • 2 ♀♀; Tengchong city, Laifeng Shan Forest Park; 25°01.24'N, 98°28.94'E; 1800 m a.s.l.; (CH05) 22 Jun. 2016; J. Hájek & J. Růžička leg.; sift #04, dense mixed forest above tombs near track, wet debris in terrain depressions; NMPC.

Description. Body length: 1.87–2.39 mm, holotype 2.13 mm.

Body (Figs 19, 20) unicoloured piceous brown, antennae and legs slightly paler, reddish brown. The entire body except for frons, antennal funicles with clubs and tarsi covered with a brownish earth-like incrustation which conceals most of the surface; rounded appressed scales, covering the whole body, very hardly visible through this incrustation. Elytra with one conspicuous, dense row of erect, subspatulate setae on each interval, starting just from the base; setae approximately as long as half width of one interval, slightly enlarged apicad, distance between two setae slightly longer than length of one seta. Pronotum and head with rostrum with similar setae, less than half as long as elytral ones, densely irregularly scattered, anteriorly directed. Antennal scapes, femora and tibiae with long, erect, very slender setae, distinctly prominent from outline of scapes and legs.

Rostrum (Figs 19, 20, 36) 1.25–1.31 × wider than long, at base 1.18–1.23 × wider than at apex, evenly tapered anteriorly with almost straight sides, at short basal part with shallowly concave sides; in profile short and wide, convex. Epifrons distinctly tapered anteriorly with straight sides, at level of antennal insertion narrow, 0.65–0.68 × as wide as corresponding width of rostrum, with ill-defined, shallow, longitudinal furrow. Frons conspicuous, glabrous, smooth and shiny, posteriorly continuous with epifrons. Epistome indistinct. Antennal scrobes in dorsal view fully visible as furrows, reaching eyes; in lateral view with dorsal margin directed towards middle of eye and ventral margin deeply below ventral margin of eye. Eyes small, in dorsal view protruding from outline of head; in lateral view placed in dorsal third, distance from dorsal margin of head longer than diameter of eye.

Antennae moderately long, scapes slightly exceeding anterior margin of pronotum and longer than funicle, weakly regularly curved, in apical half slightly gradually thickened to apex, at apex 0.7–0.8 × as wide as club. Funicle segment 1 bead-shaped, 1.5–1.6 × longer than wide and 1.3–1.4 × longer than segment 2, which is 1.5–1.6 × longer

than wide; segments 3–7 successively wider, segment 3 and 4 1.3–1.4 ×, segment 5–6 1.6–1.7 ×, segment 7 1.9–2.0 × wider than long. Clubs ovoid, large, 1.4–1.5 × longer than wide.

Pronotum (Figs 19, 20) 1.17–1.22 × wider than long, widest at midlength, with distinctly rounded sides; anterior margin distinctly narrower than posterior one; disc flatly and irregularly granulate; in lateral view pronotum slightly convex, anterior margin strongly obliquely directed back beneath towards coxae.

Elytra (Figs 19, 20) oval, 1.23–1.29 × longer than wide, widest at midlength, with regularly rounded sides. Striae coarsely punctate, wider than intervals, striae only slightly impressed between punctures; separation of punctures much shorter than their diameters. Intervals very narrow, somewhat convex, smooth.

Protibiae (Fig. 40) short and robust, 4.8–5.2 × longer than wide at midlength, at apical quarter indistinctly curved inwards with mesal edge slightly bisinuate, apically bluntly truncate, with dense fringe of fine but long yellowish setae, shorter in mesal than in lateral part and with long and slender yellowish mucro. Tarsi short, tarsomere 2 1.4–1.5 × wider than long; tarsomere 3 1.2–1.3 × wider than long and 1.3–1.4 × wider than tarsomere 2; onychium (tarsomere 5) 1.1 × as long as tarsomere 3, widened apicad with very long, strongly divaricate claws, almost as long as exceeding part of onychium.

Abdominal ventrites 1.09–1.12 × longer than wide, sparsely roughly punctate; ventrite 2 slightly longer than ventrite 1 and distinctly longer than ventrites 3 and 4 combined; suture between ventrites 1 and 2 sinuous, the others straight. Metaventral process as wide as transverse diameter of metacoxa.

Penis (Fig. 42) short, 1.57 × as long as wide, subparallel-sided, slightly evenly enlarged apicad, in apical part shortly subtriangular, tip rounded, sides of tip shallowly concave; in lateral view moderately wide, ventral side almost straight, dorsal side irregularly rounded, tip pointed and curved upwards.

Female genitalia. Spermatheca with short and moderately wide cornu; corpus large, elongated; ramus and collum developed, identically sized, short and wide (Fig. 44). Sternite VIII with plate 1.5–1.6 × longer than wide, rhombic, without any fenestra (Fig. 48). Gonocoxites of ovipositor very slender and long, basally enlarged, in apical part rod-shaped, bearing slender and long, cylindrical stylus with apical setae.

Bionomics. The majority of the material was collected by sifting wet debris under trees along the border of an old orchard.

Etymology. The new species is dedicated to one of the collectors and a very good friend of the second author, Dr. Jan Růžička (University of Life Science, Prague). The Czech name Jan has its nickname “Honza”. The specific name is a noun in apposition.

Distribution. China, Yunnan (Fig. 54).

Differential diagnosis. *Trachyphloeosoma honza* sp. nov. shares with *T. martin* sp. nov. short and robust protibiae, short and wide rostrum and subspatulate setae. It is easily distinguished from *T. martin* sp. nov. by elytral setae on all elytral intervals, dorsal margin of antennal scrobes directed towards middle of eye and female sternite VIII lacking fenestra, while *T. martin* sp. nov. has elytral setae only on odd intervals, dorsal margin of scrobes directed above dorsal margin of eye and female sternite VIII

with longitudinal fenestra. In comparison with non-Chinese species, *T. honza* sp. nov. is similar to *T. advena* Zimmerman, 1956, known from Japan, Korea and introduced to U.S.A. and *T. ryukyuensis* Morimoto, 2015, known from Japan, in the funicle being 7-segmented and body covered by appressed setae and elytra with raised setae on all intervals. It is possible to distinguish *T. honza* sp. nov. from both by short subspatulate setae, distinctly shorter than width of an elytral interval (long piliform setae on elytra, approximately as long as width of interval in *T. advena* and *T. ryukyuensis*), elytral setae distinctly bent backwards in lateral view (perpendicularly erect in *T. advena* and *T. ryukyuensis*) and plate of sternite VIII in females without fenestra (with fenestra in *T. advena* and *T. ryukyuensis*).

***Trachyploeosoma jirka* sp. nov.**

<http://zoobank.org/766B872B-D8F0-4E20-8DD4-D27E44BAEA02>

Figs 21, 22, 37, 41, 45, 49, 54

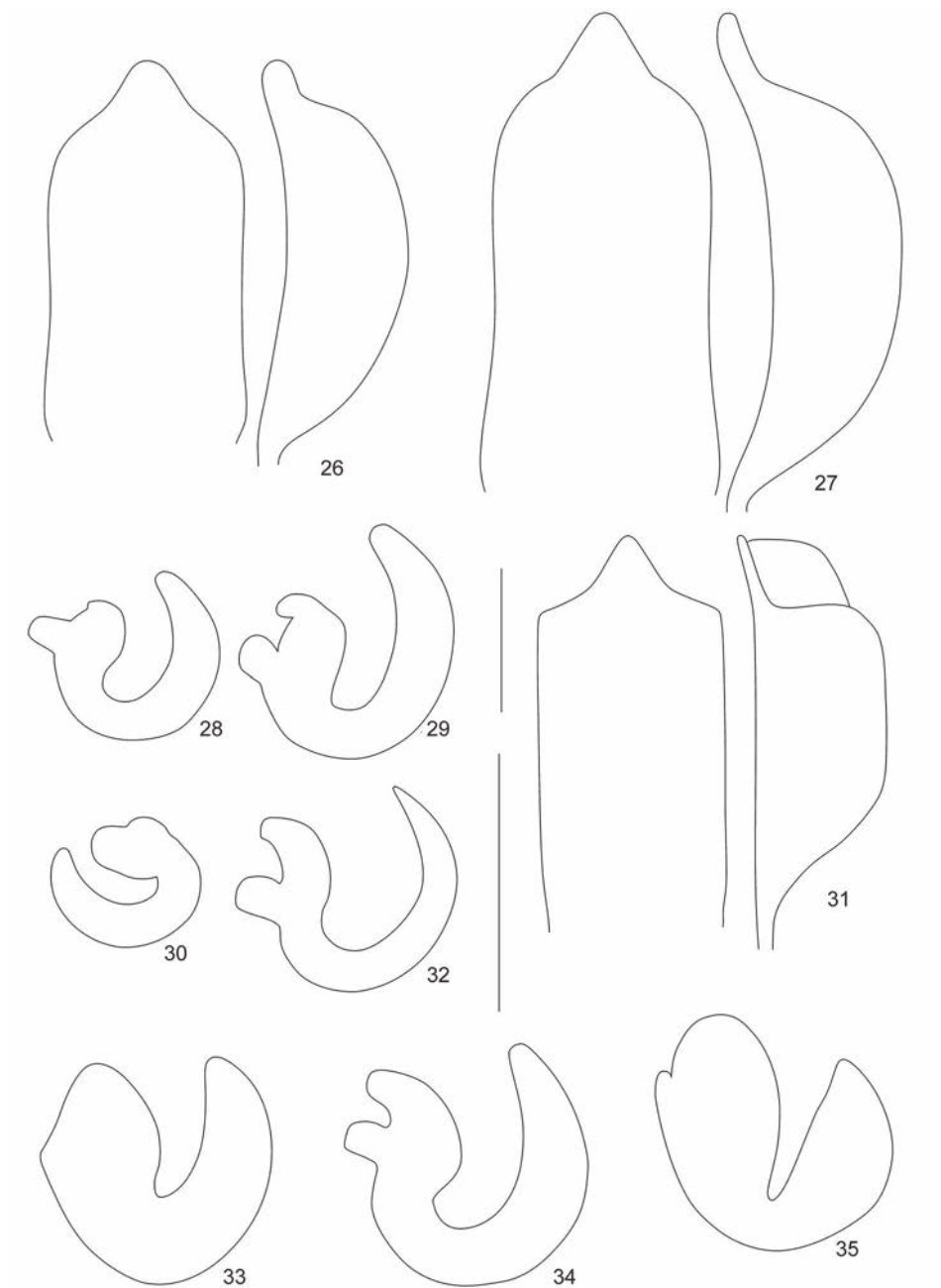
Type locality. China, Jiangxi, Jinggangshan Mts., Xiangzhou.

Material examined. Holotype. CHINA – **Jiangxi Prov.** • 1 ♀; Jinggangshan Mts., Xiangzhou (forested valley S of the village); 26°35.5'N, 114°16.0'E; 374 m a.s.l.; 26 Apr. 2011; Fikáček & Hájek leg.; sifting, accumulation of moist leaf litter along the stream and on the steep slope above the stream in the sparse secondary forest; [MF08]; NMPC. **Paratypes.** CHINA – **Jiangxi Prov.** • 1 ♀; the same data as holotype; NMPC; • 1 ♀; same data as holotype; IZCAS.

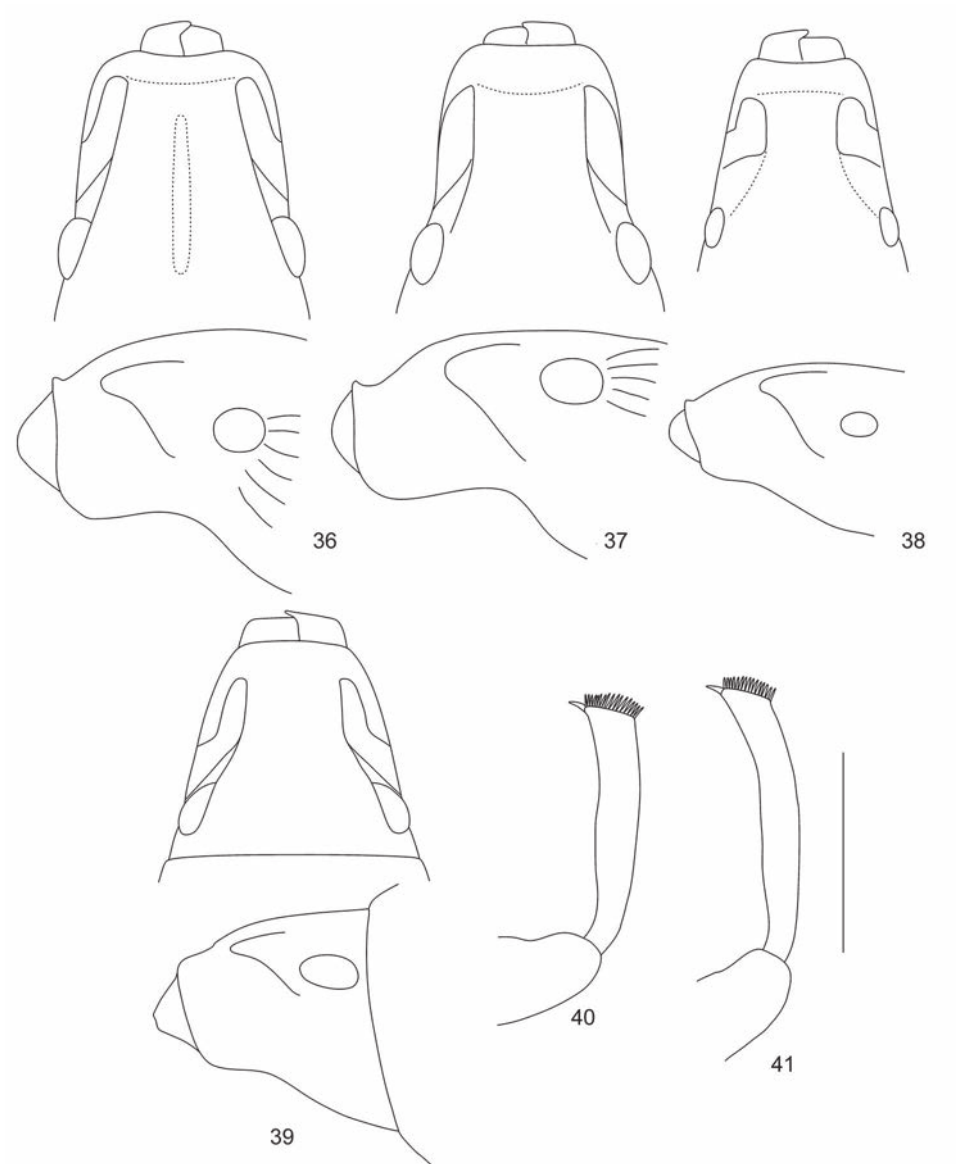
Description. Body length: 2.06–2.44 mm, holotype 2.06 mm.

Body (Figs 21, 22) including antennae and legs unicoloured piceous brown. The entire body except for frons, antennal funicles with clubs and tarsi covered with a brownish earth-like incrustation which conceals most of the surface; appressed scales, covering the whole body, with hardly visible shape, but in lateral parts rounded, finely densely striolate. Elytra with one conspicuous, dense row of long erect setae on each interval, starting from the base; setae as long as width of one interval, very slender, slightly and evenly enlarged apicad, distance between two setae slightly longer than length of one seta. Pronotum and head with rostrum with identically long and shaped setae as elytral setae, densely irregularly scattered, anteriorly directed. Antennal scapes, femora and tibiae with long, erect, very slender setae, distinctly prominent from outline of scapes and legs.

