



*Zootaxa* 3535: 1–104 (2012)

[www.mapress.com/zootaxa/](http://www.mapress.com/zootaxa/)

Copyright © 2012 · Magnolia Press

# Monograph

ISSN 1175-5326 (print edition)

**ZOOTAXA**

ISSN 1175-5334 (online edition)

urn:lsid:zoobank.org:pub:F6F763DD-F76D-4F01-8D27-70399F923B96

# ZOOTAXA

3535

**Afrotropical weevils of the *Cadoderus* Marshall generic complex  
(Coleoptera: Curculionidae: Entiminae: Embrithini).  
Part 1. Genera: *Cadoderus* Marshall, 1926; *Sphrigodellus* Marshall,  
1942 and *Oncophyes* Marshall, 1942**

NIKOLAI YUNAKOV

*Natural History Museum, University of Oslo, P.O. Box 1172, Blindern NO-0318, Oslo, Norway. E-mail: [n.yunakov@gmail.com](mailto:n.yunakov@gmail.com)*



Magnolia Press  
Auckland, New Zealand

*Accepted by R. Anderson: 20 Sept. 2012; published: 1 Nov. 2012*

NIKOLAI YUNAKOV

**Afrotropical weevils of the *Cadoderus* Marshall generic complex (Coleoptera: Curculionidae: Entiminae: Embrithini). Part 1. Genera: *Cadoderus* Marshall, 1926; *Sphrigodellus* Marshall, 1942 and *Oncophyes* Marshall, 1942**

(*Zootaxa* 3535)

104 pp.; 30 cm.

1 Nov 2012

ISBN 978-1-77557-038-7 (paperback)

ISBN 978-1-77557-039-4 (Online edition)

FIRST PUBLISHED IN 2012 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: [zootaxa@mapress.com](mailto:zootaxa@mapress.com)

<http://www.mapress.com/zootaxa/>

© 2012 Magnolia Press

All rights reserved.

No part of this publication may be reproduced, stored, transmitted or disseminated, in any form, or by any means, without prior written permission from the publisher, to whom all requests to reproduce copyright material should be directed in writing.

This authorization does not extend to any other kind of copying, by any means, in any form, and for any purpose other than private research use.

ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

## Table of contents

Abstract	3
Introduction	4
Material and methods	4
The <i>Cadoderus</i> Faust generic complex	5
Checklist of genera and species of the <i>Cadoderus</i> complex	6
Key to Embrithini genera allied to <i>Cadoderus</i> (modified after Marshall 1942)	7
Key to species of <i>Cadoderus</i>	7
Key to species of <i>Sphrigodellus</i>	8
Key to species of <i>Oncophyes</i>	9
<i>Cadoderus</i> Marshall	9
<i>Cadoderus bellus</i> (Faust)	11
<i>Cadoderus weisei</i> Yunakov, <b>sp. n.</b>	13
<i>Cadoderus burundi</i> Yunakov, <b>sp. n.</b>	14
<i>Cadoderus grebennikovi</i> Yunakov, <b>sp. n.</b>	15
<i>Cadoderus olivaceus</i> Yunakov, <b>sp. n.</b>	16
<i>Cadoderus mysticus</i> (Faust)	18
<i>Sphrigodellus</i> Marshall	19
<i>Sphrigodellus lepidus</i> (Marshall)	21
<i>Sphrigodellus usambaricus</i> Yunakov, <b>sp. n.</b>	22
<i>Sphrigodellus</i> sp. prope <i>usambaricus</i>	24
<i>Sphrigodellus kwamkoroensis</i> Yunakov, <b>sp. n.</b>	24
<i>Sphrigodellus minutus</i> Yunakov, <b>sp. n.</b>	25
<i>Sphrigodellus parecola</i> Yunakov, <b>sp. n.</b>	26
<i>Sphrigodellus gusarovi</i> Yunakov, <b>sp. n.</b>	28
<i>Sphrigodellus nasutus</i> Yunakov, <b>sp. n.</b>	30
<i>Sphrigodellus centralis</i> (Hustache)	32
<i>Sphrigodellus nguruensis</i> Yunakov, <b>sp. n.</b>	33
<i>Sphrigodellus</i> sp. prope <i>nguruensis</i>	35
<i>Sphrigodellus viridegriseus</i> Yunakov, <b>sp. n.</b>	35
<i>Sphrigodellus kiverengei</i> Yunakov, <b>sp. n.</b>	36
<i>Sphrigodellus aberdarecola</i> Yunakov, <b>sp. n.</b>	38
<i>Sphrigodellus</i> sp. prope <i>aberdarecola</i>	39
<i>Sphrigodellus sundi</i> Yunakov, <b>sp. n.</b>	40
<i>Sphrigodellus taitae</i> Yunakov, <b>sp. n.</b>	41
<i>Sphrigodellus lineatus</i> Yunakov, <b>sp. n.</b>	43
<i>Oncophyes</i> Marshall	45
<i>Oncophyes amoenus</i> (Hartmann)	46
<i>Oncophyes cadoderoides</i> Yunakov, <b>sp. n.</b>	47
Acknowledgements	49
References	49
List of figures	50

## Abstract

The canopy dwelling weevils of the genus *Cadoderus* and allied genera demonstrate significant diversity in fragmented montane and gallery forests of East Africa. Adults have various cryptic coloration or vestiture to hide them among branches covered with lichens and moss. *Cadoderus* Marshall, 1926, *Sphrigodellus* Marshall, 1942, and *Oncophyes* Marshall, 1942 are reviewed and redescribed. Eighteen new species are described: *Cadoderus weisei* **sp. n.** (Tanzania: West Usambara Mts.), *C. burundi* **sp. n.** (Burundi: Ruvubu N.P.), *C. grebennikovi* **sp. n.** (Tanzania: Nguru Mts.), *C. olivaceus* **sp. n.** (Tanzania: Nguru Mts.), *Sphrigodellus minutus* **sp. n.**, *S. gusarovi* **sp. n.**, *S. nasutus* **sp. n.**, *S. parecola* **sp. n.**, *S. viridegriseus* **sp. n.**, *S. kiverengei* **sp. n.** (Tanzania: Pare Mts.), *S. usambaricus* **sp. n.**, *S. kwamkoroensis* **sp. n.** (Tanzania: East Usambara Mts.), *S. nguruensis* **sp. n.** (Tanzania: Nguru Mts.), *S. lineatus* **sp. n.** (Tanzania: Udzungwa Mts.), *S. sundi* **sp. n.** (Tanzania: Mt. Kilimanjaro), *S. aberdarecola* **sp. n.** (Kenya: Aberdare Mountain Range), *S. taitae* **sp. n.** (Kenya: Taita Hills), *Oncophyes cadoderoides* **sp. n.** (Tanzania: Usambara Mts.). Genitalia of both sexes of all known taxa are extensively studied and illustrated for the first time. A modified key to genera and species of the *Cadoderus*-complex is given. Lectotypes are designated for *Ellimenistes bellus* Faust, 1896, *E. mysticus* Faust, 1900, *E. amoenus* Hartmann, 1904, *Barianus centralis* Hustache, 1929 and *Cadoderus lepidus* Marshall, 1940.

**Key words:** Entiminae, weevils, taxonomy, new species, East Africa, key

## Introduction

The *Cadoderus* Marshall generic complex is comprised of genera of Embrithini with 10 elytral striae, prementum with 2 setae, posterior margin of epistome terminating anterior to level of antennal articulation, anterior edge of pronotum as wide as its posterior edge, antennal scrobes dorsal, and elytra with a more or less developed subscutellar callosity (Marshall 1942). This complex includes the following genera: *Cadoderus* Marshall, 1926, *Sphrigodellus* Marshall, 1942, *Plocometopus* Marshall, 1942, *Oncophyes* Marshall, 1942, and *Stenorrhamphus* Marshall, 1942. All genera except for the first two consist of 1 or 2 species. *Cadoderus* was erected for *Ellimenistes bellus* Faust, 1896 and *E. amoenus* Hartmann, 1904 from the Usambara Mountains on account of ventrite 2 being only slightly longer than either of the two following ventrites, and with its anterior margin straight; hind coxae reaching the margin of the elytra; hind tibiae denticulate internally, with narrow bevels bare of scales internally; trochanters with an erect seta; pronotum as long or nearly as long as broad, the apex and base of equal width; elytra with a subscutellar callosity. It must be noted that the trochanteral seta is common character in many weevils and present in *Ellimenistes* Boheman, 1843 as well. Marshall (1942) subsequently proposed a new genus *Oncophyes* for *E. amoenus* Hartmann, 1904, which has a strongly developed scutellar callosity, flat eyes and robust antennal scape. *Ellimenistes mysticus* Faust, 1900 and transferred to *Cadoderus* on account of its U-shaped epistome (Marshall 1952). *Sphrigodellus* was proposed for *Barianus centralis* Hustache, 1929 and *Cadoderus lepidus* Marshall, 1940; it differs from all associated genera by its extremely narrow epistome. *Plocometopus*, a monotypic genus, was erected for *Meira scutellata* Hustache, 1929, which was previously considered in *Cadoderus* (Marshall 1935). *Stenorrhamphus* was established for a single very small (2–3 mm long) species, *Sphrigodes crinitus* Marshall, 1934, recognisable by its very long, acute, erect setae and concave scales. It differs from *Sphrigodes* in the short epistome, long parallel-sided rostrum, abbreviated metanepisternal suture, and by pronotum in its anterior edge as wide as at posterior edge.

All previous generic descriptions and grouping of species were based on limited external characters. The genitalia morphology of these weevils, as for other genera of Embrithini, has hardly been studied, so it is intended here to provide detailed descriptions of the main genitalia of both sexes to be subsequently involved in phylogenetic analysis together with other characters. The discovery of new species and new characters has led to significant adjustments of generic descriptions and diagnoses.

## Material and methods

This review is based on the study of 470 specimens housed in the following collections: **BMNH**—Natural History Museum, London; **CNC**—Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa; **DEI**—Senckenberg Deutsches Entomologisches Institut, Müncheberg; **MNHN**—Muséum National d'Histoire Naturelle, Paris; **MTD**—Museum für Tierkunde, Senckenberg Naturhistorische Sammlungen, Dresden; **TAU**—Tel Aviv University; **ZMUC**—Zoologisk Museum, University of Copenhagen; **ZMUN**—Zoologisk Museum, University of Oslo. Beetles were collected using a beating tray or by canopy fogging; occasionally they were captured by sifting of leaf litter under shrubs.

**Dissection.** Beetles were soaked in warm 10% C<sub>2</sub>H<sub>5</sub>OH solution with detergent to clean the densely squamose surface that is usually coated with exudations. Genital preparation was done by dissection of the detached entire abdomen with thin tweezers; this is less damaging than direct extraction of genitalia from the abdomen. After dissection of the abdomen, the included part of the alimentary canal and the genital organs were macerated in hot 10% KOH solution, washed in distilled water, and dehydrated sequentially through 60%, 80%, and 96% ethanol. The membranous structures such as abdominal terga, gut, sperm duct and spermathecal gland were stained with Chlorazol-Black-E. All genital structures were put in microvials with glycerol pinned below the specimen. Beetles were mounted on glue-boards 11x5 (Ento Sphinx s.r.o.) or pointed using Herkules® mounting glue (Druchema v.d.) and pinned by standard means.

**Imaging.** All illustrations of genital structures were drawn from objects in glycerine using a camera-lucida, and modified with a Wacom Graphire 4 Classic XL A5 tablet in Corel Draw (version 11.633) Corel®. Schematic outline illustrations of body parts highlight only valuable characters; sutures between antennal club segments are omitted. Photographs were taken with digital photo camera Canon EOS-1 Ds Mark III (optics: Infinity K2SC CF-4; lightning: Dyna-lite M2000ER; layers merged in Helicon Focus (version 5.0) HeliconSoft®).



**Descriptions.** Morphological terms mostly follow Thompson (1992), van Emden (1944), Doyen (1966) and DuPorte (1960). Special terms related to the rostrum follow Oberprieler (1988) and Morimoto *et al.* (2006), and those related to internal sac follow Arzanov (2003).

**Terms.** (figs 43–51; 59–63; 158, 159). **Head.** **Epistome:** plate between frons and clypeus (indistinguishable in most weevils). **Frons:** small area between epifrons and epistome, situated rather anteriorly of eyes (Oberprieler 1988). In the genera studied, the frons appears as a glabrous, transverse bar between epistomal carina and epifrons. **Antennifer** (Fig. 45): well developed process on the mesal wall of antennal socket (Doyen 1966). **Epifrons:** dorsal portion of rostrum between anterior margin of eyes and antennal sockets (DuPorte 1960, Oberprieler 1988), corresponds to “rostral dorsum”. **Vertex:** area of head between eyes (DuPorte 1960), often mistakenly referred to as the “frons”; latter term is more widespread but morphologically wrong. **Frontal setae:** setae at frons, ordered in straight or arcuate row. **Epistomal setae:** group of tiny setae anterior to frontal setae. **Vestiture.** **Subocular row:** group of erect spatulate setae above the eye. **Anterior setal fringe:** row or group of erect setae along anterior edge of pronotum. **Posterior setal fringe:** erect or recumbent, spatulate or plumose setae ordered in row at posterior edge of pronotum. **Subscutellar callosity:** thin, transverse, bold bar at basal edge of elytra. **Male genitalia.** **Aggonopodium** (Fig. 59): this term was adopted by Arzanov (2003) for sclerite or complex of sclerites arming the internal sac around the ductus ejaculatorius insertion; it facilitates the attaching of internal sac and bursa copulatrix while copulating (Werner & Simmons 2008; sclerite 5). Aggonopodium is also known as complex of armature sclerites: pinna, cucullus, and hamulus (Velázquez de Castro *et al.* 2007), sclerotized structure of internal sac (Stüben & Astrin 2010) or as anterior endophallic sclerite (Franz 2012). The homology of separate sclerites related to the aggonopodium in weevils is still obscure.

**Measurements.** All measurements were taken with an ocular stage micrometer (0.1 mm graduation) for stereomicroscope Leica MZ16. Body length was measured from the anterior margin of the eye to the apex of elytra and the length of the rostrum from the apex of the rostrum to the anterior edge of the eyes. Width of the rostrum is the maximum distance between the lateral edges of the pterygia. A set of ratios was employed for characterising the shape of body parts: ratio between vertex width and longitudinal eye diameter (FW/ELD), between pronotum length and pronotum width (PL/PW), and between elytra length and elytra width (EL/EW).

**Abbreviations.** **BL**—length of body; **BW**—width of body; **BH**—height of body; **RL**—length of rostrum; **RW**—width of rostrum; **FW**—width of vertex (distance between interior margins of eyes); **ELD**—longitudinal diameter of eye; **EL**—length of elytra; **EW**—width of elytra; **PL**—length of pronotum; **PW**—width of pronotum; **N.P.**—National Park; **N.R.**—Natural Reserve.

**Rates and shapes.** Shape of elytral contour in dorsal aspect: oblong-oval (EL/EW = 1.2–1.30); oval (1.31–1.40); broadly oval (1.41–1.52).

## The *Cadoderus* Faust generic complex

**Distribution.** Weevils of this generic complex occur in East Africa. They are represented in young mountains such as Kilimanjaro, Aberdare, and the comparatively old massifs of Chyulu Hills and Eastern Arc Mountains. The latter compound massif is significantly highlighted by maximal species richness and may be considered as a hot spot of biodiversity of this group. The ranges of most known species are rather restricted, and species appear to be strictly endemic to isolated mountain ranges or their portions, but it can not be excluded that such small ranges result from the small amount of material available. Nevertheless, material examined shows that a number of species almost never extend beyond the limits of one or two neighboring mountain ranges. This is most apparent in North and South Pare Mountains and Nguru Mountains where 2–3 sympatric species occur on each ridge. Other isolated mountains also have endemic species. The Usambara Mountains consist of western and eastern massifs separated from the Pare Mountains by the narrow valley of the Mkomazi River. Each massif contains endemic species including the genus *Oncophyes*—endemic to Usambara. The range of *Cadoderus* is much broader than that of *Oncophyes* and limited by the Usambara and Nguru Mountains (Tanzania) and Ruvubu River (Burundi). *Sphrigodellus* has the maximal range. Its occurrence is limited to the north by the Aberdare mountain range, to the south by the Udzungwa Mountains, and to the east by the Indian Ocean. The western limit of the range of *Sphrigodellus* is unclear due to the lack of material from the Rift Valley. Only one species is known so far from Mt. Kilimanjaro. Species inhabit xerothermic and wet forests, from sea level up to 2800 m elevation.

**Biology.** The biology of these species is still poorly studied; the beetles apparently inhabit the canopy level of big trees and middle size shrubs. Interaction with host plants is also not very clear; adults have been recorded on plant species from several families: *Psychotria* spp., *Mystroxydon aethiopicum*, *Myrsine africana* etc. Oviposition has not been studied but, considering that the ovipositor is heavily sclerotized and the spiculum ventrale possesses a narrow knife-shaped lamella, it may be presumed eggs are deposited in narrow gaps in "suspended litter", i.e. aggregations of lichens/moss/small orchids, dead leaves between tree branches. Descent of beetles to the ground occurs only as an emergency. As it was observed by the author, the species of *Cadoderus* and other forest dwelling groups of Embrithini do not possess an advanced armor, common in Cryptorhynchinae, that could protect the weevils from ants, particularly dorylines. It is likely, that for this reason in the middle montane forest belt, where ants are abundant, the diversity of forest floor leaf litter Entiminae is low. The subfamily is represented mostly by miniaturized unarmored *Hypsomias Aurivilius*, 1910, *Tapinomorphus* Hartmann, 1904 and endogean blind or microphthalmic species of *Dysommatus* Marshall, 1933. By contrast, the diversity and abundance of leaf litter dwelling species among armored Molytinae and Cryptorhynchinae are higher than in Entiminae. At higher elevation, where the (doryline) ants are less abundant, i.e. in the three vegetation belts dominated by *Erica arborea*, *Hagenia abyssinica* and Afroalpine belts (2700–4600 m a.s.l.) the diversity and abundance of soil dwelling Entiminae is higher compared to poorly represented Molytinae and Cryptorhynchinae.

**Coloration.** These weevils exhibit a cryptic color pattern formed by a combination of differently coloured scales. The well-defined green and brown stripes and spots have the effect of obscuring the outline of the beetle so that it blends in with the natural environment (small spots of lichens, moss and algae on leaves and branches). Unidentified species of Conoderinae (figs 41, 42), collected in the same biotope, exhibit the same general color pattern as *Sphrigodellus* and *Cadoderus*, but the number and arrangement of the stripes is different. This convergent crypsis contrasts with another phenomenon described for species of Baridinae, where beetles have a remarkable, extravagant appearance that also seems to result in a noticeable loss in the ability of natural enemies to discriminate less striking details (Prena 2010).

### Checklist of genera and species of the *Cadoderus* complex

*Cadoderus* Marshall, 1926: 249 (type species: *Ellimenistes bellus* Faust, 1896).  
*Cadoderus bellus* (Faust, 1896: 121) (*Ellimenistes*), Tanzania (East Usambara Mts., Nguru Mts.)  
*Cadoderus burundi* sp. n., Burundi (Ruvube River)  
*Cadoderus grebennikovi* sp. n., Tanzania (Nguru Mts.)  
*Cadoderus mysticus* Faust (1900: 326) (*Ellimenistes*), Tanzania (West Usambara Mts.).  
*Cadoderus olivaceus* sp. n., Tanzania (Nguru Mts.)  
*Cadoderus weisei* sp. n., Tanzania (West Usambara Mts.)

*Oncophyes* Marshall, 1942: 20 (type species *Ellimenistes amoenus* Hartmann 1904)  
*Oncophyes amoenus* (Hartmann, 1904: 386) (*Ellimenistes*), Tanzania (West Usambara Mts.)  
*Oncophyes cadoderoides* sp. n., Tanzania (Usambara Mts.)

*Plocometopus* Marshall, 1942: 20 (type species *Meira scutellata* Hustache, 1929)  
*Plocometopus scutellatus* (Hustache, 1929: 447) (*Meira*) Kenya (Shimoni)

*Sphrigodellus* Marshall, 1942: 19 (type species: *Barianus centralis* Hustache, 1929)  
*Sphrigodellus aberdarecola* sp. n., Kenya (Aberdare Mt.R.)  
*Sphrigodellus centralis* (Hustache, 1929: 399) (*Barianus*), Kenya (Nairobi: Karura Forest)  
*Sphrigodellus gusarovi* sp. n., Tanzania (South Pare Mts.: Chome N.R.)  
*Sphrigodellus kiverengei* sp. n., Tanzania (North Pare Mts.: Kiverenge F.R.)  
*Sphrigodellus kwamkoroensis* sp. n., Tanzania (East Usambara Mts.)  
*Sphrigodellus lepidus* (Marshall, 1940: 39) (*Cadoderus*), Kenya (Chyulu Hills, Thika riv.: Chania Falls)  
*Sphrigodellus lineatus* sp. n., Tanzania (Udzungwa Mts.)  
*Sphrigodellus minutus* sp. n., Tanzania (South Pare Mts.: Chome N.R.)  
*Sphrigodellus nasutus* sp. n., Tanzania (North Pare Mts.)  
*Sphrigodellus nguruensis* sp. n., Tanzania (Nguru Mts.)  
*Sphrigodellus parecola* sp. n., Tanzania (South Pare Mts.: Chome N.R.)  
*Sphrigodellus sundi* sp. n., Tanzania (Kilimanjaro Mt.) *Sphrigodellus taitae* sp. n., Kenya (Taita Hills)

*Sphrigodellus usambaricus* **sp. n.**, Tanzania (East Usambara Mts.)  
*Sphrigodellus viridegriseus* **sp. n.**, Tanzania (North Pare Mts.: Kiverenge F.R.)

*Stenorrhamphus* Marshall, 1942: 21 (type species *Sphrigodes crinitus* Marshall 1934)  
*Stenorrhamphus crinitus* (Marshall, 1934: 495) (*Sphrigodes*), Tanzania (Morogoro)

## Key to Embrithini genera allied to *Cadoderus* (modified after Marshall 1942)

- 1 Epistome U-shaped, its posterior margin forming arcuate carina; frons not declivous or weakly declivous; subocular row consisting of 2–3 (rarely 4–6) setae; pronotum without anterior transverse setal fringe; ventrites densely squamose; antennifer entirely visible in dorsal view; pronotum strongly transverse [PL/PW: 0.71–0.89]; aggonopodium of internal sac with ventral process, if ventral process absent then lobes curved ..... 2
- Epistome very narrow, linear, without carina; frons vertical, linear; subocular row consists of 5–8 (rarely 2) setae; pronotum with (rarely without) anterior setal fringe; ventrites with scattered scales and short hairs; antennifers half-visible; funicular segment 1 more or less longer than 2; pronotum transverse or as long as wide [PL/PW: 0.81–1]; aggonopodium of internal sac consisting of two stick-shaped lobes connected proximally by transverse bridge, without ventral process ..... *Sphrigodellus* Marshall
- 2 Eyes weakly convex, not surrounded by wide glabrous ring; transverse sulcus not concealed by scales; Internal sac with aggonopodium long, consisting of straight lobes; subscutellar callosity weakly developed ..... *Cadoderus* Marshall
- Eyes flat, surrounded by wide glabrous ring; transverse sulcus completely concealed by scales; subscutellar callosity strongly developed ..... 3
- 3 Metanepisternal suture complete; anterior portion of epifrons roundly dilated; rostrum and vertex covered with dense matted curled, erect setae ..... *Plocometopus* Marshall [*P. scutellatus* (Hustache) 4–4.5 mm]
- Metanepisternal sutures obsolete behind; anterior portion of epifrons parallel-sided; rostrum and vertex squamose ..... 4
- 4 Body size larger than 4 mm; pronotum covered with round recumbent, overlapping flat scales; elytra with dense entire round scales; setae on elytra weakly erect, spatulate, shorter and obtuse; rostrum as long as wide or slightly elongate [RL/RW: 1–1.1]; pronotum of equal width at anterior and posterior edge; eyes larger, flat; subscutellar callosity large, without tubercles; hind coxae reaching elytra. .... *Oncophyes* Marshall
- Body size 2.7–3.5 mm; pronotum covered with umbrella-shaped erect scales (natively coated by soil particles); elytra with dense multiply excised round scales; setae on elytra strongly erect, slender, very long and acute; rostrum 2 x as long as wide; pronotum much narrower at anterior than posterior edge; eyes small, strongly convex; subscutellar callosity tiny, with two sharp tubercles; hind coxae narrowly separated from elytra ..... *Stenorrhamphus* Marshall [*S. crinitus* (Marshall)]

## Key to species of *Cadoderus*

- 1 Rostrum broader; lateral carinae broadly convex; pterygia extended beyond lateral contour of rostrum; epistome separated from frons by carina, glabrous; antennal scape squamose; tarsi setose and with scattered scales; elytra without transverse band on posterior declivity, spotted pattern absent; green scales form distinct longitudinal stripes on elytra and pronotum; ventral side of head and pronotum green; pronotum widest at middle; elytral disc strongly convex (observable in lateral view) (figs 1–2, 5–10); apex of median lobe without dorsal tooth-shaped process (observable in lateral view, Figs 70, 97), otherwise angulate flange developed (Fig. 59); coxites curved dorso-ventrally, with heavily sclerotized dorsal baculi; cornus of spermatheca extended beyond corpus ..... 2
- Rostrum narrower; lateral carinae vestigial; pterygia extended beyond lateral contour of rostrum; epistome fused with frons in fronto-epistome, not delimited by carina, coarsely punctate; antennal scapes without scales; elytral disc weakly convex; tarsi setose, without scales; elytra with pale transverse band on posterior declivity and scattered deep-brown unclear spots on intervals 1, 2, 4, 6; green scales scattered; ventral side of head and pronotum grey; pronotum widest in posterior half; elytral disc slightly convex (figs 3–4); apex of median lobe with dorsal tooth-shaped process directed posteriad (Fig. 122); coxites not curved dorso-ventrally, without heavily sclerotized dorsal baculi; cornus of spermatheca not extended beyond corpus ..... *C. mysticus* (Faust)
- 2 Eyes smaller, rather convex (FW/ELD: 1.14–1.50); subocular row consisting of 4–6 setae; lateral carinae broadly strongly convex ..... 3
- Eyes larger, less convex (FW/ELD: 0.67–1.07); subocular row consisting of 3–4 (rarely 2) setae; lateral carinae not convex ..... 5
- 3 Anterior declivity with setae up to a third as long as interval width; background brownish-olivaceous; striped pattern formed by green and cupreous scales; pronotum with 3 longitudinal cupreous stripes (1 discal, 2 dorso-lateral); dorso-lateral stripes broad, fused with lateral stripes; anterior portion of intervals 3 and 5 gray; rostrum with scarcely convex lateral carinae; epifrons at the level of antennal articulation 2.8–3.0 x narrower than vertex; eyes smaller [FW/ELD: average 1.43]; tubercles along striae 1 larger (Fig. 82); setal comb of protibiae consisting of 8–9 setae; female tergite 8 with sparse setal fringe. .... *C. burundi* **sp. n.**

- Anterior declivity with setae half as long as interval width; background deep-brown or olivaceous; striped pattern formed by green and cupreous scales; pronotum with 5 longitudinal distinct stripes (1 discal, 2 dorso-lateral, 2 lateral); dorso-lateral stripes narrow; anterior portion of intervals 3 and 5 green or olivaceous-brown; rostrum with strongly convex lateral carinae; epifrons at level of antennal articulation 2 x narrower than vertex; eyes larger [FW/ELD: average 1.21–1.30]; tubercles along the striae 1 smaller; setal comb of protibiae consisting of 10–14 setae; female tergite 8 with dense setal fringe ..... 4
- 4 Subocular row consisting of 4 setae; anterior and posterior elytral declivity with equally strongly erect setae; 2nd–3rd funicular segments with scattered scales; metatibiae with vestigial grooming brush; background scaling olivaceous; antennal funicle slender (1st funicular segment 1.42 x as long as 2nd; elytra rather broad and convex EL/EW average: 1.31, EL/BH average: 1.5; median lobe 0.75 x as long as apodemes, tubular, in apical 1/3 sharply narrowed anteriorly, apex attenuate, narrowly rounded ..... *C. olivaceus* **sp. n.**
- Subocular row consisting of 4–6 setae; posterior elytral declivity with longer and broader setae; funicular segments without scales; metatibiae with significantly developed grooming brush; background scaling deep-brown; elytra oval and less convex (EL/EW average: 1.36, EL/BH average: 1.41); median lobe 1.30 x as long as apodemes, lateral edges not connate dorsally, evenly narrowed anteriorly, apex acute. .... *C. grebennikovi* **sp. n.**
- 5 Epifrons very narrow, parallel-sided, at level of antennal articulation 2 x narrower than vertex; eyes smaller [FW/ELD: 1.00–1.07 (1.03)]; metatibiae indistinctly serrate or without teeth on interior edge; 2nd ventrite 1.5 x as long as 3rd one; apex of median lobe acute, strongly laterally compressed ..... *C. bellus* (Faust)
- Epifrons wider, at the level of antennal articulation 1.8 x narrower than vertex; eyes larger [FW/ELD: 0.67–0.87 (0.80)]; metatibiae with large teeth on interior edge; 2nd ventrite 2 x as long as 3rd one; apex of median lobe narrowly rounded, not flattened ..... *C. weisei* **sp. n.**

### Key to species of *Sphrigodellus*

- 1 Striped pattern on elytra more or less developed ..... 2
- Striped pattern on elytra absent ..... 10
- 2 Pro- and mesotibiae strongly curved; elytral intervals 3 and 5 densely setose; temples with longitudinal callosity ..... 3
- Pro- and mesotibiae straight; elytral intervals 3 and 5 sparsely setose or without setae; temples without longitudinal callosity ..... 4
- 3 Subocular row consists of 2–4 setae; anterior fringe distinct; basisternum squamose; antennal scape squamose; rostrum as long as wide or weakly elongate [RL/RW: 1.06–1.24 (1.12)]; antennal funicle robust: funicular segments 5–7 as long as wide; club egg-shaped; median lobe 0.7 x as long as apodemes, distinctly tubular; sharply narrowed apically in apical 1/4; apex narrowly rounded, almost acute; spermatheca with slender collum slender 2 x as long as ramus ..... *S. minutus* **sp. n.**
- Subocular row consists of 4–6 setae; anterior fringe indistinct; basisternum bare; antennal scape setose, without scales; rostrum strongly elongate [RL/RW: 1.20–1.33 (1.27)]; antennal funicle slender: funicular segments 5–7 oblong; club spindle-shaped; median lobe 1.30 x longer than apodemes, flattened dorso-ventrally, not tubular, evenly narrowed apically in apical 1/3; apex broadly rounded, dorso-ventrally slightly convex; spermatheca with slender collum 0.5 x as long as ramus ..... *S. parecola* **sp. n.**
- 4 Striped pattern on elytra unclear ..... 5
- Striped pattern on elytra distinct ..... 6
- 5 Head, sides of pronotum, and elytral interval 1 entirely brown or grayish-brown; epifrons sides with row of rather erect scales; elytral intervals 2, 4, 6 with distinct row of setae; intervals 1, 3, 5, 7–10 without setae; antennal funicle without scales; rostrum with 6 epistomal setae; anterior setal fringe consists of 8 (4+4) suberect setae; epifrons at the level of antennal articulation 1.66 x as wide as vertex; antennal scape sharply widened apically; funicular segments 6–7 as long as wide; FW/ELD average: 1.50; median lobe as long as apodeme; shape of aggonopodium (Fig. 144) ..... *S. lepidus* (Marshall)
- Head, sides of pronotum, and 1st interval of elytra with green scales; epifrons sides with row of rather erect scales; elytral intervals 1–6 with distinct row of setae; intervals 1, 3, 5 with sparse setal row; antennal funicle (1st or 1st–2nd segments) with scales; rostrum with 8–10 epistomal setae; anterior setal fringe consists of 12 (4+2+2+4) suberect setae; epifrons at the level of antennal articulation 1.5 x as wide as vertex; antennal scape evenly widened apically; funicular segments 6–7 1.5 x as long as wide; FW/ELD average: 1.14; median lobe 0.7 x as long as apodeme; shape of aggonopodium (figs 161, 162) ..... *S. usambaricus* **sp. n.**
- 6 Scape setose; setae erect and thin, piliform ..... 7
- Scape squamose; setae suberect or subrecumbent and broad, narrowly-lanceolate ..... 8
- 7 Subocular row consists of 4–6 setae; suberect setae short (up to a third of interval width); rostrum weakly elongate [RL/RW: 1.11–1.22 (1.17)]; eyes highest at middle; pronotal disc flat longitudinally and slightly convex transversally; male elytra oval [EL/EW: 1.31–1.41 (1.38)]; tarsomere 2 transverse, 1.5 x as wide as length; median lobe slightly constricted in apical 1/3 and sharply narrowed apically; apex narrowly rounded, dorso-ventrally slightly convex; lateral edges of median lobe fused, form longitudinal convexity through entire length; preputial opening cordate ..... *S. gusarovi* **sp. n.**
- Subocular row consists of 6–8 setae; elytral setae long (half as long as interval width); rostrum strongly elongate [RL/RW: 1.24–1.39 (1.34)]; eyes highest posteriorly; pronotal disc strongly convex longitudinally and transversally; male elytra oblong-oval [EL/EW m: 1.53–1.56 (1.54)]; tarsomere 2 as long as wide; median lobe parallel-sided (not constricted), in apical 1/4 evenly narrowed anteriorly; apex dorso-ventrally slightly flattened; lateral edges of median lobe partly fused, form longitudinal convexity in basal half; preputial opening oblong-ovate ..... *S. nasutus* **sp. n.**

- 8 Green scales broadly present in body pattern, elytral interval 1 green; elytra oval, weakly convex at the disc; submentum not protruding (see in dorsal aspect); female tergite 8 with straight or divided setal fringe (figs 145, 169) ..... 9
- Green scales absent in body pattern, elytral interval 1 grey; elytra almost globose, strongly convex at sides and at the disc; submentum protruding (see in dorsal aspect, Fig. 331); female tergite 8 with bunch-shaped setal fringe (Fig. 340) ..... *S. lineatus* **sp. n.**
- 9 Smaller (BL: 2.15–3.00 mm); anterior half of elytra with long suberect setae (as long as interval width), posterior declivity with extremely long erect setae (1.5 x as long as interval width); epifrons with distinct median carina (normally concealed by dense scaling); anterior portion of epifrons without median sulcus; aggonopodium with narrow lobes; subscutellar callosity reaches 2nd interval, bears 2 tiny tubercles. .... *S. kwamkoroensis* **sp. n.**
- Larger (BL: 3.40–4.05 mm); anterior half of elytra with short suberect setae (0.5 x as long as interval width), posterior declivity with long erect setae (as long as interval width); epifrons without median carina; anterior portion of epifrons with thin median sulcus; aggonopodium with broad lobes; subscutellar callosity reaches 3rd interval, with 6 tiny tubercles ..... *S. nguruensis* **sp. n.**
- 10 Body with marble patter; elytra without transverse bend on posterior declivity; scales on antennal scape overlapping; basisternum densely squamose; epistome with 2 or 4 setae ..... 11
- Body with uniform coloration, if marble rarely developed then elytra with lateral spots and transverse bend on posterior declivity, setae at declivity much longer than at disc, basisternum bare, abdomen with scattered scaling; scales on antennal scape scattered, not overlapping; basisternum bare or poorly squamose; epistome with 6 setae. .... 13
- 11 Elytra globose, with 2 large dark spots at the disc; epistome with 4 setae; funicle squamose; scape shorter, reaches apical 1/3 of pronotum; 5th–7th funicular segments as long as wide; club egg-shaped; larger (BL: 3.80–4.56 mm) ... *S. centralis* (Hustache)
- Elytra ovate, without large dark spots at the disc; epistome with 2 setae; funicle without scales; scape longer, reaches the middle of pronotum; 5th–7th funicular segments oblong; club spindle-shaped; smaller (BL: 2.43–3.70 mm) ..... 12
- 12 Elytral intervals with weakly visible erect setae; rostrum oblong [RL/RW: 1.18–1.26 (1.22)]; transverse sulcus invisible; eyes small [FW/ELD: 0.83–1.03 (0.92)]; pronotal disc flat; subscutellar callosity distinct, with 2 tiny tubercles; male metatibiae in distal 1/3, weakly serrate; male 5th ventrite flat, without depression near the apex, apical edge broadly rounded; median lobe without thin dorsal carina; aggonopodium consists of two C-shaped lobes ..... *S. viridegriseus* **sp. n.**
- Elytral intervals with erect setae distinctly visible at declivity; rostrum as long as wide; transverse sulcus distinctly visible; eyes large [FW/ELD: 1.07–1.36 (1.21)]; pronotal disc slightly convex transversally; subscutellar callosity concealed by scales, tubercles not developed; male metatibiae in distal 1/3, strongly serrate; male 5th ventrite with depression near the apex, apical edge truncate; median lobe with thin dorsal carina; aggonopodium consists of two stick-shaped curved lobes connected proximally by transverse bridge ..... *S. kiverengei* **sp. n.**
- 13 Eyes highest posteriorly; antennal scape with suberect setae; funicular segment 2 less oblong, 2 x as long as wide, shorter than 3rd and 4th together; subscutellar callosity with 2 tiny tubercles or tubercles vestigial; median lobe as long as apodemes ... 14
- Eyes highest at middle; antennal scape with subrecumbent setae; funicular segment 2 strongly oblong, 3 x as long as wide, and as long as 3rd and 4th together; subscutellar callosity with 4 and more tiny tubercles; median lobe 1.44 x as long as apodemes ..... *S. taitae* **sp. n.**
- 14 Smaller (BL: 2.74–3.00 mm); subocular row consists of 4–5 setae; anterior portion of epifrons with median sulcus; frontal fovea long; male metatibiae weakly serrate; male elytra oblong-oval; median lobe with apex sharply narrowed; spermatheca with collum shorter (Fig. 300) ..... *S. aberdarecola* **sp. n.**
- Larger (BL: 3.01–3.70 mm); subocular row consists of 7 setae; anterior portion of epifrons without median sulcus; frontal fovea short; male metatibiae distinctly serrate; male elytra oval; median lobe in apical 1/3 evenly narrowed anteriorly; spermatheca with collum longer (Fig. 314) ..... *S. sundi* **sp. n.**

## Key to species of *Oncophyes*

- 1 Elytral interval 1 with row of setae; elytra background scaling with brown stripes at the elytral intervals 2 and 4; green scales absent; ventral side cupreous; vertex narrower [FW/ELD average: 0.77]; funicular segments 3–7 less oblong (3rd—1.5 x, 7th—1.1 x as long as wide); subscutellar callosity oblong, weakly convex ..... *O. amoenus* (Hartmann)
- Elytral interval 1 without row of setae; elytra background scaling cupreous with dark-cupreous stripes at the elytral intervals 2 and 4, occasionally 1st and 7th intervals green; ventral side cupreous or whitish-cupreous with scattered greenish scales; vertex wider [FW/ELD average: 0.81]; funicular segments 3–7 rather oblong (3rd—1.54 x, 7th—1.25 x as long as wide); subscutellar callosity oblong-egg-shaped, strongly convex ..... *O. cadoderoides* **sp. n.**

## *Cadoderus* Marshall

Marshall, 1926: 249. Type species: *Ellimenistes bellus* Faust, 1896, by original designation.