Rostrum (Figs 21, 22, 37) 1.12–1.18 × wider than long, at base 1.18–1.20 × wider than at apex, evenly tapered anteriorly, at basal half with straight sides; in profile moderately long and slender, convex, at apex distinctly declined. Epifrons in basal half distinctly tapered anteriorly, in apical half almost parallel-sided, narrow, 0.61–0.67 × as wide as rostrum in corresponding part, with ill-defined, slender, longitudinal furrow. Frons conspicuous, smooth, shiny, angularly declined from epifrons. Epistome small, short, indistinct, just at apical portion of rostrum, posteriorly narrowly carinate. Antennal scrobes in dorsal view visible as wide furrows, reaching



Figures 26–35. Genitalia of *Rhinodontodes* and *Rhinodontus*: **26** Penis of *Rhinodontodes alashanensis* sp. nov., dorsal and lateral view **27** Penis of *Rhinodontodes subsignatus*, dorsal and lateral view **28** Spermatheca of *Rhinodontodes alashanensis* sp. nov. **29** Spermatheca of *Rhinodontodes subsignatus* **30** Spermatheca of *Rhinodontus crassiscapus* **31** Penis of *Rhinodontus ignarus*, dorsal and lateral view **32** Spermatheca of *Rhinodontus ignarus* **33** Spermatheca of *Rhinodontus mongolicus* **34** Spermatheca of *Rhinodontus proximus* **35** Spermatheca of *Rhinodontus sawadai*. Scale bars: 0.50 mm (**26, 27, 31**); 0.25 mm (**28–30, 32–35**).



Figures 36–41. Head with rostrum in dorsal and lateral view of *Trachyphloeosoma* species: **36** *T. honza* sp. nov. **37** *T. jirka* sp. nov. **38** *T. martin* sp. nov. **39** *T. roelofsi*; Protibiae of *Trachyphloeosoma* species: **40** *T. honza* sp. nov. **41** *T. jirka* sp. nov. Scale bars: 0.50 mm (**36–41**).

eyes; in lateral view distinctly subtriangular, strikingly enlarged posteriad with dorsal margin directed above dorsal margin of eye and ventral margin deeply below ventral margin of eye. Eyes small, in dorsal view hardly protruding from outline of head; in lateral view placed subdorsally, distance from dorsal margin of head shorter than diameter of eye.

Antennae moderately long, scapes slightly exceeding anterior margin of pronotum and distinctly longer than funicle, weakly curved in basal third, in apical half slightly gradually thickened to apex, at apex $0.7\text{--}0.8 \times$ as wide as club. Funicle segment 1 bead-shaped, $1.3\text{--}1.4 \times$ longer than wide and $1.4\text{--}1.5 \times$ longer than segment 2, this is short, $1.1\text{--}1.2 \times$ longer than wide; segments 3–7 slightly successively wider, segment 3 and 4 $1.3\text{--}1.4 \times$, segment 5–6 $1.5\text{--}1.6 \times$, segment 7 $1.7\text{--}1.8 \times$ wider than long. Clubs ovoid, large, $1.6\text{--}1.7 \times$ longer than wide.

Pronotum (Figs 21, 22) $1.21\text{--}1.28 \times$ wider than long, widest at anterior third, with distinctly rounded sides, slightly constricted behind anterior margin; disc flatly and irregularly granulate, among granules irregularly punctate with rough and fine punctures; in lateral view pronotum slightly convex, anterior margin strongly obliquely directed back beneath towards coxae.

Elytra (Figs 21, 22) oval, $1.42\text{--}1.46 \times$ longer than wide, widest at midlength, with regularly rounded sides. Striae coarsely punctate, twice as wide as intervals, striae not impressed between the punctures; separations of punctures much less than their diameters. Intervals very narrow, flat, shiny.

Protibiae (Fig. 41) long and slender, $6.1\text{--}6.3 \times$ longer than wide at midlength, at apical quarter conspicuously curved inwards with mesal edge slightly bisinuate, apically obliquely subtruncate, with dense fringe of fine but long yellowish setae, shorter in mesal than in lateral part, with long and slender yellowish mucro. Tarsi short, tarsomere 2 $1.4\text{--}1.5 \times$ wider than long; tarsomere 3 $1.3\text{--}1.4 \times$ wider than long and $1.4\text{--}1.5 \times$ wider than tarsomere 2; tarsomere 5 $1.1 \times$ as long as tarsomere 3, evenly widened apicad with very long, strongly divaricate claws, approximately as long as part of onychium (tarsomere 5) projecting beyond lobes of tarsomere 3.

Abdominal ventrites sparsely roughly punctate; ventrite 2 slightly longer than ventrite 1 and distinctly longer than ventrites 3 and 4 combined; suture between ventrites 1 and 2 sinuate, the others straight. Metaventral process as wide as transverse diameter of metacoxa.

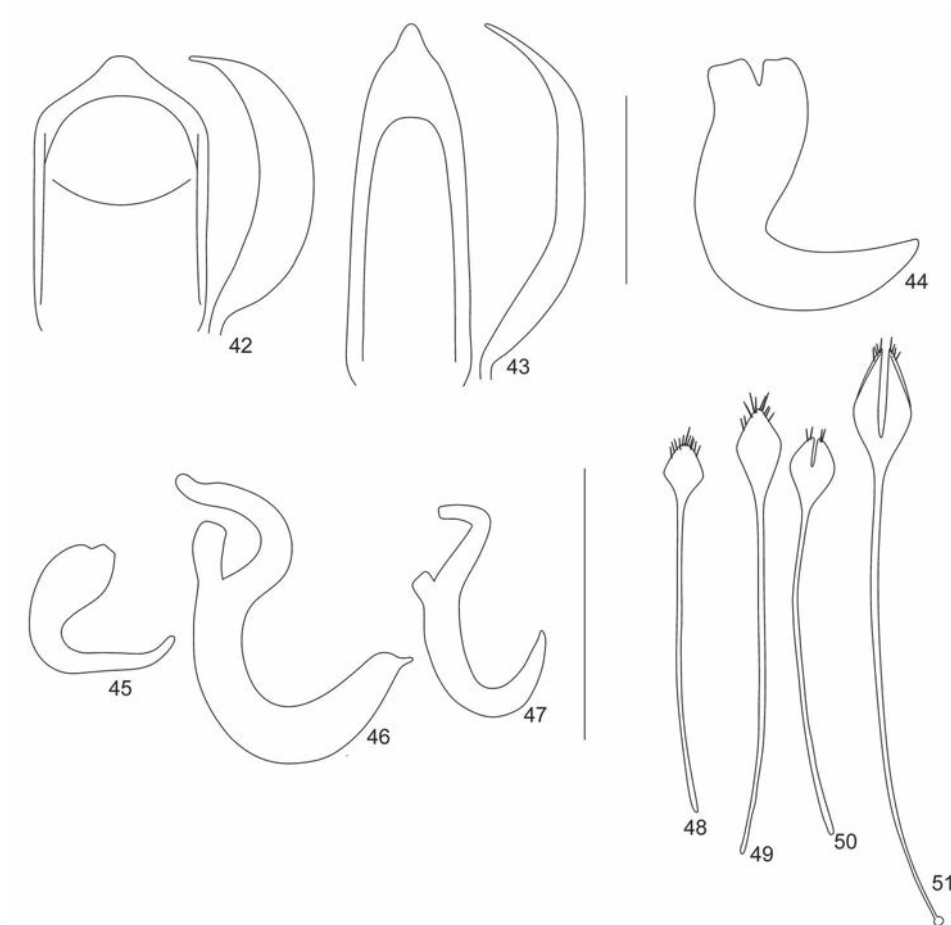
Female genitalia. Spermatheca with very slender and irregularly distorted cornu; corpus large, elongate; ramus not developed; collum very small, hump-shaped, shorter than wide (Fig. 45). Sternite VIII with plate $2.0\text{--}2.2 \times$ longer than wide, rhombic, without any fenestra (Fig. 49). Gonocoxites of ovipositor very slender and long, basally enlarged, in apical part rod-shaped, bearing slender and long cylindrical stylus with apical setae.

Bionomics. This species was collected by sifting in sparse secondary forest.

Etymology. This species is dedicated to Dr. Jiří Hájek, curator of National Museum in Prague, who loaned us very interesting material of *Trachyphloeosoma* for study and also collected the specimens of this species. The nickname of Jiří is “Jirka” in the Czech language. The specific name is a noun in apposition.

Distribution. China, Jiangxi (Fig. 54).

Differential diagnosis. *Trachyphloeosoma jirka* sp. nov. is easily distinguishable among Chinese *Trachyphloeosoma* species by its long and slender protibiae, distinctly curved inwards at apical part, long piliform setae as long on pronotum as on elytra, long



Figures 42–51. Terminalia of *Trachyploeosoma* species: **42** Penis of *T. honza* sp. nov., dorsal and lateral view **43** Penis of *T. martin* sp. nov., dorsal and lateral view **44** Spermatheca of *T. honza* sp. nov. **45** Spermatheca of *T. jirka* sp. nov. **46** Spermatheca of *T. martin* sp. nov. **47** Spermatheca of *T. roelofsi* **48** Sternite VIII of *T. honza* sp. nov. **49** Sternite VIII of *T. jirka* sp. nov. **50** Sternite VIII of *T. martin* sp. nov. **51** Sternite VIII of *T. roelofsi*. Scale bars: 0.25 mm (**42–47**); 0.5 mm (**48–51**).

and slender rostrum with frons distinctly declined downwards, subdorsal eyes and long and slender plate of female sternite VIII. In comparison with non-Chinese species, *T. jirka* sp. nov. is, in the funicle 7-segmented, body covered by appressed setae and elytra with raised setae on all intervals similar to *T. advena* Zimmerman, 1956, known from Japan, Korea and introduced to U.S.A. and *T. ryukyuensis* Morimoto, 2015, known from Japan. It is possible to distinguish it from both by erect setae on pronotum equal in length to elytral setae (distinctly shorter in *T. advena* and *T. ryukyuensis*), elytra long, oval, 1.42–1.46 × longer than wide (oval, 1.26–1.31 × longer than wide long in *T. advena* and *T. ryukyuensis*) and protibiae slender, distinctly curved inwards at apical portion (short and robust, only slightly curved in *T. advena* and *T. ryukyuensis*) and also plate of sternite VIII in females without fenestra (with fenestra in *T. advena* and *T. ryukyuensis*).

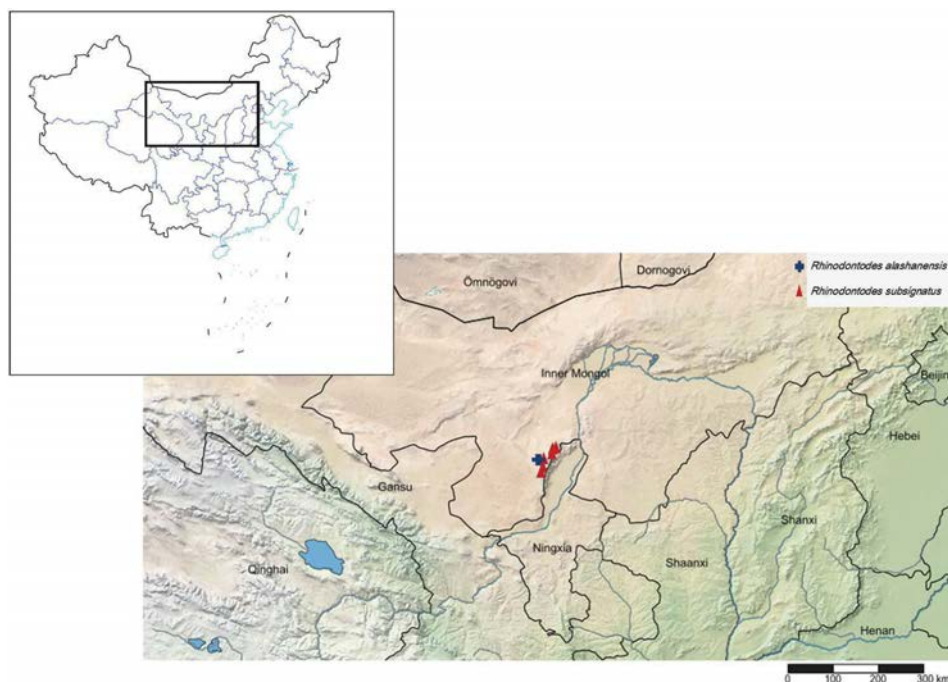


Figure 52. Geographical distribution of new species and new record of *Rhinodontodes* in China.

***Trachyploeosoma martin* sp. nov.**

<http://zoobank.org/0F81305F-227E-49C0-95E3-B4FB14BB3F1C>

Figs 23, 24, 38, 43, 46, 50, 54

Type locality. China, Hainan, Limushan Mts.

Material examined. Holotype. CHINA – **Hainan Prov.** • 1 ♂; Limushan Mts., mountains above frst. admin. Centre; 19°10.5–19°10.9'N, 109°44–109°45'E; 650–900 m a.s.l.; 6 May 2011; Fikáček leg.; sifting – small accumulations of moist leaf litter along an on the trail in secondary forest partly with *Cyathea* and bamboo; MF19; NMPC. **Paratypes.** CHINA – **Hainan Prov.** • 1 ♀; the same data as holotype; NMPC; • 1 ♀; same data as for preceding; IZCAS.

Description. Body length: 1.63–2.31 mm, holotype 1.63 mm.

Body (Figs 23, 24) including antennae and legs unicoloured piceous brown. Entire body except of frons, antennal funicles with clubs and tarsi covered with a brownish earth-like incrustation which conceals integument; rounded scales with hardly visible shape, but at least on pronotum, head and rostrum irregularly star-shaped. Elytra with one conspicuous dense row of erect, subspatulate setae only on odd-numbered intervals; setae almost as long as width of one interval, enlarged apicad, distance between two setae distinctly longer than length of one seta. Pronotum and head with rostrum with similar setae, approximately half length of elytral setae, densely irregularly scattered, anteriorly directed. Antennal scapes, femora and tibiae with short, erect, very slender setae, prominent from outline of scapes and legs.

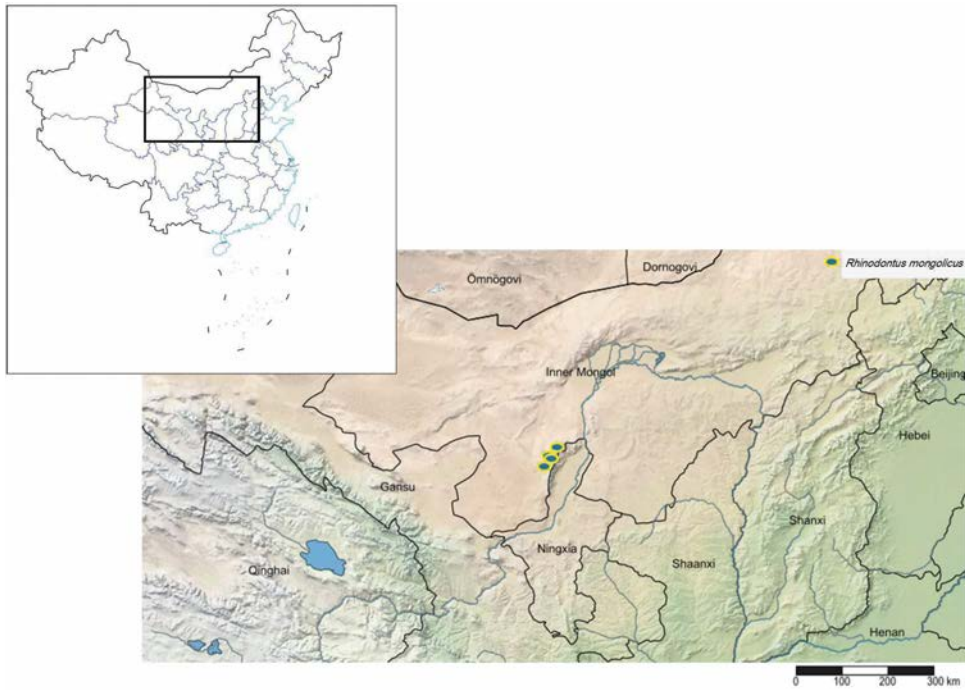


Figure 53. Geographical distribution of new record species of *Rhinodontus* in China.