**Diagnosis.** Very similar to *Sphrigodellus* Marshall, differs from it in following characters: subocular row consists of 2–3 (rarely 4–6) setae; basisternum, mesobasisternum and pro- and mesocoxae covered with plumose setae; epistome broadly arcuate, U-shaped or triangular, convex, delimited by strong carina or not; pronotum without

anterior transverse setal fringe; posterior setal fringe consists of plumose setae, not hidden by posterior edge of pronotum; ventrites densely squamose; antennifers entirely visible in dorsal view; frons not declivous; funicular segment 1 as long as 2<sup>nd</sup>; pronotum strongly transverse [PL/PW: 0.71–0.87]; aggonopodium consisting of two stick-shaped symmetrical lobes connected proximally by transverse bridge and long, slender ventral processes.

#### Redescription.

**Measurements.** BL: 2.79–4.11 mm, BW: 1.30–2.22 mm, BH: 1.20–1.74 mm.

**Vestiture.** Body densely covered with overlapping or serried round scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 2–3 (4–6) setae. Temples with or without broad, bare stripe. Subgenae and genae sparsely squamose. Pronotum without anterior setal fringe. Elytral intervals 1–6 (7) with distinct row of setae. Anterior half of elytra with rather short suberect setae (half to third as long as interval width), posterior declivity with rather long, strongly erect, thick, acute or truncate spatulate setae (0.5 x or as long as interval width). Mesepimera bare or partly squamose. Basisternum, mesobasisternum, pro- and mesocoxae covered with plumose setae. Ventrites densely squamose. Scape setose and densely squamose or without scales (*C. mysticus*); scales (if present) round; setae long, slender, acute, erect or suberect. Funicle setose, segments 1–3 with elongate scales or without scales (*C. grebennikovi*, *C. mysticus*); setae suberect, as long as funicular segment 7. Club densely tomentose. Femora and tibiae external and internal surfaces covered with overlapping or serried scales and suberect or subrecumbent setae; setae slender, acute. Male metatibiae with more or less developed grooming brush; setae short or long. Tarsi setose and squamose or only setose (in *C. mysticus*).

**Coloration.** Integument of body brown to deep-brown, of legs deep-brown. Background scaling deep-brown or brownish-olivaceous; striped pattern formed by green and cupreous scales, dark and pale scales with slight pearly shine. Head with green stripes around eyes and antennal sockets, anterior portion of epifrons green; pronotum with 3 cupreous stripes. Elytra background scaling deep-brown, occasionally with pale transverse band on posterior declivity and scattered deep-brown unclear spots on intervals 1, 2, 4, 6 (*C. mysticus*); intervals 1, (3, 5), 7(9)–11 green (green scales occasionally scattered: *C. mysticus*). Stripes on 3 and 5 (if present) interrupted, intervals 2, 4, 6 occasionally (*C. grebennikovi*) with scattered green scales. Ventral side of head and pronotum green or grey (*C. mysticus*), meso- and metapleura green, meso- and metanotum and abdomen cupreous. Femora brown-cupreous to brown, proximal portion and ventral surface with green scales, middle portion occasionally with oblique deep-brown or cupreous bands. Tibiae external surface cupreous, brownish-cupreous or grayish-cupreous.

**Head.** Rostrum elongate or weakly elongate [RL/RW: 1.11–1.31], parallel-sided. Pterygia not or weakly (*C. mysticus*) extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers entirely visible in dorsal view. Lateral carinae convex or weakly convex (*C. mysticus*). Epifrons very narrow, parallel-sided, at the level of antennal articulation 1.8–2.0 x narrower than vertex, distinctly sloping at sides, with convex median carina. Transverse sulcus deep, slightly or not concealed (*C. mysticus*) by dense scaling dorsally and laterally. Anterior portion of epifrons not steep, without median sulcus. Frons horizontal, glabrous, bare, with 4 frontal setae. Epistome broadly U-shaped or triangular, convex, generally delimited by narrow carina, bearing 2 epistomal setae; rarely (*C. mysticus*) epistome not delimited by carina, fused with frons in fronto-epistome, triangular or U-shaped, strongly convex, bare, coarsely punctate, its posterior margin reaches the antennal articulation level. Prementum with 2 setae. Eyes orbicular, large, sublateral, moderately convex, highest at the middle [FW/ELD: 0.67–1.07]. Vertex broad (occasionally in males narrow), flat. Frontal fovea deep, furrow-shaped, concealed or not concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, evenly curved and widened distally. Funicular segment 1 as long as 2<sup>nd</sup> or  $\approx 1.5$  x as long as 2<sup>nd</sup> (*C. mysticus*), funicular segments 3–7 oblong. Club broadly-spindle-shaped.

**Thorax.** Pronotum strongly transverse, evenly slightly convex at sides, more or less constricted at apex, widest at middle or in posterior half [PL/PW: 0.71–0.87]. Disc weakly convex, occasionally with 2 shallow sublateral depressions. Posterior setal fringe consists of round plumose setae, not hidden by posterior edge of pronotum. Tergosternal sutures complete or obsolete (*C. mysticus*). Metanepisternal suture obsolete posteriorly.

**Elytra.** Oval to broadly oval or cordate (*C. mysticus*) [EL/EW 1.00–1.37], anterior edge arcuate, abrupt or not steep, narrowly rounded or acute; disc strongly convex [EL/BH: 1.38–1.61]. Subscutellar callosities hidden by scales, with 2 tiny tubercles. Intervals flat. Anterior portion of striae 1 with regular row of tiny tubercles.

**Legs.** Femora unarmed, clavate, swollen in middle. Protibiae and mesotibiae curved or straight, not widened at the apex; interior edge arcuate, without teeth in distal portion. Metatibiae interior edge finely serrate. Mucro well

developed, thorn-shaped, acute. Setal comb of protibiae consists of 9–10 black setae not extending beyond external edge of tibiae; bevel of metatibiae narrow, surface bare. Tarsi robust; setose pelma well developed; tarsomere 2 triangular, 1.5 x as long as wide; 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one. Claws connate in basal half.

**Abdomen.** 1st and 2nd ventrites fused but with distinct immovable suture. Posterior margin of 1st ventrite straight. 2nd ventrite 1.5–2 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female weakly convex near the apex; apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, tubular, in apical third evenly narrowed anteriorly; apex attenuate, acute, strongly laterally compressed; body 0.7–1.3 x as long as apodemes. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped symmetrical lobes connected proximally by transverse bridge and long, slender ventral process. Ostium triangular, moderately sclerotized or absent. Ligulae membranous (transparent) or heavily sclerotized. Tegmen with long parameres, fused at base, basal piece narrow, apodeme 0.75–0.50 x as long as apodemes of median lobe.

**Female genitalia.** Coxites heavily sclerotized, dorso-ventrally curved, with or without (*C. mysticus*) heavily sclerotized dorsal baculi, evenly covered with pores, without sensilla. Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with short broad ramus, collum. Corpus large, slightly swollen. cornu thick, extended or not extended (*C. mysticus*) beyond corpus. Tergite 8 subtrapezoid, with curved fringe of multiple, tenuous, short setae at the apex; connecting membrane without sclerotized fields. Sternite 8 thick. Lamella sharply narrowed and acute without setae, knife-shaped, heavily sclerotized; apodeme thick; caput small.

### *Cadoderus bellus* (Faust)

(figs 1, 2, 52–63, 365, 368)

*Ellimenistes bellus* Faust, 1896: 121.

*Cadoderus bellus*. Marshall, 1926: 249, 1940: 40.

**Diagnosis.** Similar to *C. weisei* sp. n. and *C. grebennikovi* sp. n.; differs by funicular segments 1–3 occasionally covered with elongate scales or setae, epifrons very narrow, parallel-sided, at level of antennal articulation 2 x narrower than vertex, eyes smaller [FW/ELD: 1.00–1.07 (1.03), in *C. weisei* 0.67–0.87 (0.80)], metatibiae indistinctly serrate or without teeth on interior edge, 2nd ventrite 1.5 x as long as 3rd one; apex of median lobe acute, strongly laterally compressed. From *C. grebennikovi* it differs by subocular row consisting of 3–4 (rarely 2) setae (4–6 in *C. grebennikovi*), metatibiae with small grooming brush of short pale setae; pronotum with brown background and 5 longitudinal (1 discal, 2 dorso-lateral, 2 lateral) light brown stripes, rostrum strongly elongate [RL/RW average: 1.21, in *C. grebennikovi* 1.15], lateral carinae broadly weakly convex, eyes larger [FW/ELD: 1.00–1.07 (1.03), 1.14–1.43 (1.30) in *C. grebennikovi*], median lobe shorter than apodemes, apex of median lobe with dorsal process, aggonopodium longer. (figs 59, 97)

### **Redescription.**

**Measurements.** BL: 3.44–3.60 (3.52) mm; BW: 1.60–1.90 (1.75) mm; BH: 1.50–1.74 (1.62) mm.

**Vestiture.** Body densely covered only with overlapping, round scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 3–4 setae. Posterior setal fringe consists of round, plumose, recumbent setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–7 with distinct row of setae. Anterior half of elytra with rather short suberect setae (half as long as interval width), posterior declivity with rather long, strongly erect, thick, acute or truncate spatulate setae (as long as interval width). Ventrites densely squamose. Antennal scape setose and densely squamose; scales round; setae long, slender, acute, and erect. Funicle setose; funicular segments 1–3 with elongate scales. Male metatibiae with small grooming brush; hairs short. Tarsi setose and squamose.

**Coloration.** Background scaling deep-brown; striped pattern formed by green and cupreous scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface brown, with green stripes around eyes and antennal sockets; anterior portion of epifrons green. Pronotum with deep-brown background scaling and 3 elongate cupreous stripes. Elytra background scaling deep-brown. Intervals 1, 7–11 green. Ventral side of head and pronotum green, meso- and metanotum cupreous. Femora brown-cupreous, proximal portion and ventral surface with green scales. Tibiae external surface cupreous.

**Head.** Rostrum weakly elongate to elongate [RL/RW: 1.11–1.32 (1.21)], parallel-sided. Pterygia not extended beyond contour of rostrum. Lateral carinae broadly weakly convex. Epifrons very narrow, parallel-sided, at the level of antennal articulation 2 x narrower than vertex, distinctly sloping at sides, with convex median carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons not steep, without median sulcus. Frons not declivous, glabrous, bare. Epistome convex, broad U-shaped, delimited by narrow carina. Eyes large, orbicular, sublateral, moderately convex, highest at the middle [FW/ELD: 1.00–1.07 (1.03)]. Vertex in male narrow, in female broad, flat. Frontal fovea concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, evenly curved and widened. Funicular segment 1 as long as 2nd; 3rd–7th oblong.

**Thorax.** Pronotum strongly transverse, evenly slightly convex at sides, slightly constricted at apex, widest at middle [PL/PW: 0.78–0.87 (0.83)]. Disc weakly convex longitudinally and transversally. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Oval to broadly oval [EL/EW: 1.26–1.37 (1.32)], anterior edge arcuate, vertical, narrowly rounded; disc strongly convex [EL/BH: 1.38–1.47 (1.42)]. Subscutellar callosity hidden by scales, with 2 tiny tubercles. Anterior declivity with regular row of tiny tubercles along the 1st striae.

**Legs.** Protibiae and mesotibiae moderately curved, not widened at the apex. Interior edge C-shaped, without teeth in distal portion. Metatibiae with small teeth on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 9–10 black setae not extending beyond external edge of tibiae. Bevel of metatibiae narrow; its surface bare. Tarsi robust; tarsomere 2 triangular, 1.5 x as long as wide; 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female weakly convex near the apex; apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, tubular, in apical 1/3 evenly narrowed anteriorly; apex attenuate, acute, strongly laterally compressed; 0.7 x as long as apodemes. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped symmetrical lobes connected proximally by transverse bridge and long ventral slender process. Ostium triangular, moderately sclerotized. Ligulae membranous. Parameres long, fused in base, basal piece of tegmen narrow, tegminal apodeme 0.5 x as long as apodemes of median lobe.

**Female genitalia.** Coxites heavily sclerotized dorso-ventrally curved, with heavily sclerotized dorsal baculi, evenly covered with pores, without sensilla. Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with short broad ramus, collum slender, as long as ramus; Corpus large, slightly swollen. cornus thick, extended beyond corpus. Tergite 8 subtrapezoid, with curved fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick; caput small.

**Distribution.** Tanzania: East Usambara Mountains (figs 365, 368).

**Bionomics.** Submontane and lowland rain forests; 500–1300 m a.s.l. Trees and shrubs, canopy.

**Type material.** Tanzania: Holotype, ♂ (MTD) “Tanga / Hartmann”, “bellus / Faust”, “Type” [red], “coll. E. Faust / Ankauf 1900”, “Staatl. Museum für Tierkunde Dresden”.

**Material examined.** Tanzania: 1♂ (ZMUC) Tanga reg., Kambai Forest Reserve, S4 59 E 38 41, Jan.–March.1996 “Frontier Tanzania” ZMUC; 5♂, 1♀ (ZMUN) TZ-11-103, Tanga Reg., East Usambara Mts., Amani Nature Reserve: Amani East Forest, S5 05.913 E38 38.729 h = 529 m, lowland rain forest, beating, N.N. Yunakov leg., 26.v.2011; 40♂, 31♀ (ZMUN) TZ11-108, Tanga Reg., East Usambara Mts., Amani Nature Reserve: Kwamkoro Forest, S5° 08.098' E38° 37.334' h = 869 m, submontane rain forest, beating, N.N. Yunakov leg., 27.v.2011; 1♂ (ZMUN) TZ-11-109, Tanga Reg., East Usambara Mts., Amani Nature Reserve: Kwamkoro Forest, S5° 08.034' E38° 37.286' h = 863 m, submontane rain forest, beating, N.N. Yunakov leg., 27.v.2011. 1♂ (BMNH) Usambara Mts. / Amani / coll. A.H. Ritchie”, “taken by beating / Coffee foliage”; 1♂ (BMNH) Tanganyika Ty / Amani ii.21 / coll. A.H. Ritchie”; 1♀ (BMNH) Tanganyika / Amani / 27.x.1935”, “N.L.H. Krauss/ B.M. 1952-388”; 1♀ (BMNH) idem 3.xii.1935; 1♀ (BMNH) idem 25.xi.1935; Amani / G.E.A. / Dr. Morstatt”, G.A.K. Marshall / Coll. / B.M. 1950-255.; 3♂, 4♀, (MNHN) Tanga, Afrique Orientale / Usambara Derema / L. Conradt / 1891, Museum Paris / 1905; 1♂, 7♀, (MNHN) Tanga, Derema / Usambara / vii-xii - 1891, Museum Paris / ex coll. R. Oberthür.



***Cadoderus weisei* Yunakov, sp. n.**

(figs 64–75, 365, 368)

**Diagnosis.** Very similar to *C. bellus*, differs from it by funicular segments 1–3 without scales; epifrons wider, at the level of antennal articulation 1.8 x narrower than vertex; eyes larger [FW/ELD: 0.67–0.87 (0.8)]; metatibiae with large teeth on interior edge; 2nd ventrite 2 x as long as 3rd one; apex of median lobe narrowly rounded, not flattened.

**Description.**

**Measurements.** BL: 2.79–3.22 (2.97) mm, BW: 1.34–1.66 (1.44) mm, BH: 1.20–1.52 (1.35) mm.

**Vestiture.** Body densely covered only with overlapping, round scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 3 setae. Elytral intervals 1–7 with distinct row of setae. Anterior half of elytra with rather short suberect setae (half as long as interval width), posterior declivity with rather long, strongly erect, thick, acute or truncate spatulate setae (as long as interval width). Ventrites densely squamose. Antennal scape setose and densely squamose; scales round; setae long, slender, acute, and erect. Funicle setose, funicular segments 1–3 with elongate scales. Male metatibiae with small grooming brush; hairs short. Tarsi setose and squamose.

**Coloration.** Background scaling deep-brown; striped pattern formed by green and cupreous scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface brown, with green stripes around eyes and antennal sockets; anterior portion of epifrons green. Pronotum with deep-brown background scaling and 3 elongate cupreous stripes. Elytra background scaling deep-brown. Intervals 1, 7–11 green. Ventral side of head and pronotum green, meso- and metanotum cupreous. Femora brown-cupreous, proximal portion and ventral surface with green scales. Tibiae external surface cupreous.

**Head.** Rostrum weakly elongate [RL/RW: 1.14–1.17 (1.16)], parallel-sided. Pterygia not extended beyond contour of rostrum. Lateral carinae broadly weakly convex. Epifrons very narrow, parallel-sided, at the level of antennal articulation 2 x narrower than vertex, distinctly sloping at sides, with convex median carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons not steep, without median sulcus. Frons horizontal, glabrous, bare. Epistome convex, broad U-shaped, delimited by narrow carina. Eyes large, orbicular, sublateral, moderately convex, highest at the middle [FW/ELD: 0.67–0.87 (0.80)]. Vertex broad, flat. Frontal fovea concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, evenly curved and widened. 1st funicular segment as long as 2nd 3rd–7th oblong.

**Thorax.** Pronotum strongly transverse [PL/PW: 0.79–0.84 (0.81)], evenly slightly convex at sides, constricted at apex, widest at middle. Disc weakly convex longitudinally and transversally. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Broadly-ovate [EL/EW: 1.26–1.34 (1.31)], anterior edge arcuate, vertical, narrowly rounded; disc strongly convex [EL/BH: 1.38–1.50 (1.44)]. Subscutellar callosity hidden by scales, with 2 tiny tubercles. Intervals flat. Anterior portion of 1st striae with regular row of tiny tubercles.

**Legs.** Protibiae and mesotibiae curved, not widened at the apex. Interior edge C-shaped without teeth in distal portion. Metatibiae with small teeth on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 9–10 black setae not extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed; its surface bare. Tarsi robust; tarsomere 2 elongate, 1.5 x as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 2 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female weakly convex near the apex; apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, tubular, in apical 1/3 evenly narrowed anteriorly; apex attenuate, narrowly rounded; 0.7 x as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped symmetrical lobes connected proximally by transverse bridge and long ventral slender process. Ostium triangular, moderately sclerotized. Ligulae membranous. Parameres long, fused in base, basal piece of tegmen narrow, tegmental apodeme 0.5 x as long as apodemes of median lobe.

**Female genitalia.** Coxites heavily sclerotized dorso-ventrally curved, with heavily sclerotized dorsal baculi, evenly covered with pores, without sensilla. Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with short broad ramus, collum slender, as long as ramus. Corpus large, slightly swollen.

cornus thick, extended beyond corpus. Tergite 8 subtrapezoid, with curved fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized; apodeme thick; caput small.

**Distribution.** Tanzania: West Usambara Mountains (Kwai) (Figs 365, 368).

**Bionomics.** Unknown.

**Material examined.** Tanzania: Holotype, ♂, dissected (MTD) “Kwai, Weise”; Paratypes. 1♂, 1♀, (MTD) labeled as holotype; 1♀ (DEI) “Usambara”; “Ellimenistes/ bellus Fst.; “coll. Pape”; “Cadoderus/ bellus Fst./ Hustache det.”

**Etymology.** The name is dedicated to the collector Paul Weise, a son of famous German coleopterologist Julius Weise, in recognition of his contribution to the knowledge of beetles of the Usambara Mountains.

### ***Cadoderus burundi* Yunakov, sp.n.**

(figs 9, 10, 76–87, 365)

**Diagnosis.** This species is very similar to *C. olivaceus* sp. n. and *C. grebennikovi* sp. n.; differs by very short erect setae on elytral intervals: anterior declivity with setae up to a third of interval width (in *C. olivaceus* sp. n. and *C. grebennikovi* sp. n.—0.5). From *C. bellus* it differs by setae of elytral intervals 1–6 subrecumbent and very short (a third to half as long as interval width); genae bare, with oblique stripes of green scales; background coloration of body dorsal surface brownish-olivaceous; pale stripes of elytral intervals 2 and 4 interrupted at disk; eyes smaller and strongly convex [FW/ELD: 1.36–1.5 (1.43)].

#### **Description.**

**Measurements.** BL: 3.55–3.92 (3.69) mm; BW: 1.87–1.97 (1.93) mm; BH: 1.62–1.82 (1.73) mm.

**Vestiture.** Body densely covered only with overlapping, round scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 4 setae. Temples with broad bare stripe. Elytral intervals 1–6 with distinct row of subrecumbent setae. Anterior half of elytra with rather short setae (one third as long as interval width), posterior declivity with rather long, erect, thick, truncate spatulate setae (half as long as interval width). Genae bare, with oblique green stripes, occasionally densely squamulate. Ventrites densely squamose, anal ventrite with apical setal comb. Antennal scape setose and densely squamose; scales round; setae long, slender, acute, and erect. Funicle setose, funicular segments 1–3 with elongate scales Metatibiae with small grooming brush; hairs short. Tarsi setose and squamose.

**Coloration.** Background scaling brownish-olivaceous; striped pattern formed by green and cupreous scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface brown, with green stripes around eyes and antennal sockets; temples, anterior portion of epifrons, and pterygia green. Pronotum with deep-brown background scaling and 3 longitudinal cupreous stripes (fused; sides with green scales. Elytra background scaling brown. Intervals 1, 5–7 (subdeclivital portion), 9–11 green. Discal portion of intervals 1–3 brown, declivital portion grayish-cupreous. Occasionally anterior portion of intervals 2–6 with alternate brown and gray striped pattern. Ventral side of head (except for hls-ptp callosity) and pronotum green, meso- and metapleura cupreous. Femora brown-cupreous, proximal portion and ventral surface with green scales. Tibiae external surface cupreous or greenish-cupreous.

**Head.** Rostrum weakly elongate to elongate [RL/RW: 1.11–1.22 (1.17)], parallel-sided. Pterygia not extended beyond contour of rostrum. Lateral carinae sparsely convex. Epifrons very narrow, parallel-sided, at the level of antennal articulation 2.8–3 x narrower than vertex, distinctly sloping at sides, with convex median carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons not steep, without median sulcus. Frons horizontal, glabrous, bare. Epistome convex, broadly arcuate, delimited by narrow carina. Eyes small, broadly oval, sublateral, strongly convex, highest at the middle [FW/ELD: 1.36–1.50 (1.43)]. Vertex broad, flat. Frontal fovea concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, evenly curved and widened. funicular segment 1 as long as 2nd; 3rd–7th oblong.

**Thorax.** Pronotum strongly transverse, evenly slightly convex at sides, constricted at apex, widest at middle [PL/PW: 0.80–0.81 (0.81)]. Disc weakly convex longitudinally and transversally. Tergosternal and Metanepisternal sutures concealed by scales. Metanepisternal suture obsolete posteriorly.

**Elytra.** Oval to broadly-oval [EL/EW: 1.20–1.33 (1.26)], anterior edge arcuate, vertical, narrowly rounded; disc strongly convex [EL/BH: 1.34–1.45 (1.41)]. Subscutellar callosity hidden by scales, with 2 tiny tubercles. Elytral intervals flat. Anterior portion of 1st striae with regular row of tiny tubercles.

**Legs.** Protibiae and mesotibiae moderately curved, not widened at the apex. Interior edge C-shaped, without teeth in distal portion. Metatibiae with small teeth on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 8–9 black setae not extending beyond external edge of tibiae; bevel of metatibiae narrowly enclosed; its surface bare. Tarsi robust; tarsomere 2 triangular, 1.5 x as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite weakly convex near the apex; apical edge acute.

**Male genitalia.** Male unknown.

**Female genitalia.** Coxites heavily sclerotized dorso-ventrally curved, with heavily sclerotized dorsal baculi, evenly covered with pores, without sensilla. Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with oblong, thick ramus; collum slender, as long as ramus; corpus large, slightly swollen. cornus thick, extended beyond corpus. Tergite 8 subtrapezoid, with sparse arcuate setal fringe; setae tenuous, short. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick; caput small.

**Distribution.** Burundi (Ruvube River) (Fig. 365).

**Bionomics.** Unknown.

**Material examined.** Burundi: Holotype, ♀, dissected (TAU) “102673 BURUNDI / Muyinga Province, / Ruvube Nat. Park / 2° 59'S 30° 28'E / 1350m 31.i.2011/ A. Freidberg”. Paratypes 2♀, (TAU, ZMUN) labeled as holotype, 1 female dissected.

**Etymology.** The name is a noun and refers to the Burundi, a country in Central Africa, where this species occurs.

### ***Cadoderus grebennikovi* Yunakov, sp. n.**

(figs 5–6, 88–101, 365)

**Diagnosis.** Similar to *C. bellus* and *C. olivaceus* sp. n. From *C. bellus* this new species differs by subocular row consisting of 4–6 setae (in *C. bellus* 3–4 (rarely 2) setae); metatibiae with large grooming brush; hairs long; pronotum with deep-brown background and 5 longitudinal (1 discal, 2 dorso-lateral 2 lateral) green stripes; rostrum weakly elongate [RL/RW average: 1.15; in *C. bellus*—1.21], lateral carinae broadly strongly convex; eyes smaller [FW/ELD: 1.14–1.43 (1.30)]; median lobe longer than apodeme; apex of median lobe without dorsal process; aggonopodium shorter. From *C. olivaceus* sp. n. and *C. burundi* sp. n. it differs by metatibial grooming brush consisting of long hairs; background color of body vestiture deep-brown, strongly developed green striation of pronotum and elytra; pronotum rather transverse [PL/PW: 0.77–0.78 (0.775)].

#### **Description.**

**Measurements.** BL: 2.92–3.61 (3.30) mm, BW: 1.30–1.76 (1.58) mm, BH: 1.28–1.68 (1.51) mm.

**Vestiture.** Body densely covered only with overlapping, round scales, setose. Setae of head form oblique rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 4–6 setae. Temples with broad bare stripe. Posterior setal fringe consists of round, recumbent, plumose setae, not hidden by posterior edge of pronotum. Elytral intervals 1–6 with distinct row of setae. Anterior half of elytra with rather short suberect setae (half as long as interval width), posterior declivity with rather long, strongly erect, thick, acute or truncate spatulate setae (as long as interval width). Ventrites densely squamose, anal ventrite with apical setal comb. Antennal scape setose and densely squamose; scales round; setae long, slender, acute, and erect. Funicle setose, without scales. Metatibiae with large grooming brush; hairs long. Tarsi setose and squamose.

**Coloration.** Background scaling deep-brown; striped pattern formed by green scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface brown, with green stripes around eyes and antennal sockets; temples, anterior portion of epifrons, and pterygia green. Pronotum with deep-brown background scaling and 5 longitudinal (1 discal, 2 dorso-lateral 2 lateral) green stripes. Elytra background scaling deep-brown. Intervals 1, 3, 5, 7–11 green. Stripes on intervals 3 and 5 interrupted. Intervals 2, 4, 6 with scattered green scales. Genae, meso- and metapleura green; meso- and metasternum and abdomen cupreous. Femora brown-cupreous, middle portion with oblique deep-brown bands. Tibiae external surface grayish-cupreous.

**Head.** Rostrum weakly elongate [RL/RW: 1.13–1.19 (1.15)], parallel-sided. Pterygia not extended beyond contour of rostrum. Lateral carinae broadly strongly convex. Epifrons significantly narrowed from base to the level of antennal socket, than sharply sinuate, at the level of antennal articulation 2 x narrower than vertex, distinctly sloping at sides, with distinct median carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons not steep, without median sulcus. Frons not declivous, glabrous, bare. Epistome convex, broadly arcuate, delimited by narrow carina. Eyes sublateral, broadly oval, moderately convex, highest at the middle [FW/ELD: 1.14–1.43 (1.30)]. Vertex broad, flat. Frontal fovea concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, evenly curved and widened. Funicular segment 1 as long as 2nd; 3rd–7th oblong.

**Thorax.** Pronotum strongly transverse [PL/PW: 0.77–0.78 (0.78)], evenly slightly convex at sides, constricted at apex, widest at middle. Disc weakly convex longitudinally and transversally. Tergosternal suture concealed by scales. Metanepisternal suture concealed by scales, obsolete behind.

**Elytra.** Elytra broadly-ovate [EL/EW: 1.32–1.40 (1.36)], in male oval; anterior edge arcuate, vertical narrowly rounded; disc in male not convex, in female strongly convex [EL/BH: 1.40–1.43 (1.42)]. Subscutellar callosity interrupted, partly hidden by scales, with 2 tiny tubercles. Elytral intervals flat. Anterior portion of 1st striae with regular row of tiny tubercles.

**Legs.** Protibiae and mesotibiae strongly curved, not widened at the apex. Interior edge C-shaped, without teeth in distal portion. Metatibiae with small teeth. Mucro on meso- and metatibiae large, thorn-shaped, acute. Setal comb of protibiae consists of dense 10–14 black short setae weakly extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed; its surface bare. Tarsi robust; tarsomere 2 triangular, as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female weakly convex near the apex; apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, lateral edges not fused, not tubular, in apical 1/3 evenly narrowed anteriorly; apex attenuate, acute, strongly laterally compressed; 1.3 x as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped symmetrical lobes connected proximally by transverse bridge and long ventral thick process. Ostium absent. Ligulae sclerotized. Parameres long, fused in base, basal piece of tegmen narrow, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Coxites heavily sclerotized dorso-ventrally curved, with heavily sclerotized dorsal baculi, evenly covered with pores, without sensilla. Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with short broad ramus, collum slender, as long as ramus. Corpus large, slender; cornus thick, extended beyond corpus. Tergite 8 subtrapezoid, with curved fringe of tenuous multiple long setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick; caput small.

**Distribution.** Tanzania: Nguru Mountains (Fig. 365).

**Bionomics.** Montane rain forests.

**Material examined.** Tanzania: Holotype ♂, dissected (CNC) “Tanzania, Morogoro Reg., Nguru Mts. at Turani, h = 1236 m 06°06'24"S, 037°31'48"E, sifting05, V. Grebennikov leg., 03.XI.2010". Paratypes: 2 ♀ (CNC) labeled as holotype.

**Etymology.** The name is dedicated to the coleopterologist Vasily Grebennikov (CNC) in recognition of his contribution to the knowledge of weevils of the East Africa.

***Cadoderus olivaceus* Yunakov, sp. n.**  
(figs 7, 8, 102–113, 365)

**Diagnosis.** Similar to *C. grebennikovi* sp. n. and *C. bellus*. From *C. grebennikovi* sp. n. it differs by subocular row consisting of 4 setae; anterior and posterior elytral declivity with equally strongly erect setae; 2nd–3rd funicular segments with scattered scales; metatibiae with vestigial grooming brush; background scaling olivaceous; antennal funicle slender (1st funicular segment 1.42 x as long as 2nd; elytra rather broad and convex EL/EW average: 1.31,

EL/BH average: 1.50 (in *C. grebennikovi* sp. n.—1.36 and 1.42 respectively); median lobe tubular, in apical 1/3 sharply narrowed anteriorly, apex attenuate, narrowly rounded; 0.75 x as long as apodeme. From *C. bellus* this new species differs by absence of alternate striped pattern of elytral intervals 3–6; 1st funicular segment 1.42 x as long as 3rd; median lobe apex of median lobe without dorsal process; spermatheca with rather long ramus.

#### **Description.**

**Measurements.** BL: 2.86–3.57 (3.15) mm, BW: 1.45–1.87 (1.61) mm, BH: 1.30–1.62 (1.41) mm.

**Vestiture.** Body densely covered only with overlapping, round scales, setose. Setae of head form oblique rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 4 setae. Temples with broad bare stripe. Posterior setal fringe consists of round, recumbent, plumose setae, not hidden by posterior edge of pronotum. Elytral intervals 1–6 with distinct row of setae. Anterior and posterior declivity with equally strongly erect, acute or truncate spatulate setae. Anterior declivity with setae half as long as interval width, posterior declivity with rather long, with setae as long as interval width. Ventriles densely squamose, anal ventrite with apical setal comb. Antennal scape setose and densely squamose; scales round; setae long, slender, acute, and erect. Funicle setose, 2nd–3rd funicular segments with scattered scales. Metatibiae with vestigial grooming brush; hairs short and almost recumbent. Tarsi setose and scarcely squamose.

**Coloration.** Integument of body brown to deep-brown; limbs deep-brown. Background scaling olivaceous; striped pattern formed by green scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface olivaceous, with green stripes around eyes and antennal sockets; temples, anterior portion of epifrons, and pterygia green. Pronotum with 5 longitudinal green stripes. (1 discal and 2 dorso-lateral stripes narrow, pale; 2 lateral stripes broad and bright. Elytra background scaling olivaceous. Intervals 1, 5, 6 (posterior half), 7–11 green. Presutural stripes occasionally interrupted. Intervals 2 and 3 with green scales (at posterior declivity). Ventral side including genae, meso- and metapleura green; meso- and metasternum and abdomen green. Femora greyish-green, middle portion with oblique deep-grey-brown bands. Tibiae external surface grayish-cupreous.

**Head.** Rostrum weakly elongate [RL/RW: 1.16–1.20 (1.18)], parallel-sided. Pterygia not extended beyond contour of rostrum. Lateral carinae broadly strongly convex. Epifrons significantly narrowed from base to the level of antennal socket, than sharply sinuate, at the level of antennal articulation 2 x narrower than vertex, distinctly sloping at sides, with distinct median carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons not steep, without median sulcus. Frons not declivous, glabrous, bare. Epistome convex, broadly arcuate, delimited by narrow carina. Eyes sublateral, broadly oval, moderately convex, highest at the middle [FW/ELD: 1.18–1.25 (1.21)]. Vertex broad, flat. Frontal fovea concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, evenly curved and widened. 1st funicular segment 1.42 x as long as 2nd; 3rd–7th oblong. Club spindle-shaped.

**Thorax.** Pronotum strongly transverse [PL/PW: 0.82–0.83 (0.83)], evenly slightly convex at sides, constricted at apex, widest at middle. Disc weakly convex longitudinally and transversally. Tergosternal suture concealed by scales. Metanepisternal suture concealed by scales, obsolete behind.

**Elytra.** Elytra broadly-ovate [EL/EW: 1.27–1.34 (1.31)], in male oval; anterior edge arcuate, vertical narrowly rounded; disc in male not convex, in female strongly convex [EL/BH: 1.46–1.54 (1.5)]. Subscutellar callosity interrupted, partly hidden by scales, with 2 tiny tubercles. Elytral intervals flat. Anterior portion of 1st striae with regular row of tiny tubercles.

**Legs.** Protibiae and mesotibiae strongly curved, not widened at the apex. Interior edge C-shaped, without teeth in distal portion. Metatibiae with small teeth. Mucro on meso- and metatibiae large, thorn-shaped, acute. Setal comb of protibiae consists of dense 10–11 black or deep brown short setae not extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed; its surface bare. Tarsi robust; tarsomere 2 triangular, as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female weakly convex near the apex; apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, lateral edges not fused, tubular, in apical 1/3 sharply narrowed anteriorly; apex attenuate, narrowly rounded; 0.75 x as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped symmetrical lobes connected proximally by transverse bridge and long ventral thick process. Ostium absent. Ligulae heavily sclerotized. Parameres long, fused in base, basal piece of tegmen narrow, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Coxites heavily sclerotized dorso-ventrally curved, with heavily sclerotized dorsal baculi, evenly covered with pores, without sensilla. Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with oblong, thick ramus, collum slender, as long as ramus. Corpus large, slender; cornus thick, extended beyond corpus. Tergite 8 subtrapezoid, with curved fringe of tenuous multiple long setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick; caput small.