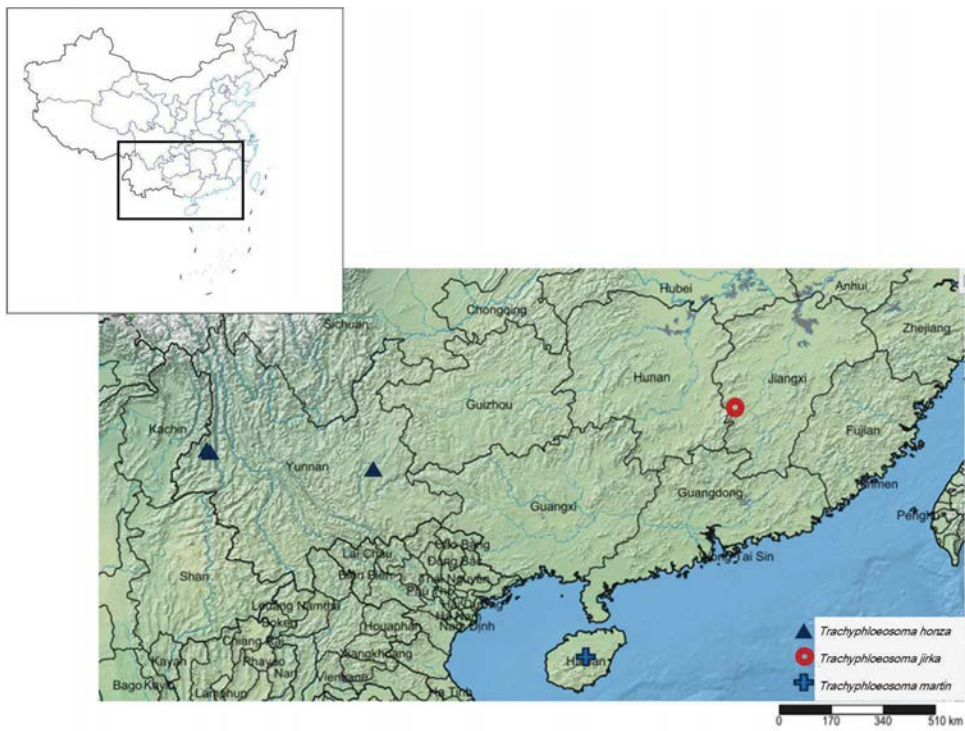


Figure 54. Geographical distribution of new species of *Trachyphloeosoma* in China.

Rostrum (Figs 23, 24, 38) 1.38–1.42 × wider than long, at base 1.23–1.28 × wider than at apex, evenly tapered anteriorly with straight sides; in profile short and wide, convex. Epifrons in basal half distinctly tapered anteriorly, in apical half almost parallel-sided, narrow, 0.62–0.67 × as wide as rostrum in corresponding part, with ill-defined, longitudinal furrow. Frons glabrous, smooth and shiny, posteriorly continuous with epifrons. Epistome indistinct. Antennal scrobes in dorsal view visible as furrows, not reaching eyes; in lateral view distinctly subtriangular, short, strikingly enlarged posteriorly with dorsal margin directed above dorsal margin of eye and ventral margin deeply below ventral margin of eye. Eyes very small, in dorsal view hardly protruding from outline of head; in lateral view placed in dorsal third, distance from dorsal margin of head distinctly longer than diameter of eye.

Antennae moderately long, scapes slightly exceeding anterior margin of pronotum and longer than funicle, weakly regularly curved, in apical half slightly gradually thickened to apex, at apex 0.7–0.8 × as wide as club. Funicle segment 1 wide, bead-shaped, 1.3–1.4 × longer than wide and 1.6–1.7 × longer than segment 2, which is short, 1.1–1.2 × longer than wide; segments 3–7 slightly successively wider, segments 3–5 1.6–1.7 ×, segment 6 1.6–1.7 ×, segment 7 1.7–1.8 × wider than long. Clubs ovoid, large, 1.5–1.6 × longer than wide.

Pronotum (Figs 23, 24) narrow, 1.07–1.11 × wider than long, widest at anterior third, with distinctly rounded sides, constricted behind anterior margin; disc regularly domed, indistinctly granulate; pronotum slightly convex in lateral view, anterior margin strongly obliquely directed back beneath towards coxae.

Elytra (Figs 23, 24) elongated, 1.44–1.48 × longer than wide, widest at midlength, with regularly rounded sides. Striae coarsely punctate, twice as wide as intervals, striae not impressed between punctures; separation of punctures much less than their diameters. Intervals very narrow, flat, shiny.

Protibiae short and robust, 5.0–5.3 × longer than wide at midlength, at apical quarter slightly curved inwards with mesal edge slightly bisinuate, apically obliquely subtruncate, with a dense fringe fine of long yellowish setae, shorter in mesal than in lateral part, with long and slender yellowish mucro. Tarsi short, tarsomere 2 1.6–1.7 × wider than long; tarsomere 3 1.3–1.4 × wider than long and 1.4 × wider than tarsomere 2; onychium (tarsomere 5) as long as tarsomere 3, strikingly widened apically with very long, strongly divaricate claws, as long as part of onychium projecting beyond lobes of tarsomere 3.

Abdominal ventrites 1.14–1.19 × longer than wide, sparsely roughly punctate; ventrite 2 slightly longer than ventrite 1 and distinctly longer than ventrites 3 and 4 combined; suture between ventrites 1 and 2 sinuate, the others straight. Metaventral process as wide as transverse diameter of metacoxa.

Penis (Fig. 43) long and slender, 2.91 × as long as wide, subparallel-sided with straight sides, slightly evenly tapered apically; tip long, subtriangular with slightly concave sides; in lateral view slender, distinctly irregularly curved, tip pointed.

Female genitalia. Spermatheca with long and irregularly curved cornu; corpus slender, indistinct; ramus developed, short or tubular; collum very long, distinctly irregularly curved (Fig. 46). Sternite VIII with plate 1.5–1.7 × longer than wide, rhom-

bic, with distinct, slender, longitudinal fenestra reaching midlength of plate (Fig. 50). Gonocoxites of ovipositor very slender and long, basally enlarged, in apical part rod-shaped, bearing slender and long, cylindrical stylus with apical setae.

Bionomics. Type material was sifted from leaf litter in secondary forest partly with *Cyathea* and bamboo.

Etymology. This species is named after the curator of the National Museum in Prague and also the collector of the type specimens, Dr. Martin Fikáček. The specific name is a noun in apposition.

Distribution. China, Hainan (Fig. 54).

Differential diagnosis. *Trachyphloeosoma martin* sp. nov. is very easily recognizable among Chinese species by the elytral raised setae only on odd-numbered intervals and also by the pronotum being somewhat longer, only slightly wider than long, not distinctly granulate on disc, almost flat. Within the genus, *Trachyphloeosoma martin* sp. nov. is similar only to *T. roelofsi* Sharp, 1896 from Japan and *T. setosum* (Wollaston, 1869) known from St. Helena, where it is apparently introduced (but region of origin not yet known). *Trachyphloeosoma martin* sp. nov. is similar to them in having raised elytral setae only on odd intervals, but distinguished from them by a more slender and longer rostrum, 1.38–1.42 × wider than long (1.56–1.73 × in *T. roelofsi* and *T. setosum*), longer and more slender elytra, 1.44–1.48 × longer than wide, (1.19–1.27 × in *T. roelofsi* and *T. setosum*), and also by the different shape of the spermatheca, with collum distinctly longer than wide (isodiametric in *T. roelofsi*), or long and irregularly curved cornu (short and regularly curved in *T. setosum*).

Trachyphloeosoma roelofsi Sharp, 1896

Figs 39, 47, 51

Trachyphloeops setosus Roelofs 1873: 166 (**non** Wollaston, 1869).

Trachyphloeosoma roelofsi Sharp, 1896: 92 (nomen novum for *Trachyphloeops setosus* Roelofs); Morimoto 2015: 346 (review of Japanese species).

Trachyphloeosoma setosum: Zimmerman 1956: 27 (review of genus); Borovec 2009: 78 (check-list); Borovec 2014: 20 (revision of genus); Alonso-Zarazaga et al. 2017: 403 (catalogue).

Material examined. CHINA – Taiwan • 1 ♀; TianMu Gudao Hik. Trail (Taipei) Beitou Twنش., Taipei Co., S. Samau Mt.; 3 Jan. 2009; S. Vít leg.; dead leaves; NMPC; • 1 ♀; Rd. Jhuzihhu/Shuiwei, Yangmingshan Mts., slopes E of Mt. Datun, Taipei Co.; 650 m a.s.l.; 24 Oct. 2007; S. Vít leg.; putresc. base of *Cryptomeria* (?); NMPC.

Remarks. This species was described by Sharp from Nagasaki, Japan. Zimmerman (1956) compared the series of *Trachyphloeosoma setosum* Wollaston, 1869 from St. Helena with Sharp's material of *T. roelofsi* from Japan and found the two series represent only one species and placed them in synonymy. However, Morimoto (2015) resurrected the name *T. roelofsi* as an independent species, and distinguished it from *T. setosus* Wollaston from St. Helena. *Trachyphloeosoma roelofsi* is thus known from Japan

and Taiwan, while *T. setosus* is assumed as a species introduced to St. Helena without knowledge of its original country.

Key to Chinese *Trachyphloeosoma* species

- 1 Protibiae long and slender, $6.1-6.3 \times$ longer than wide at midlength, at apical portion distinctly inwardly curved (Fig. 41). Elytral setae piliform, as long as setae on pronotum (Fig. 22). Rostrum long and slender, $1.12-1.18 \times$ wider than long (Fig. 37). Frons distinctly declined from epifrons (Fig. 37). Distance between head and eye shorter than diameter of eye in profile (Fig. 37). Plate of female sternite VIII more elongate, rhombic, $2.0-2.2 \times$ longer than wide, lacking fenestra (Fig. 49). China: Jiangxi..... ***T. jirka* sp. nov.**
- Protibiae short and robust, $4.8-5.3 \times$ longer than wide at midlength, at apical portion only slightly inwardly curved (Fig. 40). Elytral setae subspatulate, twice as long as setae on pronotum (Figs 20, 24). Rostrum short and wide, $1.25-1.42 \times$ wider than long (Figs 36, 38, 39). Frons continuous with epifrons (Figs 36, 38, 39). Distance between head and eye longer than diameter of eye in profile (Figs 36, 38, 39). Plate of female sternite VIII proportionally shorter, rhombic, $1.5-1.7 \times$ longer than wide, if twice longer than wide, then with fenestra (Figs 48, 50, 51)..... **2**
- 2 Elytral setae on all elytral intervals, half as long as width of interval (Fig. 19). Epifrons with straight sides (Fig. 36). Dorsal margin of antennal scrobes directed towards middle of eye (Fig. 36). Pronotum shorter, $1.17-1.22 \times$ wider than long, widest at midlength, distinctly granulate (Fig. 36). Penis short and wide, in profile wide (Fig. 42). Spermatheca with ramus and collum equally sized (Fig. 44). Female sternite VIII lacking fenestra (Fig. 48). China: Yunnan ***T. honza* sp. nov.**
- Elytral setae on odd-numbered elytral intervals only, almost as long as width of interval (Fig. 23). Epifrons with concave sides (Figs 38, 39). Dorsal margin of antennal scrobes directed above eye (Figs 38, 39). Pronotum slightly longer, $1.07-1.15 \times$ wider than long, widest at anterior third, almost flat (Fig. 23). Penis long and slender, slender in profile (Fig. 43). Spermatheca with collum distinctly longer than ramus (Figs 46, 47). Female sternite VIII with distinct slender fenestra (Figs 50, 51)..... **3**
- 3 Rostrum more slender, $1.38-1.42 \times$ wider than long (Fig. 38). Eyes smaller, in profile with greater distance from dorsal margin of head (Fig. 38). Elytra oval, $1.44-1.48 \times$ longer than wide. Spermatheca with ramus distinctly longer than wide (Fig. 46). Female sternite VIII with plate $1.5-1.7 \times$ longer than wide and fenestra reaching midlength of plate (Fig. 50). China: Hainan..... ***T. martin* sp. nov.**
- Rostrum wider, $1.56-1.73 \times$ wider than long (Fig. 39). Eyes larger, in profile nearer to dorsal margin of head (Fig. 39). Elytra suboval, $1.19-1.27 \times$ longer than wide. Spermatheca with ramus isodiametric (Fig. 47). Female sternite VIII with plate twice as long as wide and fenestra reaching basal part of plate (Fig. 51). China, Taiwan; Japan..... ***T. roelofsi* Sharp**

Key to Chinese genera of Trachyploeini

- 1 Anterior margin of pronotum with postocular lobes in lateral view. Claws connate in short basal part..... **2**
- Anterior margin of pronotum straight or oblique in lateral view, without postocular lobes. Claws free..... **4**
- 2 Epistome conspicuous in dorsal as well as in lateral view, projecting as two teeth from outline of head. Postocular lobes with short fringe of setae **3**
- Epistome inconspicuous, not projecting from outline of the head. Postocular lobes without setae. 2.6–6.8 mm..... *Pseudocneorhinus* **Roelofs**
- 3 Rostrum before eyes enlarged, wider than long. Apex of protibiae enlarged laterally, with stout spines. Claws divaricate. Length 2.9–4.1 mm.....
..... *Rhinodontus* **Faust**
- Rostrum very feebly enlarged anteriorly, almost parallel-sided, longer than wide. Apex of protibiae feebly enlarged laterally, with slender, bristle-shaped spines. Claws almost parallel-sided, feebly divaricate. Length 3.8–4.9 mm
..... *Rhinodontodes* **Voss**
- 4 Genae glabrous, longitudinally striate. Antennal scrobes in lateral view gently enlarged posteriorly, dorsal margin directed towards ventral margin of eye. Rostrum as long as wide, or slightly wider than long. Length 3.0 mm *Trachyphilus* **Faust**
- Genae squamose, lacking striae. Antennal scrobes in lateral view enlarged posteriorly, subtriangular; dorsal margin directed towards dorsal margin of eye. Rostrum wider than long. Length 1.7–2.3 mm *Trachyploeosoma* **Wollaston**

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Review of the *Stomodes tolutarius* species group (Coleoptera: Curculionidae: Entiminae: Otiorhynchini) from the Balkan Peninsula with description of two new species from Greece

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Abstract

Species of the *tolutarius* species group of the genus *Stomodes* Schoenherr, 1826 are revised. A redescription of the genus is provided and all available male and female genitalia are illustrated. Two new species, *S. benedikti* sp. n. and *S. dodo-cunevi* sp. n. from Greece, are described. A lectotype is designated for *S. amorei* Desbrochers des Loges, 1904. The redescrptions of the following species are provided: *S. marocanus* Hoffmann, 1956; *S. muelleri* Lona, 1922; *S. leonhardi* Wagner, 1912; *S. letzneri* Reitter, 1889 and *S. tolutarius* Schoenherr, 1826. *S. muelleri* is for the first time recorded for Macedonia, Bosnia and Hercegovina and Greece; *S. tolutarius* for Macedonia, Bulgaria and Turkey. An identification key to species of the *tolutarius* species group is given.

Key words: Curculionidae, Entiminae, Otiorhynchini, *Stomodes*, taxonomy, new species, Balkan peninsula

Introduction

The Palaearctic genus *Stomodes* Schoenherr, 1826 contains 11 species distributed mainly in southern Europe, especially in the Balkans, with one species known from the Caucasus, one from Iran and one from Morocco (Alonso-Zarazaga *et al.* 2017). *Stomodes gyrosicollis* Boheman, 1843 was introduced in the USA (Anderson 2002). The genus is easy to distinguish within the tribe Otiorhynchini Schoenherr, 1826 (see below). Since Wagner's revision (1912), three species (Lona 1922, Reitter 1915 and Hoffmann 1957) and one subspecies (Solari 1947) have been described.

In his *Stomodes* revision, Wagner (1912) redescribed the genus and its eight then-known species, introduced two new ones (*S. ganglbaueri* Wagner, 1912 and *S. leonhardi* Wagner, 1912) and provided a key to species. He also stated several synonyms, but it is not clear which of them were new, and which were suggested earlier by others. Reitter (1913) erected a new genus, *Stomodesops* Reitter, 1913, for one of these species (*S. schaufussi* Miller, 1863). Terminalia of *Stomodes* were not published until Germann (2014) illustrated the female terminalia of *S. letzneri* Reitter, 1889.

The main aims of the present paper are to redescribe the genus, define two species groups and review the *S. tolutarius* Schoenherr, 1826 species group.

Material and methods

Body length was measured in dorsal view from the anterior margin of the eyes to the apex of elytra, excluding the rostrum. Habitus images were taken with a Canon EOS 5D mark II in combination with a Canon MP-E65 1-5x macro lens. Images were stacked by Zerene Stacker and edited in Adobe Photoshop CC 2015. The terminology of the rostrum and the terminalia follows Oberprieler *et al.* (2014).

Type specimen label data are cited verbatim. Text from different labels is separated by a slash (/). The author's remarks and comments are in square brackets; [p] and [hw] indicate printed and hand written text, respectively.

The material is deposited in the following collections:

CGBS	private collection of Christoph Germann, Rubigen, Switzerland;
ECRI	private collection of Enzo Colonnelli, Rome, Italy;
GKAG	private collection of George Kakiopoulos, Athens, Greece;
HWBG	private collection of Herbert Winkelmann, Berlin, Germany;
JKHC	private collection of Jiří Krátký, Hradec Králové, Czech Republic;
MKHC	private collection of Michael Košťál, Hradec Králové, Czech Republic;
MMTI	private collection of Massimo Meregalli, Torino, Italy;
NMPC	National Museum Prague, Czech Republic (J. Hájek);
PHPC	private collection of Peter Hlaváč, Prague, Czech Republic;
RBSC	private collection of Roman Borovec, Sloupno, Czech Republic;
RŠLC	private collection of Richard Škoda, Liberec, Czech Republic;
SBPC	private collection of Stanislav Benedikt, Plzeň, Czech Republic;
SDEI	Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany (L. Behne);
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany (W. Schawaller).

Taxonomic part

The genus *Stomodes* can be divided into two species groups according to the different punctuation of the surface of the pronotum. The *Stomodes tolutarius* Schoenherr, 1826 species group includes eight described, two in this paper, species that have clearly isolated punctures on the pronotum (*Stomodes benedikti* sp. n., *S. dodocunevi* sp. n., *S. leonhardi* Wagner, 1912, *S. letzneri* Reitter, 1899, *S. marocanus* Hoffmann, 1957, *S. muelleri* Lona, 1922, *S. puncticollis* Tournier, 1864 with three subspecies and *S. tolutarius* Schoenherr, 1826). The *Stomodes gyrosicollis* Boheman, 1842 species group includes five described species that have punctures on the pronotum that are connected to form longitudinal furrows at least laterally; often these punctures also have slender elevated ridges between them (*S. convexicollis* Miller, 1881, *S. ganglbaueri* Wagner, 1912, *S. gyrosicollis* Boheman, 1843, *S. periteliformis* Reitter, 1915 and *S. rotundicollis* Frivaldszky, 1880).

Stomodes Schoenherr, 1826

Stomodes Schoenherr, 1826: 188. Type species: *Stomodes tolutarius* Schoenherr, 1826, by original designation.

Stomodes: Wagner, 1912: 263 (revision); Lona 1937: 235 (catalogue); Hoffmann 1950: 152 (fauna); Angelov 1978: 284 (fauna); Dieckmann 1980: 179 (fauna); Alonso-Zarazaga & Lyal 1999: 172 (catalogue); Benedikt *et al.* 2011: 103 (catalogue); Magnano & Alonso-Zarazaga 2013: 347 (catalogue); Alonso-Zarazaga *et al.* 2017: 336 (catalogue).

Diagnosis. Small genus of the tribe Otiiorhynchini, body length not exceeding 4.4 mm; body glabrous, lacking appressed scales; with fine erect setae; rostrum width slightly tapered apicad, rostral sides straight, pterygium not prominent laterally; scrobes reaching anterior edge of eyes; lateral anterior border of pronotum clearly oblique; elytra long, slender and flat; metaventral process obtuse, twice as wide as transverse diameter of metacoxae; tarsal claws free; female sternite VIII with apodeme terminating in base of plate, creating short basal margin, its plate with longitudinally developed arms.

Redescription. Body length 2.75–4.34 mm. Body and appendages unicolorous brown, dark brown or black; in some species with paler, monochromatic, brownish antennae and legs. Body glabrous; without appressed scales; with distinct, moderately long and very fine brown setae on dorsal surface. Setae on head semi-appressed to semi-erect, on vertex distinctly longer than on other parts of head and rostrum; on rostrum and pronotum semi-erect; on elytra erect, those on apical declivity longer than those on disc; on antennae and legs small and short, semi-appressed. Protibiae with distinct inner apical grooming brush.

Rostrum 1.36–1.91× as wide as long; dorsally widest at base, only slightly tapered apicad; with straight sides, evenly and distinctly convex in dorsal view; at apex slightly widened; pterygium absent; dorsally shallowly separated from head by sulcus. Epifrons widest at apex, distinctly tapered posteriad with concave sides, narrowest

in middle, at base distinctly narrower than distance between central points of anterior margins of eyes; dorsally longitudinally shallowly depressed; in lateral view evenly and gently curved until anterior quarter where it becomes sub-vertical; not carinate posteriad; with group of long setae directed obliquely anteriad. Epistome absent. Mandibles glabrous. Antennal scrobes visible dorsally, broadly kidney-shaped; almost straight in lateral view; glabrous; reaching level of eyes, with ventral border directed to ventral border of eyes and dorsal border directed shortly above eyes. Eyes small; dorsally not prominent from outline of head; in lateral view close to upper border of head. Head short and wide, weakly enlarged posteriad. Head and rostrum with densely and finely punctate microsculpture, the surface matt.

Antennal scape short and robust; curved at basal third to quarter; in apical half evenly enlarged apicad; at apex as wide as or wider than club. Funicle 7-segmented; segments 1 and 2 conical, robust, longer than wide; segments 3–7 as wide as long or longer than wide, in some species exceptionally wider than long; club slender, spindle-shaped.

Pronotum variable in shape, slightly longer than wide, or about as long as wide to slightly wider than long; widest at middle or behind; with evenly rounded sides; anterior margin slightly wider than posterior margin; constricted before posterior margin; disc evenly and densely punctate; in lateral view almost flat to convex, with anterolateral border directed distinctly obliquely ventrad to procoxae. Procoxal cavities contiguous, round, located in mid-length of prosternum; procoxae subglobular.

Scutellum very small, sometimes not visible externally.

Elytra slender, elongate-oval, 1.60–1.98× as long as wide; widest at mid-length; with evenly rounded sides; apically narrowly rounded; disc distinctly punctostriate, interstriae flat, with uneven rows of punctures; elytra in lateral view almost flat to slightly evenly convex.

Mesocoxae globular; mesoventral process narrow, about as wide as one quarter of mesocoxal diameter, reaching middle of mesocoxae. Metacoxae semiglobular; placed laterally, almost reaching elytra.

Abdominal ventrites long and narrow, 1.6–1.8× as long as wide; ventrite 1 at middle distinctly longer than ventrite 2, behind metacoxae about as long as ventrite 2; ventrite 2 as long as ventrites 3 and 4 combined; ventrites 3 and 4 equal in length; ventrite 5 about as long as ventrites 3 and 4 combined, apically rounded. Suture between ventrites 1 and 2 narrow, sinuate; remaining sutures straight and wider. Ventrites smooth, shiny, sparsely and finely punctate; with short semi-appressed and sparse setae. Metaventral process truncate, twice as wide as transverse diameter of metacoxa.

Femora medially inflated; unarmed or with very small tooth at middle. Tibiae moderately long; protibiae apically rounded, armed with fringe of fine setae; all tibiae mucronate with inner edge sinuate with distinct grooming brush; metatibiae with apical surface glabrous, lacking corbels. Tarsi long and slender; tarsus 3 wider than others, deeply bilobed and shorter than onychium; claws free.

Male terminalia. Penis long and slender; well sclerotised; temones subequal in length to body of penis and 1.5× as long as tegminal manubrium. Tegmen with slender complete ring; with two slender, long and widely separated parameres. Sternite IX (Figs 15, 29) with spiculum gastrale moderately long, anteriorly curved and tapered or only slightly enlarged posteriorly, and with fused, bell-shaped basal arms. Hemisternites (Figs 15, 29) moderately large, almost as large as basal arms of sternite IX.

Female terminalia. Gonocoxite (Figs 11, 24) small, very slender; weakly sclerotised; evenly tapered apicad; with short to medium sized stylus. Stylus at apex with tuft of 2–4 setae, apical part of body of gonocoxite also with 4–8 fine and long, laterally prominent setae. Sternite VIII with long and slender apodeme, 4–5× as long as plate, terminating just at base of plate, creating short basal margin. Plate of sternite VIII oval to elongate-oval (species-specific); with longitudinally developed arms; and with apical margin ill-defined, armed with sparse fringe of setae. Spermatheca small, slender; with very slender cornu and small corpus; the ramus and nodulus not often differing between species; ramus usually slightly longer than wide and nodulus smaller, hump-shaped.

Sexual dimorphism. Dorsally not apparent (exception: *S. leonhardi*, where the pronotum and antennae of males are more slender). Ventrite 5 in males shorter and with the apical margin more obtuse (in females ventrite 5 is slightly longer and apically tapered).

Distribution. Central and southern Europe; Balkan peninsula; Ukraine; Turkey; Caucasus; Syria; Iran; USA (introduced).

Remarks. Adults of *Stomodes* are most similar to those of the genus *Otiorhynchus* Germar, 1822, from which the former can be readily separated by 1) the rostrum dorsally subparallel and straight-sided; 2) lacking the laterally

prominent pterygium; and (from the majority of species of *Otiorhynchus*) and 3) by the small, long, slender and flat body lacking appressed scales, and with erect setae on the elytra. A short and robust rostrum with straight sides that lacks a laterally prominent pterygium is known in only two other Palaearctic genera of Entiminae, the monotypic *Stomodesops* Reitter, 1913 (Otorhynchini), known from the Balkans, and *Baromiamima* Borovec, 2006 (Omiini Shuckard, 1840), with three species from southern Europe. From *Stomodesops* (characters in parentheses), *Stomodes* differs in the very small eyes (eyes large, occupying majority of head in dorsal and lateral view), the funicle with segment 1 longer than 2 (funicle with segment 1 shorter than), the simple or minutely toothed femora (femora of all legs with well-defined, big teeth), and the non-denticulate inner edge of the protibia (inner edge of protibiae denticulate). From *Baromiomima* (characters in parentheses), *Stomodes* differs by having free claws (claws fused at base), scrobes laterally reaching the eyes (scrobes short laterally, subtriangular, and clearly separated from eyes), and the metaventral process twice as wide as the transverse diameter of the metacoxa (metaventral process narrower than transverse diameter of metacoxa).

***Stomodes benedikti* sp. n.**

(Figs 1–6)

Type locality. Greece, Tymfristós mts., Karpenissi env., 1850–2200 m.

Type material. Holotype: ♀, ‘GREECE occ., Tymfristós mts., Karpenissi env., 23.5.1997, 1850–2200 m, S. Benedikt leg.’ (NMPC). Paratypes: 3 ♀♀, the same data as holotype (SBPC, RBSC, PHPC); 3 ♀♀, ‘GRAECIA m., TIMFRISTOS Mts., Karpenissi env., 26.vi.2005, 1900–2300 m a.s.l., subalpine, S. Benedikt leg.’ (SBPC); 1 ♀, ‘Graecia c., Mt. Timfristós, Karpenissi, 23.05.1997, 2100m, J. Prouza lgt.’ (MMTI); 1 ♂, ‘East part of Central Greece, Boeotia [Boiótie] region, near village Pyli, 26/iii/1995, about 550m, under stone, in a nest of ants, G. Kakiopoulos lgt.’ (GKAG).

Description. Body (Fig. 1) length 3.06–3.44 mm. Rostrum moderately long, 1.36–1.44× as wide as long; at base equally as wide as at apex; from base slightly tapered anteriorly, with slightly concave sides and with slightly laterally projecting pterygiae. Epifrons at basal half subparallel-sided; as wide as one third of rostral width; dorsally slightly convex; only at apex with indistinct short longitudinal median stria. Antennal scape 0.9× as wide as club; funicle segment 1 1.7–1.8× as long as wide and 1.6–1.7× as long as segment 2, which is 1.1× as long as wide; segment 3 1.2× as wide as long; segments 4–7 isodiametric; club 2.5–2.6× as long as wide. Pronotum slender, about as long as wide, widest at midlength; disc glabrous, shiny, densely unevenly punctate; with ill-defined, slender and short, smooth longitudinal stripe at basal half; pronotal punctures of slightly unequal size, space between two punctures distinctly less than puncture diameter. Elytra long and slender, 1.81–1.92× as long as wide; elytral interstriae with one uneven row of setae, semi-appressed on disc and semi-erect at posterior declivity, setae on disc as long as width of interstriae, at apex longer than width of interstriae; striae with moderately large punctures, weakly wider than interstriae; interstriae with one uneven row of punctures equally large as the punctures in the striae. Elytra in lateral view flat; posterior slope evenly declined. Femora (Fig. 2) of all legs with small but distinct tooth. Tarsi slender, segment 2 1.2–1.3× as wide as long; segment 3 1.2× as wide as long and 1.4–1.5× as wide as segment 2; onychium 1.4× as long as segment 3. Penis (Figs. 5, 6) long, slender, parallel-sided, apex subtriangular, tip narrowly rounded; laterally evenly curved, apex elongate, tapered. Female terminalia. Sternite VIII (Fig. 3) with plate almost isodiametric, basal part formed by Y-shaped terminated apodeme, continuing to two lateral arms, connecting again in anterior margin or anterior margin not sclerotised; central fenestra large; anterior margin fringed with short and fine setae. Spermatheca (Fig. 4) with ramus and nodulus equal in size, each slender, longer than wide, perpendicularly placed.