**Distribution.** Tanzania: Uzigua Forest; Nguru Mountains (Fig. 365).

**Bionomics.** Montane rain forests.

**Material examined.** Tanzania: Holotype male, dissected (MNHN) “Zanguebar / Mhonde Ouziguua / A. Hacquard Mis. ap. / 1879. 1ar Trim”, Museum Paris / ex. Coll. Oberthür / 1952”. Paratypes: 4♀, labeled as holotype, 1 female dissected; 1♀ (CNC) Morogoro Reg., Nguru Mts. at Turani, h = 1277 m 06°04'29"S, 037°32'19"E, sifting03, V. Grebennikov leg., 31.x.2010.

**Etymology.** The name is a Latin adjective meaning “olivaceous”.

### *Cadoderus mysticus* (Faust)

(figs 3, 4, 114–128, 365, 368)

*Ellimenistes mysticus* Faust, 1900 : 326, Lona (1937: 353). *Cadoderus mysticus*. Marshall (1952 : 263).

**Diagnosis.** Differs from all other species of the genus by antennal scape without scales; tarsi setose, without scales; elytra with pale transverse band on declivity and scattered deep-brown unclear spots on intervals 1, 2, 4, 6; green scales scattered; Ventral side of head and pronotum grey; transverse sulcus of rostrum not concealed by scales; epistome fused with frons in frontoepistome, not delimited by carina, coarsely punctate; tergosternal suture of mesothorax obsolete; elytra cordate; elytral disc weakly convex; apex of median lobe with dorsal tooth-shaped process; coxites heavily sclerotized, not curved dorso-ventrally, without heavily sclerotized dorsal baculi; cornus of spermatheca thick, not extended beyond corpus.

#### **Description.**

**Measurements.** BL f: 3.61–4.11 (3.91) mm, BW f: 1.90–2.22 (2.09) mm, BH f: 1.60–1.74 (1.68) mm.

**Vestiture.** Body densely covered with serried and feebly overlapping, round scales, setose. Subgenae and genae sparsely squamose. Temples with bare longitudinal field posteriorly of eyes. Setae of head slender forming rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 2–4 setae. Posterior setal fringe consists of round plumose setae, not hidden by posterior edge of pronotum. Elytral intervals 1–7 with distinct row of recumbent or subrecumbent slender setae (half as long as interval width). Ventriles sparsely squamose. Antennal scape and funicle sparsely setose; setae long, slender, acute, and suberect. Funicle setose, without scales. Femora and tibiae external and internal surfaces covered with serried scales and subrecumbent setae; setae on legs slender, acute. Male metatibiae with wide grooming brush; hairs long. Tarsi setose.

**Coloration.** Background scaling brown; spotted pattern formed by deep-brown, green and cupreous scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface brown without stripes. Subgenae and genae green. Pronotum with deep-brown background scaling and 3 longitudinal cupreous unclear stripes. Elytra background scaling brown. Interval 1, 9–11 with scattered green scales. Declivity with pale transverse band. Intervals 1, 2, 4, 6 with scattered deep-brown unclear spots, 7–11 green. Ventral side grey. Femora brown, metafemora in distal portion with oblique cupreous band. Tibiae external surface brownish-cupreous.

**Head.** Rostrum weakly elongate [RL/RW: 1.25–1.31 (1.27)], almost parallel-sided. Pterygia weakly extended beyond contour of rostrum. Lateral carinae weakly convex. Epifrons narrow, parallel-sided, at the level of antennal articulation 1.8 x narrower than vertex, distinctly sloping at sides, with convex median carina. Transverse sulcus deep, not concealed entirely by dense scaling at dorsal surface and at sides. Anterior portion of epifrons not steep, with distinct median sulcus. Epistome fused with frons in fronto-epistome, triangular or U-shaped, strongly convex, bare, coarsely punctate, its posterior margin reaches the antennal articulation level. Eyes large, orbicular, sublateral, moderately convex, highest at the middle [FW/ELD: 0.67–0.87 (0.80)]. Vertex narrow, flat. Frontal fovea deep, furrow-shaped, not concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, evenly curved and widened distally. Funicular segment 1 as long as 2nd; 3rd–7th oblong

**Thorax.** Pronotum strongly transverse [PL/PW: 0.71–0.73 (0.72)], evenly slightly convex at sides, constricted at apex, pronotum widest in posterior half. Disc weakly convex longitudinally and transversally, with 2 shallow sublateral depressions. Tergosternal suture obsolete. Metanepisternal suture obsolete.

**Elytra.** Cordate, anterior declivity arcuate, abrupt, sharpen; anterior portion of disc sharply sloped [EL/EW: 1.00–1.26 (1.15)]; disc slightly convex [EL/BH: 1.50–1.61 (1.56)]. Subscutellar callosity entirely hidden by scales, with 2 tiny tubercles. Elytral intervals flat. Anterior portion of 1st striae with regular row of tiny tubercles.

**Legs.** Protibiae and mesotibiae straight, not widened at the apex. Interior edge distinctly C-shaped, with small teeth in distal portion. Metatibiae with large teeth on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 12–14 black setae distinctly extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed; its surface bare. Tarsi robust; tarsomere 2 elongate, 1.5 x as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female strongly transversally depressed near the apex; apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, tubular, in apical 1/4 sharply narrowed anteriorly; apex attenuate, acute, strongly laterally compressed with distinct dorsal tooth, as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped symmetrical lobes connected proximally by transverse bridge and long proximal-ventral process. Ostium absent. Ligulae membranous heavily sclerotized. Parameres long, fused in base, basal piece of tegmen narrow, tegminal apodeme 0.5 x as long as apodemes of median lobe.

**Female genitalia.** Coxites heavily sclerotized, not curved dorso-ventrally, without heavily sclerotized dorsal baculi, evenly covered with pores, without sensilla. Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with short broad ramus, collum slender, as long as ramus. Corpus large, slightly swollen. cornus thick, not extended beyond corpus. Tergite 8 subtrapezoid, with straight fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick; caput small.

**Distribution.** Tanzania: West Usambara (Kwai) (figs 365, 368).

**Bionomics.** Unknown.

**Type material examined.** Lectotype female, here designated, dissected (MTD) gold square, “Kwai, Weise [handwritten]”/ “mysticus Faust, [handwritten]” /coll. J. Faust, Ankauf 1900 [blue, printed]/Typus [red, printed]/ LECTOTYPUS, *Ellimenistes mysticus* Fst., Dr. E. Haaf, 1961; “LECTOTYPUS/ *Ellimenistes/ mysticus* Fst./ Yunakov des., 2011”. Paralectotypes: 2♀ (MTD): gold square, “Kwai, Weise [handwritten]”/ “mysticus Faust, [handwritten]” /coll. J. Faust, Ankauf 1900 [blue, printed]/Typus [red, printed]/ PARATYPOID/ *Ellimenistes/ mysticus* Fst./ Dr. E. Haaf, 1961; “PARALECTOTYPUS/ *Ellimenistes/ mysticus* Fst./ Yunakov des., 2011”.

**Note.** Previous lectotype designation by E. Haaf was apparently not published.

**Additional material examined.** Tanzania: 1♂ (DEI) “Usambara”/ “coll. Pape”/ “*Cadoderus mysticus* Fst., Hustache det.”; 1♂ (DEI) “Usambara/ P. Weise”; “coll. Kraatz”.

## ***Sphrigodellus* Marshall**

Marshall, 1942: 19. Type species: *Barianus centralis* Hustache, 1929, by original designation.

**Diagnosis.** Very similar to *Cadoderus* Fst., differing from it in the following characters: subocular row consists of 5–8 (rarely 2) setae; basisternum sparsely squamose, mesobasisternum bare or entirely squamose (scales lepidiform); epistome linear, transverse, vestigial, delimited by hardly visible, narrow carina; pronotum with (rarely without) anterior transverse setal fringe; posterior setal fringe consists of spatulate setae, entirely or partly hidden by posterior edge of pronotum; ventrites with scattered scales and short hairs; antennifers half-visible; frons vertical; 1st funicular segment more or less longer than 2nd; pronotum transverse or as long as wide [PL/PW: 0.81–1.00]; aggonopodium consisting of two stick-shaped lobes connected proximally by transverse bridge, without ventral process.

## Redescription.

**Measurements.** BL: 1.94–4.56 mm, BW: 0.80–2.48 mm, BH: 0.76–2.08 mm.

**Vestiture.** Body densely covered with overlapping scales, setose. Scales round or oval, concave (with more or less distinct middle pit). Setae of head spatulate, forming rows above the eyes (erect); with or without rows along the lateral edges of epifrons. Subocular row consists of 5–8 (rarely 2) setae. Temples without broad bare stripe. Pronotum with (rarely without) anterior transverse setal fringe; number of setae significantly varies from 4 to 12. Posterior setal fringe consists of spatulate setae, entirely or partly hidden by posterior edge of pronotum. Elytral intervals 1–5 (6) with distinct setal row; or rows obsolete. Posterior declivity with much longer setae. Setae short to extremely long, erect, recumbent or subrecumbent (0.25–0.50 x (or 1.50 x) as long as an interval width). Ventral side covered with overlapping, round scales. Ventrites with scattered scales and short hairs. Basisternum sparsely squamose, mesobasisternum bare or entirely squamose (scales lepidiform). Antennal scape setose, squamose or without scales. Setae spatulate, recumbent, subrecumbent or erect. Funicle setose, with slender or spatulate scales (or without scales); setae slender, suberect, as long as or 1.5–1.7 x longer than funicular segment 7. Club densely tomentose. Femora and tibiae external surface covered with overlapping or serried scales and suberect setae, internal surface with sparse piliform scales and hairs (occasionally also densely squamose: *S. viridegriseus*), distal portion of tibiae internal surface without scales; setae on legs slender, acute. Male metatibiae with more or less developed grooming brush; hairs short. Tarsi setose or densely squamose.

**Coloration.** Integument of body brown, deep-brown or black, of legs deep-brown. Background scaling brown, deep-brown to gray; scales concave with slightly pronounced pearl shine; striped and maculate pattern formed by cupreous and green scales. Head, body and limbs with more or less pronounced striped or marmorate pattern, occasionally elytral disc with indistinct dark large spot (*S. centralis*); temples and articulation surface often covered with green scales. Pronotum usually with deep-brown background scaling and 3 (5) (1 discal, 2 (4) lateral) broad longitudinal cupreous stripes.

**Head.** Rostrum weakly elongate or as long as wide [RL/RW: 1.00–1.42], parallel-sided. Pterygia not or weakly extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Lateral carinae convex. Epifrons almost parallel-sided, at the level of antennal articulation 1.3–1.6 x narrower than vertex, distinctly sloping at sides, with more or less developed median sulcus. Transverse sulcus deep, more or less concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons steep or weakly sloped. Frons vertical, glabrous, bare, with 4 frontal setae. Epistome linear, transverse, vestigial, delimited by hardly visible, narrow carina, bears 4 (6–10) epistomal setae. Prementum with 2 setae (occasionally several small hairs may also be present). Mandibles with 3 setae. Eyes oval or orbicular, sublateral, strongly convex, highest at the middle or posteriorly [FW/ELD: 0.83–1.72]. Vertex flat, broad (occasionally narrow—*S. minutus*). Frontal fovea concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, straight or weakly evenly curved, thick or thin (evenly widened distally or clavate). Funicular segment 1 more or less longer than 2nd; segments 3 and 4 oblong; segments 5–7 moniliform or oblong. Club egg- or spindle-shaped.

**Thorax.** Pronotum transverse or as long as wide [PL/PW: 0.81–1.00], evenly slightly convex at sides, not constricted at anterior portion, widest at middle or anteriorly of the middle. Disc flat or convex. Posterior edge straight. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly or complete.

**Elytra.** Oval to broadly oval or globose (*S. centralis*), anterior declivity arcuate, abrupt, sharpen [EL/EW: 1.17–1.56]; disc in male weakly, in female strongly convex [EL/BH: 1.37–1.67]. Elytral intervals flat. Subscutellar callosity short, V shaped, reaches 2nd elytral interval, with 2–6 tiny tubercles.

**Legs.** Femora unarmed, clavate, swollen in middle part. Protibiae and mesotibiae curved or straight, not widened at the apex. Interior edge C-shaped, with or without teeth in distal portion. Meso- and metatibiae on interior edge with 1 tooth or serrate. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 7–8 black setae not extending beyond external edge of tibiae, partly hidden by spatulate setae. Bevel of metatibiae narrowly enclosed; its surface densely setose or bare. Tarsi robust; setose pelma well developed; tarsomere 2 triangular, as long as wide or 1.5 x wider than length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** 1st and 2nd ventrites fused but with distinct immovable suture. Posterior margin of 1st ventrite straight. 2nd ventrite 1.5–2 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female weakly convex near the apex; apical edge in male broadly rounded, in female acute.



**Male genitalia.** Aedeagus heavily sclerotized. Median lobe parallel-sided, tubular, in apical 1/3–1/5 sharply narrowed anteriorly; apex attenuate, narrowly rounded, dorso-ventrally slightly swollen; as long as or 0.7 x as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium stick-shaped, spatulate or oblong-ovate. Ligulae membranous, poorly-visible. Parameres absent, basal piece of tegmen very broad, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Coxites heavily sclerotized, strongly laterally depressed, with heavily sclerotized dorsal baculi, evenly covered with pores, without sensilla. Styli well developed, stick-shaped, bearing 3 setae. Spermatheca moderately sclerotized, ramus slender or thick, collum slender as long as or 2 x longer than ramus. Corpus small, slightly swollen or not swollen. Cornus thick, extended beyond corpus. Tergite 8 arcuate or triangular, with curved or straight setal fringe at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, straight, caput large or ill-defined.

### *Sphrigodellus lepidus* (Marshall)

(figs 31, 32, 129–147, 365)

*Cadoderus lepidus* Marshall, 1940: 39. *Sphrigodellus lepidus*. Marshall (1942: 19).

**Diagnosis.** This species is very similar to *S. usambaricus* sp. n., differs from it by absence of green scales on head, sides of pronotum, and 1st interval of elytra; epifrons sides with row of rather erect scales; elytral intervals 2, 4, 6 (in *S. usambaricus* sp. n.—1–6) with distinct row of setae; intervals 1, 3, 5, 7–10 without setae (in *S. usambaricus* intervals 1, 3, 5 with sparse setal row); antennal funicle without scales; rostrum with 6 (in *S. usambaricus* sp. n.—8–10) epistomal setae; anterior setal fringe consists of 8 (4+4) suberect setae (in *S. usambaricus* sp. n.—12 (4+2+2+4)); epifrons at the level of antennal articulation 1.66 x as wide as vertex (in *S. usambaricus* sp. n.—1.5 x); antennal scape sharply widened apically; funicular segments 6–7 as long as wide (in *S. usambaricus* sp. n.—1.5 x as long as wide); FW/ELD average: 1.50 (in *S. usambaricus* sp. n.—1.14); median lobe as long as apodeme (in *S. usambaricus* sp. n.—0.7 x shorter); shape of aggonopodium (fig. 144).

#### **Redescription.**

**Measurements.** BL: 2.82–3.75 (3.15), BW: 1.50–1.87 (1.61), BH: 1.25–1.60 (1.39).

**Vestiture.** Body densely covered with overlapping, round, concave scales; setose. Setae of head form rows along the epifrons sides (suberect) and above the eyes (erect). Subocular row consists of 5–6 setae. Anterior setal fringe consists of 8 (4+4) suberect setae. Setae of this row large, strongly differ from ones on pronotal disc. Elytral intervals 2, 4, 6 with distinct row of setae. In basal half of elytra with shorter and broader suberect setae, posterior declivity with long strongly erect narrow truncate setae. Intervals 1, 3, 5, 7–10 without setae, only with scattered setae near on posterior declivity. Interval 2 with row of short setae (0.5 x as long as width of interval). Intervals 4, 6 with rather long setae (In basal half of elytra as long as or on declivity 2 x as long as interval's width). Ventral side of thorax (including basisternum and mesobasisternum) and abdomen densely squamose. Antennal scape setose and densely squamulate; setae erect, long, thick, and acute. Funicle setose; setae suberect 1.5 x as long as funicular segment 7. Femora and tibiae external and internal surfaces covered with overlapping scales as on antennal scape; densely setose; distal portion of tibiae internal surface without scales; setae on legs slender acute. Internal surface of hind male tibiae with dense grooming brush; hairs short. Tarsi setose and without scales.

**Coloration.** Integument of body deep-brown to black, of limbs deep-brown. Background scaling consists of light brown, brown and cupreous scales; striped pattern formed by cupreous and green scales. Dark and pale scales both with slightly pronounced pearl shine. Head brownish-cupreous, without green scales. Pronotum with dark-brown background scaling and 5 broad longitudinal cupreous stripes: 1 median (narrow) and 4 lateral (broad). Elytra with brownish-cupreous background scaling, alternate striped pattern obscure. Basal and declivital portion of elytral intervals 3–5 green, interval 7 entirely or predominantly green. Ventral side, thorax, and abdomen cupreous. Femora and tibiae including their ventral surface brown-cupreous without green scales.

**Head.** Rostrum elongate [RL/RW mf: 1.14–1.18 (1.15)], parallel-sided. Pterygia not extended beyond rostrum. Antennal sockets dorsal. Antennifers half-visible. Epifrons almost parallel-sided, at the level of antennal articulation 1.66 x narrower than vertex, evenly longitudinally convex, without transverse depression posteriorly of

antennal sockets, distinctly sloping at sides and very steep sloping anteriorly, without median sulcus or carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and partly open at sides. Apical portion of epifrons almost vertical with shallow longitudinal depression. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 6 epistomal chaetae. Eyes broadly oval, sublateral, strongly convex, highest posteriorly [FW/ELD m: 1.35–1.47 (1.41); f: 1.56–1.67 (1.61)]. Vertex flat, with deep oblong frontal fovea. Occiput distinctly convex (see in lateral view).

**Antennae.** Scape extended behind anterior edge of pronotum, weakly evenly curved, thick. 1<sup>st</sup> funicular segment longer and wider than 2<sup>nd</sup>; 3–5 oblong; 6–7 as long as wide. Club broadly spindle-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.86–0.90 (0.88)], evenly slightly convex at sides, distinctly constricted at anterior portion, widest anteriorly of the middle. Disc weakly convex transversally. Posterior edge straight. Posterior setal fringe consists of long spatulate setae, partly hidden by posterior edge of pronotum.

**Mesothorax.** Tergosternal suture complete but concealed by scales. **Metathorax.** Metanepisternal suture obsolete posteriorly.

**Elytra.** in male oblong-oval, in female oval EL/EW: 1.30–1.45 (1.37), basal declivity sinuate, vertical; in male weakly convex, in female strongly convex at disc, sides in basal 1/3 straight.

**Legs.** Protibiae and mesotibiae almost straight, not widened at the apex, inner edge C-shaped with group of teeth in distal portion. Meso- and metatibiae with teeth on inner edge (straight). Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 7–9 black setae not extending beyond external edge of tibiae, hidden by fringe of pale spatulate setae. Bevel of metatibiae narrowly enclosed, its surface entirely bare. Tarsi robust; tarsomere 2 transverse, 1.4 x as wide as length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by 0.72 of length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 5th ventrite flat, without depression near the apex, apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, sharply narrowed anteriorly; apex narrowly rounded, dorsoventrally slightly curved; as long as apodeme. Lateral edges of median lobe fused, without longitudinal convexity. Internal sac without spiculate fields, with large long aggonopodium consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium stick-shaped slightly sclerotized. Ligulae membranous. Parameres absent, basal piece of tegmen broad, tegminal apodeme 0.75 x as long as apodemes of median lobes.

**Female genitalia.** Styli well developed stick-shaped bearing 2 chaetae. Spermatheca moderately sclerotized; ramus thick, 3 x as wide as collum; collum slender, as long as ramus; corpus small, not swollen; cornus slender, acute, not extended beyond corpus. Tergite 8 subtrapezoid, with two bunches of tenuous long setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped heavily sclerotized. Apodeme thick, caput distinctly developed.

**Distribution.** Kenya: Chyulu Hills., Chania Falls (Thika River) (Fig. 365).

**Bionomics.** Unknown.

**Type material examined.** Kenya: Lectotype, ♂, here designated (BMNH) “Type”, “Coryndon Museum / Expedit. Chyulu Hills / June 38 Alt. 5600”, “Cadoderus / lepidus Marshl. / TYPE male”. Paralectotypes: 1♂, 2♀, male and female dissected (BMNH) “Syntype”, “Coryndon Museum / Expedit. Chyulu Hills / June 38 Alt. 5600”, “Cadoderus / lepidus Marshl. / TYPE”.

**Other not examined type material.** Paralectotypes. 1♂ (BMNH) Chania Falls, Thika, 5050 ft., S 1 1 E 37 4, A.F.J. Gedye leg., i.1921; 2♂, 3♀, (BMNH) Kenya Chyulu Hills, 5600 ft, A.F.J. Gedye leg., vi.1938.

### ***Sphrigodellus usambaricus* Yunakov, sp. n.**

(figs 29, 30, 148–166, 172, 173, 365)

**Diagnosis.** Similar to *S. lepidus* Marshall, 1940 and *S. minutus* sp. n. in general appearance. From *S. minutus* sp. n. it differs by narrower and longer erect setae on elytra, tibiae, and antennae; feebly curved pro- and mesotibiae; frontal fovea not by scales; intervals 3 and 5 sparsely setose or without setae; occiput constricted; rostrum as long as wide or weakly elongate [RL/RW average 1.30]; subocular row dense, consists of 6–8 setae; temples squamose without longitudinal callosity; funicular segment 1 squamose; male elytral disc flat; median lobe constricted on the middle part; tegminal ring with process. From *S. lepidus* it differs by green scales on head, sides of pronotum, and

1st interval of elytra; epifrons sides with row of rather erect scales; elytral intervals 1–6 (in *S. lepidus*—2, 4, 6) with distinct row of setae; intervals 1, 3, 5 with sparse setal row (in *S. lepidus* intervals 1, 3, 5, 7–10 without setae); antennal funicle (1st or 1st and 2nd segments) with scales; rostrum with 8–10 (in *S. lepidus*—6) epistomal setae; anterior setal fringe consists of 12 (4+2+2+4) (in *S. lepidus*—8 (4+4)) suberect setae; epifrons at the level of antennal articulation 1.5 x as wide as vertex (in *S. lepidus* 1.66 x); antennal scape evenly widened apically; funicular segments 6–7 1.5x as long as wide (in *S. lepidus* as long as wide); FW/ELD average: 1.14 (in *S. lepidus*—1.50); median lobe 0.7 x as long as apodeme (in *S. lepidus* long as apodeme); shape of aggonopodium (figs 161, 162).

#### **Description.**

**Measurements.** BL: 2.98–4.07 (3.41) mm, BW: 1.36–2.00 (1.55) mm, BH: 1.20–1.90 (1.42) mm.

**Vestiture.** Body densely covered with overlapping, round convex scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 6–8 setae. Anterior setal fringe consists of 12 (4+2+2+4) erect setae; they large, strongly differ from ones on pronotal disc. Posterior setal fringe consists of long spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–6 with distinct row of setae. Anterior half of elytra with shorter and broader suberect setae (half as long as interval width), posterior declivity with long, strongly erect, narrow, truncate setae (as long as interval width). Intervals 2, 4, 6 with rather dense setal row; intervals 1, 3, 5 with sparse setal row. Ventral side of thorax (including basisternum and mesobasisternum) and abdomen densely squamose. Antennal scape setose and densely squamose; setae erect, long, thick, acute or truncate. Funicle setose, 1st funicular segment with scales; setae suberect 1.5 x as long as segment 7. Femora and tibiae externally and internally covered with overlapping scales as on antennal scape; densely setose; distal portion of tibiae surface without scales; setae on legs slender, acute. Male metatibiae with dense grooming brush; hairs short. Tarsi setose and squamose.

**Coloration.** Background scaling consists of light brown, brown and cupreous scales; striped pattern formed by cupreous and green scales. Dark and pale scales both with slightly pronounced pearl shine. Head brownish-cupreous; subgenae, temples, genae, and articulation surface covered with green scales. Pronotum with deep-brown background scaling and 5 broad longitudinal cupreous stripes: 1 discal (narrow) and 4 lateral (broad). Elytra with brownish-cupreous background scaling, alternate striped pattern obscure (intervals 2, 4, 6 light brown). Elytral interval 1 and 11 entirely or partly green, interval 2 with small green spot on posterior declivity, 7–10 with green spots in apical half. Ventral side of pronotum green, meso-/metasternum and abdomen green or green+cupreous. Femora brown-cupreous, proximal portion and ventral surface with green scales. Tibiae cupreous.

**Head.** Rostrum elongate [RL/RW: 1.19–1.40 (1.3)], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Epifrons distinctly sinuate in middle, at the level of antennal articulation 1.5 x as wide as vertex width, with transverse depression posteriorly of antennal sockets, distinctly sloping at sides and very steep sloping anteriorly, without median sulcus or carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and partly open at sides. Anterior portion of epifrons almost vertical with shallow longitudinal depression. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 8–10 epistomal setae. Eyes broadly oval, sublateral, strongly convex, highest posteriorly [FW/ELD: 0.92–1.36 (1.14)]. Vertex in male narrow, in female broad, flat. Vertex with deep oblong frontal fovea. Occiput distinctly constricted (see in lateral view).

**Antennae.** Scape extended behind anterior edge of pronotum, weakly evenly curved, thick. 1<sup>st</sup> funicular segment longer and wider than 2<sup>nd</sup>; segments 3–7 oblong. Club egg-shaped.

**Thorax.** Pronotum transverse or as long as wide [PL/PW: 0.95–1.00 (0.97)], evenly slightly convex at sides, distinctly constricted at anterior portion, widest anteriorly of the middle. Disc weakly convex longitudinally and transversally, with distinct lateral carinae and depressions. Posterior edge straight. Tergosternal suture complete but concealed by scales. Metanepisternal suture obsolete posteriorly.

**Elytra.** In male oblong-oval, in female oval EL/EW: 1.29–1.50 (1.36); sides in basal 1/3 straight; anterior declivity arcuate, abrupt, sharpen; disc in male weakly, in female strongly convex, [EL/BH: 1.37–1.61 (1.49)]. Subscutellar callosity reaches 3rd elytral interval, with two tiny tubercles.

**Legs.** Protibiae and mesotibiae almost straight, not widened at the apex, interior edge C-shaped in distal portion sparsely serrate. Meso- and metatibiae with 2 small teeth on interior edge (straight). Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 7–9 black setae not extending beyond external edge of tibiae, hidden by fringe of pale spatulate setae. Bevel of metatibiae narrowly enclosed; its surface entirely

densely setose. Tarsi robust; tarsomere 2 transverse, 1.5 x as wide as length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite flat, without depression near the apex, apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided in middle (in one male from Bamba Forest median lobe strongly sinuate in middle 1/3; lateral edges of median lobe form longitudinal carina), in apical 1/4 sharply evenly narrowed anteriorly; narrowly rounded, dorso-ventrally slightly swollen; 0.7 x as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium stick-shaped, moderately sclerotized. Ligulae membranous. Parameres absent, basal piece of tegmen broad, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 2 setae. Spermatheca moderately sclerotized; ramus thick, 2 x as wide as ramus; collum slender, as long as ramus; corpus small, not swollen; cornus slender, acute, not extended beyond corpus. Tergite 8 triangular with straight short fringe of tenuous long setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, caput distinctly developed.

**Distribution.** Tanzania: East Usambara Mountains (figs 365, 368).

**Bionomics.** Submontane and lowland rain forests; 170–1000 m a.s.l. Trees and shrubs, canopy.

**Material examined.** Tanzania: 1♂, 1♀ including holotype male, dissected (ZMUC) “TANZANIA: Tanga Region/ Bamba For. Res./ S4 58 E 38 47/ July–Sept.1995/ “Frontier-Tanzania” ZMUC”; 1♂ (ZMUC) Tanga reg., Kwangumi Forest Reserve, 170–220 m, S4 57 E 38 44, 22.vii.1995 canopy fog 9-1A, ZMUC; 1♂ (ZMUC) Tanga reg., Pangani Falls Forest, S5 20 E 38 40, July–March.1993 “Frontier Tanzania” ZMUC.

**Etymology.** The name refers to Usambara Mountains where this species occurs.

### *Sphrigodellus* sp. *prope usambaricus*

(figs 155, 156, 165, 172)

**Note.** One specimen was found among material from East Usambara and initially treated as *S. usambaricus*. Morphological details and general appearance of this specimen are almost as in *S. usambaricus*.

**Diagnosis.** From *S. usambaricus* sp. n. it differs by the thick antennal scape (its proximal thickness as distal; in *S. usambaricus* sp. n. antennal scape distinctly widened distally); antennal funicle robust (funicular segments 3–7 moniliform, in *S. usambaricus* sp. n.—oblong); funicular segment 2 covered with piliform scales. (figs 155, 156); aggonopodium very long (as long as median lobe; in *S. usambaricus* sp. n. 0.7 x as long as median lobe length).

**Measurements.** BL: 3.3 mm; BW: 1.5 mm; BH: 1.4 mm.

**Distribution.** Tanzania: East Usambara Mountains.

**Bionomics.** Submontane and lowland rain forests. Trees and shrubs, canopy.

**Material examined.** Tanzania: 1♂ (ZMUC) Tanga reg., Longuza Forest Reserve, S5 02 E 38 41, Oct.–Dec.1995, “Frontier Tanzania” ZMUC.

### *Sphrigodellus kwamkoroensis* Yunakov, sp. n.

(figs 167–171, 174, 368)

#### **Diagnosis and Description.**

**Measurements.** BL: 2.15–3.00 mm, BW: 1.00–1.35 mm, BH: 0.87–1.25 mm. Very similar to *S. usambaricus* sp. n. and *S. nguruensis* sp. n., and corresponds to it in most morphological details. From *S. nguruensis* sp. n. this new species differs in small size; anterior half of elytra with long suberect setae (as long as interval width), posterior declivity with extremely long, strongly erect narrow truncate setae (1.5 x as long as interval width); epifrons with distinct median carina (normally concealed by dense scaling); anterior portion of epifrons without median sulcus; aggonopodium with narrow lobes; subscutellar callosity reaches 2nd interval, bears 2 tiny tubercles. From *S. usambaricus* sp. n. this new species differs by elytra much oblong; intervals 2 deep-brown; posterior

declivity with extremely long strongly erect narrow truncate setae; body more oblong; aggonopodium lobes straight, with U-shaped proximal piece.

**Distribution.** Tanzania: East Usambara Mountains (Amani N.R.) (Fig. 368).

**Bionomics.** Submontane rain forests; 800–1000 m a.s.l. Trees and shrubs, canopy.

**Material examined.** Tanzania: 2♂, 2♀ including holotype male, dissected (ZMUN) TZ11-109, Tanga Reg., East Usambara Mts., Amani Nature Reserve: Kwamkoro Forest, S5 08.034 E38 37.286 h = 863 m, submontane rain forest, beating, N.N. Yunakov leg., 27.v.2011; 2♂ (ZMUN) TZ-11-108 Tanga Reg., East Usambara Mts., Amani Nature Reserve: Kwamkoro Forest, S5 08.098 E38 37.334 h = 869 m, submontane rain forest, beating, N.N. Yunakov leg., 27.v.2011.

**Etymology.** The name refers to Kwamkoro Forest in East Usambara Mountains where this species occurs.

### *Sphrigodellus minutus* Yunakov, sp. n.

(figs 23, 24, 46–51, 176–189, 367, 375, 376)

**Diagnosis.** Similar to *S. lepidus* Marshall, 1940 and *S. usambaricus* sp. n. in general appearance but differs by small size; broader and shorter erect setae on elytra, tibiae, and antennae; strongly curved pro- and mesotibiae; frontal fovea concealed by scales; intervals 3 and 5 densely setose; occiput not constricted; rostrum as long as wide or weakly elongate [RL/RW average: 1.12]; subocular row sparse, consists of 2–4 setae; temples with longitudinal callosity; 1st funicular segment without scales; male elytral disc convex longitudinally; median lobe not constricted on the middle part; tegminal ring without parameres and process.

#### **Description.**

**Measurements.** BL: 1.94–2.81 (2.30) mm, BW: 0.80–1.20 (0.99) mm, BH: 0.76–1.20 (0.96) mm.

**Vestiture.** Body densely covered with overlapping, round scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 2–4 setae. Anterior setal fringe consists of 6 (1+2+2+1) erect setae; they distinctly differ from ones on pronotal disc. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–5 with distinct row of setae. Anterior half of elytra with short, subrecumbent setae (half as long as interval width), posterior declivity with long strongly erect spatulate setae (as long as interval width). Ventral side rather sparsely squamose. Ventrites with scattered scales, metapleura densely squamose but scales not overlapped; basisternum and mesobasisternum bare. Antennal scape densely squamose and setose, scales lanceolate, not overlapping; setae thick acute subrecumbent. Funicle setose; setae suberect 1.5 x as long as funicular segment 7. Femora and tibiae external surface covered with overlapping scales and subrecumbent setae, internal surface with sparse piliform scales and hairs, distal portion of tibiae internal surface without scales; setae on femora slender, acute, setae of tibiae broad truncate. Male metatibiae with vestigial grooming brush; hairs very short. Tarsi setose.

**Coloration.** Integument of body brown to deep-brown; limbs rather lighter. Background scaling deep-brown to brown; striped longitudinal pattern formed by white-rose scales. Dark and pale scales both with slightly pronounced pearl shine. Head with two longitudinal stripes passing obliquely through the epifrons and vertex; subgenae and genae with grey scales. Pronotum with grayish-rose median stripe and double light grey and green longitudinal stripes at sides. Elytra with alternate brown and grayish longitudinal stripes. Elytral intervals 3, 5, basal portion of interval 4, posterior portion of interval 2, and subsutural portion of interval 1 covered with grayish-rose scales. Intervals 7–9, 11 covered with green scales. Ventral side with sparse green scales. Femora main surface with maculate pattern of brown and grey scales, proximal portion with green scales. Tibiae external surface with grey scales.

**Head.** Rostrum as long as wide or weakly elongate [RL/RW: 1.06–1.24 (1.12)], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Epifrons narrow, almost parallel-sided, at the level of antennal articulation 1.3 x narrower than vertex, weakly convex longitudinally and transversally, with very narrow median carina almost entirely concealed by scales. Transverse sulcus deep, partly concealed by dense scaling, rather visible at the sides. Epistome transverse, vestigial, delimited by narrow carina, bears 8–9 epistomal setae. Eyes oval, sublateral, strongly convex, highest posteriorly [FW/ELD: 0.83–1.15 (1.01)]. Vertex flat, broad. Frontal fovea concealed by scales. Occiput convex, without constriction.

**Antennae.** Scape extended behind anterior edge of pronotum, weakly evenly curved and widened, swollen in distal portion. 1st funicular segment longer and wider than 2nd; funicular segments 3–4 oblong; 6th–7th segments as long as wide, moniliform. Club egg-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.81–0.96 (0.88)], evenly convex at sides, not constricted, widest anteriorly of the middle. Disc flat. Tergosternal suture complete. Metanepisternal suture complete.

**Elytra.** Oval to broadly oval [EL/EW: 1.40–1.52 (1.48)]; disc in male weakly, in female strongly convex [EL/BH: 1.46–1.58 (1.52)]; anterior edge arcuate, vertical. Subscutellar callosity very short but distinct, with 2 tiny tubercles.

**Legs.** Protibiae and mesotibiae strongly curved, not widened at the apex; interior edge C-shaped. Meso- and metatibiae on interior edge with tooth in distal portion. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of 5–8 sparse, black setae, not extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed; its surface bare. Tarsi robust; tarsomere 2 transverse, 1.5 x as wide as length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1<sup>st</sup> ventrite straight. 2<sup>nd</sup> ventrite 1.5 x as long as 3<sup>rd</sup> one, posterior margin of 2<sup>nd</sup> ventrite straight. 5<sup>th</sup> ventrite flat in both sexes, without depression near the apex, apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided and sharply narrowed apically; apex narrowly rounded, dorsoventrally slightly convex, 0.7 x as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium spatulate moderately sclerotized. Ligulae membranous. Parameres absent, basal piece of tegmen broad, tegminal apodeme 0.5 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 3 setae. Spermatheca moderately sclerotized, with swollen ramus, collum slender 2 x as long as ramus. Corpus slightly swollen. cornus slender, extended beyond corpus. Tergite 8 subrounded with straight transverse row of 5–7 short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, straight, caput developed.

**Distribution.** Tanzania: South Pare Mountains (Fig. 367).

**Bionomics.** Submontane rain forest; 1300–1600 m a.s.l. Trees and shrubs, canopy (figs 375, 376).

**Material examined.** Tanzania: 13♂, 4♀ including holotype male, dissected (ZMUN) TZ-10-47, Kilimanjaro Reg., South Pare Mts., Chome Forest Reserve, S4 19.381 E37 59.454, h = 1352 m, rain forest, beaten, N.N. Yunakov leg., 09.xi.2010; 38♂, 17♀ (ZMUN) TZ-10-48, Kilimanjaro Reg., South Pare Mts., Chome Forest Reserve, S4 19.400 E37 59.311, h = 1372 m, rain forest, beaten, N.N. Yunakov leg., 09.xi.2010; 2♂ (ZMUN) TZ-10-50, Kilimanjaro Reg., South Pare Mts., Chome Forest Reserve, S4 19.400 E37 59.311, h = 1372 m, rain forest, sifted leaf litter, N.N. Yunakov leg., 09.xi.2010; 9♂, 6♀ (ZMUN) TZ-10-58, Kilimanjaro Reg., South Pare Mts., Chome Forest Reserve, S4 19.443 E37 59.199, h = 1405 m, rain forest, beaten, N.N. Yunakov leg., 10.xi.2010; 4♂, 6♀ (ZMUN) TZ-10-62, Kilimanjaro Reg., South Pare Mts., Chome Forest Reserve, S4 19.400 E37 59.311, h = 1372 m, rain forest, beaten, N.N. Yunakov leg., 11.xi.2010; 19♂ (ZMUN) TZ-10-63, Kilimanjaro Reg., South Pare Mts., Chome Forest Reserve, S4 19.850 E37 59.040, h = 1549 m, rain forest, beaten, N.N. Yunakov leg., 11.xi.2010.