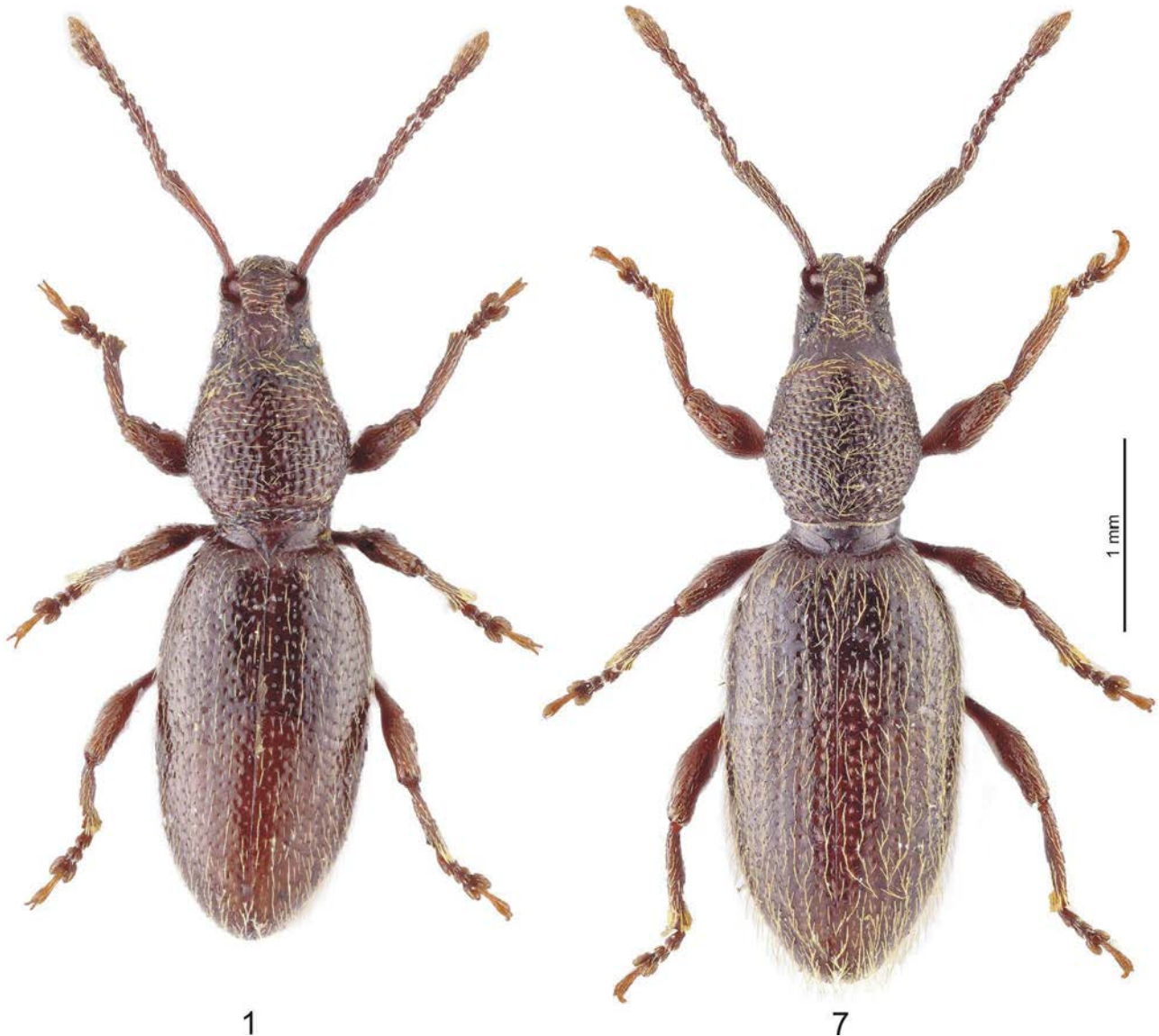
Sexual dimorphism. Males differ slightly from females in the more sparsely punctate and smaller pronotum, and in the elytral intervals with finer punctures.

Derivation of name. Patronymic, named after our friend and collector of the holotype, Stanislav Benedikt.

Distribution. Known only from Central Greece, Mt. Tymfristós.

Biology. Collected in the subalpine zone, altitude 1900–2300 m, together with one female of *S. convexicollis*.

Differential diagnosis. *Stomodes benedikti* sp. n. differs from all other species by the following set of characters: rostrum with slightly concave sides and slightly laterally projecting pterygiae; striae slightly wider than interstriae; interstriae with one uneven row of punctures, these punctures equal in size to those of the striae; and femora of all legs with small, but distinct median tooth.



FIGURES 1–2. 1—*Stomodes benedikti*, habitus; 2—*Stomodes dodocunevi*, habitus.

***Stomodes dodocunevi* sp. n.**

(Figs 7–15)

Type locality. Greece, Crete, Dikti Oros Limnakaro, 35°08'08" N, 25°29'00" E, 1170 m.

Type material. Holotype: ♂, 'GR—Crete (11a), NW, Dikti Oros Limnakaro, 35°08'08" N, 25°29'00" E, 27.III.2012, 1170 m, sifted, V. Assing' (NMPC). Paratypes: 4 spec., the same data as holotype (PHPC); 3 spec., same data as holotype, but '(17a)' and '30.III.2012'; 3 spec., same data as holotype, but '(12a), 35°08'16" N, 25°28'52" E, 28.III.2012, 1140 m, under stones'; 3 spec., 'GR—Crete (15), SW, Ag. Nikolaos, Kroustas, 35°08'32" N, 25°39'03" E, 29.III.2012, 430 m, oak forest, sifted, V. Assing' (PHPC); 2 spec., 'GR—Crete (13), Lasithi Plateau, S Mesa Lasithi, 35°10'37" N, 25°30'34" E, 28.III.2012, 840 m, oak forest, sifted, V. Assing' (PHPC); 1 spec., 'GR—Crete (29), ESE, Perama, N Garazo, 35°21'05" N, 24°47'01" E, 4.IV.2012, 130 m, stream bank, V. Assing' (PHPC); 1 spec., 'GR—Crete (1), WSW, Ag. Nikolas, W Kritsa, Katharo plateau, 35°08'35" N, 25°32'51" E, 24.III.2012, 1120 m, V. Assing' (PHPC); 6 spec., 'ΕΛΛΑΣ - Κρήτη (Λασιθί), Δικτή όρος [Ellas [Greece] - Kríti (Lasíthi), Dikti óros] - m 1100, N35.09.36 E25.31.03 [N35°09'36" E25°31'03"], 30.IV.2017 - E. Colonnelli' [lgt.] [in one specimen G. Meloni] (ECRI); 4 spec., 'Créta Or., Díkti Óros Mts., Kato Metochi, 35°10.8' N, 25°26.0' E, 19.v.2018, 800 m, M. Košťál lgt.' (MKHC).

Description. Body (Fig. 7) length 3.09–4.00 mm. Rostrum short, 1.55–1.67× as wide as long; subparallel-sided; without projecting pterygiae. Epifrons at basal half subparallel-sided, about as wide as third of rostral width at the same place; with distinct median longitudinal stria along the entire length. Antennal scape 0.9× as wide as club; funicle segment 1 1.7–1.9× as long as wide and 1.4–1.5× as long as segment 2, which is 1.3–1.4× as long as wide; segments 3–7 isodiametric except for segment 4, which is 1.1–1.2× as long as wide; club 2.4–2.6× as long as wide. Pronotum slender, isodiametric to 1.04× as long as wide, widest slightly before the middle; disc regularly moderately densely punctate, punctures slightly unequal in size, well separated, intervening spaces shiny. Elytra (Fig. 9) long and slender, 1.88–1.98× as long as wide; in lateral view flat, posterior slope regularly declined; with 1–2 uneven rows of setae, on disc setae almost appressed and striae equally wide as width of an interstria, setae at posterior declivity conspicuously longer than those on disc, erect, almost twice as long as width of one interstriae. Striae with moderately large punctures; about equally wide as interstriae lacking punctures. Femora (Fig. 8) adentate. Tarsi slender; segment 2 1.1× as wide as long; segment 3 1.1× as wide as long and 1.5× as wide as segment 2; onychium 1.2–1.3× as long as segment 3. Penis (Figs 13, 14) long and slender; subparallel-sided; at apex evenly regularly tapered, tip shortly subtruncate; laterally evenly distinctly curved; width equal along whole length, apically evenly tapered; tip shortly elongate and weakly curved inside. Female terminalia. Sternite VIII (Fig. 10) with plate wider than long; apodeme Y-shaped terminated at base. Plate of sternite VIII sclerotised mainly in marginal parts; fenestra ill-defined; anterior margin concave, setose. Spermatheca (Fig. 12) with ramus and nodulus equal in size, isodiametric, V-shaped.

Derivation of name. Patronymic, named after our friend Jozef (Dodo, to his friends) Cunev, expert on Curculionidae of Slovakia.

Distribution. Known from the central and western parts of Crete.

Biology. Collected from the lowlands to altitude 1100 m, E. Colonnelli (pers. comm.) sifted his paratype specimens from litter under sparse oaks.

Differential diagnosis. Among species with elytra having apex not visible in dorsal view, hidden by slope overhanging apex and funicle segments in females longer than wide, *S. dodocunevi* sp. n. is distinguishable by having the femora adentate, the rostrum without laterally projecting pterygiae, the epifrons with a longitudinal median stria, the pronotum widest slightly before the middle, the longer rostrum and elytra and the penis evenly tapering apicad in dorsal as well as in lateral view.

***Stomodes leonhardi* Wagner, 1912**

(Figs 16–18)

Stomodes leonhardi Wagner, 1912: 270.

Stomodes leonhardi: Lona 1922: 141 (note); Lona 1937: 236 (catalogue); Magnano & Alonso-Zarazaga 2013: 347 (catalogue); Germann 2014: 187 (note); Alonso-Zarazaga *et al.* 2017: 336 (catalogue).

Type locality. Graecia, Parnassos.

Type material. Holotype: ♀, ‘Holotypus [p, red] / Graecia, Parnassos, v.Oertzen [p] / Coll. O. Leonhard [p] / *Stom. tolutarius* Boh. [hw] / *Leonhardi* mihi [hw] / *Leonhardi mihi* [hw] Wagner det. [p] Type! ♀ [hw] / DEI Müncheberg Col-07457 [p, green] / DEI Müncheberg Col-08601 [p, green] / HOLOTYPUS *Stomodes leonhardi* Wagner, Borovec & Hlaváč vid 2017 [p, red]’ (SDEI).

Additional material examined. Greece: 1 ♂, Parnassos Mts., Sarandavli env., subalpine, 20.vi.2005, 1800–2200 m, S. Benedikt lgt. (SBPC); 1 ♂, Fthiótida, Parnassos, oberh. Ski-Center, 38°32’30” N, 22°35’31” E, 25.iv.1998, 1965 m, Schneerand, unter Juniperus, Zerche lgt. (SDEI).

Redescription. Body length of holotype 3.81 mm, males 3.28–3.38 mm. Rostrum (Fig. 16) moderately long, 1.36–1.48× as wide as long; with slightly concave sides; from base weakly tapered anteriorly at basal half, with slightly laterally prominent pterygiae at anterior half. Epifrons wide; dorsally weakly convex; with distinctly concave sides; at midlength wider than third of rostral width; distinctly enlarged posteriorly; at base only slightly narrower than space between anterior margins of eyes. Antennal scape 0.7–0.8× as wide as club; funicle in female with segment 1 1.6× as long as wide and 1.5× as long as isodiametric segment 2; segments 3 and 4 1.1× as wide as long; segments 5–7 1.2–1.3× as wide as long; club twice as long as wide; in males segment 1 1.5× as long as wide and 1.3× as long as segment 2, which is 1.1× as long as wide; segments 3–6 isodiametric; segment 7 1.1× as wide

as long; club 2.1× as long as wide. Pronotum in females wider than in males, 1.03× as wide as long; in males 1.05–1.07× as long as wide, widest at midlength. Disc sparsely punctate; smooth; glabrous; shiny. Punctures unequal in size; well isolated, intervening spaces only slightly shorter than their diameter. Elytra long and slender; similar in both sexes, 1.81–1.84× as long as wide; in lateral view flat, the posterior slope evenly declined; with one uneven row of setae, setae semi-appressed, on disc as long as width of interstriae, on posterior declivity erect and distinctly longer than width of interstriae; striae with somewhat small punctures, wider than interstriae which are with 1–2 uneven rows of very fine, almost indistinct punctures. Femora adentate. Tarsi moderately slender; segment 2 1.2–1.3× as wide as long; segment 3 isodiametric, 1.4–1.5× as wide as segment 2; onychium 1.1–1.2× as long as segment 3. Penis (Figs 17, 18) somewhat long and slender; dorsally evenly weakly tapered apicad, the tip narrowly rounded; laterally evenly curved, widest at midlength and evenly tapered apicad and basad, tip shortly elongated and curved.

Sexual dimorphism. Females are larger than males, the pronotum wider and antennae distinctly more robust.

Distribution. Known only from Greece, Parnassos.

Biology. Collected in the subalpine zone, between 1800–2200 m a.s.l.

Remarks. The holotype lacks the right anterior tibia and tarsus (remounted probably by Wagner) and it is missing the ventrites and terminalia.

Differential diagnosis. Robust funicular segments in the females place this species near *S. muelleri*. From this species (characters in parentheses), *S. leonhardi* can be easily distinguished by its densely punctate pronotum (sparsely punctate), elytra that are longer and slenderer (shorter and wider), with densely punctate striae (sparsely punctate striae) and semi-appressed discal setae (erect discal setae).

Stomodes letzneri Reitter, 1889

(Figs 19–22)

Stomodes letzneri Reitter, 1889: 375.

Stomodes letzneri: Magnano & Alonso-Zarazaga 2013: 347 (catalogue); Germann 2014: 183 (note, illustration of female terminalia); Alonso-Zarazaga *et al.* 2017: 336 (catalogue).

Otiorynchus angustatus Stierlin, 1872: 335 (original description). Type locality: Attica.

Stomodes angustatus: Wagner, 1912: 271 (revision); Lona, 1922: 141 (note); Lona 1937: 235 (catalogue).

Type locality. Griechenland

Type material. 1 ♀: ‘Taygetos [hw] / Griechenland [hw] / TYPUS [p, red] / Coll. Letzner [p] / *Stomodes Letzneri* m. n. sp. [hw] / *angustatus* Strl. [hw] Wagner det. [p] Ex Typ.! [hw] / Formánek [p, violet] / TYPUS [p, red] / Nár. Mus. Praha coll. Formánek [p] / SYNTYPE *Stomodes letzneri* Reitter, Borovec, Hlaváč des. 2017 [p, red]’ (NMHP); 1 ♀: ‘Taygetos [hw] / Griechenland [hw] / TYPUS [p, red] / Coll. Letzner [p] / *Stomodes ?tolutarius* Boh. [hw] J. Fremuth det., 2003 [p] / SYNTYPE *Stomodes letzneri* Reitter, Borovec, Hlaváč des. 2017 [p, red]’ (NMHP).

Additional material examined. **Greece:** 1 ♂, 1 ♀, Karpathos, S Olympos, 35°43'19" N, 27°10'19" E, 26.xii.2015, 460 m, shrub litter sifting, V. Assing lgt. (HWBG); 1 ♀, Peloponnese, Messinia, Mt. Taygetos W, Saidona E, 36°52'59" N, 22°17'25" E, 19.v.2011, 800 m, Bahr, Bayer, Brunner & Winkelmann lgt. (HWBG); 2 ♀♀, NW-Peloponnes, Lámbia-Gebirge, 10 km NE, Panópulos, Q. coccifera, 5.x.2004, 1000m, W. Schawaller lgt. (SMNS, PHPC); 4 ♀♀, Peloponnes, E - Tripoli, W Agias Sofia, Pass, 24.ix.2014, 800 m, C. Germann lgt. (CGBS); 1 ♀, Peloponnes, SE—Kalamata, oberhalb Kentro/Anatoliko, 30.ix.2014, 600m, C. Germann lgt. (CGBS); 1 ♀, Peloponnes, S Pilos, Mesohori, GS Buschwald, 25.ix.2014, C. Germann lgt. (CGBS); 4 ♀♀, Peloponnes, N—Leonidhio, Vaskina-Plateau, Vaskina env., 37.22352, 22.830512, 3.x.2016, C. Germann & G. Kakiopoulos lgt. (CGBS); 3 ♀♀, Peloponnes, Taygetos Mts., Stoupa env., 36°53.0' N, 22°15.4' E, 4.v.2015, 250 m, K. Košťál lgt. (MKHC); 1 ♀, Peloponnes, Vlahokerasia env. Pr. Tripoli, 37°22.6' N, 22°23.4' E, 3.v.2015, 900m, K. Košťál lgt. (MKHC); 4 ♀♀, Peloponnes, N Taygetos, 6 km NE Thouria, 37°08'24.1" N, 22°07'42.5" E, 584 m, 25.iv.2015, litter and soil under bushes, sifted, M. Schülke lgt. (SMNS). **Crete:** 1 ♀, Chania, S-Vrises, 35°21'41" N, 24°11'44" E, 8.iv.2012, 130m, Olivenhain auf Kalkfels, C. Germann lgt. (CGBS); 1 ♀, Chania, S-Alikambos, Krapis, 35°19'47" N, 24°12'01" E, 7.iv.2012, 440m, Olivenhain auf Kalkfels, C. Germann lgt. (CGBS); 1 ♀, Kefalonia, Sami, 22.-30.ix.2006, L. Poláček lgt. (MMTI); 2 ♀♀, Khaniá, oropédio Távrís, 35°17'46" N, 26°09'42" E, 11.v.2017, 1550 m, E. Colonnelli lgt. (ECRI); 2 ♀♀, Khaniá, Khónistra, 35°16'40" N, 24°12'10" E, 970 m, 11.v.2017, E. Colonnelli & G. Meloni lgt. (CRI).

Redescription. Body length 2.82–3.68 mm. Rostrum (Fig. 19) very short, 1.78–1.91× as wide as long; parallel-sided, without projecting pterygiae. Epifrons at basal half subparallel-sided; less than one third of width of rostral width at the same place; dorsally slightly convex. Antennal scape 0.9× as wide as club; funicle segment 1 1.6–1.8× as long as wide and 1.2–1.4× as long as segment 2, which is 1.3–1.5× as long as wide; segments 3–7 isodiametric; club 2.2–2.3× as long as wide. Pronotum slender, 1.03–1.07 × as long as wide, widest at middle; disc densely punctate; punctures of unequal size, intervening spaces very narrow. Elytra long and slender, 1.81–1.91× as long as wide; in lateral view flat, posterior slope regularly declined; with 1–2 uneven rows of setae, on disc semierect and weakly longer than width of one interstria, at posterior declivity erect and almost twice as long as width of one interstria, striae with moderately large punctures, punctures equally wide as interstriae; interstriae with indistinct irregular row of very fine punctures. Femora adentate. Tarsi somewhat robust; segment 2 1.4× as wide as long; segment 3 1.1–1.2× as wide as long and 1.3–1.4× as wide as segment 2; onychium 1.2–1.3× as long as segment 3. Penis (Figs 21, 22) long and slender; ventrally slightly widest near base; subparallel-sided along whole length; apex weakly enlarged, tapered and pointed apicad with slightly convex sides; laterally curved at midlength, at apical half almost straight and weakly enlarged before apex, apex forming dorsal plate, tip shortly elongated, pointed and curved inside. Female terminalia (see also Germann 2014: 186). Sternite VIII (Fig. 20) with plate wider than long; basally with shortly Y-shaped apodeme and membranous posterior margin; apically with slightly rounded anterior margin fringed with short and sparse fine setae, apical half uniformly sclerotised. Spermatheca with ramus and nodulus equally long and wide; V-shaped.

Distribution. Known from Peloponnesos in continental Greece and the islands Crete and Karpathos.

Biology. This species probably lives in lowlands, since the highest records are from 1,000 m. Specimens were sifted from litter under *Quercus* and *Oliva* (Germann 2014, E. Colonnelli pers. comm.).

Remarks. *Stomodes letzneri* was synonymised with *angustatus* by Wagner (1912), but due to its homonymy with *Otiorynchus angustatus* Stierlin, 1861 (currently synonym of *O. coecus coecus* Germar, 1824), *S. letzneri* was used as a first available valid name by Magnano & Alonso-Zarazaga (2013). Both syntypes were remounted and dissected during this study, one female lacks posterior tarsi, the second one lacks the right antenna, right anterior leg and tarsus of right posterior leg.

Differential diagnosis. *S. letzneri* can be distinguished from all its congeners by the very short rostrum, densely punctate pronotum with very narrow intervening spaces between punctures, the slender funicle segments and adentate femora. It is similar to *S. dodocunevi*, from which it can be separated by characters stated in the below key. The penis resembles that of *S. rotundicollis*, known from Bulgaria, but it is readily distinguished from that species by the densely punctate and slender pronotum that is widest at the middle, while *S. rotundicollis* has a wider pronotum, widest at the basal third, and bearing well isolated punctures.

***Stomodes marocanus* Hoffmann, 1957**

(Fig. 23)

Stomodes tolutarius marocanus Hoffmann, 1957: 79 (original description).

Stomodes marocanus: Magnano & Alonso-Zarazaga 2013: 347 (catalogue); Alonso-Zarazaga *et al.* 2017: 336 (catalogue).

Type locality. Tamda, Grand Atlas, 2500 m. [Morocco]

Type material. Holotype (sex not determined). ‘Tamda Maroc, gr. Atlas 2500m., Cap. Kocher [p] / MUSEUM PARIS 1968 Col. A. Hoffmann [p, blue] / Typus [hw, red] / *Stomodes tolutarius* ssp. *marocanus* m. [hw] A. Hoffmann det. [p] / HOLOTYPUS *Stomodes tolutarius* ssp. *marocanus* Hoffmann, Borovec & Hlaváč vid 2017 [p, red]’ (MNHN).

Redescription. Body length 4.34 mm. Rostrum very short, 1.85× as wide as long; from base slightly tapered anteriorly; at apex indistinctly enlarged around scrobes; epifrons moderately wider, with distinctly concave sides, at base only weakly narrower than distance between eyes; dorsally with longitudinal median furrow, deeper at apical half. Pronotum 1.11× as wide as long; widest at midlength; with distinctly rounded sides. Disc densely double punctate (with coarse and fine punctures), the intervening spaces glabrous, shiny. Elytra (Fig. 23) long and slender; 1.85× as long as wide; laterally flat, slope overhanging apex, rounded and then perpendicularly falling downwards, with 2 uneven rows of setae, semi-appressed and slightly longer than width of one interstria on disc, erect and weakly longer at posterior declivity; punctures in striae coarse, interstriae with one uneven row of equally coarse

punctures; slightly wider than striae. Femora with small, but distinct median tooth. Tarsi slender, segment 2 1.4× as wide as long; segment 3 1.2× as wide as long and 1.4× as wide as segment 2; onychium 1.2× as long as segment 3.

Distribution. Known only from the type locality, Grand Atlas in Morocco.

Biology. Unknown.

Remarks. Holotype probably found as a dead specimen. The antennae are completely missing except for the left scape, and the left middle and posterior legs are completely missing. The species was described as a “western race of *tolutarius*”, based on only one male specimen collected by L. Kocher. This finding was very surprising, documenting for the first time the occurrence of the genus in northern Africa; this is also the most western point of the distribution of the genus, which so far has not been recorded from the Iberian peninsula. This taxon was elevated to species level by Magnano & Alonso-Zarazaga (2013). The holotype is the only known specimen of the species, which has not been collected since.

Differential diagnosis. Elytra with apex not visible in dorsal view, hidden by slope overhanging apex places *S. maroccanus* close to *S. tolutarius*. From *S. tolutarius* it is possible to distinguish *S. maroccanus* by the shorter and wider rostrum, wider pronotum, differently shaped elytral tip (in lateral view) and wider tarsi.

***Stomodes muelleri* Lona, 1922**

(Figs 24–29)

Stomodes Mülleri Lona, 1922: 140 (original description).

Stomodes muelleri: Lona 1937: 236 (catalogue); Magnano & Alonso-Zarazaga 2013: 347 (catalogue); Alonso-Zarazaga *et al.* 2017: 337 (catalogue).

Type locality. Albania meridionali, Regione della Tomorica, Tojk.

Additional material examined. Albania: 2 ♀♀, Korçë, 23 km N Korçë, Pllaja e Pusit, 40°49'29" N, 20°51'04" E, 1820 m, 25.v.2010, sifted, V. Assing lgt. (PHPC); 1 ♀, Korçë, 10 km S Korçë, Mali i Gramozit, 40°31'40" N, 20°48'22" E, 1570 m, 27.v.2010, V. Assing lgt. (PHPC); 1 ♀, Berat, Mal. I Tomorrit, Tomorrit env., 2150–2180 m, 1.vii.2001, snow field, P. Moravec lgt. (RBSC). Macedonia: 2 ♀♀, Prov. Ohrid, PN Galičica, Lako Signoj, 13.vi.2012, R. Škoda lgt. (RŠLC); 1 ♀, Ohrid, PN Galičica, 2 km S Lako Signoj, 6.-7.vi.2016, R. Škoda lgt. (RŠLC); 1 ♀, Perister, vii.1914, alpin, Dr. Rambousek lgt. (MMTI). Bosnia and Hercegovina: 1 ♀, Krstac, Jablanica planina, 9.x.1926, Dr. Rambousek lgt. (MMTI). Greece: 1 ♂, W-Peloponnes, SE Zakháro 6 km E Néa Figalía, Quercus, 2.x.2004, 700 m, W. Schawaller lgt. (SMNS); 1 ♀, Pindos Mts., Pertoúli p. Tríkala env., 1900 m, 3.vi.2001, subalpin, S. Benedikt lgt. (SBPC); 1 ♀, Fthiótida, NP Oros Iti, SO Kastania, Hochebene, Abies, Schnee, 38°49'09" N, 22°16'12" E, 6.v.1999, 1850 m, Zerche lgt. (SDEI); 1 ♀, Imathía, Vémio, Ski-Center Séli, O-Hang, Juniperus, Schneeflecken, 40°32'20" N, 22°00'45" E, 1520 m, Zerche lgt. (SDEI). **New species record for Macedonia, Bosnia and Hercegovina and Greece.**

Redescription. Body length 2.75–3.31 mm. Rostrum short, 1.56–1.68× as wide as long; with slightly concave sides. Epifrons moderately wide, with distinctly concave sides, at base only weakly narrower than distance between eyes; dorsally slightly convex. Head behind eyes conspicuously inflated dorsally and laterally, smooth. Antennal scape at apex 0.8–0.9× as wide as club. Antennae more robust in female than male; in male funicle segment 1 1.7× as long as wide and twice as long as segment 2, which is isodiametric; segments 3–7 1.1× as wide as long; club twice as long as wide; in females segment 1 1.5× as long as wide and 1.5× as long as segment 2, which is 1.1× as long as wide; segments 3–6 1.2× as wide as long; segment 7 1.3× as wide as long; club twice as long as wide. Pronotum short and wide, 1.04–1.07× as wide as long; widest at middle; with distinctly rounded sides; dorsally smooth, shiny, only finely and sparsely punctate; intervening spaces between punctures longer than puncture diameter. Elytra long; oval, with distinctly rounded sides; 1.60–1.68× as long as wide; smooth, shiny; laterally slightly convex, posterior slope evenly declined; with one uneven row of setae on each interstria, setae in lateral view conspicuous, semierect on the disc, at posterior declivity only slightly longer than at basal half; punctures in striae very small, almost indistinct, interstriae distinctly wider than striae, with one uneven row of very small punctures. Femora adentate (two specimens observed to have very small, indistinct median tooth on profemora). Tarsi slender, segment 2 1.2–1.3× as wide as long; segment 3 1.1–1.2× as wide as long and 1.4–1.5× as wide as segment 2; onychium 1.2–1.3× as long as segment 3. Penis (Figs 27, 28) dorsally short; subparallel-sided; apex evenly tapered with slightly convex sides, tip shortly truncate; laterally strongly curved, apex sharp. Female

terminalia. Sternite VIII (Fig. 26) with plate longer than wide, oval, translucent, with two longitudinal V-shaped arms along the whole length, with fringe of slender setae at apical margin. Spermatheca (Fig. 25) with ramus slightly longer than wide and distinctly larger than small; with hump-shaped nodulus.

Distribution. Albania, Bosnia and Hercegovina, Macedonia, Greece.

Biology. It seems likely that this is a mountain species, collected at higher altitudes from 1570–2150 m a. s. l.

Remarks. Since its description, this species was mentioned only in catalogues (Magnano & Alonso-Zarazaga 2013; Alonso-Zarazaga *et al.* 2017). It is proven here that *S. muelleri* is distributed in the larger area of the Balkans.

Differential diagnosis. *S. muelleri* can be easily separated from its congeners by the following set of characters: Pronotum and elytra shiny, smooth; pronotal disc and elytral striae with small, fine and sparse punctures; pronotum widest at basal third; elytra elongately oval and with rounded sides; elytral disc with long semierect setae; funicular segments in females transverse; head behind eyes distinctly inflated dorsally and laterally, smooth; and female sternite VIII with plate longer than wide and with two distinct arms along the whole length.

Stomodes puncticollis Tournier, 1864 *sensu lato*

Stomodes puncticollis Tournier, 1864: 268 (original description).

Stomodes puncticollis: Solari, 1947: 17 (note); Magnano & Alonso-Zarazaga 2013: 347 (catalogue); Alonso-Zarazaga *et al.* 2017: 337 (catalogue).

Stomodes amorei Desbrochers des Loges, 1904: 64 (original description). Type locality: Italie: Cerchio, Aquila.

Stomodes puncticollis var. *amorei*: Solari, 1947: 17 (note).

Stomodes puncticollis amorei: Magnano & Alonso-Zarazaga 2013: 347 (catalogue); Alonso-Zarazaga *et al.* 2017: 337 (catalogue).

Stomodes puncticollis ssp. *lanzae* Solari, 1947: 17 (original description). Type locality: Toscana: Calvana, Firenze.

Stomodes puncticollis lanzae: Magnano & Alonso-Zarazaga 2013: 347 (catalogue); Alonso-Zarazaga *et al.* 2017: 337 (catalogue).

Stomodes krueperi Faust, 1890: 323 (original description). Type locality: Greece, Parnass.

Stomodes tolutarius: Wagner, 1912: 269 (revision).

Type locality. Sicile.

Type material. *Stomodes amorei*: LECTOTYPE, here designated: 1 ♀, 'Amarei, Cerchio, Desbroch. 4 frs. [handwritten] / Syntypus [red, printed] / DEI Müncheberg, Col - 08588 [green, printed] / LECTOTYPUS *Stomodes amorei* Desbrochers, R. Borovec & P. Hlaváč desig. 2017 [red, printed]' (SDEI).

Additional material examined. Italy: 3 ♀♀, Monte Gargano, 8.iv.1907, M. Hilf lgt. (SDEI); 1 ♀, Umbria, Monte Martano, Giano dell'Umbria, 11.iv.2009, 950 m, A. Paladini lgt. (JKHC).

In his revision, Wagner (1912) synonymised *S. puncticollis*, *S. amorei*, *S. krueperi* and *Omius elongates* under *S. tolutarius* Schoenherr, 1826. Solari (1947) reinstated *S. puncticollis* as a valid species; he distinguished it from *S. tolutarius* by colour, antennal segment proportions, the longer than wide pronotum and longer elytra. In all *Stomodes* species except *S. muelleri*, the colour of the body and proportions of the antennal segments are very variable and difficult to use for species discrimination. *Stomodes puncticollis* has an isodiametric pronotum and the elytra are 1.85–1.92× as long as wide; whereas in *S. tolutarius*, the pronotum is 1.03–1.06× as wide as long and the elytra are 1.83–1.88× as long as wide. We examined only a limited number of Italian specimens of *S. puncticollis*. Except for slight differences in the pronotal measurements, the only character separating *S. puncticollis* and *S. tolutarius* is the punctuation of the elytral interstriae: in Italian *S. puncticollis* the interstriae punctures are smaller than those in the striae, while in *S. tolutarius* the punctures on the whole elytra are equally large. Solari (1947) described *S. puncticollis lanzae* from Tuscany in the same paper and included *S. amorei* from Abruzzo and Molise as a variety of *S. puncticollis*. He also synonymized *S. krueperi* with *S. puncticollis*. However, since not enough material of Italian *S. puncticollis* was available to us (mainly specimens from Sicily as a classical locality), a reconsideration of the validity of this species is not attempted in this paper. The redescription of *S. puncticollis*, as well as the confirmation of the validity of its three subspecies, will be left for a future study when much more Italian material is available. We note that one examined female from Umbria has a different elytral tip in comparison with other Italian specimens.

Stomodes tolutarius Schoenherr, 1826

(Figs 30–33)

Stomodes tolutarius Schoenherr, 1826: 189 (original description).

Stomodes tolutarius Boheman, 1834: 511 (original description), junior homonym.

Stomodes tolutarius: Wagner 1912: 269 (revision); Lona 1922: 140 (note); Lona 1937: 236 (catalogue); Solari 1947: 20 (note); Magnano & Alonso-Zarazaga 2013: 347 (catalogue); Germann 2014: 187 (note); Alonso-Zarazaga *et al.* 2017: 337 (catalogue).

Omius elongatus Hochhuth, 1847: 503 (original description). Type locality: Armenien.