**Etymology.** The name is a Latin adjective meaning “small”.

### *Sphrigodellus parecola* Yunakov, sp. n.

(figs 21–22, 230–243, 367)

**Diagnosis.** Similar to *S. nasutus* sp. n. and *S. gusarovi* sp. n. in general appearance. From *S. nasutus* sp. n. it differs by small size [BL: 2.30–3.09 (2.61) mm, in *S. nasutus* sp. n.—3.50–4.40 (3.69) mm]; overlapping scales of body; subocular row consists of 4–6 setae; pronotum with anterior fringe indistinct; elytra with distinct pattern of alternate dark and pale stripes; Eyes orbicular; vertex narrow; male metatibiae with obsolete grooming brush; meso- and metatibiae without teeth or with very small poorly-visible teeth on interior edge; 2nd ventrite 1.5 x as long as 3rd one; median lobe parallel-sided and evenly narrowed apically; apex broadly rounded, dorsoventrally slightly convex; female tergite 8 with short fringe of setae at the apex. From *S. gusarovi* sp. n. it differs by body

densely covered with overlapping scales; pronotal anterior fringe indistinct; abdomen densely squamose; epifrons parallel-sided; eyes orbicular, sublateral, strongly convex, highest posteriorly [FW/ELD: 0.73–1.00 (0.89)]; median lobe parallel-sided, in apical 1/3 evenly narrowed apically; apex broadly rounded; spermatheca moderately sclerotized, with swollen ramus, collum slender 0.5 x as long as ramus. From *S. minutus* sp. n. it differs by subocular row consists of 4–6 setae; anterior fringe indistinct; basisternum bare; antennal scape setose, without scales; strongly elongate [RL/RW: 1.20–1.33 (1.27)]; funicular segments 5–7 oblong (in *S. minutus* sp. n.—as long as wide); club spindle-shaped (in *minutus* egg-shaped); Median lobe parallel-sided, in apical 1/3 evenly narrowed apically; apex broadly rounded, dorsoventrally slightly convex, 1.3 x longer than apodeme; spermatheca with swollen ramus, collum slender 0.5 x as long as ramus (in *S. minutus* sp. n. collum slender 2 x as long as ramus).

#### **Description.**

**Measurements.** BL: 2.30–3.09 (2.61) mm, BW: 1–1.46 (1.19) mm, BH: 0.90–1.3 (1.07) mm.

**Vestiture.** Body densely covered with overlapping, round concave scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 4–6 setae. Anterior fringe indistinct; pronotum evenly setose; setae small, spatulate, recumbent. Posterior setal fringe consists of long spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–6 with distinct row of setae. Anterior half of elytra with shorter and narrow suberect setae (up to a third of interval width), posterior declivity with long strongly erect spatulate acute setae (as long as interval width). Ventral side of thorax and abdomen densely squamose, scales scattered; basisternum and mesobasisternum bare. Meso- and metapleura with scattered scaling. Antennal scape setose, without scales; setae long, slender, acute, and erect. Funicle setose, without scales; setae suberect, as long as funicular segment 7. Femora and tibiae external surface covered with serrated scales and suberect setae, internal surface with sparse piliform scales and hairs, distal portion of tibiae internal surface without scales; setae on legs slender, acute. Male metatibiae with obsolete grooming brush; hairs short, subrecumbent. Tarsi setose.

**Coloration.** Integument of body deep-brown to black; limbs deep-brown. Background scaling deep-brown to brown; striped longitudinal pattern formed by light rose scales. Dark and pale scales both with slightly pronounced pearl shine. Head with two longitudinal stripes passing obliquely through the epifrons and vertex; subgenae with brown scales, Anterior portion of epifrons, subgenae, and temples green. Pronotum with grayish-rose median and laterodorsal and green lateral stripe. Elytra with alternate brown and grayish-rose longitudinal stripes. Elytral intervals 3, 5, basal portion of interval 4, posterior portion of interval 2, and subsutural portion of interval 1 covered with grayish-rose scales. Intervals 7–11, and apical 1/4 of interval 5 covered with green scales. Ventral side of head and body with sparse green scales. Femora main surface with maculate pattern of brown and grey scales, proximal portion with green scales. Tibiae external surface with grey scales.

**Head.** Rostrum strongly elongate [RL/RW: 1.20–1.33 (1.27)], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Epifrons parallel-sided, not sinuate, at the level of antennal articulation 1.5 x as wide as vertex width, with transverse depression posteriorly of antennal sockets, distinctly sloping at sides and very steep sloping anteriorly, without median sulcus or carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and partly open at sides. Anterior portion of epifrons very steep without longitudinal depression. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 8–10 epistomal setae. Eyes orbicular, sublateral, strongly convex, highest posteriorly [FW/ELD: 0.73–1.00 (0.89)]. Vertex flat, narrow, Frontal fovea, deep, oblong, not concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, weakly evenly curved, slightly swollen in distal portion. 1st funicular segment longer and wider than 2nd; 3rd–7th oblong. Club spindle-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.88–0.89 (0.88)], evenly slightly convex at sides, not constricted, widest anteriorly of the middle. Disc weakly convex longitudinally and transversally. Posterior edge straight. Tergosternal suture complete but concealed by scales. Metanepisternal suture obsolete posteriorly.

**Elytra.** Oblong-oval EL/EW: 1.37–1.42 (1.39)]; anterior declivity arcuate, abrupt, sharpen; disc weakly convex; sides in basal 1/3 straight [EL/BH: 1.54–1.56 (1.55)]. Subscutellar callosity reaches 2<sup>nd</sup> elytral interval, with two tiny tubercles.

**Legs.** Protibiae and mesotibiae strongly curved, not widened at the apex; interior edge C-shaped. Meso- and metatibiae on interior edge without teeth or with very small poorly-visible teeth. Pro- and mesotibiae with large thorn-shaped acute mucro, metatibiae with small mucro well developed. Setal comb of protibiae consists of sparse 7–8 black setae not extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed; its surface

bare. Tarsi robust; tarsomere 2 triangular, as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite flat, without depression near the apex, apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, in apical 1/3 evenly narrowed apically; apex broadly rounded, dorso-ventrally slightly convex, 1.3 x longer than apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium spatulate, strongly sclerotized. Ligulae membranous. Parameres absent, basal piece of tegmen broad, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 2 setae. Spermatheca moderately sclerotized, with swollen ramus, collum slender 0.5 x as long as ramus; corpus small, very swollen; cornus slender, extended beyond corpus. Tergite 8 triangular with straight short fringe of tenuous long setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, caput distinctly developed.

**Distribution.** Tanzania: South Pare Mountains (Chome Nature Reserve) (Fig. 367).

**Bionomics.** Montane rain forests. Trees and shrubs, canopy.

**Material examined.** Tanzania: 2♂, 1♀ including holotype male (ZMUN) TZ-10-63, Kilimanjaro Reg., South Pare Mts., Chome Nature Reserve, S4 19.850 E37 59.040, h = 1549 m, rain forest, beaten, N.N. Yunakov leg., 11.xi.2010. 2♂, 2♀ (ZMUN, DNA collection: tube#17809) TZN-72, Chome Nature Reserve, S4 20.044 E 37 58.766, h = 1651 m, sifting forest litter, V.I. Gusarov & O.M. Nniwako leg., 11.xi.2010.

**Etymology.** The name is a Latin adjective meaning “inhabiting Pare Mountains”.

### ***Sphrigodellus gusarovi* Yunakov, sp. n.**

(figs 33, 34, 43–45, 190–204, 367, 373, 374)

**Diagnosis.** Similar to *S. nasutus* sp. n. in general appearance, differs by subocular row consisting of 4–6 setae; suberect setae short (0.3 of interval width); rostrum weakly elongate [RL/RW average 1.17]; eyes highest at middle; pronotal disc flat longitudinally and slightly convex transversally; male elytra oval [EL/EW: 1.31–1.41 (1.38) in *S. nasutus* sp. n.—1.53–1.56 (1.545)]; tarsomere 2 transverse, 1.5 x as wide as length; median lobe slightly constricted in apical 1/3 and sharply narrowed apically; apex narrowly rounded, dorso-ventrally slightly convex; lateral edges of median lobe fused, form longitudinal convexity through entire length; preputial opening cordate.

#### **Description.**

**Measurements.** BL: 2.75–3.64 (3.24) mm, BW: 1.30–1.68 (1.50) mm, BH: 1.08–1.40 (1.25) mm.

**Vestiture.** Body densely covered with serried (not overlapping) round scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 4–6 setae. Anterior setal fringe consists of 6 (1+1+1+1+1) erect setae; they weakly differ from ones on pronotal disc. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–5 with distinct row of setae. Anterior half of elytra with rather short suberect setae (up to a third of interval width), posterior declivity with long, strongly erect, thick, truncate setae (as long as interval width). Ventral side rather sparsely squamose. Ventrites with scattered scales, metapleura densely squamose but scales not serried; basisternum and mesobasisternum bare. Antennal scape setose, without scales; setae long, slender, acute, and suberect. Funicle setose, without scales; setae suberect 1.5 x as long as funicular segment 7. Femora and tibiae external surface covered with serried scales and suberect setae, internal surface with sparse piliform scales and hairs, scales on distal portion evenly replaced by setae; setae on femora slender, acute, setae of tibiae broad truncate. Male metatibiae with sparse grooming brush; hairs short. Tarsi setose.

**Coloration.** Integument of body brown to deep-brown; limbs rather lighter. Background scaling camouflage-like, very complicated, consists of deep-brown, brown and cupreous scales; striped-maculate pattern formed by cupreous and green scales. Dark and pale scales both with slightly pronounced pearl shine. Head brownish-cupreous; temples and articulation surface covered with green scales. Pronotum with deep-brown background scaling and 5 broad longitudinal cupreous stripes: 1 discal and 4 lateral. Solitary green scales randomly scattered



along stripes and form short narrow transverse stripes along dorso-lateral-portion of posterior edge of pronotum. These stripes are complementary to two green stripes on anterior edge of elytra. Elytra with alternate brown and cupreous longitudinal stripes and green spots. Elytral intervals 1, 3, 5, 7–9 covered with cupreous scales. Stripes on intervals 3, 5, 7, often interrupted by green squamose portions. Intervals 2, 4, 6, 10 with deep-brown stripes. Intervals 2 and 4 interrupted at posterior declivity by greens and cupreous spots. Intervals 6 and 10 interrupted by green spots through entire length. Ventral side with sparse green scales. Femora brown-cupreous, proximal portion with green scales. Tibiae external surface cupreous.

**Head.** Rostrum weakly elongate [RL/RW: 1.11–1.22 (1.17)], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Epifrons distinctly widened from base to apex, at the level of antennal articulation 1.5 x as wide as vertex width, distinctly sloping at sides and very steep sloping anteriorly, without median sulcus or carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and partly open at sides. Frons vertical, glabrous, bare, with 6 frontal setae. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 8–12 epistomal setae. Eyes broadly oval, sublateral, strongly convex, highest at the middle [FW/ELD: 1.04–1.27 (1.14)]. Vertex flat, in male broad, in female narrow. Frontal fovea concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, weakly evenly curved and widened, swollen in distal portion. 1st funicular segment longer and wider than 2nd, funicular segments 3–6 oblong; 7th segment as long as wide. Club egg-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.87–0.95 (0.92)], evenly slightly convex at sides, not constricted, widest anteriorly of the middle. Disc flat longitudinally and slightly convex transversally. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Oval to broadly oval [EL/EW: 1.31–1.44 (1.38)]; anterior declivity abrupt, sharpen; disc in male not convex, in female convex [EL/BH: 1.56–1.75 (1.66)]. Subscutellar callosity reaches interval 2, with 2 tiny tubercles.

**Legs.** Protibiae and mesotibiae almost straight, not widened at the apex, interior edge C-shaped in distal portion serrate. Meso- and metatibiae serrate on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 5–8 black setae not extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed; its surface partly setose. Tarsi robust; tarsomere 2 transverse, 1.5 x as wide as length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 2 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite flat, without depression near the apex, apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe slightly constricted in apical 1/3 and sharply narrowed apically; apex narrowly rounded, dorso-ventrally slightly convex; as long as apodeme. Lateral edges of median lobe fused, form longitudinal convexity through entire length. Preputial opening cordate. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium triangular, moderately sclerotized. Ligulae membranous. Parameres absent, basal piece of tegmen broad, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 3 setae. Spermatheca moderately sclerotized, with swollen ramus, collum slender 2 x as long as ramus. Corpus slightly swollen. Cornus slender, extended beyond corpus. Tergite 8 subtrapezoid, with curved fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, straight, with ill-defined caput.

**Distribution.** Tanzania: South Pare Mountains (Chome Nature Reserve) (Fig. 367).

**Bionomics.** Montane cloud forests; 1900–2400 m a.s.l. Trees and shrubs, canopy; predominantly on *Psychotria* spp. (figs 373, 374).

**Material examined.** Tanzania: 4♂, 7♀, including holotype male, dissected (ZMUN) Tanzania, TZ-10-69, Kilimanjaro Reg., South Pare Mts., Chome Forest Reserve, S4 17.599 E37 55.752, h = 1965 m, rain forest, beaten, N.N. Yunakov leg., 13.xi.2010; 2♂, 1♀ (ZMUN) Kilimanjaro Reg., TZ-10-73, South Pare Mts., Chome Forest Reserve, S4 17.606 E37 55.794, h = 1956 m, rain forest, beaten, N.N. Yunakov leg., 14.xi.2010; 1♀ (ZMUN) Kilimanjaro Reg., TZ-10-81 South Pare Mts., Chome Forest Reserve, S4 17.630 E37 55.942, h = 2033 m, rain forest, on *Psychotria* sp., N.N. Yunakov leg., 15.xi.2010; 1♂ (ZMUN) Kilimanjaro Reg., 33 km SSE Same, 14 km NE Makanya, South Pare Mts., Chome Forest Reserve, 3 km S Shengena summit, 4°17.638–606'S 37°55.930–763'E, h = 2037–1960 m, montane forest, beating, 10TZ25, V.I. Gusarov leg., 12.iii.2010; 1♂, 1♀ (ZMUN) TZ-10-78,

Kilimanjaro Reg., South Pare Mts., Chome Forest Reserve, S4 17.634 E37 55.902, h = 1983 m, rain forest, sifted leaf litter, N.N. Yunakov leg., 15.xi.2010; 3♂, 1♀ (ZMUN) TZ-11-23, Kilimanjaro Reg., South Pare Mts., Chome Nature Reserve, Shengena Mt.R., S4 17.379–464 E37 55.864–883 h = 2143–2106 m, montane rain forest, beating, N.N. Yunakov leg., 10.v.2011; 8♂, 6♀ (ZMUN) TZ-11–15, Kilimanjaro Reg., South Pare Mts., Chome Nature Reserve, S4 17.750 E37 56.248 h = 1991 m, montane rain forest, beating, on *Psychotria* sp., N.N. Yunakov leg., 08.v.2011.

**Etymology.** The name is dedicated to the coleopterologist Vladimir Gusarov (ZMUN) in recognition of his significant contribution to the knowledge of Afrotropical beetles.

***Sphrigodellus nasutus* Yunakov, sp. n.**

(figs 35, 36, 205–216, 365, 366, 369, 370)

**Diagnosis.** Similar to *S. lepidus*, *S. usambaricus* sp. n., and *S. gusarovi* sp. n. in general appearance. From *S. lepidus* and *S. usambaricus* sp. n. it differs by antennae with very long, piliform, erect setae, without scales; body scales not concave, not overlapping; male protibiae curved inwards, interior edge serrate, metatibiae with long and dense grooming brush, without scales; metatibial mucro tiny; temples with longitudinal callosity; setae of anterior fridge weakly differ from ones on pronotal disc; setae on elytral intervals sparse and narrow; tarsi without scales; tarsomere 2 triangular, as long as wide. From *S. usambaricus* sp. n. it additionally differs by median lobe not constricted on the middle part, with strong ridge at the base, with apex attenuate; spermatheca with ramus strongly swollen; tergite 8 subtrapezoid, with curved fringe of multiple, tenuous, short setae at the apex. From *S. gusarovi* sp. n. this species differs by subocular row consisting of 6–8 setae; elytral setae long (half as long as interval width); rostrum strongly elongate [RL/RW: 1.24–1.39 (1.34)]; eyes highest posteriorly; pronotal disc strongly convex longitudinally and transversally; male elytra oblong-oval [EL/EW m: 1.53–1.56 (1.55)]; tarsomere 2 as long as wide; median lobe parallel-sided (not constricted), in apical 1/4 evenly narrowed anteriorly; apex dorso-ventrally slightly flattened; lateral edges of median lobe partly fused, form longitudinal convexity in basal half; preputial opening oblong-ovate.

**Description.**

**Measurements.** BL: 3.50–4.40 (3.69) mm, BW: 1.44–2.25 (1.65) mm, BH: 1.30–1.80 (1.42) mm.

**Vestiture.** Body densely covered with serried (not overlapping) round weakly convex scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 6–8 setae. Anterior setal fringe consists of 6 (1+1+1+1+1) erect setae; they weakly differ from ones on pronotal disc. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–6 with distinct row of setae. Anterior half of elytra with rather short suberect setae (half as long as interval width), posterior declivity with long, strongly erect, thick, truncate setae (as long as interval width). Ventral side rather sparsely squamose. Ventrites with scattered scales; male anal ventrite with long hairs in apical portion. Metapleura densely squamose but scales not serried; basisternum and mesobasisternum bare. Antennal scape setose, without scales; setae very long, slender, acute, and erect. Funicle setose, without scales; setae erect, 1.7 x as long as funicular segment 7. Femora and tibiae external surface covered with serried scales and suberect setae, internal surface with sparse piliform scales and hairs, distal portion of tibiae internal surface without scales; setae on legs slender, acute. Male metatibiae with dense grooming brush; hairs very long. Female metatibiae with less pronounced but distinct grooming brush. Tarsi setose.

**Coloration.** Integument of body deep-brown to black, of legs deep-brown. Background scaling consists of deep-brown, brown and cupreous scales; striped pattern formed by cupreous and green scales. Dark and pale scales both with slightly pronounced pearl shine. Head brownish-cupreous; anterior portion of epifrons, temples, genae, and articulation surface covered with green scales. Pronotum with deep-brown background scaling and 5 broad longitudinal cupreous stripes: 1 discal and 4 lateral. Green scales form narrow stripe along anterior edge, small basal spot and two transverse broad stripes along dorsolateral-portion of posterior edge of pronotum. These stripes are complementary to two green narrow stripes on anterior edge of elytra. Elytra with brownish-cupreous background scaling, alternate striped pattern obscure. Elytral intervals 3, 4, 8, 9 with short green stripes in apical portion, 5, 6, 10, 11 entirely green; 6th interval with black spot anteriorly of middle. Ventral side with sparse green scales. Sides of metasternum cupreous. Femora brown-cupreous, proximal portion and ventral surface with green scales. Tibiae external surface cupreous.

**Head.** Rostrum strongly elongate [RL/RW: 1.24–1.39 (1.34)], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Epifrons distinctly sinuate in middle, at the level of antennal articulation 1.5 x as wide as vertex width, distinctly sloping at sides and very steep sloping anteriorly, without median sulcus or carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and partly open at sides. Anterior portion of epifrons almost vertical with median sulcus. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 8–9 epistomal setae. Eyes broadly oval, sublateral, strongly convex, highest posteriorly [FW/ELD: 1.10–1.25 (1.18)]. Vertex flat, broad. Frontal fovea concealed by scales. Occiput not constricted.

**Antennae.** Scape extended behind anterior edge of pronotum, weakly evenly curved and widened, swollen in distal portion. 1st funicular segment longer and wider than 2nd; 3rd–7th oblong. Club egg-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.89–0.98 (0.96)], evenly slightly convex at sides, not constricted, widest anteriorly of the middle. Disc strongly convex longitudinally and transversally. Posterior edge straight. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** in male oblong-oval, in female oval [EL/EW: 1.32–1.56 (1.44)]; anterior declivity arcuate, abrupt, sharpen; disc in male flat, in female convex [EL/BH: 1.53–1.84 (1.65)]. Subscutellar callosity very short, with two tiny tubercles.

**Legs.** Protibiae and mesotibiae almost straight, not widened at the apex, interior edge C-shaped in distal portion serrate. Meso- and metatibiae serrate on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 5–8 black setae not extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed, its surface partly setose. Tarsi robust; tarsomere 2 triangular, as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 2 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite flat, without depression near the apex, apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, in apical 1/4 evenly narrowed anteriorly; apex attenuate, narrowly rounded, dorso-ventrally slightly flattened; as long as apodeme. Lateral edges of median lobe form longitudinal convexity in basal half. Preputial opening oblong-ovate. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium triangular, moderately sclerotized. Ligulae membranous. Parameres absent, basal piece of tegmen broad, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 3 setae. Spermatheca moderately sclerotized, with swollen ramus, collum slender 2 x as long as ramus. Corpus small, not swollen. Cornus slender, extended beyond corpus. Tergite 8 subtrapezoid, with curved fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, caput not developed.

**Distribution.** Tanzania: North Pare Mountains (Kindoroko Forest Reserve, Kiverenge Forest Reserve, Kizungoa Mountain Reserve) (figs 365, 366)

**Bionomics.** Submontane rain forests and montane cloud forests; 1900–2400 m a.s.l. Trees and shrubs canopy (figs 369, 370).

**Material examined.** Tanzania, Kilimanjaro Reg.: 1♂, 4♀, including holotype male (ZMUN) TZ-10-34, North Pare Mts., Kilomeni vill. env., Kindoroko Forest Res., S3 45.200–531 E37 38.709–923, h = 1904–1796 m, rain forest, beaten, N.N. Yunakov leg., 05.xi.2010; 1♂ (ZMUN) TZ-10-31, North Pare Mts., Kilomeni vill. env., Kindoroko Forest Reserve, S3 45.200 E37 38.709, h = 1904 m, rain forest, beaten, N.N. Yunakov leg., 05.xi.2010; 1♂, 2♀ (ZMUN) TZ-11-31, North Pare Mts., Kindoroko Forest Reserve, S3 45.265 E37 38.751 h = 1889 m, montane rain forest, beating, N.N. Yunakov leg., 13.v.2011; 5♂, 3♀ (ZMUN) TZ-11-32, North Pare Mts., Kindoroko Forest Reserve, S3 45.096 E37 38.887 h = 1920 m, montane rain forest, beating, N.N. Yunakov leg., 13.v.2011; 1♀ (ZMUN) TZ-11-48a, North Pare Mts., Kiverenge Forest Reserve, S3 48.778 E37 38.800, h = 1654 m, montane rain forest, beating, N.N. Yunakov leg., 15.v.2011; 2♂, 2♀ (ZMUN) TZ-11-61, North Pare Mts., Kizungoa Mt.R., S3 57.151 E37 41.694, h = 1688 m, montane rain forest, beating, N.N. Yunakov leg., 18.v.2011.

**Etymology.** The name is a Latin adjective meaning “having pronounced nose”.

## *Sphrigodellus centralis* (Hustache)

(figs 15, 16, 217–229, 365)

*Barianus centralis* Hustache, 1929: 399. *Sphrigodellus centralis*. Marshall (1942: 19).

**Diagnosis.** Strongly differs from all known species by elytra globose; epifrons lateral edges without longitudinal setal rows; pronotum without anterior transverse setal fringe; setae of elytral intervals short, recumbent (up to a quarter of interval width); antennal funicle squamose, with setae spatulate; median lobe parallel-sided, tubular, in apical 1/4 sharply narrowed anteriorly; spermatheca with very long and slender ramus, collum slender, as long as ramus.

### **Description.**

**Measurements.** BL: 3.80–4.56 (4.05) mm, BW: 2.08–2.48 (2.2) mm, BH: 1.48–2.08 (1.69) mm.

**Vestiture.** Body densely covered with overlapping, round weakly concave scales, setose. Setae of head form rows above the eyes (erect). Subocular row consists of 5 setae, without rows along lateral edges of epifrons. Pronotum without anterior transverse setal fringe. Posterior setal fringe consists of spatulate setae, entirely hidden by posterior edge of pronotum. Elytral intervals with almost invisible row of setae. Setae rather short, recumbent (up to a quarter of interval width). Ventral side covered with overlapping, round scales. Ventrites with overlapping scales and short hairs. Basisternum sparsely squamose, mesobasisternum bare. Meso- and metapleura covered with overlapping scales. Antennal scape setose, covered with overlapping, round and oval concave scales; setae spatulate recumbent or subrecumbent. Funicle setose, with slender and spatulate scales; setae slender, suberect, as long as funicular segment 7. Femora and tibiae external surface covered with overlapping scales and suberect setae, internal surface with sparse piliform scales and hairs, distal portion of tibiae internal surface without scales; setae on legs slender, acute. Male metatibiae with small grooming brush; hairs short. Tarsi setose and densely squamose.

**Coloration.** Integument of body and limbs deep-brown. Background scaling consists of deep-brown and gray scales; scales concave with slightly pronounced pearl shine. Head, body and limbs with brown-grayish marmorate pattern. Elytral disc with indistinct dark large spot.

**Head.** Rostrum weakly elongate RL/RW: 1.18–1.42 (1.31), parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Lateral carinae convex. Epifrons almost parallel-sided, at the level of antennal articulation 1.6x narrower than vertex, distinctly sloping at sides, with median sulcus. Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons weakly sloped, without median sulcus. Frons steep, glabrous, bare, with 4 frontal setae. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 4 epistomal setae. Eyes orbicular, sublateral, strongly convex, highest at the middle [FW/ELD: 1.52–1.72 (1.60)]. Vertex flat, broad. Frontal fovea concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, straight, thick. Funicular segment 1 as long as or longer than 2nd; segments 3–4 oblong; segments 5–7 as long as wide. Club egg-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.90–0.94 (0.92)], evenly slightly convex at sides, not constricted at anterior portion, widest at middle. Disc flat. Posterior edge straight. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Elytra globose, anterior edge arcuate, vertical [EL/EW: 1.17–1.24 (1.2)]; disc in male weakly, in female strongly convex [EL/BH: 1.48–1.67 (1.61)]. Subscutellar callosity reaches 2nd elytral interval, with 2 tiny strongly convex tubercles.

**Legs.** Protibiae and mesotibiae almost straight, not widened at the apex. Interior edge C-shaped, with or without teeth in distal portion. Meso- and metatibiae with 2 large teeth and several small ones in between on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 7–8 black setae not extending beyond external edge of tibiae, partly hidden by spatulate setae. Bevel of metatibiae narrowly enclosed, its surface densely setose. Tarsi robust; tarsomere 2 transverse, 1.5 x as wide as length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female weakly convex near the apex; apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, tubular, in apical 1/4 sharply narrowed anteriorly; apex attenuate, narrowly rounded, dorso-ventrally slightly swollen; 0.7 x as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium elongate. Ligulae membranous. Parameres absent, basal piece of tegmen very broad, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 3 setae. Spermatheca moderately sclerotized, with very long and slender ramus, collum slender, as long as ramus. Corpus small, slightly swollen. cornus thick, extended beyond corpus. Tergite 8 arcuate with curved fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, caput large.

**Distribution.** Kenya: Nairobi (Karura and Ololua Forest) (Fig. 365).

**Bionomics.** Lowland rain forest; 1600–1700 m a.s.l. Trees and shrubs, canopy.

**Type material.** Kenya: Lectotype ♂, here designated (MNHN) “Afrique orient. anglaise / forêt de Nairobi, Alluaud & Jeannel / Nov.-Dec. 1911 - 1700 m., St. 11”. Paralectotype 1 ♀ (MNHN), “Afrique orient. anglaise / forêt de Nairobi, Alluaud & Jeannel / Nov.-Dec. 1911 - 1700 m St. 28”.

**Material examined.** Kenya: 3 ♂, 1 ♀ (TAU) Nairobi, Karura Forest, [S1 14.6 E36 49.7], L. Friedman leg., 16.x.2007; 1 ♀ (BMNH), Nairobi Area, Langata Forest [= Ololua Forest, Nairobi env.], 1°21'47" S 36°42'14" E, van Someren, xii.1938; 2 ♂ (BMNH), Nairobi Area, Nairobi / Kenya Colony / 5450 ft. / 20.iii.1921, Gedye A.F. leg.; 1 ♀ (BMNH), Nairobi Area, Nairobi, van Someren leg., vii.1937; 1 ♀ (BMNH), Emali Range / Sultan Hamud / 4900-5900 ft. 3-1940, 2°3'28" S 37°22'32" E.

### *Sphrigodellus nguruensis* Yunakov, sp. n.

(figs 37, 38, 244–258, 365)

**Diagnosis.** Similar to *S. usambaricus* sp. n. in general appearance; differs by multituberculate subscutellar callosity (6 tubercles; in *S. usambaricus* only 2 smaller tubercles present); elytral intervals 3, 5 without setae or sparsely setose; funicular segment 1 without scales; funicular setae longer (1.7 x as long as funicular segment 7; in *S. usambaricus* sp. n.—1.5 x as long as funicular segment 7); alternate striped pattern sharp (intervals 2, 4, 6 deep-brown; in *S. usambaricus* sp. n.—obscure, intervals 2, 4, 6 light brown); epifrons with distinct median sulcus; meso- and metatibiae with 3–4 large teeth on interior edge (in *S. usambaricus* sp. n. with 2 small teeth); protibial interior in distal portion densely serrate; aggonopodium of internal sac with thick lobes (in *S. usambaricus* with thin lobes; lobes of sternite 9 with strong posterior process; spermatheca with corpus small, moderately swollen, cornus thick, narrowly rounded; female tergite 8 trapezoid with long slightly arcuate setal fringe.

#### **Description.**

**Measurements.** BL: 3.40–4.05 (3.79) mm, BW: 1.44–1.92 (1.67) mm, BH: 1.24–1.60 (1.45) mm.

**Vestiture.** Body densely covered with overlapping, round concave scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 5–7 setae. Lateral carinae of rostrum and lateral edges of epifrons densely squamose. Anterior setal fringe consists of 4 (2+2) setae in female or 8 (4+4) in male. Setae of this row large, strongly differ from ones on pronotal disc. Posterior setal fringe consists of long spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1, 2, 4, 6 with distinct row of setae; intervals 3, 5 without setae or sparsely setose. Anterior half of elytra with short, suberect setae (0.5 x as long as interval width), posterior declivity with long (as long as interval width), strongly erect narrow truncate setae. Ventral side of thorax and abdomen densely squamose; basisternum and mesobasisternum bare. Antennal scape setose and densely squamose; setae long, erect, thick, acute or truncate. Funicle setose, without scales; setae suberect 1.7 x as long as funicular segment 7. Femora and tibiae external surface covered with overlapping scales as on antennal scape; densely setose; internal surface with the same dense vestiture, distal portion of tibiae internal surface without scales; setae on legs slender, acute. Male metatibiae with sparse grooming brush; hairs short. Tarsi setose and squamose.

**Coloration.** Integument of body deep-brown to black, of legs deep-brown. Background scaling consists of light brown, brown and cupreous scales; striped pattern formed by cupreous, brown and green scales. Dark and

pale scales both with slightly pronounced pearl shine. Head multicolour rostrum brownish-cupreous; vertex, occiput, temples, genae, and articulation surface covered with green scales. Pronotum with deep-brown background scaling and 5 broad longitudinal cupreous stripes: 1 discal (narrow) and 4 lateral (broad). Elytra with brownish-cupreous background scaling, alternate striped pattern sharp (intervals 2, 4, 6 deep-brown). Elytral intervals entirely (1, 7, 9, 11) or at posterior declivity (3, 5) green. Ventral side of pronotum and mesosternum green, metasternum and abdomen cupreous. Femora brown-cupreous, proximal portion and ventral surface with green scales. Tibiae cupreous.

**Head.** Rostrum strongly elongate [RL/RW: 1.24–1.50 (1.41)], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Epifrons distinctly sinuate in middle, at the level of antennal articulation 1.5 x as wide as vertex width, with transverse depression posteriorly of antennal sockets, distinctly sloping at sides and anteriorly almost vertical, with distinct median sulcus, without median carina. Transverse sulcus deep, concealed by dense scaling at dorsal surface and partly open at sides. Anterior portion of epifrons almost vertical with shallow longitudinal depression. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 8–10 epistomal setae. Eyes sublateral, broadly oval, moderately convex, highest posteriorly [FW/ELD: 0.9–1.12 (0.97)]. Vertex narrow, flat. Frontal fovea deep, oblong. Occiput distinctly constricted (see in lateral view).

**Antennae.** Scape extended behind anterior edge of pronotum, weakly evenly curved, thick. 1st funicular segment longer and wider than 2nd; 3rd–7th oblong. Club egg-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.90–0.96 (0.94)], evenly slightly convex at sides, distinctly constricted at anterior portion, widest anteriorly of the middle. Disc weakly convex longitudinally and transversally, with sublateral depressions and tubercles in posterior half. Posterior edge straight. Tergosternal suture complete but concealed by scales. Metanepisternal suture obsolete posteriorly.

**Elytra.** in male oblong-oval, in female oval [EL/EW: 1.35–1.57 (1.46)]; sides in basal 1/3 straight; anterior edge arcuate, vertical, narrowly rounded; disc in male weakly convex, in female strongly convex [EL/BH: 1.62–1.71 (1.68)]. Subscutellar callosity reaches 3rd interval, with 6 tiny tubercles.

**Legs.** Protibiae and mesotibiae almost straight, not widened at the apex, interior edge C-shaped in distal portion densely serrate. Meso- and metatibiae with 3–4 large teeth on interior edge (straight). Mucro well developed, thornshaped, acute. Setal comb of protibiae sparse, consists of 7–8 black setae not extending beyond external edge of tibiae, hidden by fringe of pale spatulate setae. Bevel of metatibiae narrowly enclosed; its surface entirely densely setose. Grooming brush dense, consists of long setae. Tarsi robust; tarsomere 2 transverse, 1.5 x as wide as length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, its posterior margin straight. 5th ventrite flat, without depression near the apex, apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided in middle, in apical 1/4 sharply evenly narrowed anteriorly; narrowly rounded, dorso-ventrally slightly swollen; 0.7 x as long as apodeme. Lateral edges of median lobe fused do not form longitudinal carina. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped thick lobes connected proximally by transverse bridge, ventral processes absent. Ostium stick-shaped, moderately sclerotized. Ligulae membranous. Parameres absent, basal piece of tegmen broad, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with thick ramus, collum slender 2 x as long as ramus. Corpus small, moderately swollen. cornus thick, narrowly rounded, not extended beyond corpus. Tergite 8 trapezoid with long slightly arcuate fringe of tenuous long setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute missing the setae, knife-shaped, heavily sclerotized. Apodeme thick, caput distinctly developed.

**Distribution.** Tanzania: Nguru Mountains (Fig. 365).

**Bionomics.** Montane rain forests.

**Material examined.** Tanzania: Holotype male, dissected (CNC) Morogoro Reg., Nguru Mts. at Turani, h = 1277 m 06°04'29"S, 037°32'19"E, sifting03, V. Grebennikov leg., 31.x.2010; Paratype: 1 ♀ (CNC) Morogoro Reg., Nguru Mts. at Turani, h = 1277 m 06°04'29"S, 037°32'19"E, sifting06, V. Grebennikov leg., 04.xi.2010.

**Etymology.** The name is a Latin adjective meaning “inhabiting Nguru Mountains”.

### *Sphrigodellus* sp. prope *nguruensis*

**Diagnosis.** Morphological details mostly corresponds to *S. nguruensis* sp. n. Differs from *S. nguruensis* sp. n. by anterior half of elytra with long, suberect setae (in male as long as interval width), posterior declivity with extremely long strongly erect narrow truncate setae (in male 1.5 x as long as interval width).

**Measurements.** BL: 4.05 mm, BW: 1.66 mm, BH: 1.52 mm. Main morphometric indexes: RL/RW = 1.44, FW/ELD = 0.90, PL/PW = 0.96, EL/BH = 1.71, EL/EW = 1.57.

**Material examined.** Tanzania: 1♂ (CNC) Morogoro Reg., Nguru Mts. at Turani, h = 1236 m 06°06'24"S, 037°31'48"E, sifting07, V. Grebennikov leg., 05.XI.2010.

### *Sphrigodellus viridegriseus* Yunakov, sp. n.

(figs 27, 28, 259–272, 365, 366, 371, 372)

**Diagnosis.** Similar to *S. centralis* (Hust.) in dense vestiture. Strictly differs from majority known species by pronotum without anterior transverse setal fringe; parameres well developed; aggonoporum with curved lobes; spermatheca with thick collum and ramus. From *S. centralis* it differs by elytra oval; small size. [BL: 2.43–3.05 (2.74), BW: 1.16–1.6 (1.36), BH: 1–1.52 (1.25)]; subocular row above the eyes with 2 setae; elytral setae half as long as interval width; ventrites with serried scales; tarsi setose, without scales; elytra with distinct marmorated grey-brown-green pattern, large dark spot is absent; eyes highest posteriorly; antennal scape curved, thin. Funicular segment 1 1.5 x as long as 2nd one; funicular segments 3–7 oblong; club spindle-shaped; median lobe with strong dorsal angulate flange; spermatheca with cornus slender, not extending beyond corpus; female tergite 8 subtrapezoid.