Type locality. Tauria [Ukraine].

Type material. *Omius elongatus*: ‘Type [hw] / Holotypus [p, red] / Armenia [hw] / coll. Stierlin [p] / Armenien [hw] / *S. elongates* (Omius) Hochh. Hochh. [hw, blue margin] / *elongates* Hoch. = *tolutarius* Boh., ex typ! [hw] Wagner det. [p]’ (MNHN).

Additional material examined. Greece: 4 ♀♀, Tymfristós Mts., Karpenissi env. 23.v.1997, 1850–2200 m, S. Benedikt lgt. (SBPC); 1 ♀, Tsoumerka Mts., Athamánia env., 29.vi.2005, 1700–2100 m, subalpine, S. Benedikt lgt. (SBPC); 1 ♀, Ahaña, Panahaiko oberh. Ano Kastrizi, N-Seite, 38°14'46" N, 21°51'37" W, 30.iii.2000, 1550m, gefrorenes Gras, Schneefeld, Zerche & Behne lgt. (SDEI); 1 ♀, Parnassos, Paganetti lgt. (MMTI); 1 ♀, Attika, Parnassos (NMPC). Macedonia: 1 ♀, prov. Ohrid PN Galičica, Lako Signoj, 13.vi.2012, R. Škoda lgt. (RŠLC). Bulgaria: 1 ♀, Achtopol, 24.vii.1971, J. M. Štusák lgt. (NMPC). Romania: 1 ♀, Buzau, Vulkanii Noroisi, 9.vi.2013, R. Škoda lgt. (RŠLC). Turkey: 1 ♀, Isparta, 10 km SE Sütçüler, 37°24'55" N, 31°02'21" E, 26.iv.2011, 1520 m, meadow, under stones, V. Assing lgt. (PHPC); 1 ♀, Ankara, N of Elma Dagi, , 31.x.1995, 1200 m, slopes, *Crataegus* litter, S. Vít lgt. (NMPC). **New species record for Macedonia, Bulgaria and Turkey.**

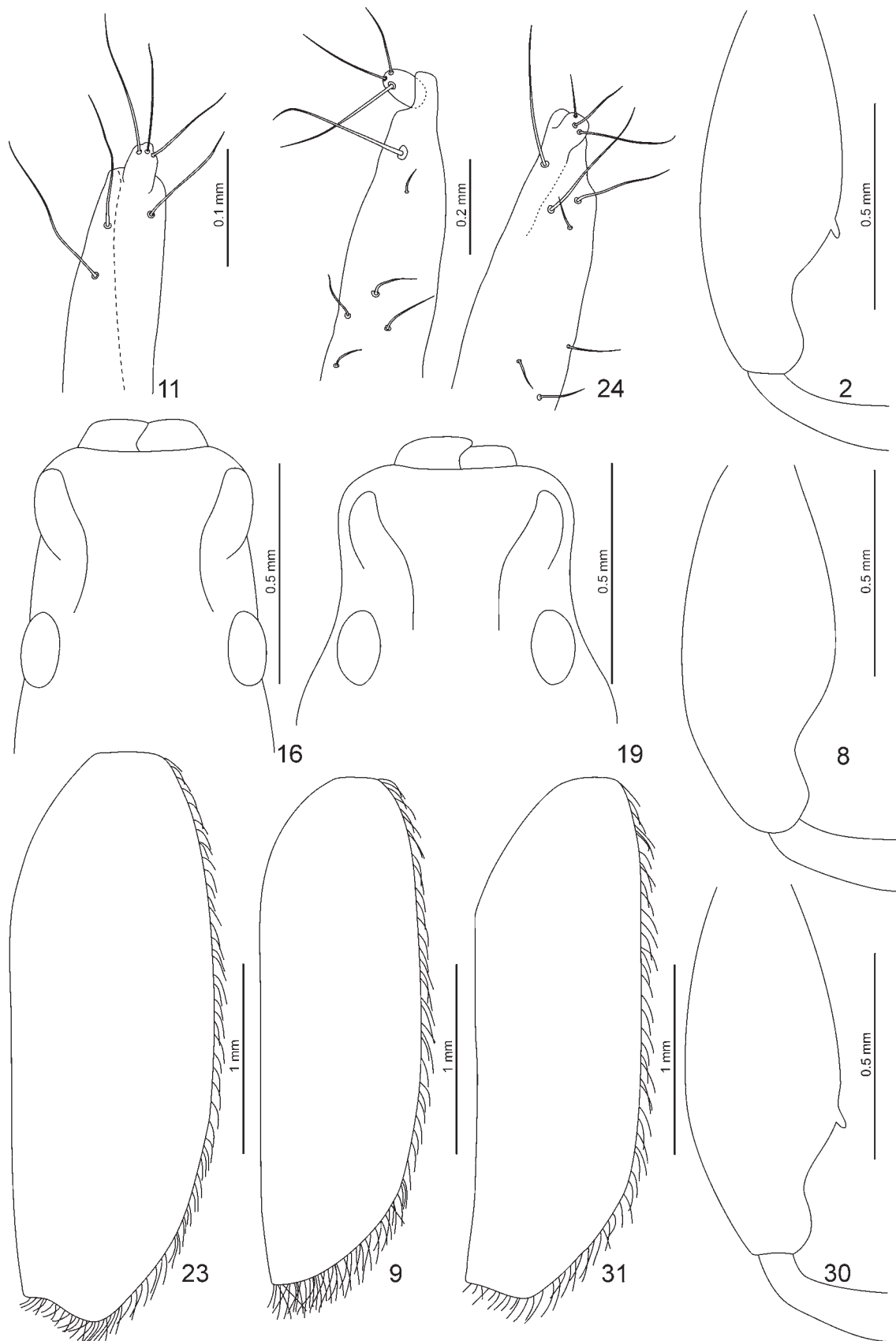
Redescription. Body length 3.69–4.25 mm. Rostrum short, 1.61–1.67× as wide as long; from base slightly tapered anteriorly; at apex indistinctly enlarged around scrobes. Epifrons moderately wide; with distinctly concave sides; at base only weakly narrower than distance between eyes; with longitudinal median furrow dorsally (varies considerably intraspecifically). Antennal scape 0.8× as wide as club; funicle segment 1 1.3–1.4× as long as wide and 1.2–1.3× as long as segment 2, which is 1.2–1.3× as long as wide; segments 3–7 1.1× as wide as long; club 2.1–2.2× as long as wide. Pronotum 1.03–1.06× as wide as long; widest at middle; with distinctly rounded sides; disc double punctate (with coarse and fine punctures), intervening spaces glabrous, shiny. Elytra (Fig. 31) long and slender, 1.83–1.88× as long as wide; laterally flat; slope of apex evenly descending downwards, lacking hump or tooth; with 1–2 uneven rows of setae, semiappressed and slightly longer than width of one interstria on disc, erect and conspicuously longer at posterior declivity; punctures in striae coarse, interstriae with one uneven row of equally coarse punctures; slightly wider than striae. Femora (Fig. 30) ventrally with small, but distinct tooth distal to middle. Tarsi slender, segment 2 1.1–1.2× as wide as long; segment 3 1.1× as wide as long and 1.4–1.5× as wide as segment 2; onychium 1.3–1.4× as long as segment 3. Male terminalia unknown. Female terminalia. Sternite VIII (Fig. 32) in females with shortly V-shaped apodeme in basal half; apical half with two oval sclerotised spots; apical margin slightly concave, with two tufts of moderately long but fine setae. Spermatheca (Fig. 33) with ramus longer than wide and conspicuously longer and wider than the small, hump-shaped nodulus.

Distribution. According to Alonso-Zarazaga *et al.* (2017), this species is known from Romania, Ukraine, south European Russia, Armenia, Georgia and Syria. *Stomodes puncticollis*, which is not easy to distinguish from *S. tolutarius*, in the same catalogue is reported from Italy, Bosnia and Herzegovina, Croatia, Greece and Romania. We examined *S. tolutarius* also from Greece, Macedonia, Bulgaria and Turkey, and report here the new records for these countries.

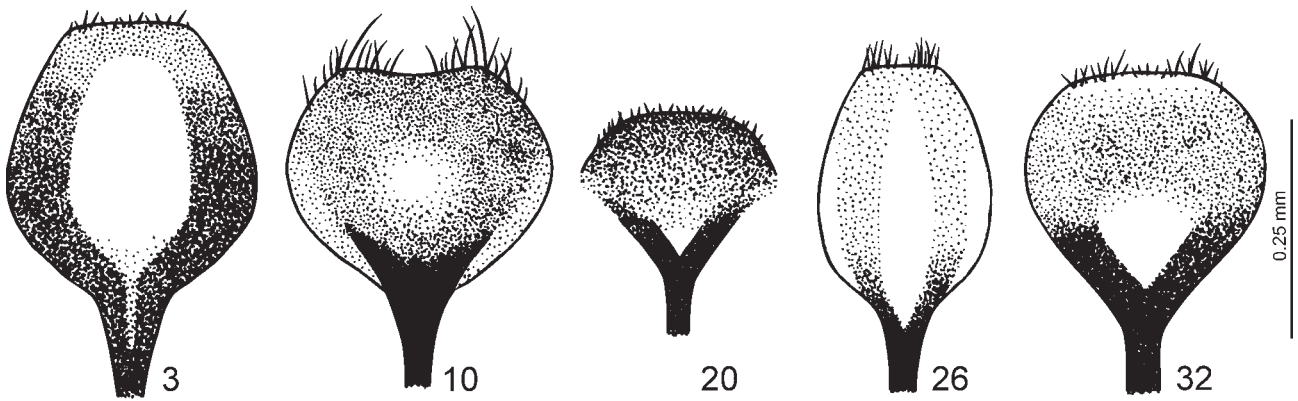
Biology. Collected in the mountains under stones, between 1200 and 2200 m.

Remarks. The holotype of *Omius elongatus* is incomplete; the left anterior and middle tibia with tarsi as well as the right middle tarsus are missing. As stated for *S. puncticollis*, subsequent study will have to solve whether *S. tolutarius* is a different species from *S. puncticollis*, a species which is likely known only from Italy.

Differential diagnosis. *Stomodes tolutarius* is easily distinguishable from its congeners by having a double punctured pronotum and elytra that, when viewed laterally, have the slope overhanging the apex. These two characters are shared only with *S. marocanus*; from that species *S. tolutarius* can be separated by the characters mentioned in the below key.



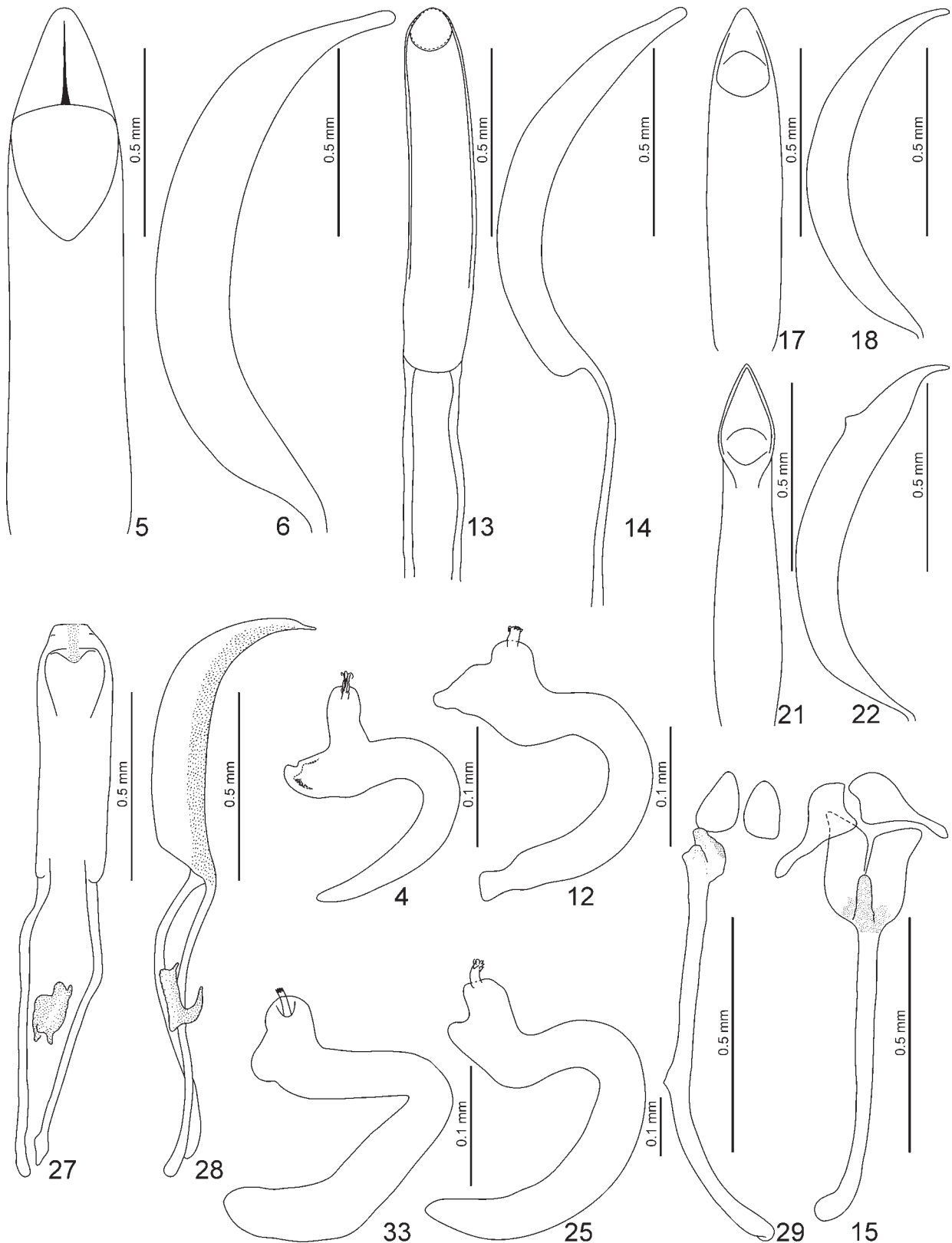
FIGURES 2, 8, 9, 11, 16, 19, 23, 24, 30, 31. 2—*Stomodes benedikti*, femora; 8—*Stomodes dodocunevi*, femora; 9—*Stomodes dodocunevi*, elytra, lateral view; 11—*Stomodes dodocunevi*, gonocoxite; 16—*Stomodes leonhardi*, head with rostrum; 19—*Stomodes letzneri*, head with rostrum; 23—*Stomodes marocanus*, elytra, lateral view; 24—*Stomodes muelleri*, gonocoxites; 30—*Stomodes tolutarius*, femora; 31—*Stomodes leonhardi*, elytra, lateral view.



FIGURES 3, 10, 20, 26, 32. 3—*Stomodes benedikti*, sternite VIII ♀; 10—*Stomodes dodocunevi*, sternite VIII ♀; 20—*Stomodes letzneri*, sternite VIII ♀; 26—*Stomodes muelleri*, sternite VIII ♀; 32—*Stomodes tolutarius*, sternite VIII ♀.