#### **Description.**

**Measurements.** BL: 2.43–3.05 (2.74) mm, BW: 1.16–1.6 (1.36) mm, BH: 1.00–1.52 (1.25) mm.

**Vestiture.** Body densely covered with overlapping, round, concave scales, setose. Setae of head recumbent, form indistinct subocular row above the eyes (consists of 2 setae), and along lateral edges of epifrons. Pronotum without anterior transverse setal fringe. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–5 with almost invisible row of setae. Setae recumbent, spatulate, half as long as interval width. Ventral side covered with overlapping, round scales. Ventrites with serried (not overlapping) scales and short hairs. Basisternum sparsely squamose, mesobasisternum bare. Antennal scape setose and squamose; setae very long, slender, acute, recumbent, strongly curved. Funicle setose, without scales; setae suberect, as long as funicular segment 7; funicular segments 6–7 densely setose. Femora and tibiae external and internal surfaces covered with overlapping scales and recumbent, slender, curved, acute setae. Distal portion of tibiae bare (without scales). Male metatibiae with sparse very small grooming brush; hairs short. Tarsi setose.

**Coloration.** Integument of body deep-brown to black, of limbs deep-brown. Background scaling consists of greyish-brown, and grey scales; spotted pattern often obvious, formed by gray, brown and green scales. Dark and pale scales both with slightly pronounced pearl shine. Head grey, indistinctly brownish maculate. Pronotum with deep-brown background scaling and 3 longitudinal broad stripes: 1 discal and 2 lateral. Anterior 2/3 of stripes consist of grey scales and basal 1/3 -green. Elytra with distinct marmorated grey-brown-green pattern. Ventral side including meso- and metapleura green-grey. Femora brown with broad grey bands in middle and distal portion, and occasionally with small spots of green scales at internal surface. Tibiae external surface grey, without bands.

**Head.** Rostrum weakly elongate [RL/RW: 1.18–1.26 (1.22)], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers partly hidden by lateral edges of epifrons. Lateral carinae hardly convex. Epifrons distinctly sinuate in middle, at the level of antennal articulation 0.5 x as wide as vertex, abruptly sloping anteriorly, scarcely concave without median sulcus. Lateral edges of epifrons in basal 2/3 not pronounced. Transverse sulcus concealed by dense scaling at dorsal surface and partly open at sides. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 2 tiny epistomal setae. Eyes broadly-ovate, sublateral, strongly convex, highest posteriorly [FW/ELD = 0.83–1.03 (0.92)]. Vertex flat. Frontal fovea deep, elongate, concealed by scales.

**Antennae.** Scape reaches the middle of pronotum, scarcely evenly curved, weakly clavate, thin. 1st funicular segment 1.5 x longer and wider than 2nd; 3rd–7th oblong. Club spindle-shaped.

**Thorax.** Pronotum transverse or scarcely transverse [PL/PW: 0.86–0.94 (0.90)], evenly slightly convex at sides, not constricted, widest at the middle. Disc flat, without lateral depressions and carinae. Posterior edge of pronotum straight. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Oblong-oval (male) to oval (female) [EL/EW: 1.25–1.33 (1.29)], anterior edge arcuate, vertical; disc in both sexes moderately convex at the disc [EL/BH: 1.32–1.54 (1.41)]. Subsutural callosity distinct, with 2 tiny tubercles.

**Legs.** Protibiae and mesotibiae almost straight, not widened at the apex, interior edge slightly C-shaped, with group of teeth and strong setae in distal portion. Meso- and metatibiae with single large tooth near mucro. Interior edge of male mesotibiae not sinuate in distal 1/3. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of ca.10 sparse brown setae not extending beyond external edge of tibiae and partly hidden by broad setae. Bevel of metatibiae narrowly enclosed, its surface setose. Tarsi robust; tarsomere 2 triangular, transverse, 1.5 as wide as length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite arcuate. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite arcuate. Male 5th ventrite flat, without depression near the apex, apical edge broadly rounded. Female 5th ventrite flat, apical edge acute.

**Male genitalia.** Median lobe parallel-sided, moderately curved dorso-ventrally, in apical 1/3 evenly narrowed anteriorly; lateral edges partly fused in basal 1/3; apex acute, with strong dorsal angulate flange; 0.8 x as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped symmetrical lobes connected proximally by transverse bridge and long proximal process. Ostium long stick-shaped, heavily sclerotized, protruded from preputial field of median lobe. Ligulae sclerotized. Parameres long, fused in base; basal piece of tegmen narrow, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with very short ramus, collum oblong. Corpus slightly swollen. cornus slender, not extending beyond corpus. Tergite 8 subtrapezoid, with angulate fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, straight, with distinctly defined caput.

**Distribution.** Tanzania: North Pare Mountains (Kiverenge Forest Reserve) (figs 365, 366).

**Bionomics.** Xerothermic forests; 1500 m a.s.l. Trees and shrubs canopy; on *Myrsine africana* (figs 371, 372).

**Material examined.** Tanzania: 7♂, 3♀, including holotype male, dissected (ZMUN) TZ-11-39, Kilimanjaro Reg., North Pare Mts., Kiverenge Forest Reserve, S3 48.620 E37 38.928, h = 1495 m, xerothermic forest, beating, on *Myrsine africana*, N.N. Yunakov leg., 14.v.2011.

**Etymology.** The name is a Latin adjective describing coloration of body; it compounds “viridis”—green and “griseus”—grey.

### ***Sphrigodellus kiverengei* Yunakov, sp. n.**

(figs 25–26, 273–288, 365, 366, 371, 372)

**Diagnosis.** Very similar to *S. viridegriseus* sp. n. in general appearance, but may be easily defined in structure of male genitalia median lobe with thin dorsal carina; aggonopodium large bifurcate, consists of two stick-shaped curved lobes connected proximally by transverse bridge. It also differs by external structures: scales slightly overlapping; anterior setal fringe consists of 4 (1+1+1+1) recumbent setae; elytral intervals 1–6 (females) 1–7 (males) with distinct row of setae; tarsi setose and squamose; rostrum as long as wide; transverse sulcus deep, distinctly visible; eyes large [FW/ELD: 1.07–1.36 (1.21), in *S. viridegriseus* sp. n. FW/ELD: 0.83–1.03 (0.92)]; pronotal disc slightly convex transversally; elytra oval in both sexes; subscutellar callosity concealed by scales, tubercles not developed; male protibiae with interior edge strongly C-shaped; male metatibiae distinctly sinuate in distal 1/3, with 1 large and 2–4 tiny teeth on interior edge; 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite arcuate; male 5th ventrite with depression near the apex, apical edge truncate.

### **Description.**

**Measurements.** BL: 3.14–3.70 (3.40) mm, BW: 1.50–1.82 (1.72) mm, BH: 1.34–1.80 (1.63) mm.



**Vestiture.** Integument of body deep-brown to black, of legs deep-brown. Body densely covered with slightly overlapping, round depressed scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (suberect). Subocular row consists of 3–4 setae. Anterior setal fringe reduced. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–6 (females) 1–7 (males) with distinct row of setae. Anterior half of elytra with hardly shorter erect setae [up to half (males) or a third (females) of interval width], posterior declivity with long, strongly erect, thick, truncate setae [up to as 0.63 (males) or half (females) an interval width]. Ventral side densely squamose. Ventrites with scales serried (not overlapping) scales; male anal ventrite with piliform scales long, but without hairs in apical portion. Metapleura densely squamose, scales serried; basisternum and mesobasisternum sparsely squamose. Antennal scape setose and squamose; setae very long, slender, acute, and suberect, curved. Funicle setose, without scales; setae suberect, as long as funicular segment 7. Femora and tibiae external and internal surfaces (incl. distal portion of tibiae) covered with overlapping scales and suberect setae, internal surface with sparse hairs; setae slender, acute. Male metatibiae with sparse very small grooming brush; hairs short. Tarsi setose and squamose.

**Integument.** Body deep-brown to black; limbs deep-brown.

**Coloration.** Background scaling consists of greyish-brown, and grey scales; spotted pattern often obvious, formed mainly by gray and brown scales. Dark and pale scales both with slightly pronounced pearl shine. Head brown, indistinctly greyish maculate. Pronotum with deep-brown background scaling and 3 longitudinal grey stripes: 1 discal (thin, obsolete) and 2 lateral (broad, rather distinct). Lateral stripes broad. Green scales mostly absent; occasionally solitary scales scattered in basal half of pronotum. Elytra with brown background scaling, with distinct spotted pattern; with green scales scattered through the elytral disc. Ventral side including meso- and metapleura green-grey. Femora brown with broad grey bands in middle and distal portion, and occasionally with small spots of green scales at internal surface. Tibiae external surface grey, without bands.

**Head.** Rostrum as long as wide [RL/RW: 1.00], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers partly hidden by lateral edges of epifrons. Lateral carinae hardly convex. Epifrons parallel-sided distinctly sinuate in middle, at the level of antennal articulation 0.7 x as wide as vertex width, weakly sloping at sides and abruptly sloping anteriorly, scarcely concave and weakly sulcate in anterior portion (median sulcus concealed by dense scaling). Transverse sulcus deep, less concealed by dense scaling at dorsal surface and partly open at sides. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 2 tiny epistomal setae. Eyes broadly-ovate, sublateral, strongly convex, highest posteriorly [FW/ELD: 1.07–1.36 (1.21)]. Vertex flat. Frontal fovea deep, elongate, concealed by scales.

**Antennae.** Scape reaches middle of pronotum, scarcely evenly curved, at the apex clavate. Funicular segment 1 very long, 1.5 x as long as 2nd; 3rd–7th oblong. Club spindle-shaped.

**Thorax.** Pronotum transverse or scarcely transverse [PL/PW: 0.82–0.95 (0.87)], evenly slightly convex at sides, not constricted, widest at the middle. Disc slightly convex transversally, without lateral depressions and carinae. Posterior edge of pronotum straight. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Oval [EL/EW: 1.22–1.36 (1.28)], anterior edge arcuate, vertical. Disc moderately convex [EL/BH 1.24–1.50 (1.36)]. Subcutellar callosity concealed by scales, tubercles not developed.

**Legs.** Protibiae and mesotibiae almost straight, not widened at the apex, interior edge strongly C-shaped and serrate in distal portion. Meso- and metatibiae with 1 large and 2–4 tiny teeth on interior edge. Interior edge of male mesotibiae distinctly sinuate in distal 1/3. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of ca. 10–14 sparse brown setae not extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed; its surface bare. Tarsi robust; tarsomere 2 triangular, as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite slightly arcuate. 2<sup>nd</sup> ventrite 2 x as long as 3<sup>rd</sup> one, posterior margin of 2<sup>nd</sup> ventrite straight. Male 5<sup>th</sup> ventrite flat, with weak depression near the apex, apical edge truncate. Female 5<sup>th</sup> ventrite convex, apical edge acute.

**Male genitalia.** Median lobe parallel-sided, apically acute; 0.7 x as long as apodeme; apex with dorsal angulate flange. Lateral edges of median lobe fused. Internal sac with dense spiculate fields in distal half, with large bifurcate aggonopodium consisting of two stick-shaped curved lobes connected proximally by transverse bridge. Ostium long stick-shaped, heavily sclerotized, protruded from preputial field of median lobe. Ligulae membranous. Parameres fused in basal 1/2, basal piece of tegmen narrow, tegminal apodeme 0.5 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with very short ramus and collum. Corpus slightly swollen. cornus slender, significantly extended beyond corpus. Tergite 8 subtrapezoid, with angulate fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, straight, with ill-defined caput.

**Distribution.** Tanzania: North Pare Mountains (Kiverenge Forest Reserve) (figs 365, 366).

**Bionomics.** Xerothermic forests; 1500 m a.s.l. Trees and shrubs canopy; on *Myrsine africana* (Myrsinaceae) (figs 371, 372).

**Material examined.** Tanzania: 9♂, 2♀, including holotype male, dissected (ZMUN) TZ-11-40, Kilimanjaro Reg., North Pare Mts., Kiverenge Forest Reserve, S3 48.647 E37 38.914 h = 1508 m, xerothermic forest, beating, on *Myrsine africana*, N.N. Yunakov leg., 14.v.2011.

**Etymology.** The name refers to Kiverenge Forest in North Pare Mountains where this species occurs.

### ***Sphrigodellus aberdarecola* Yunakov, sp. n.**

(figs 289–301, 365)

**Diagnosis.** Similar to *S. sundi* sp. n. and *S. taitae* sp. n. in general appearance. From *S. sundi* sp. n. it differs by size small [BL: 2.74–3.00 (2.87) in *S. sundi*—BL: 3.01–3.70 (3.45)]; subocular row consists of 4–5 setae; anterior portion of epifrons with median sulcus; frontal fovea long; male metatibiae weakly serrate; male elytra oblong-oval; median lobe with apex sharply narrowed; spermatheca with collum shorter. From *S. taitae* sp. n. it differs by eyes highest posteriorly; antennal scape thick; funicular segment 2 shorter than 3rd–4th together; elytra narrow; subocular row consists of 4–5 setae; subscutellar callosity with 2 tiny tubercles; median lobe in apical 1/5 sharply narrowed anteriorly; preputial opening elongate; ostium triangular; spermatheca with collum 2 x as long as ramus.

#### **Description.**

**Measurements.** BL: 2.74–3.00 (2.87) mm, BW: 1.30–1.52 (1.38) mm, BH: 1.10–1.20 (1.15) mm.

**Vestiture.** Body densely covered with overlapping, round scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 4–5 setae. Anterior setal fringe consists of 8 (1+1+1+1+1+1+1) suberect setae; they weakly differ from ones on pronotal disc. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–6 with distinct row of setae. Anterior half of elytra with rather short suberect setae (up to a third of interval width), posterior declivity with rather long, strongly erect, thick, truncate setae (as long as interval width). Ventral side rather sparsely squamose. Ventrites with scattered scales and short hairs. Metapleura densely squamose but scales not serried; basisternum and mesobasisternum bare. Antennal scape setose, with recumbent piliform scales; setae long, slender, acute, and erect. Funicle setose, without scales; setae suberect as long as funicular segment 7. Femora and tibiae external surface covered with overlapping scales and suberect setae, internal surface with sparse piliform scales and hairs, distal portion of tibiae internal surface without scales; setae on legs slender, acute. Male metatibiae with small grooming brush; hairs short. Tarsi setose.

**Coloration.** Integument of body deep-brown to black, of legs deep-brown. Background scaling deep-brown; spotted pattern formed by green scales. Dark and pale scales both with slightly pronounced pearl shine. In female: epifrons and vertex brown; anterior portion of epifrons, pterygia, subocular area, temples, genae, and articulation surface covered with green scales. Pronotum with deep-brown background scaling and 2 broad lateral green stripes. Elytra deep-brown, posterior declivity with broad transverse green stripe. Elytral intervals 5–7 with green spots in basal portion. Ventral side with sparse green scales. Femora brown-cupreous, proximal portion and ventral surface with green scales. Tibiae external surface cupreous. In male: background scaling coloration of head and body brownish-cupreous or confused (deepbrown+grey+green); anterior portion of epifrons, and subocular area covered with green scales. Pronotum brownish-cupreous, occasionally with two broad longitudinal brown stripes at the disc. Elytra coloration brownish-cupreous or confused (deep-brown + grey + green), posterior declivity with broad transverse stripe (consists of cupreous and green scales) banded by black scales on posterior margin. Elytral apex and intervals 3–11 with green spots in basal and apical portion.

**Head.** Rostrum as long as wide or weakly elongate [RL/RW: 1.00–1.19 (1.09)], slightly widened from base to apex. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Lateral

carinae convex. Epifrons weakly sinuate in middle, at the level of antennal articulation 1.5 x as wide as vertex width, distinctly sloping at sides, with median sulcus. Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons steep, with median sulcus. Frons vertical, glabrous, bare, with 4 setae. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 6 epistomal setae. Eyes orbicular, sublateral, strongly convex, highest posteriorly [FW/ELD: 1.09–1.14 (1.11)]. Vertex in male narrow, in female broad, flat. Frontal fovea visible, long, furrow-shaped.

**Antennae.** Scape extended behind anterior edge of pronotum, straight, swollen in distal portion. 1st funicular segment 1.2 x as long as 2nd; 2nd segment 2 x as long as wide; 3rd–4th weakly oblong; funicular segments 5–7 as long as wide. Club broadly-spindle-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.85–0.90 (0.86)], evenly slightly convex at sides, constricted at apex, widest anteriorly of the middle. Disc strongly convex longitudinally and transversally. Posterior edge straight. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Oblong-oval (male) to broadly-ovate (female) [EL/EW: 1.25–1.36 (1.31)]; anterior declivity arcuate, abrupt, sharpen; disc in male weakly convex, in female convex at disc [EL/BH: 1.48–1.64 (1.61)]. Subscutellar callosity reaches 3rd elytral interval, with 2 tiny tubercles.

**Legs.** Protibiae and mesotibiae almost straight, not widened at the apex, interior edge C-shaped, with tooth in distal portion. Meso- and metatibiae interior edge with 2 teeth. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 9 black setae not extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed, its surface partly setose. Tarsi robust; tarsomere 2 transverse, 1.5 x as wide as length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite flat, without depression near the apex, apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, in apical 1/5 sharply narrowed anteriorly; apex attenuate, narrowly rounded, dorso-ventrally slightly flattened; as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium elongate. Ligulae membranous. Parameres short, basal piece of tegmen very broad, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 3 setae. Spermatheca moderately sclerotized, with swollen ramus, collum slender 2 x as long as ramus. Corpus small, slightly swollen. cornus slender, extended beyond corpus. Tergite 8 subtrapezoid, with curved fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, caput not developed.

**Distribution.** Kenya: Aberdare Mountain Range.

**Bionomics.** Montane rain forests with *Croton sylvaticus*, *Garcinia livingstonei*, *Cassipourea malosana*, *Arundinaria alpina*, *Trema orientalis*, *Hibiscus* sp. and bamboo forest with *Arundinaria alpina* and *Lobelia* sp.; 2300–3000 m a.s.l. Trees and shrubs, canopy.

**Material examined.** Kenya: 3♂ including holotype (ZMUN) Central Prov., Nyandarua Distr. KE-063–065, Aberdare N.P., Salient, trail along Kinaini Riv. from Ruhuruini Gate, h = 2278–2283 m, 00°23'16.3–15.1"S, 036°49'03.3–55.2"E, N. Yunakov leg., 19.ii.2009. Paratypes: 1♀ (ZMUN) Central Prov., Nyandarua Distr. KE-072, Aberdare N.P., Salient, left board of Kinaini Riv. Valley, near Ruhuruini Gate, h = 2334 m 00°23'09.9"S, 036°48'52.2"E, N. Yunakov leg., 21.ii.2009; 9♂, 8♀ (BMNH) Kenya, Aberdare Range, 27.x.1934. / B.M. E. Afr. Exp. / B.M. 1935–203.", "Mt. Kinangop. / 9.000 ft. / J/ Ford/", "Bamboo forest.";

**Etymology.** The name is a Latin adjective meaning "inhabiting Aberdare mountains".

### *Sphrigodellus* sp. prope *aberdarecola*

**Diagnosis and note.** There are two specimens, from Mt. Kenya and Mbuyuni, presumably conspecific with *S. aberdarecola* sp. n. in most of external morphological characters; weakly differs from it in more slender antennal scape and rather narrowed apex of median lobe. By shape of antennal segments it is intermediate between *S. aberdarecola* sp. n. and *S. taitae* sp. n. From *S. taitae* these specimens differs by antennal scape with much longer erect setae; elytra rather oblong-oval; erect setae at posterior elytral declivity slender.

**Material examined.** 1♂, (MNHN) “Afrique or. anglaise / Monts Kenya vers’ ouest / zone alpine / Alluaud & Jeannel”, Prairies alpines / avec Bruyeres arbor. / zone alpine / 3300-3500 m / Janv-Fevr. 1912 St. 43”; 1♀, (MNHN) “Afrique or. Anglaise / Pori: Mbuyuni / Alluaud & Jeannel / Mars 1912 1110 St. 63”.

***Sphrigodellus sundi* Yunakov, sp. n.**  
(figs 302–316, 365)

**Diagnosis.** Similar to *S. aberdarecola* sp. n. and *S. taitae* sp. n. in general appearance. From *S. aberdarecola* sp. n. it differs by large size [BL: 3.01–3.70 (3.45) in *S. aberdarecola* sp. n.—BL: 2.74–3.00 (2.87)]; subocular row consists of 7 setae; anterior portion of epifrons without median sulcus; frontal fovea short; male metatibiae distinctly serrate; male elytra oval; median lobe in apical 1/3 evenly narrowed anteriorly; spermatheca with collum longer. From *S. taitae* sp. n. it differs by eyes highest posteriorly; antennal scape weakly curved, thick, evenly swollen in distal portion, covered with strongly erect setae; funicular segment 2 less robust, oblong (1.5 x as long as wide, 0.7 x as long as funicular segments 3 and 4 together; in *S. taitae* sp. n. 2nd funicular segment 2 x as long as wide and as long as 3rd and 4th together; pronotal disc strongly convex; elytra in male ovate, in female broadly-ovate [EL/EW: 1.20–1.37 (1.27)]; anterior edge arcuate, vertical; Subscutellar callosity of elytra with two tiny tubercles. Metatibial bevels with setose surface; aggonopodium 0.5 x as long as aedeagus; tip of median lobe oblong; ostium short; median lobe 1.5 x as long as apodeme; spermatheca with collum longer, 3 x as long as ramus (in *S. taitae* 2 x as long as ramus).

**Description.**

**Measurements.** BL: 3.01–3.70 (3.45) mm, BW: 1.52–2.00 (1.73) mm, BH: 1.44–1.80 (1.56) mm.

**Vestiture.** Body densely covered with overlapping, round scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 7 setae. Anterior setal fringe consists of 8 (1+1+1+1+1+1+1) suberect setae; they weakly differ from ones on pronotal disc. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–7 with distinct row of setae. Anterior half of elytra with rather short suberect setae (half as long as interval width), posterior declivity with rather long, strongly erect, thick, acute or spatulate setae (as long as interval width). Ventral side rather sparsely squamose. Ventrites with scattered scales and short hairs. Metapleura densely squamose but scales not serried; basisternum and mesobasisternum bare. Antennal scape setose, with recumbent piliform scales; setae long, slender, acute, and erect. Funicle setose, without scales; setae suberect as long as segment 7th. Femora and tibiae external surface covered with overlapping scales and suberect setae, internal surface with sparse piliform scales and hairs, distal portion of tibiae internal surface without scales; setae on legs slender, acute. Male metatibiae with small grooming brush; hairs short. Tarsi setose.

**Coloration.** Integument of body deep-brown to black, of limbs deep-brown. Background scaling deep-brown; spotted pattern formed by green scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface brown; occasionally anterior portion of epifrons green. Pronotum with deep-brown background scaling and 2 broad lateral green stripes spreading to dorsal surface close to posterior pronotal edge. Elytra deep-brown, posterior declivity with broad transverse green stripe delimited by black line. Elytral intervals 3–7 with green spots in basal portion; elytral apex green. Spotted pattern very variable. Occasionally humeral spots absent, very small or divided into several small spots or solitary green scales. Green scales may be replaced by cupreous ones or mixed with those. Ventral side with sparse green scales. Femora brown-cupreous, proximal portion and ventral surface with green scales. Tibiae external surface cupreous.

**Head.** Rostrum as long as wide or weakly elongate [RL/RW: 1.00–1.22 (1.07)], parallel-sided or slightly widened from base to apex. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Lateral carinae convex. Epifrons weakly sinuate in middle, at the level of antennal articulation 1.7 x as wide as vertex width, distinctly sloping at sides, with median sulcus. Transverse sulcus deep, concealed by dense scaling. Anterior portion of epifrons steep, without median sulcus. Frons vertical, glabrous, bare, with 4 setae. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 6 epistomal setae. Eyes orbicular, sublateral, strongly convex, highest posteriorly [FW/ELD: 1.03–1.29 (1.16)]. Vertex broad, flat. Frontal fovea visible, short, furrow-shaped.

**Antennae.** Scape extended behind anterior edge of pronotum, weakly curved, thick, evenly swollen in distal portion. 1st funicular segment 1.4 x as long as 2nd; 2nd funicular segment 2 x as long as wide, 0.7 x as long as segments 3rd and 4th together; 3rd–4th oblong; 5–7th moniliform, as long as wide. Club broadly-spindle-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.83–0.95 (0.89)], evenly slightly convex at sides, constricted at apex, widest at middle. Disc strongly convex longitudinally and transversally. Posterior edge straight. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Ovate (male) to broadly-ovate (female) [EL/EW: 1.20–1.37 (1.27)]; anterior declivity arcuate, abrupt, sharpen; disc in male weakly convex, in female convex [EL/BH: 1.28–1.50 (1.41)]. Subscutellar callosity reaches 3rd elytral interval, with 2 tiny tubercles.

**Legs.** Protibiae and mesotibiae almost straight, not widened distally; interior edge C-shaped, with tooth in distal portion. Meso- and metatibiae with 2 large and several small teeth between on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 8–9 black setae not extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed, its surface setose. Tarsi robust; tarsomere 2 transverse, 1.5 x as wide as length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite flat, without depression near the apex, apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, tubular, in apical 1/3 evenly narrowed anteriorly; apex attenuate, narrowly rounded, dorso-ventrally slightly flattened; 1.5 x as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium (0.5 x as long as aedeagus) consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium short. Ligulae membranous. Parameres short, basal piece of tegmen very broad, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 3 setae. Spermatheca moderately sclerotized, with short broad ramus, collum slender, 3 x as long as ramus. Corpus small, slightly swollen. cornus thick, extended beyond corpus. Tergite 8 subtrapezoid, with curved fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick; lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized; apodeme thick, caput large.

**Distribution.** Tanzania: Mt. Kilimanjaro (Fig. 365)

**Bionomics.** Montane rain forests; 2500–2700 m a.s.l. Trees and shrubs, canopy.

**Material examined.** Tanzania: 2♂ including holotype (ZMUN) Kilimanjaro Reg., TZ-18 Kilimanjaro N.P., Mandara Hut, h = 2730 m [Garmin Etrex; WGS84] 03°10'48.1"S, 037°30'54.6"E, beaten, mountain rain forest: *Schefflera* sp., *Mystroxydon aethiopicum*, *Dombeya* sp., N. Yunakov leg., 19.xi.2008; 1♂, 3♀ (ZMUN) Kilimanjaro Reg., TZ-18, Kilimanjaro N.P., Mandara Hut, h = 2730 m [Garmin Etrex; WGS84] 03°10'48.1"S, 037°30'54.6"E, beaten, mountain rain forest. *Schefflera* sp., *Mystroxydon aethiopicum*, *Dombeya* sp., N. Yunakov leg., 15.xi.2008; 1♂, 1♀ (ZMUN) Kilimanjaro Reg., TZ-15, Kilimanjaro N.P., Mandara Hut, h=2712 m, 03°10'55.0"S, 37°30'46.9"E, mountain rain forest, *Hypericum*, *Schefflera*, *Psychotria*, *Podocarpus*, *Mystroxydon aethiopicum*, N. Yunakov leg., 19.xi.2008; 1♂ (ZMUN) Kilimanjaro Reg., TZ-5a, Kilimanjaro N.P., 3.5 km E of Londorossi Gate, h = 2523 m 02°58'40.5"S, 37°09'13.8"E, N. Yunakov leg., 03.xi.2008.

**Etymology.** The name is dedicated to Karsten Sund (ZMUN) who prepared perfect photographs to this work.

### ***Sphrigodellus taitae* Yunakov, sp. n.**

(figs 17, 18, 175, 317–329, 365)

**Diagnosis.** Similar to *S. sundi* sp. n. and *S. aberdarecola* sp. n. in general appearance. From *S. aberdarecola* sp. n. it differs by antennal scape slender; funicular segment 2 as long as 3rd–4th together; elytra broad; subocular row consists of 7 setae; subscutellar callosity with 6 tiny tubercles; median lobe in apical 1/3 sharply narrowed anteriorly; ostium stick-shaped; spermatheca with collum 1.5 x as long as ramus. Differs from *S. sundi* sp. n. by eyes highest at the middle; antennal scape weakly curved, thick, evenly swollen in distal portion, covered with strongly erect setae; 2nd funicular segment 3 x as long as wide and as long as 3rd and 4th together (in *S. sundi* funicular segment 2 less robust, oblong 2 x as long as wide, 0.7 x as long as segments 3rd and 4th together);

pronotal disc strongly convex; elytra broadly-ovate in both sexes [EL/EW: 1.20–1.37 (1.27)]; subscutellar callosity of elytra with 6 tiny tubercles; metatibial bevels with partly setose surface; aggonopodium 0.3 x as long as aedeagus; tip of median lobe shorter; ostium long; median lobe 0.5 x as long as apodeme; spermatheca with collum shorter, 2 x as long as ramus (in *S. sundi* 3 x as long as ramus).

### **Description.**

**Measurements.** BL: 2.50–3.95 (3.22) mm, BW: 1.16–1.96 (1.57) mm, BH: 1.00–1.60 (1.33) mm.

**Vestiture.** Body densely covered with overlapping, round scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Subocular row consists of 7 setae. Anterior setal fringe consists of 8 (1+1+1+1+1+1+1) suberect setae; they weakly differ from ones on pronotal disc. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–6 with distinct row of setae. Anterior half of elytra with rather short suberect setae (half as long as interval width), posterior declivity with rather long, strongly erect, thick, acute or truncate spatulate setae (as long as interval width). Ventral side rather sparsely squamose. Ventriles with scattered scales and short hairs. Metapleura densely squamose but scales not serried; basisternum and mesobasisternum bare. Antennal scape setose, with recumbent piliform and round scales; setae long, slender, acute, and erect. Funicle setose, without scales; setae suberect, as long as funicular segment 7. Femora and tibiae external surface covered with overlapping scales and suberect setae, internal surface with sparse piliform scales and hairs, distal portion of tibiae internal surface without scales; setae on legs slender, acute. Male metatibiae with small grooming brush; hairs short. Tarsi setose.

**Integument.** Body brown to deep-brown; limbs deep-brown.

**Coloration.** Integument of body brown to deep-brown, of limbs deep-brown. Background scaling deep-brown; spotted pattern formed by green and cupreous scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface brown; occasionally anterior portion of epifrons green. Pronotum with 2 broad lateral green or cupreous stripes. Occasionally cupreous stripes outlined by green scales. Elytra background scaling deep-brown, basic pattern consists of two humeral spots and one transverse band on posterior declivity. Humeral spots when complete may be very large and spreading through the intervals 3–7. Spots delimited by black line. Ventral side with sparse green scales. Femora brown-cupreous, proximal portion and ventral surface with green scales. Tibiae external surface cupreous. Basic spotted pattern stated above may significantly vary. Amount, shape and topology of spots varying in broad range. Occasionally humeral spots absent, very small or divided into several small spots or solitary green scales. Green scales may be replaced by cupreous ones or mixed with those.

**Head.** Rostrum weakly elongate [RL/RW: 1.11–1.20 (1.14)], parallel-sided, weakly elongate. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers half-visible. Lateral carinae convex. Epifrons weakly sinuate in middle, at the level of antennal articulation 1.7 x as wide as vertex width, distinctly sloping at sides, with median sulcus. Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons not steep, without median sulcus. Frons steep, glabrous, bare, with 4 frontal setae. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 6 epistomal setae. Eyes orbicular, sublateral, strongly convex, highest at the middle [FW/ELD: 0.95–1.22 (1.09)]. Vertex flat, in male narrow in female broad. Frontal fovea well visible, short, furrow-shaped.

**Antennae.** Scape extended behind anterior edge of pronotum, thin, straight, sharply swollen in distal portion. 1st funicular segment as long as 2nd; 2nd funicular segment as long as 3rd and 4th together; segments 5–7 moniliform, as long as wide. Club broadly-spindle-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.78–0.93 (0.87)], evenly slightly convex at sides, constricted at apex, widest at middle. Disc weakly convex longitudinally and transversally. Posterior edge straight. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** broadly-ovate [EL/EW: 1.26–1.38 (1.31)]; anterior edge arcuate, vertical; disc in male weakly, in female strongly convex [EL/BH: 1.45–1.62 (1.55)]. Subscutellar callosity long, reaches 3rd elytral interval, with 4–6 tiny tubercles.

**Legs.** Protibiae and mesotibiae almost straight, not widened distally, in distal 1/3 weakly curved inwards; interior edge C-shaped, with or without teeth in distal portion. Meso- and metatibiae with 2 large teeth and several small ones in between on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 8–9 black setae not extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed, its surface partly setose. Tarsi robust; tarsomere 2 transverse, 1.5 x as wide as length; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 1.5 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female weakly convex near the apex; apical edge in male broadly rounded, in female acute.

**Male genitalia.** Median lobe parallel-sided, tubular, in apical 1/3 sharply narrowed anteriorly; preputial opening oblong; apex attenuate, narrowly rounded, dorso-ventrally slightly flattened; 0.7 x as long as apodeme. Internal sac without spiculate fields, with large, long aggonopodium (0.3 x as long as aedeagus) consisting of two stick-shaped lobes connected proximally by transverse bridge. Ostium elongate. Ligulae membranous. Parameres short, basal piece of tegmen very broad, tegminal apodeme 0.75 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 3 setae. Spermatheca moderately sclerotized, with short broad ramus, collum slender, 2 x as long as ramus. Corpus small, slightly swollen. cornus thick, extended beyond corpus. Tergite 8 subtrapezoid, with curved fringe of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, caput large.

**Distribution.** Kenya: Taita Hills (Vuria Mt.) (Fig. 365).

**Bionomics.** Montane cloud forests. 2200 m a.s.l.

**Material examined.** Kenya: 11♂, 7♀ including holotype male, dissected (TAU) Taita Hills, Vuria peak, S3 24 E38 18, 2200 m, L. Friedman leg., 19.ix.2005; 2♂, 2♀ (TAU) idem, Friedberg leg.

**Etymology.** The name is a Latin adjective meaning “inhabiting Taita Hills”.

### *Sphrigodellus lineatus* Yunakov, sp. n.

(figs 39, 40, 330–342, 365)

**Diagnosis.** Slightly similar to *S. nguruensis* sp. n. by pronounced striped pattern of elytra; large, moderately convex eyes, and narrow vertex. Differs from *S. nguruensis* sp. n. by strongly convex and coarsely striped scales; lateral carinae of rostrum and lateral edges of epifrons in anterior portion bare; setae as long as interval width; coloration without green scales, distinct striped pattern, formed by gray and brown scales; pterygia extended beyond contour of rostrum; epifrons steep sloping anteriorly (not vertical), parallel-sided at the level of antennal articulation 0.7 x as wide as vertex width, flat without median sulcus in anterior portion. [in *S. nguruensis* sp. n. vertical, significantly widened at the level of antennal articulation, 1.5 x as wide as vertex width]; Antennifers entirely visible in dorsal view; occiput not constricted; disc of pronotum without sublateral depressions and tubercles; elytra broadly oval; disc strongly convex [EL/BH: 1.33–1.44 (1.39)]; setal comb of protibiae dense, consists of 10–14 brown setae extending beyond external edge of tibiae; 2nd ventrite 2 x as long as 3rd one, its posterior margin arcuate; median lobe distinctly constricted in basal 1/3; aggonopodium consisting of 2 long proximal and 2 short distal stick-shaped lobes; spermatheca with large, swollen corpus; tergite 8 arcuate, fringe transformed to bunch setae.

#### **Description.**

**Measurements.** BL: 2.78–3.72 (3.29) mm, BW: 1.30–1.90 (1.59) mm, BH: 1.22–1.86 (1.56) mm.

**Vestiture.** Body densely covered with overlapping, round, striated, convex scales, setose. Setae of head form rows along lateral edges of epifrons (recumbent or subrecumbent) and above the eyes (erect). Lateral carinae of rostrum and lateral edges of epifrons in anterior portion bare. Subocular row consists of 4–5 setae. Lateral edges of epifrons in anterior half bare. Anterior setal fringe consists of 8 (3+1+1+3) erect setae; they distinctly differ from ones on pronotal disc. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1–6 with distinct row of setae. Setae as long as interval width. Ventrites with serried scales; male anal ventrite with short hairs in apical portion. Metapleura densely squamose, scales not serried; basisternum and mesobasisternum bare. Antennal scape setose and squamose; setae long, thick, acute, subrecumbent; scales serried. Funicle setose, without scales; setae suberect, as long as funicular segment 7. Femora and tibiae external surface covered with overlapping scales and suberect setae, internal surface with sparse hairs, distal portion of tibiae internal surface without scales; setae on legs slender, acute. Male metatibiae with sparse very small grooming brush; hairs short. Tarsi setose.

**Coloration.** Integument of body deep-brown to black, of limbs deep-brown. Background scaling grayish-brown; distinct striped pattern, formed by gray and brown scales. Dark and pale scales both with slightly pronounced pearl shine. Head brown, indistinctly grayish maculate. Pronotum with deep-brown background scaling and 5 distinct narrow longitudinal grey stripes: 1 discal and 4 lateral. Green scales absent. Elytra with brown background scaling, alternate striped pattern indistinct. Intervals 1, 3, 5, 7, 9–11. Ventral side including meso- and metapleura with grey scales. Sides of metasternum grey. Femora brown with grey bands in middle and proximal portion, and scattered grey scales occasionally merged in small spots. Tibiae external surface brown with distal grey band.

**Head.** Rostrum elongate [RL/RW: 1.26–1.32 (1.29)], parallel-sided. Pterygia extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers entirely visible in dorsal view. Lateral carinae convex. Epifrons almost parallel-sided in anterior portion, not sinuate in middle, at the level of antennal articulation 0.7 x as wide as vertex width, distinctly sloping anteriorly and at sides, not concave, without median sulcus. Transverse sulcus deep, partly concealed by scales. Frons steep sloping, glabrous, bare, with 4 frontal setae. Epistome vestigial, very narrow, transverse, delimited by narrow carina, bears 4 epistomal setae. Submentum convex. Eyes sublateral, broadly oval, moderately convex, highest posteriorly [FW/ELD: 0.71–0.92 (0.85)]. Vertex narrow, flat. Frontal fovea deep, weakly elongate. Occiput not constricted (see in lateral view).

**Antennae.** Scape extended behind anterior edge and reaches 1/2 of pronotum, weakly evenly curved and apically widened. 1st funicular segment as long as or 1.16 x as long as 2nd; 3rd–7th oblong. Club spindle-shaped.

**Thorax.** Pronotum transverse [PL/PW: 0.80–0.86 (0.83)], evenly slightly convex at sides, not constricted, widest at the middle. Disc strongly convex longitudinally and transversally, without sublateral depressions, carinae or tubercles. Posterior edge of pronotum straight. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Broadly oval [EL/EW: 1.33–1.42 (1.35)]; anterior edge vertical, carinate; disc in both sexes strongly convex [EL/BH: 1.33–1.44 (1.39)]. Subscutellar callosity reaches 3rd elytral interval, with 4–6 tiny tubercles.

**Legs.** Protibiae and mesotibiae almost straight, not widened at the apex, interior edge in distal portion weakly C-shaped and serrate. Meso- and metatibiae without teeth or weakly serrate on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae dense, consists of 10–14 brown setae extending beyond external edge of tibiae. Bevel of metatibiae narrowly enclosed, its surface densely setose. Tarsi robust; tarsomere 2 elongate, 1.5 x as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite straight. 2nd ventrite 2 x as long as 3rd one, its posterior margin arcuate. Male 5th ventrite flat, without depression near the apex, apical edge broadly rounded. Female 5th ventrite convex, apical edge acute.

**Male genitalia.** Median lobe distinctly constricted in basal 1/3, in apical 1/3 narrowed; apex acute, dorso-ventrally slightly swollen; slightly shorter than apodemes. Lateral edges of median lobe fused. Internal sac without spiculate fields, aggonopodium with large, long, consists of 2 stick-shaped straight lobes connected proximally by transverse bridge (2 long proximal, and 2 short, distal), in distal 1/3 with ill-sclerotized area separating proximal and distal parts of lobes. Ostium triangular heavily sclerotized, protruded from preputial field of median lobe. Ligulae membranous. Parameres fused in basal 2/3, basal piece of tegmen narrow, tegminal apodeme 0.5 x as long as apodemes of median lobe.

**Female genitalia.** Styli well developed, stick-shaped, bearing 2 setae. Spermatheca moderately sclerotized, with short ramus; collum slender 1.5 x as long as ramus. Corpus large, swollen. cornus slender, extended beyond corpus. Tergite 8 arcuate, fringe transformed to bunch of multiple, tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick; caput strongly developed.

**Distribution.** Tanzania: Udzungwa Mountains (Fig. 365).

**Bionomics.** Submontane rain forests. Trees and shrubs, canopy.

**Material examined.** Tanzania: 3♂, 2♀ including holotype, male (ZMUC) Iringa distr., Udzungwa Scarp Forest Reserve, 750 m, S8 31 58 E 35 54 00, 7.iii.1996 S. McKamey leg., canopy fog 36-GJ.

**Etymology.** The name is a Latin adjective meaning “striped”.



## *Oncophyes* Marshall

Marshall 1942: 20. Type species: *Ellimenistes amoenus* Hartmann, 1904, by original designation.

**Diagnosis.** Similar to *Cadoderus* in structure of head and general appearance, but differs by large size: [BL: 4.02–5.69 (4.96) mm, BW: 1.80–2.80 (2.38) mm, BH: 1.62–2.60 (2.17) mm]; funicle entirely squamose; coloration consisting of red-brown background and striped pattern formed by brown, cupreous and white scales; elytral intervals 1, 2, 4, 6 with distinct row of setae; subgenae and area of occipital suture bare, glabrous; rostrum as long as wide or weakly elongate [RL/RW: 1.00–1.10 (1.05)]; eyes flat, delimited by glabrous convex ring; vertex narrow; funicular segment 1 shorter than 2nd; posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum; subscutellar callosity very broad, glabrous, without tubercles, not hidden by scales; interior edge of protibiae and mesotibiae weakly C-shaped, with large teeth in distal portion; internal sac with spiculate fields and small aggonopodium consisting of two curved lobes connected proximally by transverse bridge and long, slender ventral process; female tergite 8 narrowly-subtrapezoid, apically acute.

### **Description.**

**Measurements.** BL: 4.02–5.69 mm, BW: 1.8–2.8 mm, BH: 1.62–2.60 mm.

**Vestiture.** Body densely covered with overlapping, recumbent, round, flat scales, setose. Epifrons covered with erect scales. Setae of head and body slender, truncate, form rows along lateral edges of epifrons (suberect) and above the eyes (erect). Subocular row consists of 2–3 setae. Pronotum evenly setose, without anterior setal fringe. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1, 2, 4, 6 (or 2, 4, 6) with distinct row of setae. Anterior half of elytra with rather short suberect setae (half as long as interval width), posterior declivity with rather long, strongly erect, thick, acute or truncate spatulate setae (as long as interval width). Ventral side of head capsule (except hls-ptp callosity), thorax and abdomen very densely squamose. Anterior part of pterygia, subgenae and area of occipital suture bare, glabrous. Antennal scape setose and densely squamose; scales round; setae long, slender, acute, and erect. Funicle setose and squamose; scales elongate; setae suberect, as long as funicular segment 7. Club densely tomentose. Femora and tibiae external and internal surfaces covered with overlapping scales and suberect, slender, acute setae. Male metatibiae with small grooming brush; hairs short. Tarsi setose and squamose.

**Coloration.** Integument of body brown to deep-brown; limbs deep-brown. Background red-brown; striped pattern formed by brown, cupreous, white or green scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface cupreous-brown, without stripes, temples green or red-brown. Pronotum with cupreous-brown background scaling and 4 distinct longitudinal deep-brown stripes (2 thin median stripes and 2 broad lateral stripes). Elytra background scaling deep-brown or cupreous with white V-shaped transversal band or cruciform spot at the middle and large median cupreous spot; dark-with cupreous stripes at the elytral intervals 2 and 4 or interval 1 cupreous. Ventral side cupreous or whitish-cupreous with scattered greenish scales. Femora and tibiae brown-cupreous, femora with transverse brown band in the middle.

**Head.** Rostrum as long as wide or weakly elongate [RL/RW: 0.96–1.10], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Antennifers entirely visible in dorsal view. Lateral carinae convex. Epifrons very narrow, parallel-sided, at the level of antennal articulation 1.78–2.00 x narrower than vertex, distinctly sloping at sides, with convex median carina (completely concealed by scales). Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons not steep, without median sulcus. Frons moderately declivous, glabrous, bare, with 4 frontal setae. Epistome convex, broad, arcuate, delimited by narrow carina, bears 2 tiny epistomal setae. Prementum with 2 setae. Mandibles with 3 setae. Eyes sublateral, large, orbicular, flat, delimited by glabrous convex ring [FW/ELD: 0.67–0.86]. Vertex narrow, flat. Frontal fovea elongate, partly concealed by scales.

**Antennae.** Scape extended behind anterior edge of pronotum, reaches anterior 1/3, weakly, evenly curved, thick. Funicular segment 1 shorter than 2nd; segments 3–7 oblong (3rd—1.50–1.54 x as long as wide; 7th —1.10–1.25 x as long as wide). Club broadly-spindle-shaped.

**Thorax.** Pronotum strongly transverse [PL/PW: 0.80–0.89], evenly slightly convex at sides, constricted at apex, widest at middle. Lateral longitudinal carina significantly developed to weak or absent. Disc weakly convex longitudinally and transversally. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Cordate, anterior edge arcuate, vertical, narrowly rounded [EL/EW: 1.30–1.40]; disc in male moderately in female strongly convex [EL/BH: 1.40–1.58]; posterior declivity evenly sloping; elytral apex narrowly rounded, almost acute. Subscutellar callosity broad to oblong-eggshaped, weakly or strongly convex, without tubercles. Elytral intervals flat.

**Legs.** Femora unarmed, clavate, swollen in middle part. Protibiae and mesotibiae curved, not widened at the apex. Interior edge weakly C-shaped with large teeth in distal portion. Metatibiae with large teeth on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 8–9 black short setae not extending beyond external edge of tibiae, partly hidden by spatulate setae. Bevel of metatibiae narrowly enclosed; its surface bare. Tarsi robust; setose pelma well developed; tarsomere 2 as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one. Claws connate in basal half.

**Abdomen.** 1st and 2nd ventrites fused but with distinct immovable suture. Posterior margin of 1st ventrite arcuate. 2nd ventrite 2 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female weakly convex near the apex; apical edge in male broadly rounded, in female narrowly rounded.

**Male genitalia.** Aedeagus heavily sclerotized. Median lobe parallel-sided, tubular, in apical 1/3 evenly narrowed anteriorly; apex lanceolate, acute, strongly with strong median arcuate sharp carina; 0.7 x as long as apodeme. Internal sac with spiculate fields and small aggonopodium consisting of two curved lobes connected proximally by transverse bridge and long ventral slender process. Ostium lanceolate, strongly sclerotized. Ligulae membranous. Parameres long, fused in basal half, basal piece of tegmen narrow, tegminal apodeme 0.5 x as long as apodemes of median lobe.

**Female genitalia.** Coxites heavily sclerotized, dorso-ventrally curved, with heavily sclerotized dorsal baculi, evenly covered with pores, without sensilla. Styli well developed, stick-shaped, bearing 1 seta. Spermatheca moderately sclerotized, with short broad ramus, collum slender, as long as ramus; corpus large, strongly swollen; cornus slender, extended beyond corpus. Spermathecal duct antirely tubular or bubble-shaped at distal end (Figs 353, 354). Tergite 8 narrowly-subtrapezoid, apically acute, with curved fringe of multiple tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, caput large.

### ***Oncophyes amoenus* (Hartmann)**

(figs 11, 12, 343–355, 359, 365, 368)

*Ellimenistes amoenus* Hartmann, 1904: 386. *Cadoderus amoenus*. Marshall (1926: 249). *Oncophyes amoenus*. Marshall (1942: 20).

**Diagnosis.** From *Cadoderus* species it strictly differs by large size [BL: 4.02–5.69 (4.96) mm; cupreous coloration of vestiture and large subscutellar callosity. From *O. cadoderoides* sp.n. differs by elytral interval 1 with row of setae; elytra background scaling with brown stripes at the elytral intervals 2 and 4; green scales absent; ventral side cupreous; vertex narrower [FW/ELD average: 0.77; in *O. cadoderoides*—0.81]; funicular segments 3–7 less oblong (3rd—1.50 x, 7th—1.10 x as long as wide); subscutellar callosity oblong, weakly convex.

### **Redescription.**

**Measurements.** BL: 4.02–5.69 (4.97) mm, BW: 1.80–2.80 (2.38) mm, BH: 1.62–2.60 (2.175) mm.

**Vestiture.** Scales round, flat. Setae of head and body slender, truncate, form rows along lateral edges of epifrons (suberect) and above the eyes (erect). Subocular row consists of 2–3 setae. Pronotum evenly setose, without anterior setal fringe. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 1, 2, 4, 6 with distinct row of setae.

**Coloration.** Background scaling red-brown; striped pattern formed by brown, cupreous and white scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface cupreous-brown, without stripes. Pronotum with cupreous-brown background scaling and 4 distinct longitudinal deep-brown stripes (2 thin median stripes and 2 broad lateral stripes). Elytra background scaling deep-brown with white V-shaped transversal band or cruciform spot at the middle and large median cupreous spot. Interval 1 cupreous. Ventral side cupreous. Femora and tibiae brown-cupreous, femora with transverse brown band in the middle.

**Head.** Rostrum as long as wide or weakly elongate [RL/RW: 1.00–1.10 (1.05)], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Lateral carinae convex. Epifrons very narrow, parallel-sided, at the level of antennal articulation 2 x narrower than vertex, distinctly sloping at sides, with convex median carina (completely concealed by scales). Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons not steep, without median sulcus. Eyes sublateral, large, orbicular, flat, delimited by glabrous convex ring [FW/ELD: 0.67–0.81 (0.75)].

**Antennae.** Scape extended behind anterior edge of pronotum, reaches anterior 1/3, weakly, evenly curved, thick. Funicular segment 1 shorter than 2nd; segments 3–7 oblong (3rd—1.50 x as long as wide; 7th—1.1 x as long as wide).

**Thorax.** Pronotum strongly transverse [PL/PW: 0.84–0.89 (0.86)], evenly slightly convex at sides, constricted at apex. Lateral longitudinal carina weakly developed or absent. Disc weakly convex longitudinally and transversally. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Cordate, anterior edge arcuate, vertical, narrowly rounded [EL/EW: 1.30–1.40 (1.35)]; disc in male moderately in female strongly convex [EL/BH: 1.40–1.56 (1.48)]; posterior declivity evenly sloping; elytral apex narrowly rounded, almost acute. Subscutellar callosity long and broad, weakly convex, without tubercles.

**Legs.** Protibiae and mesotibiae curved, not widened at the apex. Interior edge weakly C-shaped with large teeth in distal portion. Metatibiae with large teeth on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 8–9 black short setae not extending beyond external edge of tibiae, partly hidden by spatulate setae. Bevel of metatibiae narrowly enclosed; its surface bare. Tarsi robust; setose pelma well developed; tarsomere 2 as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite arcuate. 2nd ventrite 2 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite in male flat, in female weakly convex near the apex; apical edge in male broadly rounded, in female narrowly rounded.

**Male genitalia.** Median lobe parallel-sided, tubular, in apical 1/3 evenly narrowed anteriorly; apex lanceolate, acute, strongly with strong median arcuate sharp carina; 0.7 x as long as apodeme. Internal sac with spiculate fields and small aggonopodium consisting of two curved lobes connected proximally by transverse bridge and long ventral slender process. Ostium lanceolate, strongly sclerotized. Ligulae membranous. Parameres long, fused in basal half, basal piece of tegmen narrow, tegminal apodeme 0.5 x as long as apodemes of median lobe.

**Female genitalia.** Spermatheca moderately sclerotized, with short broad ramus, collum slender, as long as ramus; corpus large, strongly swollen; cornus slender, extended beyond corpus. Spermathecal duct tubular at distal end (Fig. 353). Tergite 8 narrowly-subtrapezoid, apically acute, with curved fringe of multiple tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, caput large.

**Distribution.** Tanzania: West Usambara Mountains (figs 365, 368).

**Bionomics.** Montane rain forests. 1600–1700 m a.s.l. Trees and shrubs, canopy.

**Type material.** Tanzania: Lectotype ♀, here designated (MTD) Tanga reg.: “Kwai, Weise [handwritten]”/ coll. J. Faust, Ankauf 1900 [blue, printed]/ Typus [red, printed]/Lectotypus, Ellimenistes amoenus Hartman, Dr. E. Haaf, 1962; PLT m (MTD): Tanzania: Tanga reg.: “Usambara [Kraatz leg., ? handwritten]”/coll. J. Faust, Ankauf 1900 [blue, printed]/Typus [red, printed]; 1♂ “Kwai, Weise [handwritten]”/coll. J. Faust, Ankauf 1900 [blue, printed]; 1♂ “Usambara, Kraatz [handwritten]”/coll. J. Faust, Ankauf 1900 [blue, printed].

**Material examined.** Tanzania: 27♂, 23♀ (ZMUC) Tanga reg., Lushoto distr. Mazumbai Forest Reserve, S4 49 E 38 29, 1650–1730 m, canopy fog 28-DD-DM, N. Scharff leg., 26.xi.1995; 1♂ (ZMUN) TZ-11-86, Tanga Reg., West Usambara Mts., Bombo Forest Reserve, S4 48.966 E38 29.982 h = 1693 m, montane rain forest, beating, N.N. Yunakov leg., 22.v.2011; 1♂, 1♀ (DEI) “Usambara, P. Weise/ coll. Kraatz/ Cadoderus amoenus Hartm., Hustache det.”; 2♂, 1♀ (DEI) “Usambara/ coll. Pape/ Cadoderus amoenus Hartm., Hustache det.”

### ***Oncophyes cadoderoides* Yunakov, sp.n.**

(figs 13, 14, 354, 356–364, 368)

**Diagnosis.** Similar to *Cadoderus* species in general appearance but definitely differs by flat eyes and large subscutellar callosity. From *O. amoenus* differs by elytral interval 1 without row of setae; elytra background

scaling cupreous with dark-cupreous stripes at the elytral intervals 2 and 4. Occasionally 1st and 7th intervals green. Ventral side cupreous or whitish-cupreous with scattered greenish scales; vertex wider [FW/ELD average: (0.813) in *O. amoenus* (0.77)]; funicular segments 3–7 rather oblong (3rd—1.54 x, 7th —1.25 x as long as wide; in *O. amoenus* 3rd—1.50 x, 7th —1.10 x as long as wide); subscutellar callosity oblong-egg-shaped, strongly convex.

#### **Description.**

**Measurements.** BL f: 4.22–4.77 (4.49) mm, BW f: 1.97–2.42 (2.19), BH f: 1.77–2.12 (1.94) mm.

**Vestiture.** Scales round, flat. Setae of head and body slender, truncate, form rows along lateral edges of epifrons (suberect) and above the eyes (erect). Subocular row consists of 2–3 setae. Pronotum evenly setose, without anterior setal fringe. Posterior setal fringe consists of spatulate setae, partly hidden by posterior edge of pronotum. Elytral intervals 2, 4, 6 with distinct row of setae.

**Coloration.** Background scaling red-brown; striped pattern formed by brown, cupreous and green scales. Dark and pale scales both with slightly pronounced pearl shine. Head dorsal surface cupreous-brown, without stripes, temples green or red-brown. Pronotum with cupreous-brown background scaling and 4 indistinct longitudinal deep-brown stripes (2 thin median stripes and 2 broad lateral stripes). Elytra background scaling cupreous with dark-cupreous stripes at the elytral intervals 2 and 4. Occasionally 1st and 7th intervals green. Ventral side cupreous or whitish-cupreous with scattered greenish scales. Femora and tibiae brown-cupreous, femora with transverse brown band in the middle.

**Head.** Rostrum almost as long as wide [RL/RW: 0.96–1.06 (1)], parallel-sided. Pterygia not extended beyond contour of rostrum. Antennal sockets dorsal. Lateral carinae convex. Epifrons very narrow, parallel-sided, at the level of antennal articulation 1.78 x narrower than vertex, distinctly sloping at sides, with convex median carina (completely concealed by scales). Transverse sulcus deep, concealed by dense scaling at dorsal surface and at sides. Anterior portion of epifrons not steep, without median sulcus. Epistome convex, broad, arcuate, delimited by narrow carina, bears 2 tiny epistomal setae. Eyes sublateral, large, orbicular, flat, delimited by glabrous convex ring [FW/ELD: 0.77–0.86 (0.81)].

**Antennae.** Scape extended behind anterior edge of pronotum, reaches anterior 1/3, weakly, evenly curved, thick. Funicular segment 1 shorter than 2nd; segments 3–7 oblong (3rd—1.54 x as long as wide; 7th—1.25 x as long as wide).

**Thorax.** Pronotum strongly transverse [PL/PW: 0.80–0.87 (0.84)], evenly slightly convex at sides, constricted at apex. Lateral longitudinal carina significantly developed. Disc weakly convex longitudinally and transversally. Tergosternal suture complete. Metanepisternal suture obsolete posteriorly.

**Elytra.** Cordate, anterior edge arcuate, vertical, narrowly rounded [EL/EW: 1.32–1.39 (1.36)]; disc in male moderately in female strongly convex [EL/BH: 1.49–1.58 (1.53)]; posterior declivity evenly sloping; elytral apex narrowly rounded, almost acute. Subscutellar callosity oblong-egg-shaped, strongly convex, without tubercles.

**Legs.** Protibiae and mesotibiae curved, not widened at the apex. Interior edge weakly C-shaped with large teeth in distal portion. Metatibiae with large teeth on interior edge. Mucro well developed, thorn-shaped, acute. Setal comb of protibiae consists of sparse 8–9 black short setae not extending beyond external edge of tibiae, partly hidden by spatulate setae. Bevel of metatibiae narrowly enclosed; its surface bare. Tarsi robust; setose pelma well developed; tarsomere 2 as long as wide; tarsomere 3 with two wide lobes; tarsomere 5 of metatarsus extending beyond apical lobes of 3rd by length of the last one.

**Abdomen.** Posterior margin of 1st ventrite arcuate. 2nd ventrite 2 x as long as 3rd one, posterior margin of 2nd ventrite straight. 5th ventrite weakly convex near the apex; apical edge in male broadly rounded, in female narrowly rounded.

**Male genitalia.** Male unknown.

**Female genitalia.** Spermatheca moderately sclerotized, with short broad ramus, collum slender, as long as ramus; corpus large, strongly swollen; cornus slender, extended beyond corpus. Spermathecal duct forms bubble-shaped reservoir at distal end (Fig. 354). Tergite 8 narrowly-subtrapezoid, apically acute, with curved fringe of multiple tenuous, short setae at the apex. Sternite 8 thick. Lamella sharply narrowed and acute, without setae, knife-shaped, heavily sclerotized. Apodeme thick, caput large.

**Distribution.** Tanzania: West Usambara Mountains (Ambangulu Forest), East Usambara (Amani Nature Reserve) (Fig. 368).

**Bionomics.** Montane forests. Recorded from *Cinchona* tree plantation.

**Material examined.** Tanzania: Holotype, ♀ (BMNH) Tanzania, Korogwe, Ambangulu Estates, B. Shott leg., 6.vi.1976, 1100 m a.s.l., on Cinchona; Paratypes: 1 ♀ (BMNH) labeled as holotype; 1 ♀ (BMNH) “Tanganyika / Amani / 7.xii.1935”, “N.L.H. Krauss / B.M. 1952-38”; 1 ♀ (BMNH) Amani / G.E.A. / xii 1912 / Dr Morstatt”, “G.A.K. Marshall / coll / B.M. 1950-255”, “Oncophyes sp.n.”

**Etymology.** The name is a Latin adjective meaning “resembling *Cadoderus*”.

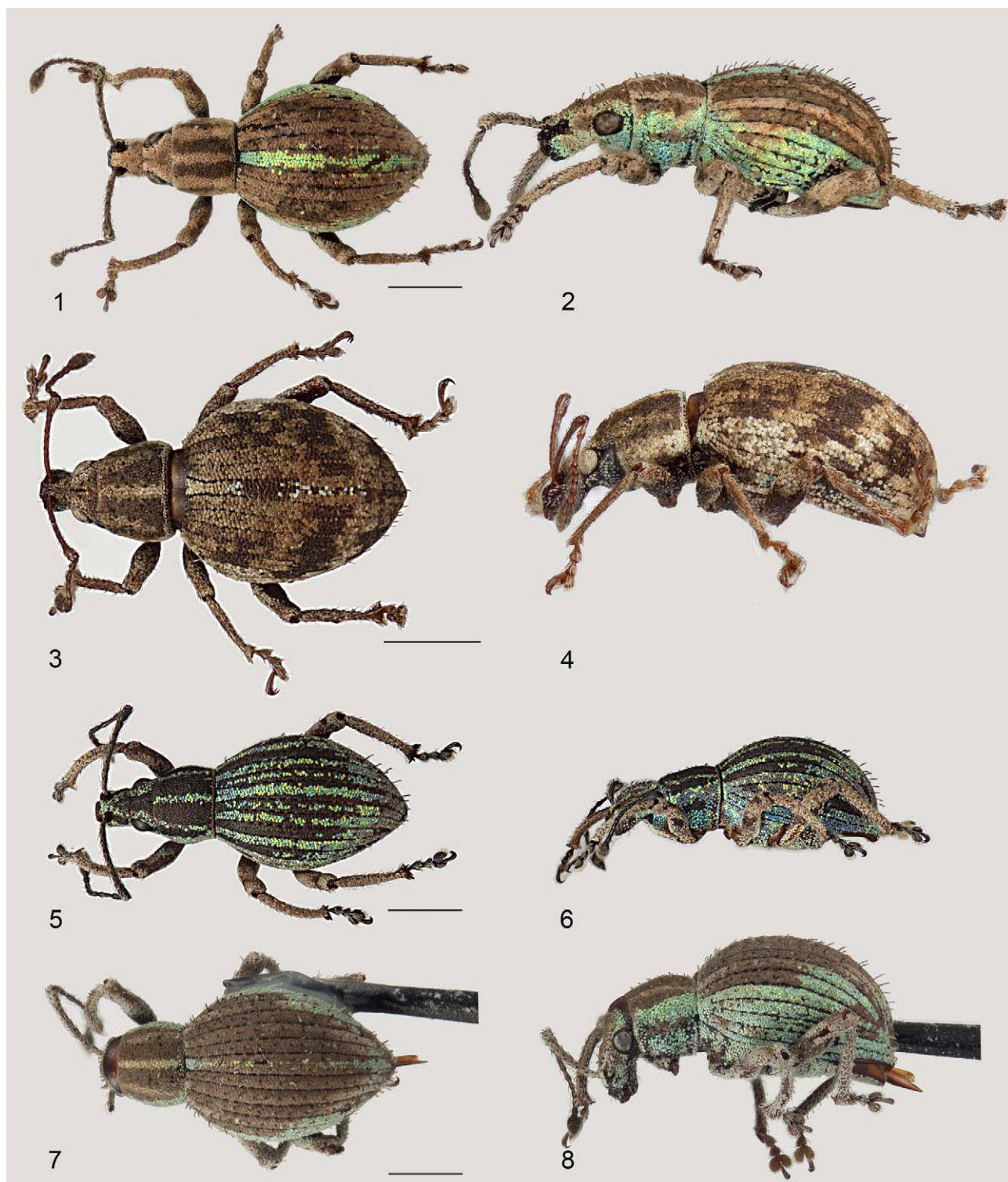
## Acknowledgements

The author thanks Maxwell Barclay & Richard Thompson (BMNH), Lutz Behne (DEI), Ariel-Leib-Leonid Friedman (TAU), Vasily Grebennikov (CNC), Vladimir Gusarov (ZMUN), Klaus Klass & Olaf Jäger (MTD), Alexey Solodovnikov (ZMUC), and Hélène Perrin (MNHN) for supplying the material and type specimens. Grateful appreciation is extended to Karsten Sund (ZMUN) who made the perfect colour photographs of weevils. I am also grateful to Maxwell Barclay (BMNH) who kindly linguistically revised this text and to two anonymous reviewers for improving the manuscript. This work was supported by the SIU (The Norwegian Centre for International Cooperation in Higher Education) grant PITRO III/10039 to Vladimir Gusarov (ZMUN).

## References

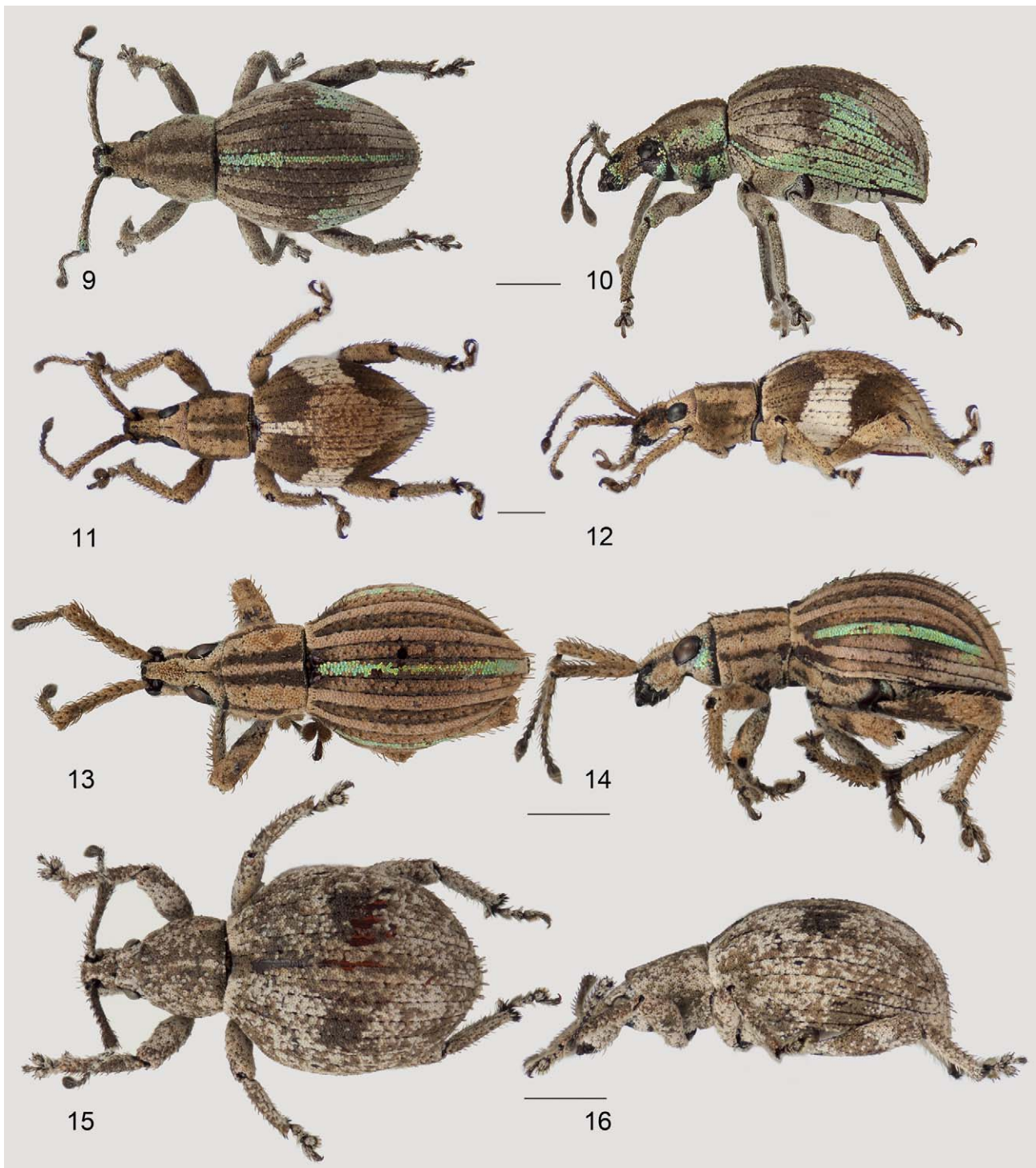
- Arzanov, Y.G. (2003) Use of the endophallus characters in the systematics of the rhynchophorous beetles (Coleoptera, Curculionoidea). *Entomological Review*, 83(8), 930–944.
- Doyen, J.T. (1966) The Skeletal Anatomy of *Tenebrio molitor* (Coleoptera: Tenebrionidae). *Miscellaneous publications of the Entomological Society of America*, 5(3), 103–150.
- DuPorte, E.M. (1960) Evolution of cranial structure of adult. Coleoptera. *Canadian Entomologist*, 38, 655–675.
- Faust, J. (1896) Beitrag zur Kenntniss der Fauna von Deutsch-Ost-Afrika. *Deutsche Entomologische Zeitschrift*, 1896 (1), 113–146.
- Faust, J. (1900) Neue Curculioniden aus Deutsch-Ost-Afrika. *Deutsche Entomologische Zeitschrift*, 1899 (2), 321–344.
- Franz, N.M. (2012) Phylogenetic reassessment of the *Exophthalmus* genus complex (Curculionidae: Entiminae: Eustylini, Geonemini). *Zoological Journal of the Linnean Society*, 164, 510–557.
- Hartmann, F. (1904) Neue Rüsselkäfer aus Ostafrika. *Deutsche Entomologische Zeitschrift*, 1904 (2), 369–419.
- Hustache, A. (1929) Curculionidae. *Voyage de Ch. Alluaud et R. Jeannel en Afrique Orientale (1911–1912). Résultats scientifiques, Coleoptera*, 30, 365–562 + pl.X–XI.
- Lona, C. (1937) Curculionidae: Otiorrhynchinae II. In: S. Schenkling (ed.), *Pars 160. Coleopterorum Catalogus auspiciis et auxilio W. Junk*, Berlin, pp. 227–412.
- Marshall, G.A.K. (1926) New South African Curculionidae (Coleoptera). *Annals of the Natal Government Museum, Pietermaritzburg* 5(3): 235–282. 1pl. 2 fig.
- Marshall, G.A.K. (1934) New injurious Curculionidae (Col.) from Tanganyika. *Bulletin of entomological research*, 25, 495–500.
- Marshall, G.A.K. (1940) Coryndon Memorial Museum expedition to the Chyulu Hills. VII. The weevils (Col. Curculionidae) of the Chyulu Hills, Kenya. Coleoptera. Part 2. *Journal of East Africa Natural History Society, Nairobi*, 15, 36–73
- Marshall, G.A.K. (1942) On some East African Otiorrhynchinae (Col., Curcul.). *Annals and Magazine of Natural History*, ser. 11, 9, 1–26. Marshall, G.A.K. (1944) New East African Curculionidae. *Journal of the East African Natural History Society, Nairobi*, 17(5–6), 308–354.
- Marshall, G.A.K. (1952) Taxonomic notes on Curculionidae (Col.). *Annals and Magazine of Natural History*, ser. 12, 5, 261–270.
- Morimoto, K., Kojima, H. & Miyakawa, S. (2006) The insects of Japan. Volume 3. Curculionoidea: general introduction and Curculionidae: Entiminae (part 1). Phyllobiini, Polydrusini and Cyphicerini (Coleoptera). Touka Shobo Co. Ltd., Fukuoka, iv + 406 pp.
- Oberprieler, R.G. (1988) Revision of the Tanyrhynchini of continental Africa (Coleoptera, Curculionidae) I. Introduction and review of the genera, revision of the genus *Brachytrachelus* Schönherr and description of *Afroleptops* gen.nov. *Entomology Memoir, Department of Agriculture and Water Supply Republic of South Africa*, 71, 1–50.
- Prena, J. (2010) The Middle American species of *Peridinetus* Schönherr (Coleoptera: Curculionidae: Baridinae). *Zootaxa*, 2507, 1–36.
- Stüben, P. & Astrin, J.J. (2010) Molecular phylogeny of the weevil genus *Kyklioacalles* Stüben, with descriptions of a new subgenus *Glaberacalles* and two new species (Curculionidae: Cryptorhynchinae). *Zootaxa*, 2662, 28–52.
- Thompson, R.T. (1992) Observations on the morphology and classification of weevils (Coleoptera, Curculionoidea) with a key to major groups. *Journal of Natural History*, 26, 835–891.
- Velázquez de Castro, A.J., Alonso-Zarazaga, M.A. & Outereiro, R. (2007) Systematics of Sitonini (Coleoptera: Curculionidae: Entiminae), with a hypothesis on the evolution of feeding habits. *Systematic Entomology*, 32, 312–331
- Werner, M. & Simmons, L.W. (2008) The evolution of male genitalia: functional integration of genital sclerites in the dung beetle *Onthophagus taurus*. *Biological Journal of the Linnean Society*, 93, 257–266.