Key to the species of *S. tolutarius* species group

1. Elytra (Figs 23, 31) with apex not visible in dorsal view, hidden by slope overhanging apex; pronotum with punctures of two different sizes, with unevenly scattered coarse and conspicuously smaller and fine punctures 2
 - Elytra (Fig. 9) with apex visible in dorsal view; pronotum with punctures of equal size, in some species weakly variable in size but never distinctly small 3
2. Rostrum 1.61–1.67× as wide as long; pronotum 1.03–1.06× as wide as long; elytra (Fig. 31) laterally flat, slope overhanging apex, evenly descending downwards; tarsi with segment 2 1.1–1.2× as wide as long *S. tolutarius* Schoenherr
 - Rostrum 1.85× as wide as long; pronotum 1.11× as wide as long; elytra (Fig. 23) with slope overhanging apex, rounded and then perpendicularly falling downwards; tarsi with segment 2 1.4× as wide as long *S. marocanus* Hoffmann
3. Pronotum shiny, with very fine and sparse punctures; distance between two nearest pronotal punctures greater than diameter of a puncture; elytra at most 1.68× as long as wide, with semierect setae on disc, and with finely punctate striae; distance between elytral punctures greater than a puncture diameter; interstriae distinctly wider than striae; funicle segments in females wider than long *S. muelleri* Lona
 - Pronotum matt, densely punctate; distance between two nearest pronotal punctures smaller than diameter of a puncture; elytra at least 1.81× as long as wide, with semi-appressed setae on disc, and with coarsely punctate striae; distance between elytral punctures shorter than their diameter; interstriae weakly wider or equally wide as striae; funicle segments in females longer than wide or as long as wide (except for *S. leonhardi*) 4
4. Epifrons (Fig. 16) wide, with distinctly concave sides, posteriorly significantly enlarged, at base only slightly narrower than space between anterior margins of eyes; funicle segments 3–7 in females wider than long; pronotum in female wider than long *S. leonhardi* Wagner
 - Epifrons (Fig. 19) slender, at basal half subparallel-sided, at base significantly narrower than space between anterior margins of eyes; funicle segments 3–7 in females isodiametric or longer than wide; pronotum in female isodiametric or longer than wide 5
5. Femora ventrally with small but distinct tooth (Fig. 2); rostrum with slightly concave sides and slightly laterally projecting pterygiae; striae and interstriae with equally large punctures; interstriae weakly wider than striae; female sternite VIII (Fig. 3) with isodiametric plate, narrowly sclerotised along anterior margin and with large fenestra; spermatheca (Fig. 4) with ramus and nodulus perpendicular *S. benedikti* sp. n.
 - Femora adentate (Fig. 8); rostrum with straight sides, without laterally projecting pterygiae; punctures in striae distinctly larger than those on interstriae; striae and interstriae equally wide; plate of female sternite VIII (Figs 10, 20) wider than long, with apical half uniformly sclerotized and lacking fenestra; spermatheca (Fig. 12) with ramus and nodulus divergent, V-shaped . . 6
6. Epifrons with longitudinal median stria; pronotum widest slightly before the middle; pronotal disc with well isolated punctures; elytra longer, 1.89–1.98× as long as wide; rostrum longer, 1.55–1.67× as wide as long; metatarsal segment 2 1.1× as wide as long; penis (Fig. 13) in dorsal view at apex evenly regularly tapered, tip shortly subtruncate; plate of female sternite VIII (Fig. 10) with apical margin concave *S. dodocunevi* sp. n.
 - Epifrons convex, lacking stria; pronotum widest at middle; pronotal disc with space between punctures very narrow; elytra shorter, 1.81–1.91× as long as wide; rostrum shorter, 1.78–1.91× as wide as long; metatarsal segment 2 1.4× as wide as long; penis in dorsal view (Fig. 21) with apex weakly enlarged and then tapered and pointed apicad; plate of female sternite VIII (Fig. 20) with round apical margin *S. letzneri* Reitter



FIGURES 4–6, 12–15, 17, 18, 21, 22, 25, 27, 28, 29, 33. 4—*Stomodes benedikti*, spermatheca; 5—*Stomodes benedikti*, aedeagus, dorsal view; 6—*Stomodes benedikti*, aedeagus, lateral view; 12—*Stomodes dodocunevi*, spermatheca; 13—*Stomodes dodocunevi*, aedeagus, dorsal view; 14—*Stomodes dodocunevi*, aedeagus, lateral view; 15—*Stomodes dodocunevi*, sternite IX ♂; 17—*Stomodes leonhardi*, aedeagus, dorsal view; 18—*Stomodes leonhardi*, aedeagus, lateral view; 21—*Stomodes letzneri*, aedeagus, dorsal view; 22—*Stomodes letzneri*, aedeagus, lateral view; 25—*Stomodes muelleri*, spermatheca; 27—*Stomodes muelleri*, aedeagus, dorsal view; 28—*Stomodes muelleri*, aedeagus, lateral view; 29—*Stomodes muelleri*, sternite IX ♂; 33—*Stomodes tolutarius*, spermatheca.

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Holcophloeus caldarai (Coleoptera: Curculionidae: Holcorhinini) a new weevil species from Morocco

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Abstract

Holcophloeus caldarai sp. n. is described as a fifth species of the genus from central Morocco. The new species differs from all other species of the genus and, generally the entire tribe, by unique irregularly star-shaped appressed scales.

Key words: Coleoptera, Curculionidae, Entiminae, Holcorhinini, *Holcophloeus*, taxonomy, new species, Morocco

Introduction

The genus *Holcophloeus* was described very recently based on the type species *Trachyphloeus cruciatus* Seidlitz, 1868 from Algeria (Borovec *et al.* 2013). In the same paper, two new species of *Holcophloeus* were described from Morocco and Libya. Perrin & Borovec (2016) described a fourth species in the genus from Algeria. All four species are known from North Africa, where they are relatively rare and/or difficult to collect. Each species is known only from a limited number of specimens, however, because of difficulties in collecting this genus other unknown *Holcophloeus* species likely exist. All species of *Holcophloeus* have a slender transverse V-shaped sulcus between the head and rostrum, a typical tribal character of Holcorhinini Lacordaire, 1863.

Material and methods

Abbreviations. MK: Michael Košťál; NMPC: National Museum, Prague.

Measurements and photographs. Measurements were made using a Rathenow microscope with an ocular micrometer. Body length does not include rostrum. A high-resolution camera (Canon EOS 50D) and macro zoom lens (Canon MP-E 65 mm) were used for whole body photography. Genitalia of both sexes were dissected. Penis was cleared for several days in 10% KOH, embedded in a glycerol chamber, spermatheca and female 8th sternite embedded in Solakryl BMX and photographed under a laboratory microscope (Intraco Micro LMI T PC) using the same camera. Penis is stored in glycerol in microvial and female structures on plastic board, each on the corresponding pin under the type specimen. Multilayered pictures were processed using the software Combine ZP. Label data are reported as exact label text between two single quotes.

Holcophloeus caldarai sp. n. Borovec & Košťál

(Figs 1–8)

Type locality. Morocco, Moyen Atlas Mts., Bin-el-Ouidane env. pr. Beni-Mellal.

Type material. Holotype: ♂, 'Marocco c., Moyen Atlas Mts., Bin-el-Ouidane env. pr. Beni-Mellal, N 32°07.1'

W 06°24.5', 850 m, 21.v.2017, Michael Košťál leg. / Holotypus, *Holcophloeus caldarai* spec. nov., R. Borovec & M. Košťál det. 2017' (NMPC). Paratype: 1 ♀, the same data as holotype, except for 'Paratypus' (MK).



FIGURE 1. *Holcophloeus caldarai* sp. n. Habitus of the male in dorsoventral view. (Not to scale.)

Body length male 2.66 mm, female 3.14 mm. Body (Figs 1–4) blackish, femora and tibiae brownish, tarsi and antennae paler, reddish brown. Body covered with irregularly star-shaped appressed scales, with 7–9 long slender tips on their circumference (partly visible on Figs 1, 3), 2–3 across width of one interval, not fully covering integument. Elytral intervals with one regular row of semierect setae, subspatulate, slender, widest at midlength, in males somewhat longer, in female equally long as half width of one interval. Pronotum and head with rostrum densely irregularly scattered by the same, erect setae. Scape sparsely covered with long, erect, very slender setae; funicle and tarsi with short setae; club finely densely setose; femora and tibiae with short, semierect slender setae.

Rostrum (Figs 4, 5) short and wide, $1.52\text{--}1.55 \times$ as wide as long, widest shortly before base and evenly slightly

tapered anteriorly with straight sides, before base 1.04–1.07 × as wide as at apex. Epifrons at base equally wide as space between margin of eyes, tapered anteriorly with slightly concave sides, dorsally shallowly longitudinally depressed with slender longitudinal middle stria; posteriorly separated from head by narrow, V-shaped, clearly defined transverse sulcus, concealed by appressed scales. Frons squamose. Epistome very short and wide, broadly V-shaped, asquamose, hardly carinate posteriorly. Scrobe in dorsal view well visible along the whole length as moderately wide furrow, equally wide, creating short shallow constriction at rostral base; in lateral view subtriangular, short and conspicuously enlarged posteriorly, separated from eye by narrow squamose stripe, dorsal border directed towards dorsal border of eye, ventral border directed well below ventral border of eye. Head with dorso-lateral tubercles, visible mainly in dorso-lateral view, creating weak transverse constriction behind posterior borders of eyes. Eyes small but clearly asymmetrically convex, conspicuously protruding from outline of head; in profile subcircular, placed at dorsal third.



FIGURE 2. *Holcophloeus caldarai* sp. n. Habitus of the female in dorsoventral view. (Not to scale.)



FIGURE 3. *Holcophloeus caldarai* sp. n. Habitus of the male in lateral view. (Not to scale.)



FIGURE 4. *Holcophloeus caldarai* sp. n. Habitus of the female in lateral view. (Not to scale.)

Antennae (Fig. 1) very slender, scape $1.1\text{--}1.2 \times$ as long as funicle, at basal half straight and very slender, at midlength distinctly curved, at apical half somewhat enlarged, $0.9 \times$ as wide as club. Funicle segment 1 and 2 very slender, segment 1 $2.4\text{--}2.5 \times$ as long as wide and $1.3\text{--}1.4 \times$ as long as segment 2, which is $2.3\text{--}2.4 \times$ as long as wide; segments 3–5 $1.3 \times$ as long as wide; segment 6 isodiametric; segment 7 $1.2 \times$ as wide as long; club $1.7\text{--}1.9 \times$ as long as wide.

Pronotum (Figs 2, 4) $1.32\text{--}1.47 \times$ as wide as long, widest at midlength with distinctly rounded sides, weakly constricted behind anterior border; disc regularly convex, without depressions; base slightly arched.

Elytra (Figs 2, 4) $1.33\text{--}1.36 \times$ as long as wide, oval, widest at midlength, in profile a bit convex; humeral calli regularly rounded. Striae finely punctuate; intervals flat.

Femora of all legs unarmed. Protibiae moderately slender with lateral margin straight; apex obliquely subtruncate with fringe of short and fine, sparse, 8–9 brownish spines; inner portion with brownish mucro. Metatibiae with apical surface glabrous, fringed outside and inside by short brownish spines, mucronate, lacking corbels. Tarsi with segment 2 $1.4\text{--}1.5 \times$ as wide as long; segment 3 $1.2\text{--}1.3 \times$ as wide as long and $1.4\text{--}1.5 \times$ as wide as segment 2; exceeding part of onychium $1.6\text{--}1.7 \times$ as long as segment 3; claws solidly fused at basal half, then weakly divorced.

Penis (Figs 6 a, b) in ventral view widest at base, distinctly evenly tapered apically with slightly concave sides; tip slender, elongate, shortly tubular; in lateral view very slender, regularly curved, widest at base and evenly tapered apically, tip in short its point slightly curved inside. Tegmen lacking parameres.



FIGURE 5. *Holcophloeus caldarai* sp. n. Rostrum of the female in dorsoventral view. (Not to scale.)



FIGURE 6. *Holcophloeus caldarai* sp. n. Penis in ventrodorsal (a) and lateral (b) view. (Not to scale.)



FIGURE 7. *Holcophloeus caldarai* sp. n. 8th sternite of the female. (Not to scale.)



FIGURE 8. *Holcophloeus caldarai* sp. n. Spermatheca. (Not to scale.)

Spermatheca (Fig. 8) with slender, almost straight cornu; corpus rounded; ramus short and wide, rounded, hardly visible; nodulus small, tubular, slightly curved. Sternite VIII (Fig. 7) with apodeme short and robust, twice as long as plate, widest at midlength, terminated at apex of plate, with short transverse bar; plate subtriangular, with posterior border membraneous, bearing short apical setae. Gonocoxites flat, weakly sclerotised, subtrapezoidal, with slender apical styli with tuft of setae.

Etymology. The newly discovered species is devoted to an eminent taxonomist and friend of the first two authors, Dr. Roberto Caldara, who kindly suggested the locality for collecting of weevils.

Bionomics. Specimens were found by sifting in a very dry locality on non-limestone bedrock with residues of dead pines and shrubs, with a few scattered surviving pines and *Ephedra* spp.

Differential diagnosis. In the most recent key to Holcorhinini genera (Pelletier 2012) the genus *Holcophloeus* runs to couplet 15, with *Paracyclomaurus* Desbrochers des Loges, 1898 and *Paracyclomauroides* Pelletier, 2009 (*Holcophloeus* is missing from this key as it was described after 2012). To complete the key to genera of Holcorhinini by Pelletier (2012), the following couplet is to be added:

- | | | |
|------|---|--|
| 15. | Epifrons of the rostrum at base as wide as the space between the anterior borders of eyes. Rostrum 1.5–1.9 × as wide as long. Erect setae on antennal scape subspatulate | <i>Holcophloeus</i> Borovec & Meregalli |
| - | Epifrons of the rostrum at base strikingly narrower than the space between anterior borders of eyes. Rostrum 1.1–1.3 × as wide as long. Erect setae on antennal scape piliform. | 15a |
| 15a. | Rostrum short, subtrapezoidal or subsquared. Scape apically distinctly enlarged | <i>Paracyclomaurus</i> Desbrochers des Loges |
| - | Rostrum elongated, subparallel-sided. Scape apically somewhat enlarged. | <i>Paracyclomauroides</i> Pelletier |

Within *Holcophloeus*, *H. caldarai* sp. n. is easily separated from the four other species using the following key:

- | | | |
|----|--|---------------------------|
| 1. | Appressed elytral scales irregularly star-shaped, with long and slender tips on their circumference. Dorsal border of antennal scrobes in profile directed towards dorsal border of eye. Eyes asymmetrical | <i>H. caldarai</i> sp. n. |
|----|--|---------------------------|

- Appressed elytral scales irregularly rounded. Dorsal border of antennal scrobes in profile distinctly extended above the eye. Eyes regularly vaulted. 2
- 2. Protibiae and outer margin of metatibial apical surface fringed by 8–9 slender, fine translucent setae. Semierect setae at posterior elytral declivity at most as long as half of width of one interval width. Gonocoxites with long, slender styli. 3
- Protibiae and outer margin of metatibial apical surface fringed by 5–6 short, wide spines. Semierect setae at posterior elytral declivity distinctly longer than half the width of one interval. Gonocoxites with microscopic, indistinct styli. 4
- 3. Rostrum 1.8–1.9 × as wide as long. Epifrons distinctly tapered anteriorly, at base as wide as space between anterior margin of eyes. Distance between eyes and anterior margin of pronotum about twice as long as diameter of eyes. Apical part of scape 1.2 × as wide as club. Elytra with weakly rounded sides. *H. laurae* Borovec & Meregalli
- Rostrum 1.6 × as wide as long. Epifrons weakly tapered anteriorly, at base weakly narrower than space between anterior margin of eyes. Distance between eyes and anterior margin of pronotum equal to diameter of eyes. Apical part of scape 0.8 × as wide as club. Elytra with distinctly rounded sides. *H. numidicus* Perrin & Borovec
- 4. Pronotum strongly expanded outwards at midlength. Elytral setae vertically inserted. Rostrum wider, 1.8–1.9 × as wide as long, with arcuate sides. Epifrons at the end with a prominent bump above eyes, mainly visible in lateral view. Eyes small, in lateral view diameter of eye by half smaller than high of head above eye. Onychium shorter, 2.2 × as long as tarsal segment 3. *H. cruciatus* (Seidlitz)
- Pronotum regularly rounded at midlength. Elytral setae oblique. Rostrum narrower, 1.6–1.7 × as wide as long, parallel-sided. Head above eyes without distinct bump in lateral view. Eyes large, in lateral view diameter of eye equal to height of head above eye. Onychium longer, 2.7–3.0 × as long as tarsal segment 3 *H. weilli* Borovec & Meregalli

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