## List of figures

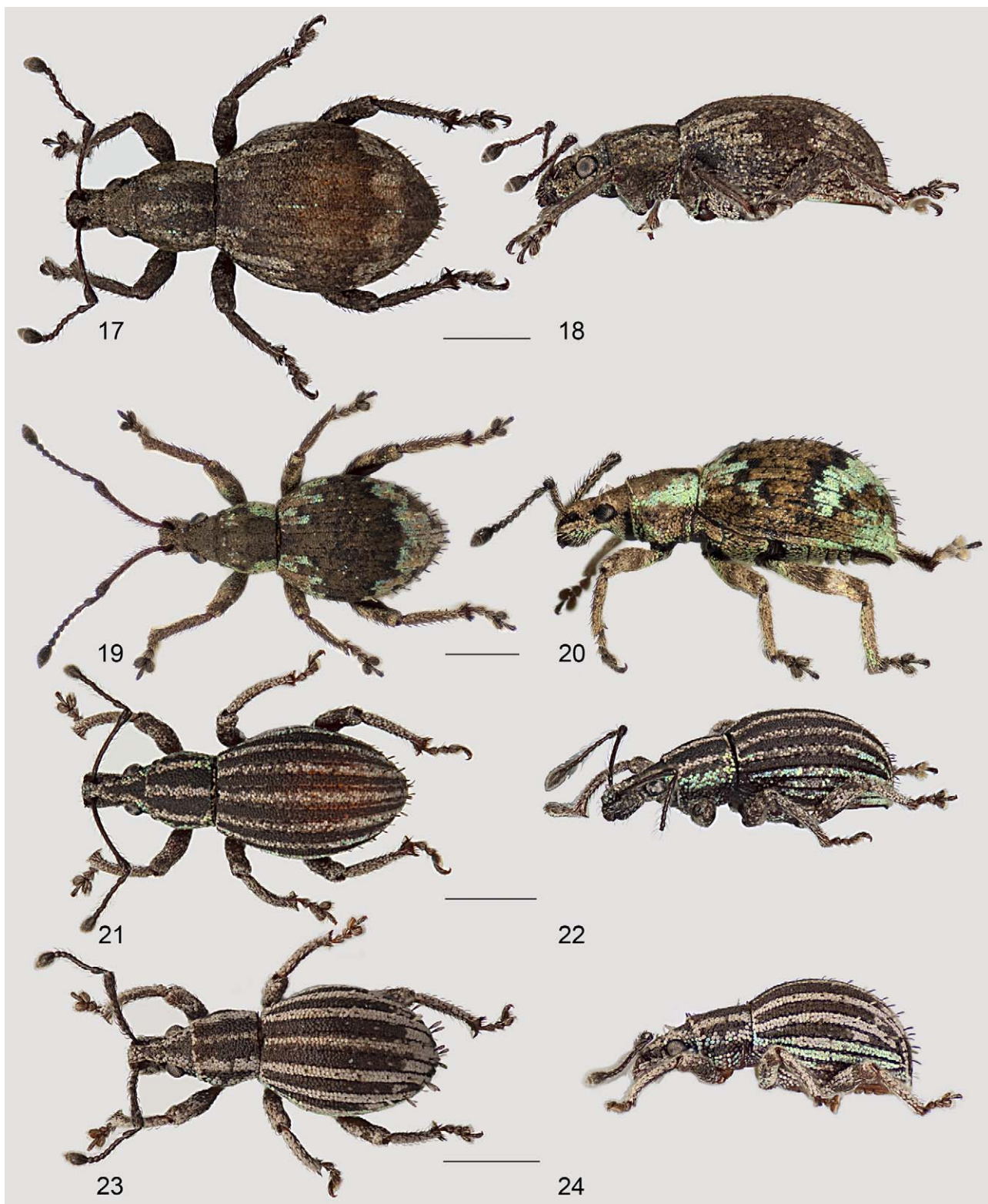


**FIGURES 1–8.** Dorsal and lateral habitus of *Cadoderus* species. 1–2, *Cadoderus bellus* (Faust) 3–4, *C. mysticus* (Faust); 5–6, *C. grebennikovi* sp. n.; 7–8, *C. olivaceus* sp. n. Scale bar: 1 mm.



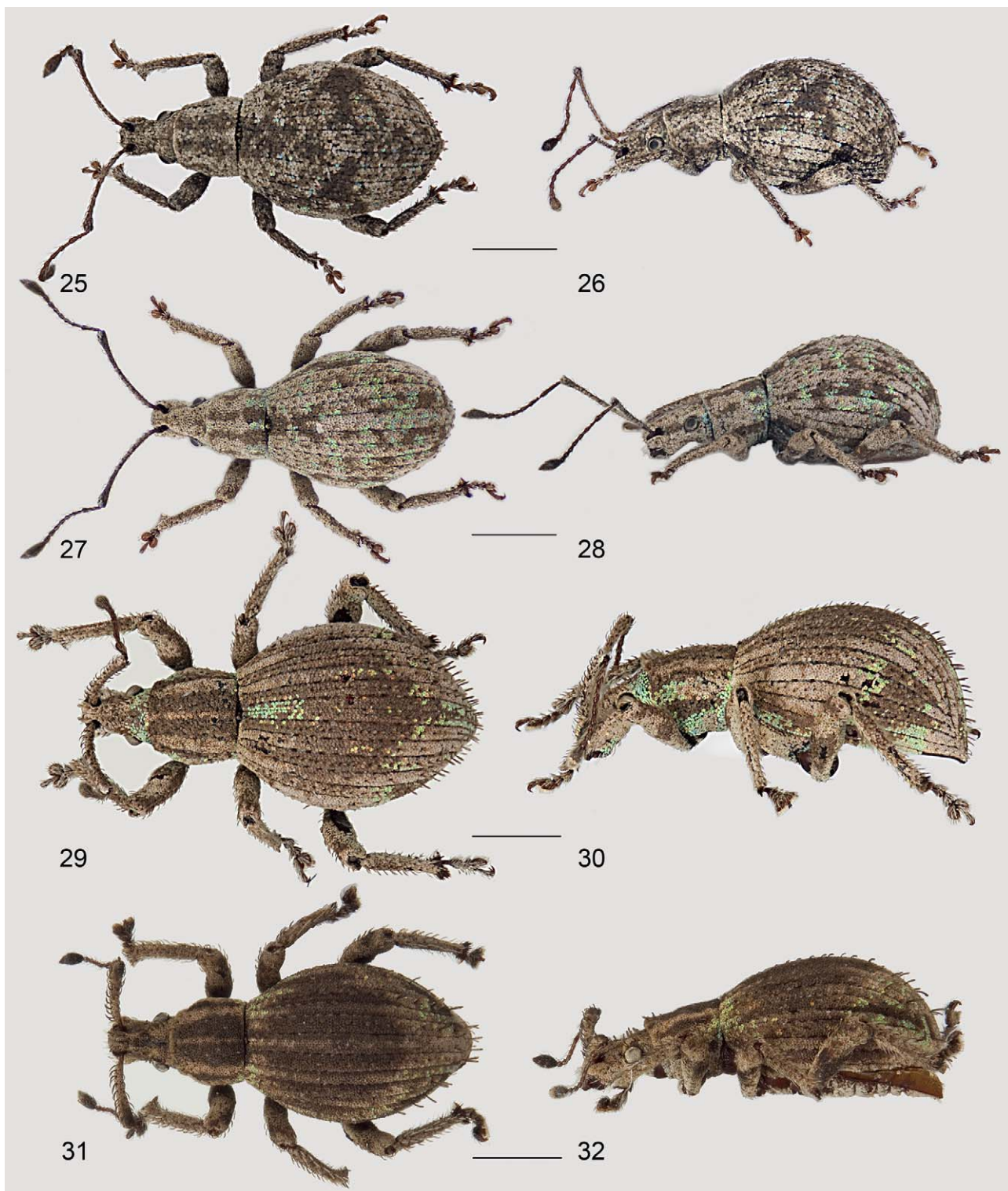


**FIGURES 9–16.** Dorsal and lateral habitus of *Cadoderus*, *Oncophyes*, and *Sphrigodellus* species. **9–10**, *C. burundi* sp. n.; **11–12**, *O. amoenus* (Hartmann); **13–14**, *O. cadoderoides* sp. n.; **15–16**, *S. centralis* (Hustache); Scale bar: 1 mm.

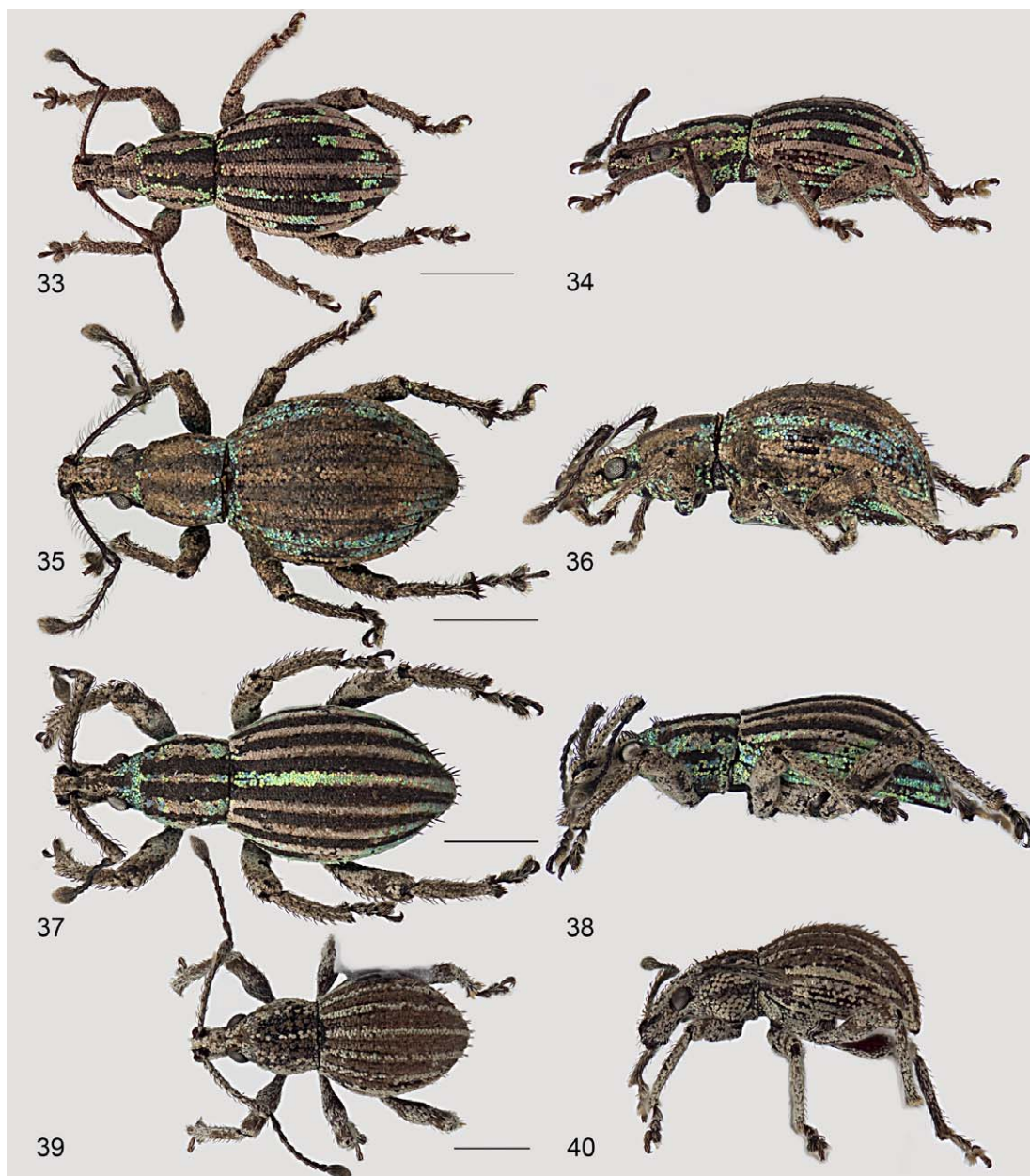


**FIGURES 17–24.** Dorsal and lateral habitus of *Sphrigodellus* species. **17–18**, *S. taitae* sp. n.; **19–20**, *S. sundi* sp. n.; **21–22**, *S. parecola* sp. n.; **23–24**, *S. minutus* sp. n. Scale bar: 1 mm.





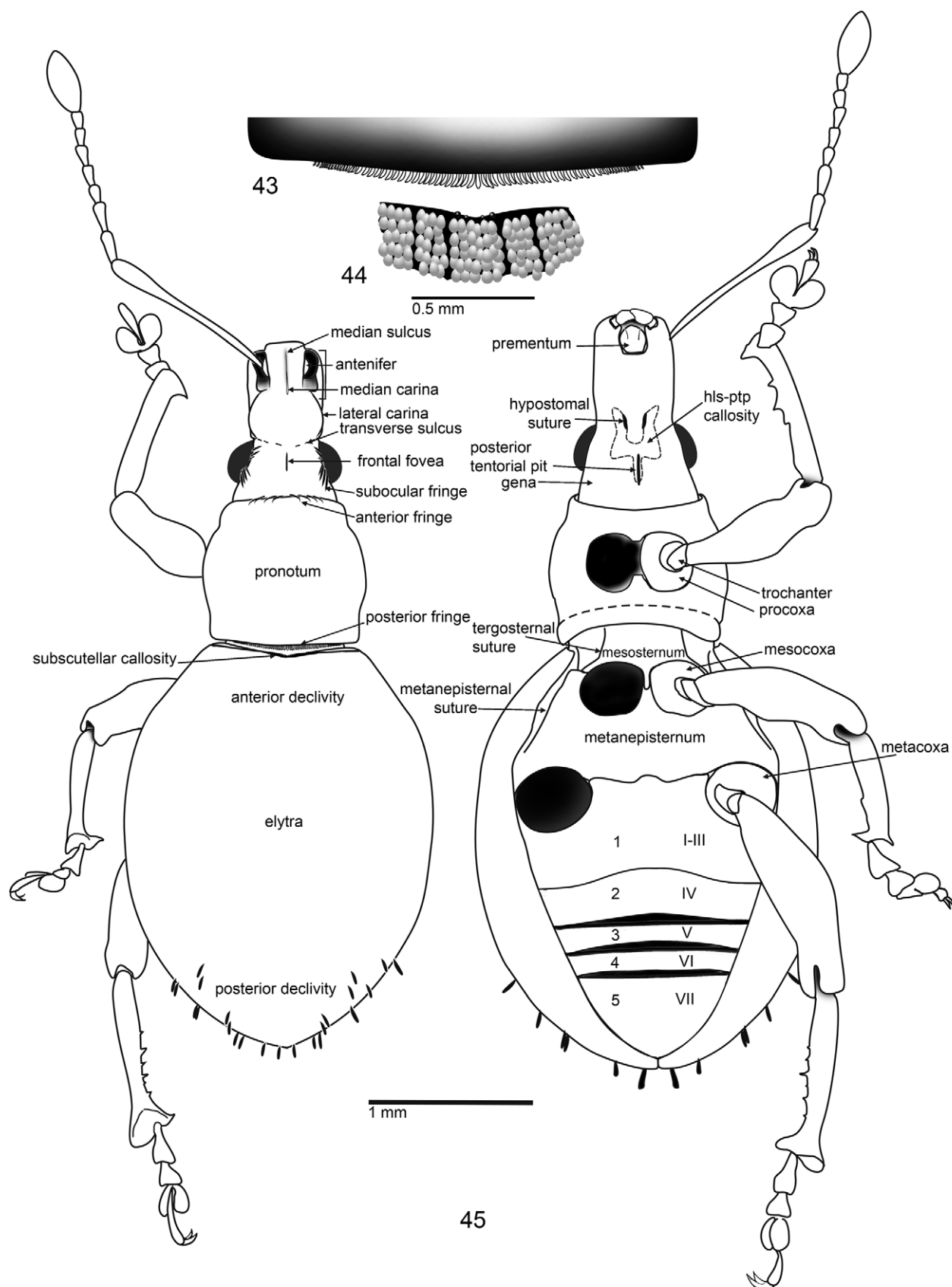
**FIGURES 25–32.** Dorsal and lateral habitus of *Sphrigodellus* species. **25–26,** *S. kiverengei* sp. n.; **27–28,** *S. viridegriseus* sp. n.; **29–30,** *S. usambaricus* sp. n.; **31–32,** *S. lepidus* Scale bar: 1 mm.



**FIGURES 33–40.** Dorsal and lateral habitus of *Sphrigodellus* species. 33–34, *S. gusarovi* sp. n.; 35–36, *S. nasutus* sp. n.; 37–38, *S. nguruensis* sp. n.; 39–40, *S. lineatus* sp. n. Scale bar: 1 mm.

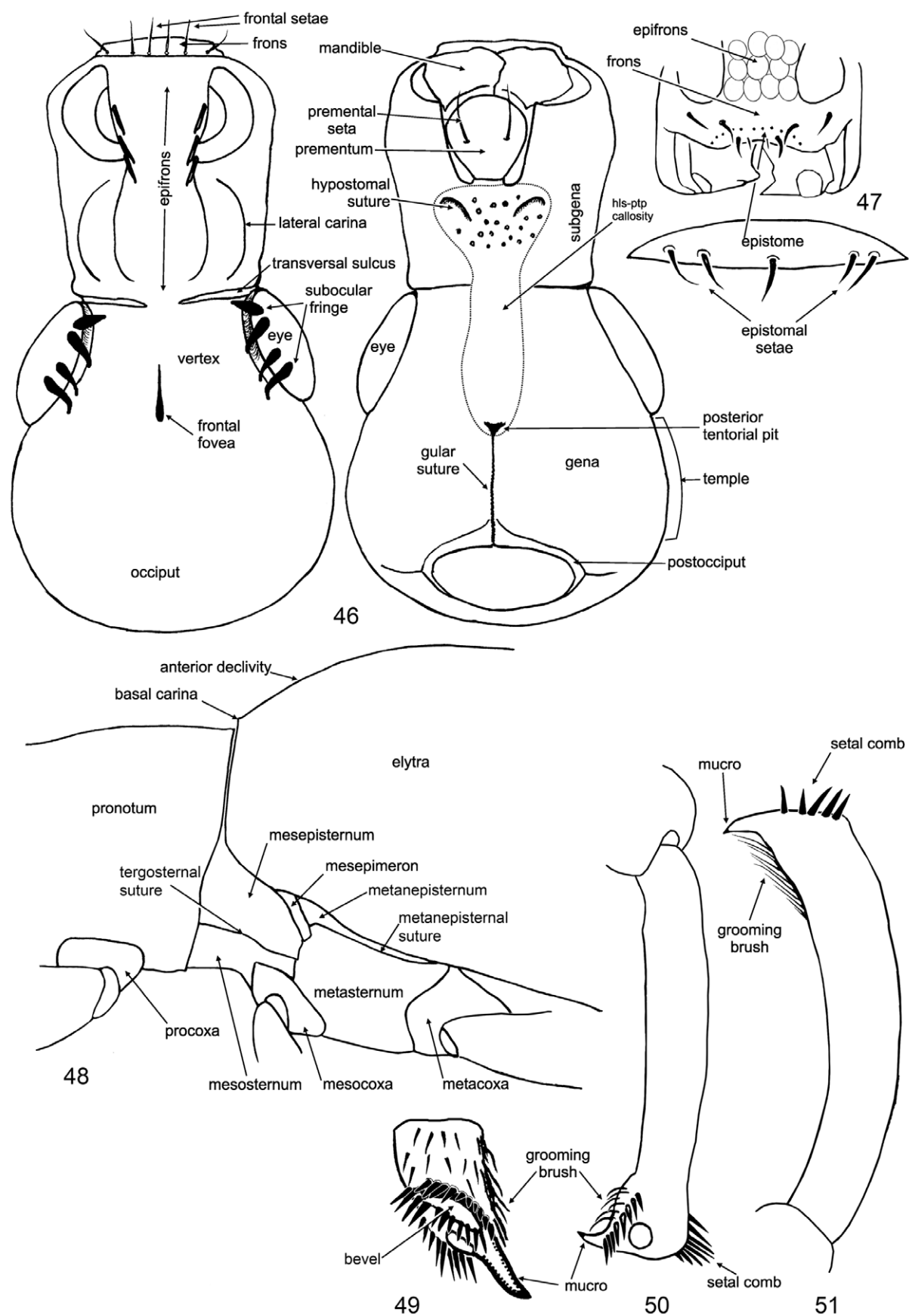


**FIGURES 41–42.** Unidentified species of Conoderinae with convergent colour pattern to that of *Cadoderus*, *Sphrigodellus* and some other canopy-dwelling weevils inhabiting African montane cloud forests. Scale bar: 1 mm.

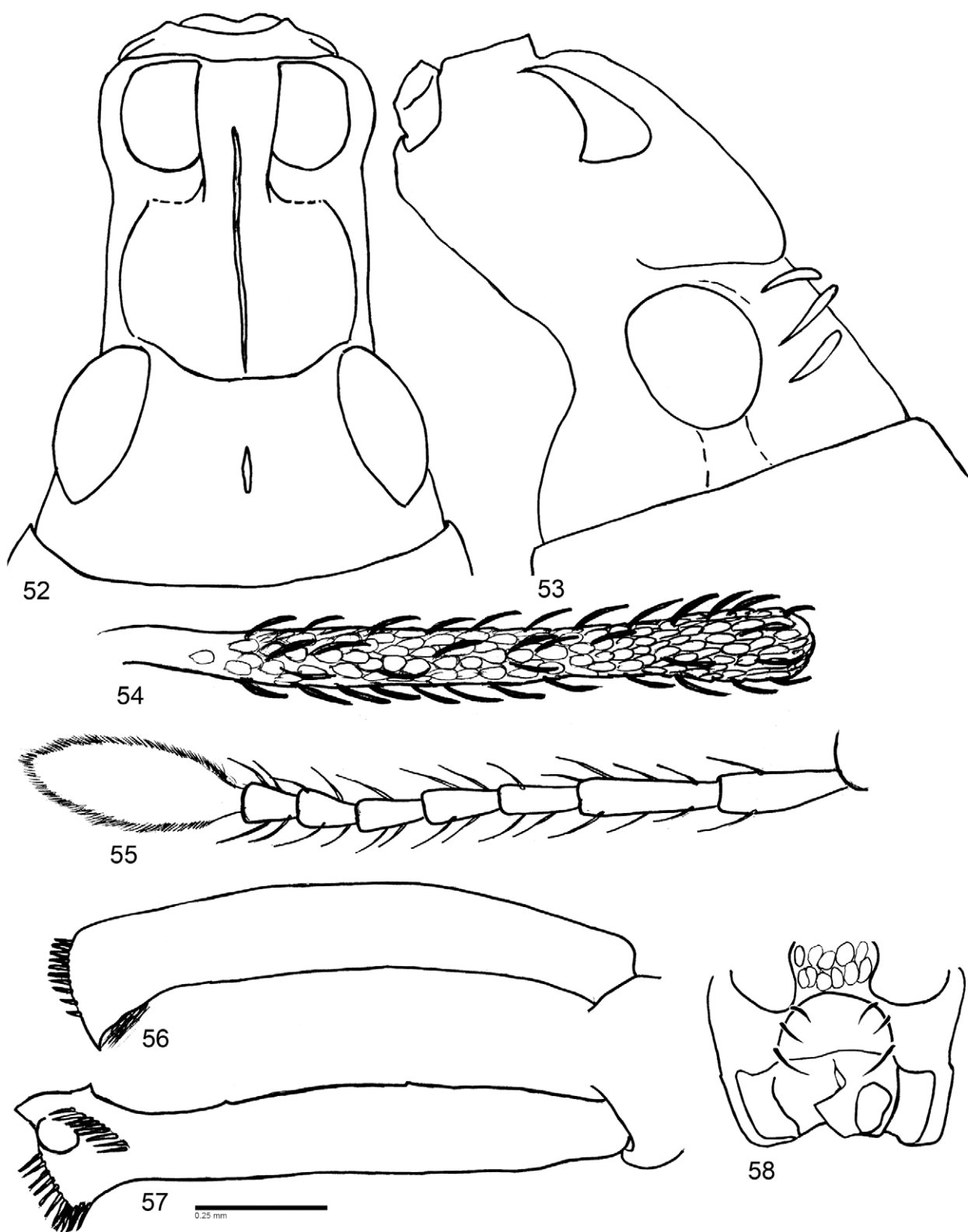


**FIGURES 43–45.** Structural details of *Sphrigodellus gusarovi* sp. n.. **43**, posterior fringe; **44**, subcutellar callosity; **45**, annotated drawings of dorsal and ventral structures of female.

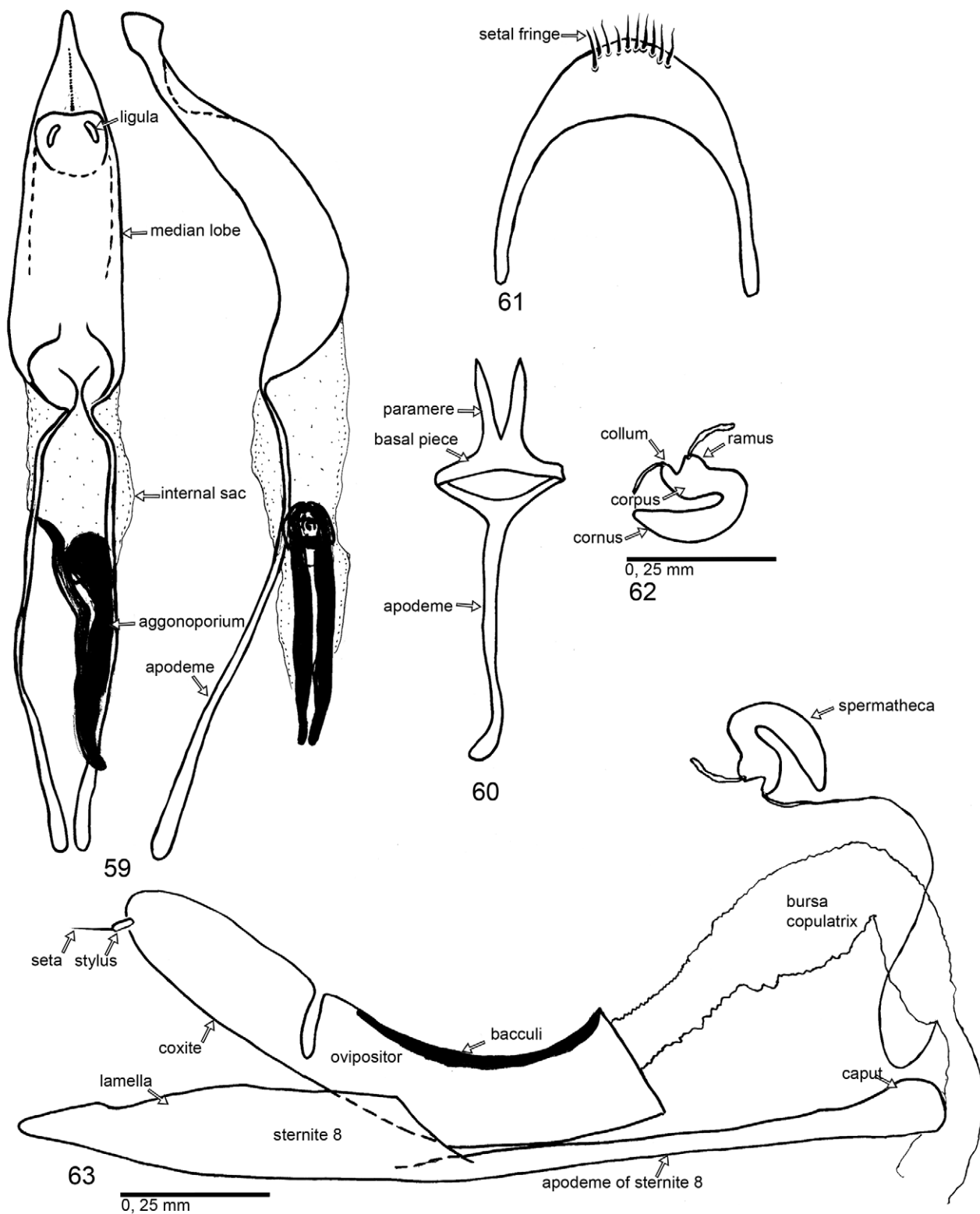




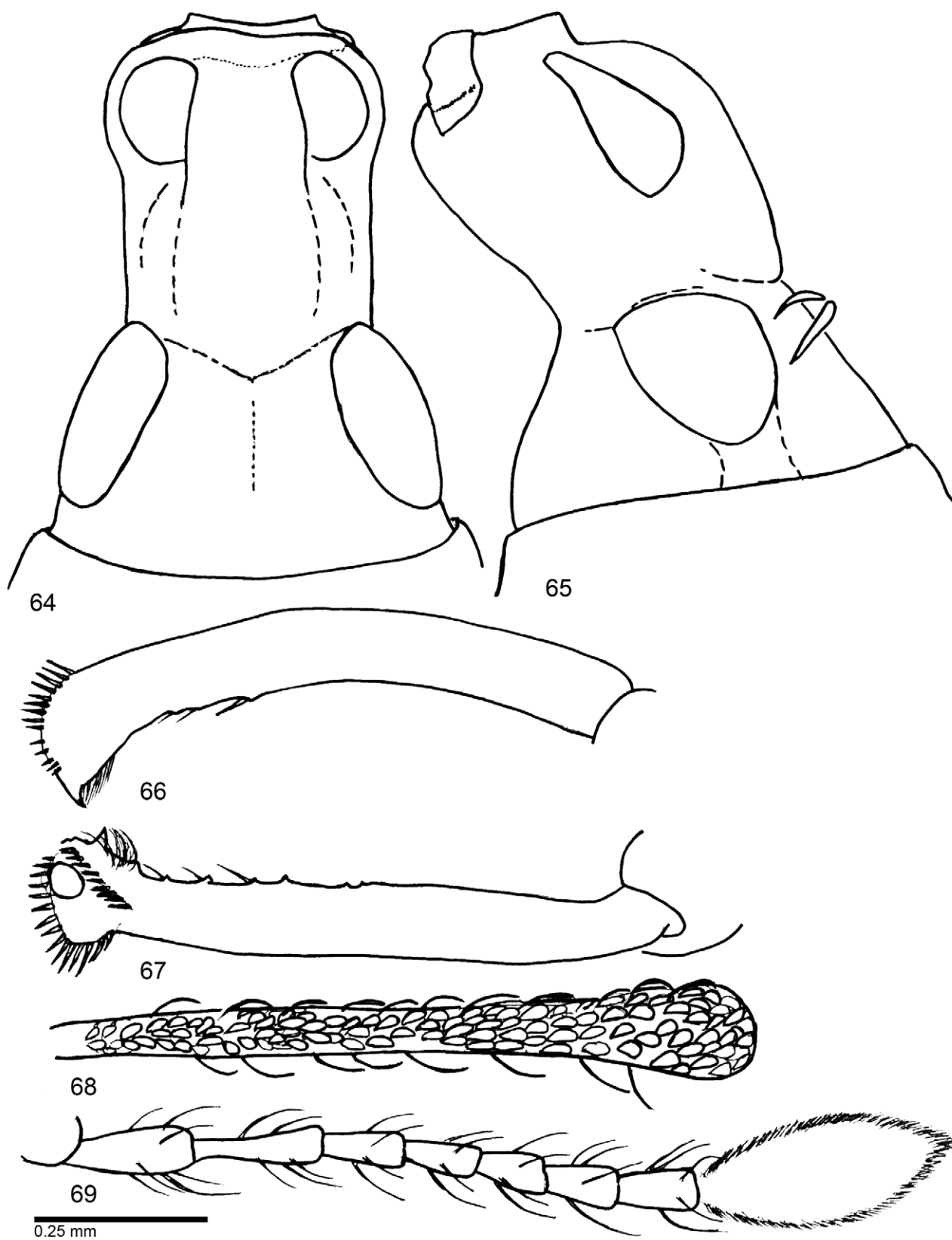
**FIGURES 46–51.** Structural details of *Sphrigodellus minutus* sp. n.. **46**, head in dorsal and ventral view; **47**, apex of rostrum, anterior view; **48**, thorax, lateral view; **49**, metatibial apex, outside; **50**, metatibia, inside; **51**, protibia, outside.



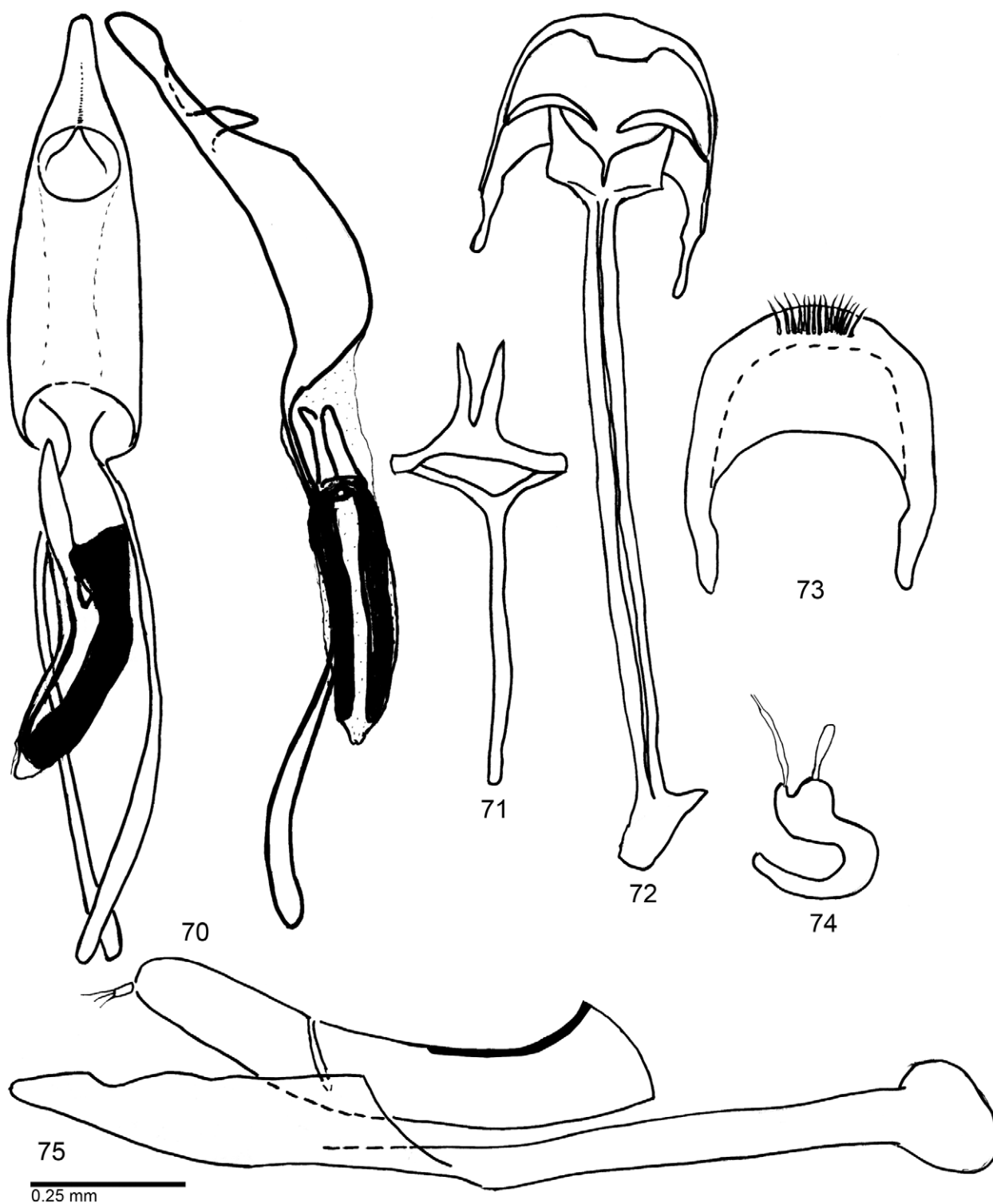
**FIGURES 52–58.** *Cadoderus bellus* (Faust), structural details. **52–53**, head, dorsal and lateral view; **54**, antennal scape; **55**, antennal funicle and club; **56**, protibia, outside; **57**, metatibia, inside; **58**, apex of rostrum, anterior view.



**FIGURES 59–63.** *Cadoderus bellus* (Faust), genital structures. **59**, aedeagus, dorsal and lateral view; **60**, tegmen, dorsal view; **61**, tergite 8 of female, dorsal view; **62**, spermatheca; **63**, female genitalia, lateral view.

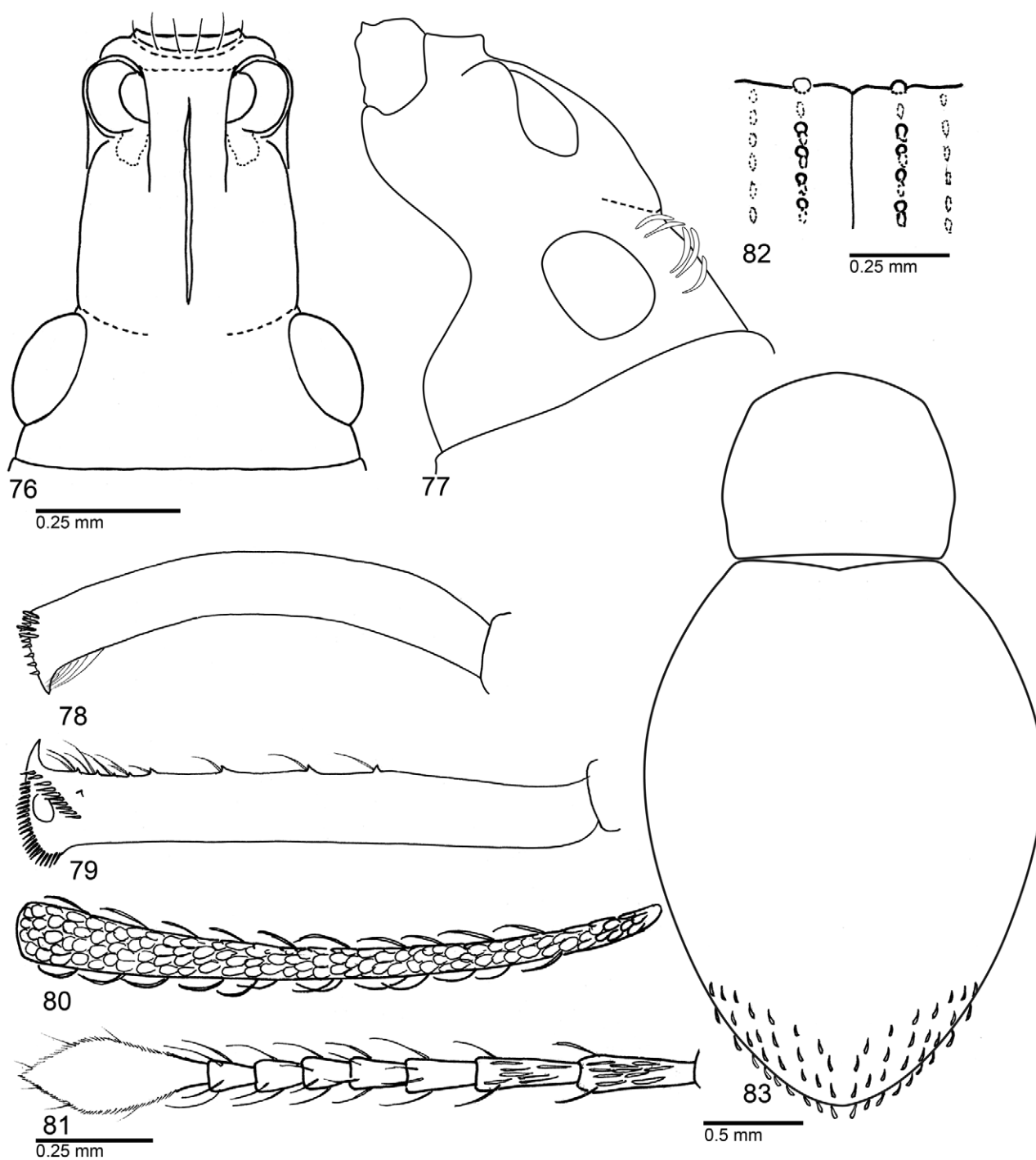


**FIGURES 64–69.** *Cadoderus weisei* sp. n., structural details. **64–65**, head, dorsal and lateral view; **66**, protibia, external view; **67**, metatibia, internal view; **68**, antennal scape; **69**, antennal funicle and club.

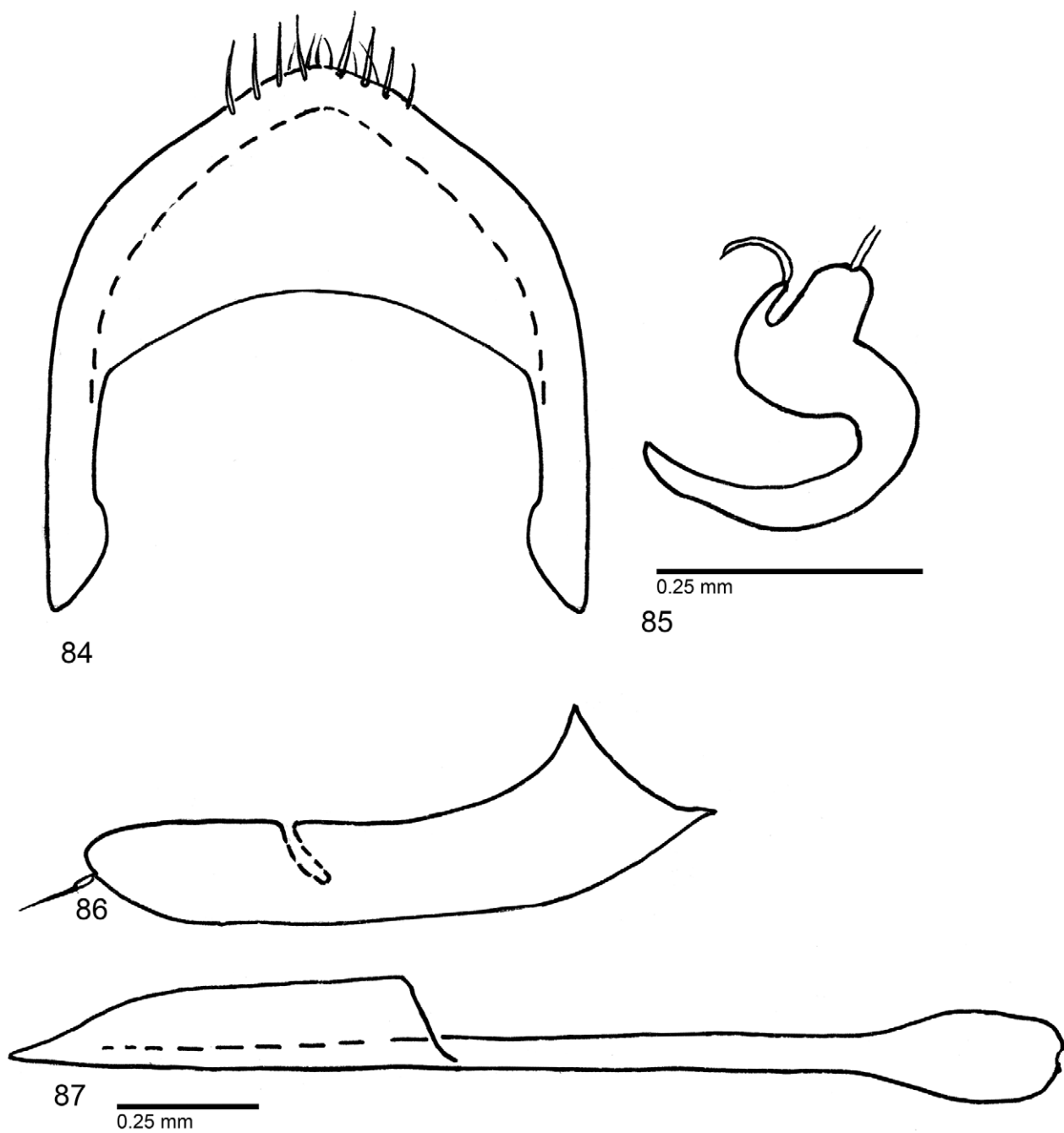


**FIGURES 70–75.** *Cadoderus weisei* sp. n., genital structures. **70**, aedeagus dorsal and lateral view; **71**, tegmen; **72**, male subgenital segments, ventral view; **73**, female tergite 8, dorsal view; **74**, spermatheca; **75**, female genitalia, lateral view.

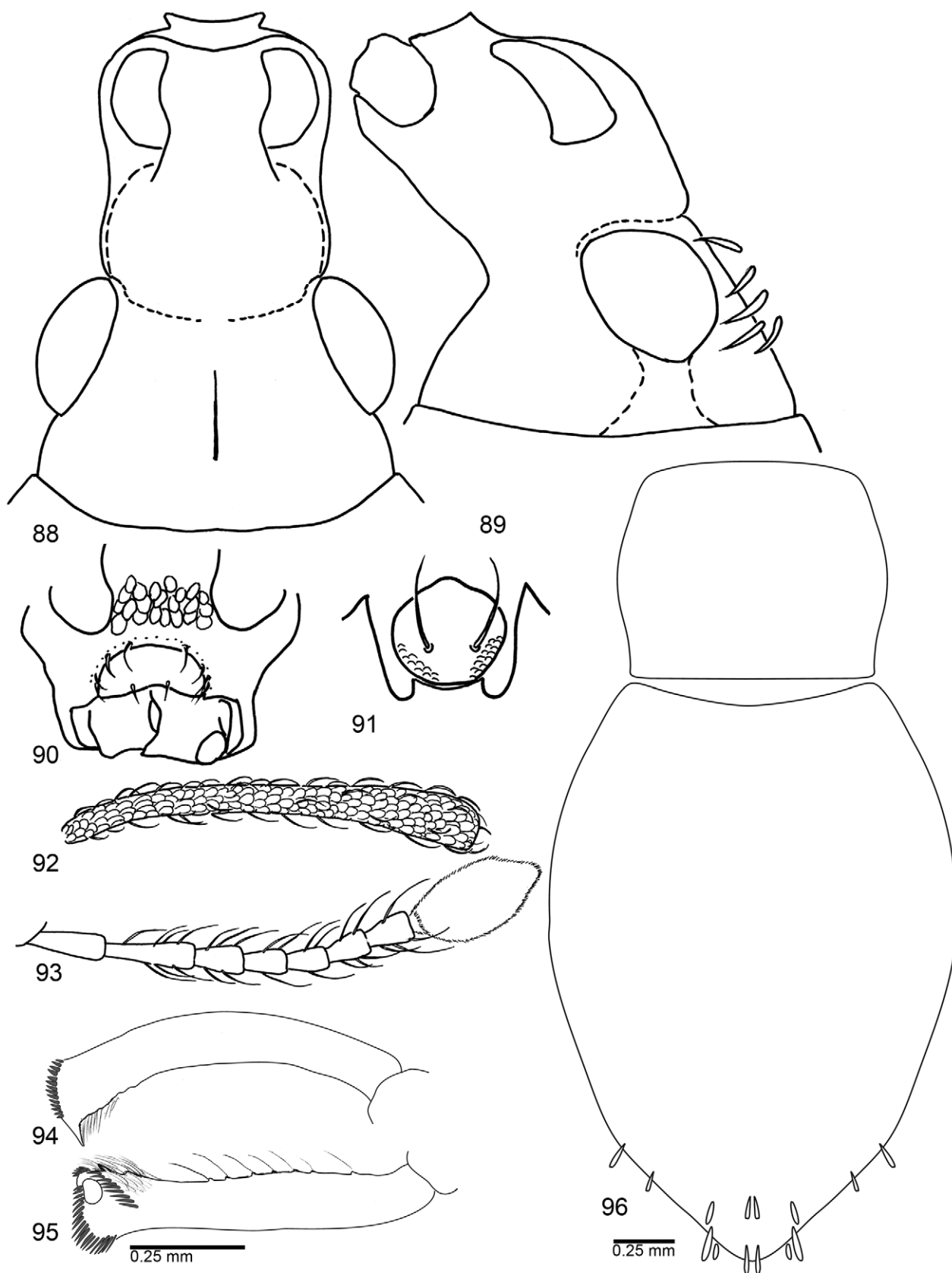




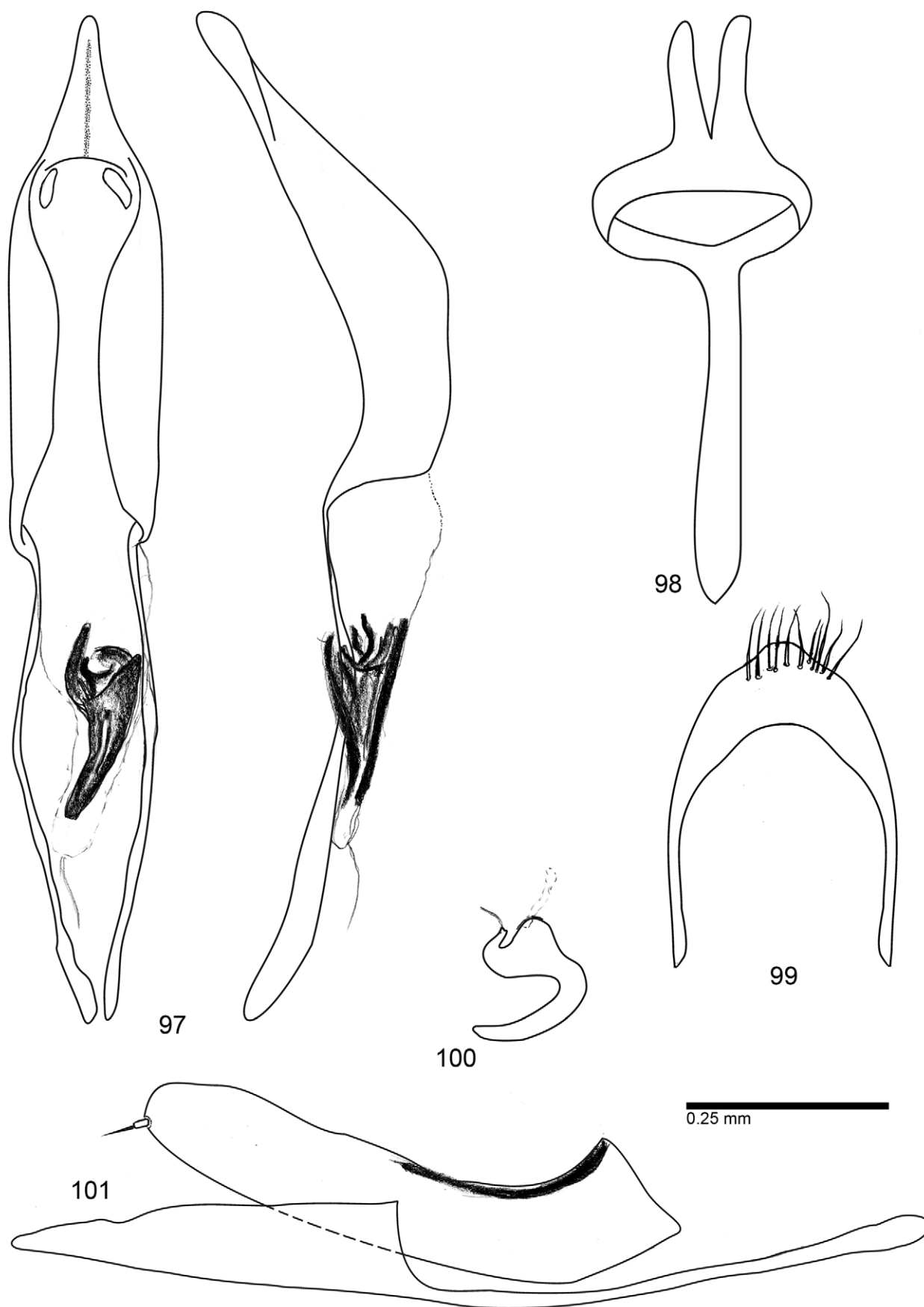
**FIGURES 76–83.** *Cadoderus burundi* sp. n., structural details, female. **76–77**, head, dorsal and lateral view; **78**, protibia, external view; **79**, metatibia, internal view; **80**, antennal scape; **81**, antennal funicle and club; **82**, subscutellar callosity; **83**, pronotum and elytra shape, dorsal view.



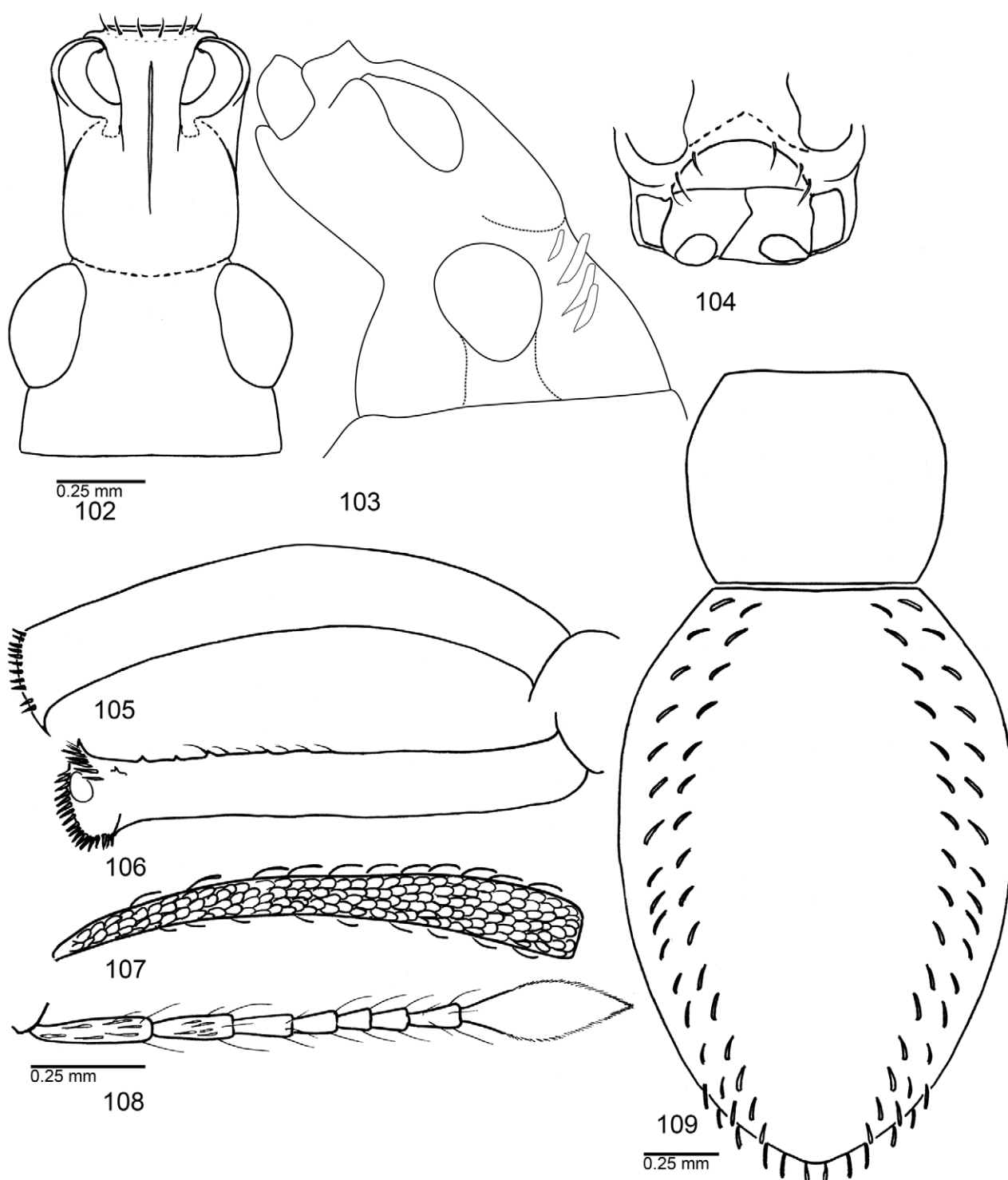
**FIGURES 84–87.** *Cadoderus burundi* sp. n., female genital structures. **84**, tergite 8, dorsal view; **85**, spermatheca; **86**, ovipositor, **87**, sternite 8.



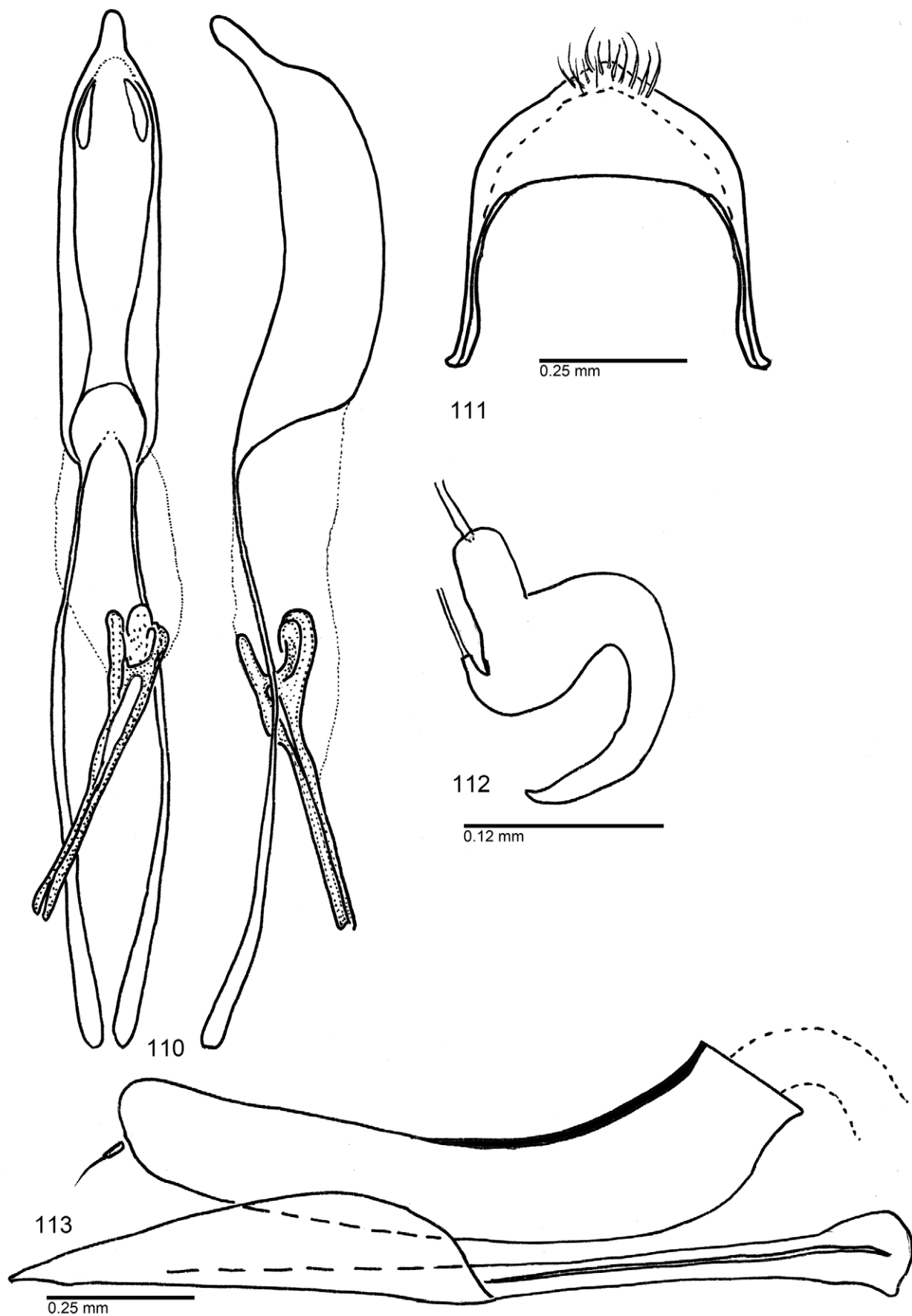
**FIGURES 88–96.** *Cadoderus grebennikovi* sp. n., structural details. **88– 89**, head, dorsal and lateral view; **90**, head capsule, anterior view; **91**, prementum; **92**, antennal scape; **93**, antennal funicle and club; **94**, protibia, external view; **95**, metatibia, internal view; **96**, male pronotum and elytra shape, dorsal view.



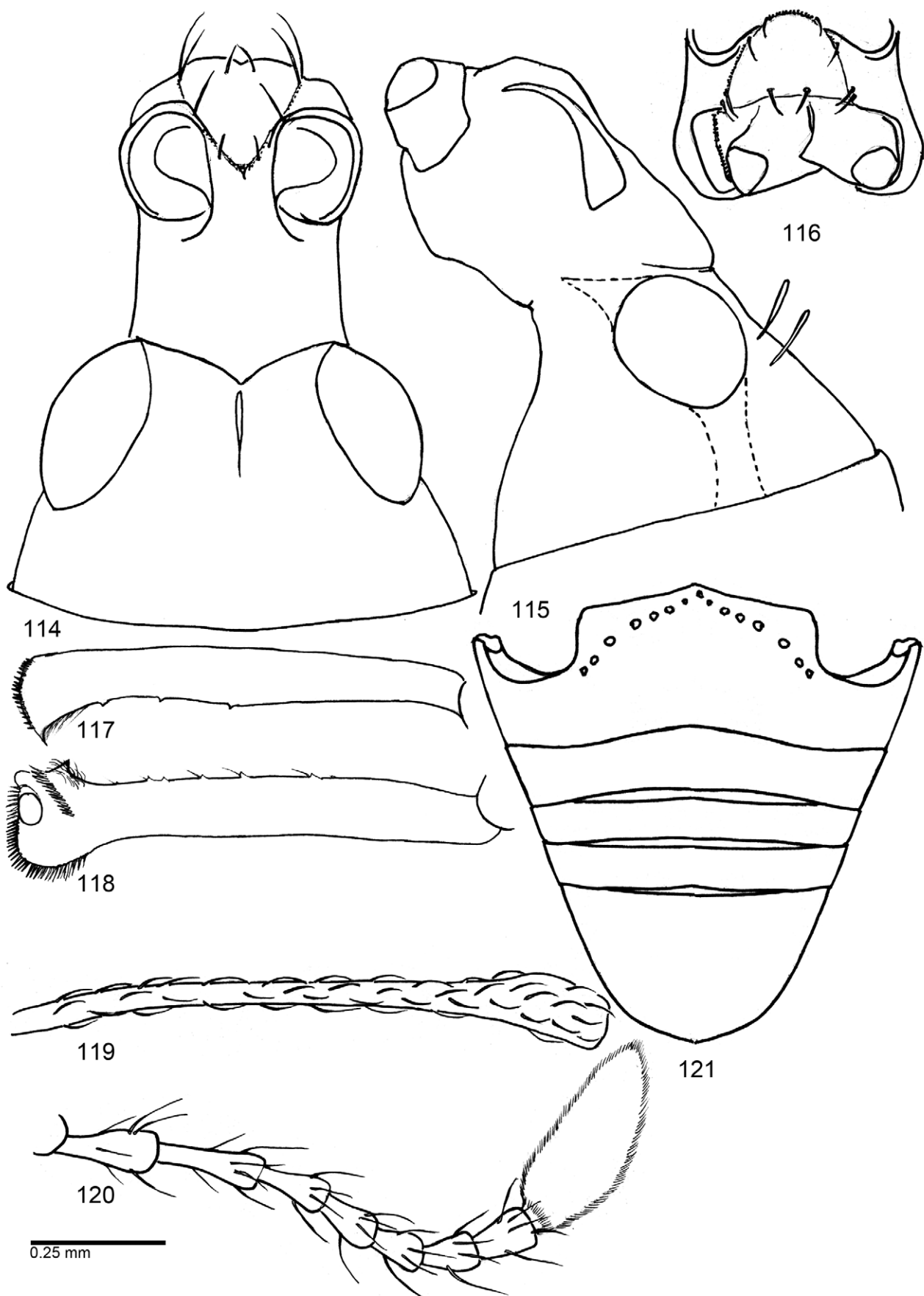
**FIGURES 97–101.** *Cadoderus grebennikovi* sp. n., genital structures. **97**, aedeagus dorsal and lateral view; **98**, tegmen; **99**, female tergite 8, dorsal view; **100**, spermatheca; **101**, female genitalia, lateral view.



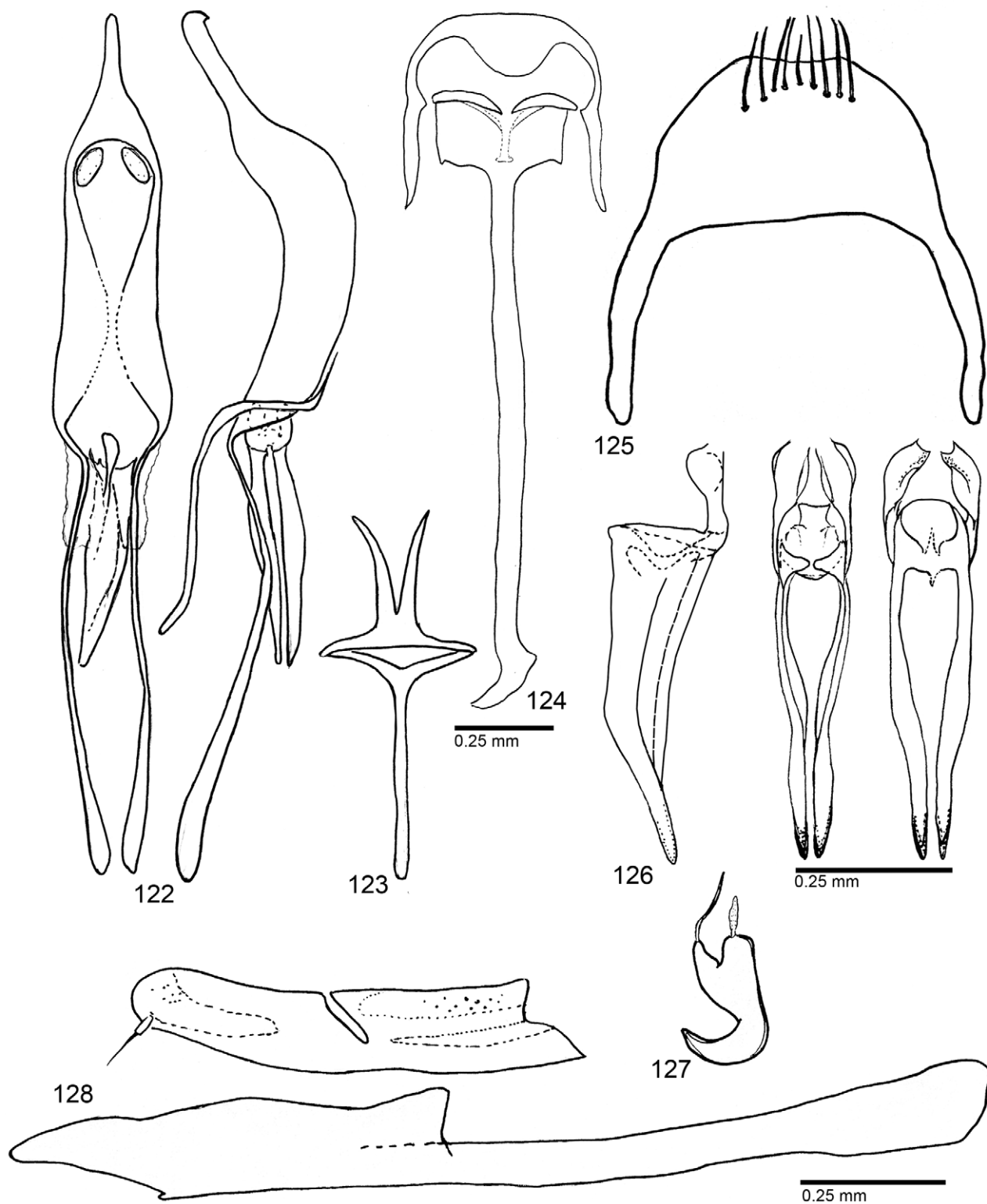
**FIGURES 102–109.** *Cadoderus olivaceus* sp. n., structural details. **102– 103**, head, dorsal and lateral view; **104**, head capsule, anterior view; **105**, protibia, external view; **106**, metatibia, internal view; **107**, antennal scape; **108**, antennal funicle and club; **109**, male pronotum and elytra shape, dorsal view.



**FIGURES 110–113.** *Cadoderus olivaceus* sp. n., genital structures. **110**, aedeagus dorsal and lateral view; **111**, female tergite 8, dorsal view; **112**, spermatheca; **113**, female genitalia, lateral view.

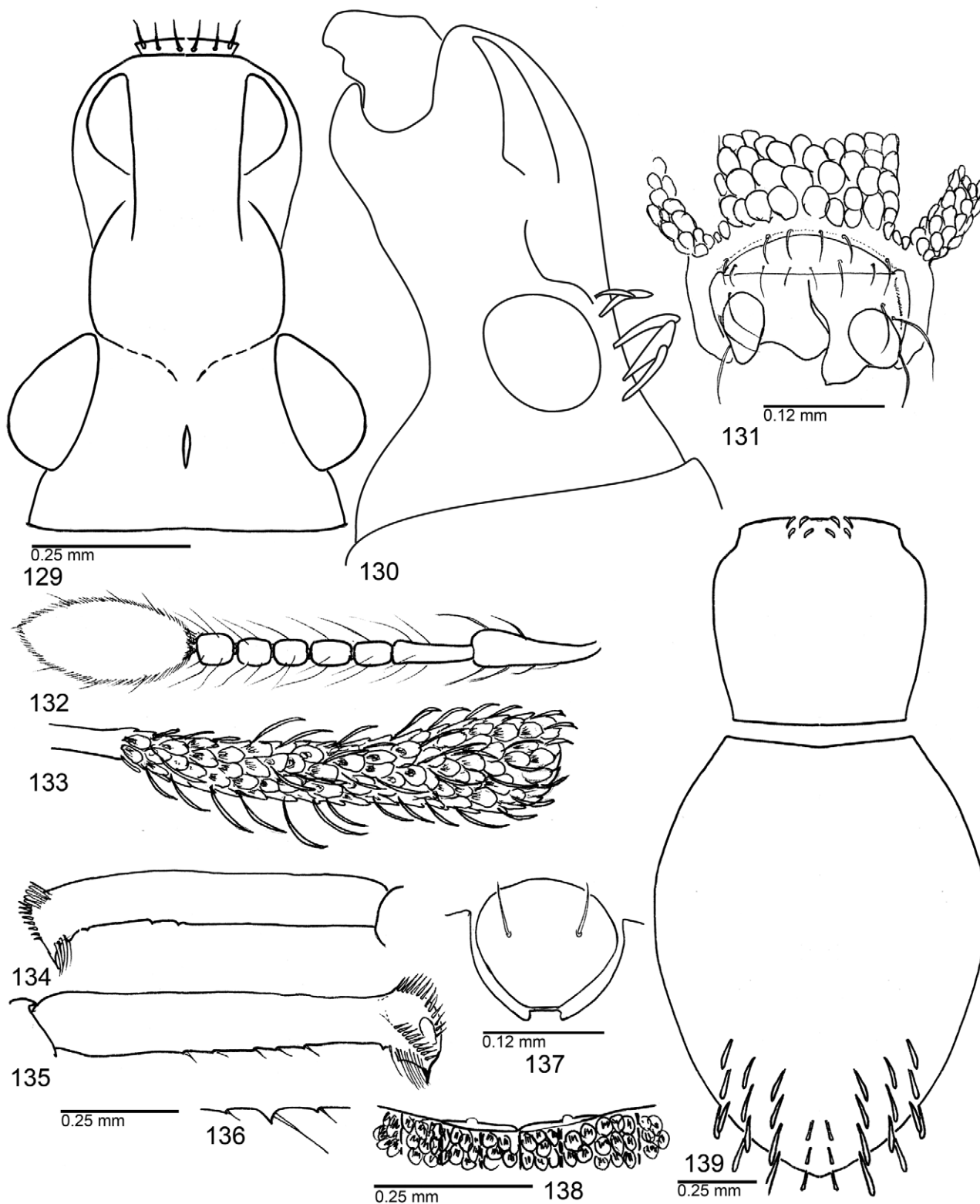


**FIGURES 114–121.** *Cadoderus mysticus* (Fst.), structural details. **114– 115**, head, dorsal and lateral view; **116**, head capsule, anterior view; **117**, protibia, external view; **118**, metatibia, internal view; **119**, antennal scape; **120**, antennal funicle and club; **121**, male ventrites.

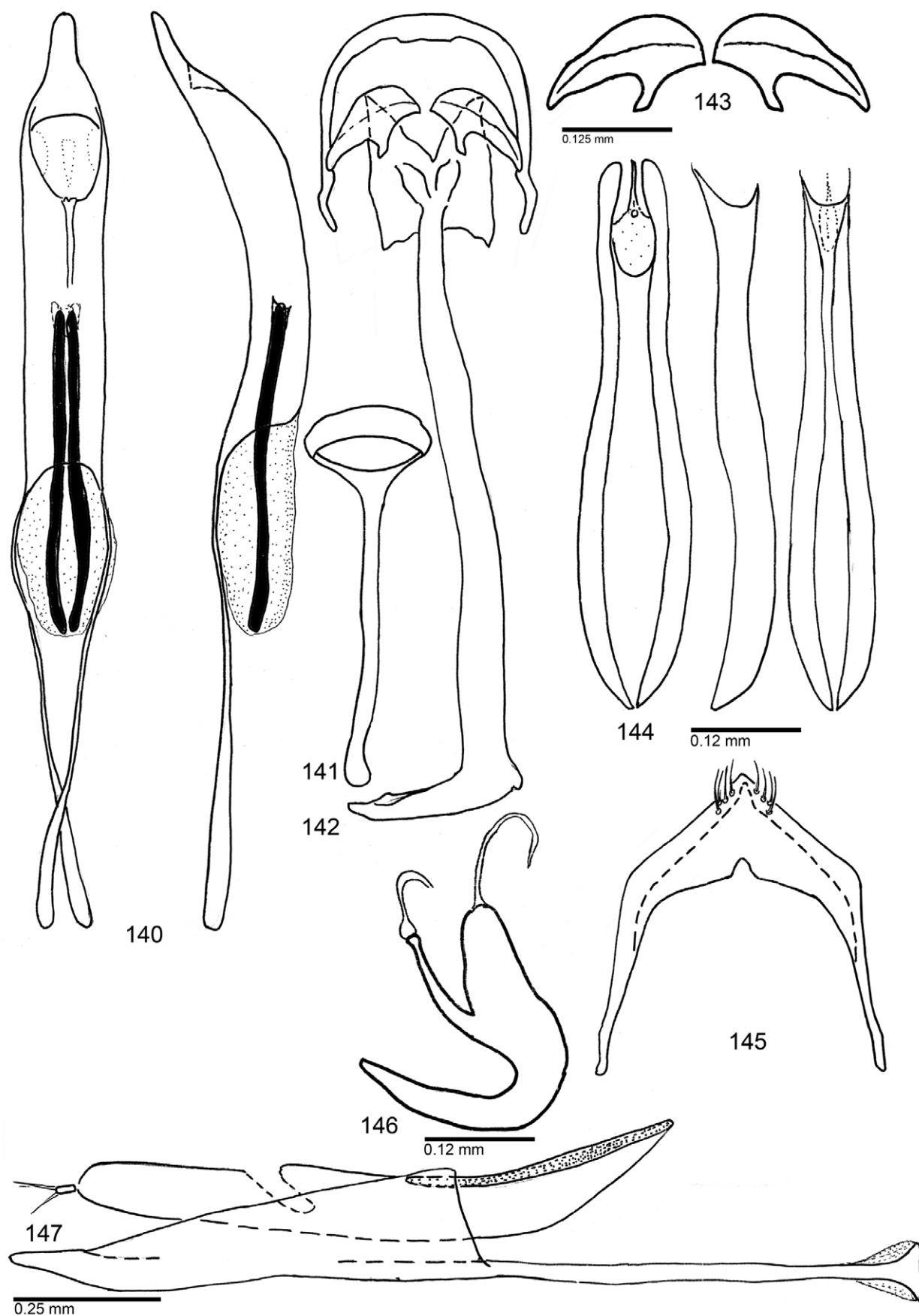


**FIGURES 122–128.** *Cadoderus mysticus* (Faust), genital structures. **122**, aedeagus dorsal and lateral view; **123**, tegmen; **124**, male subgenital segments, ventral view; **125**, female tergite 8, dorsal view; **126**, aggonopodium, lateral, dorsal and ventral views; **127**, spermatheca; **128**, female genitalia, lateral view.

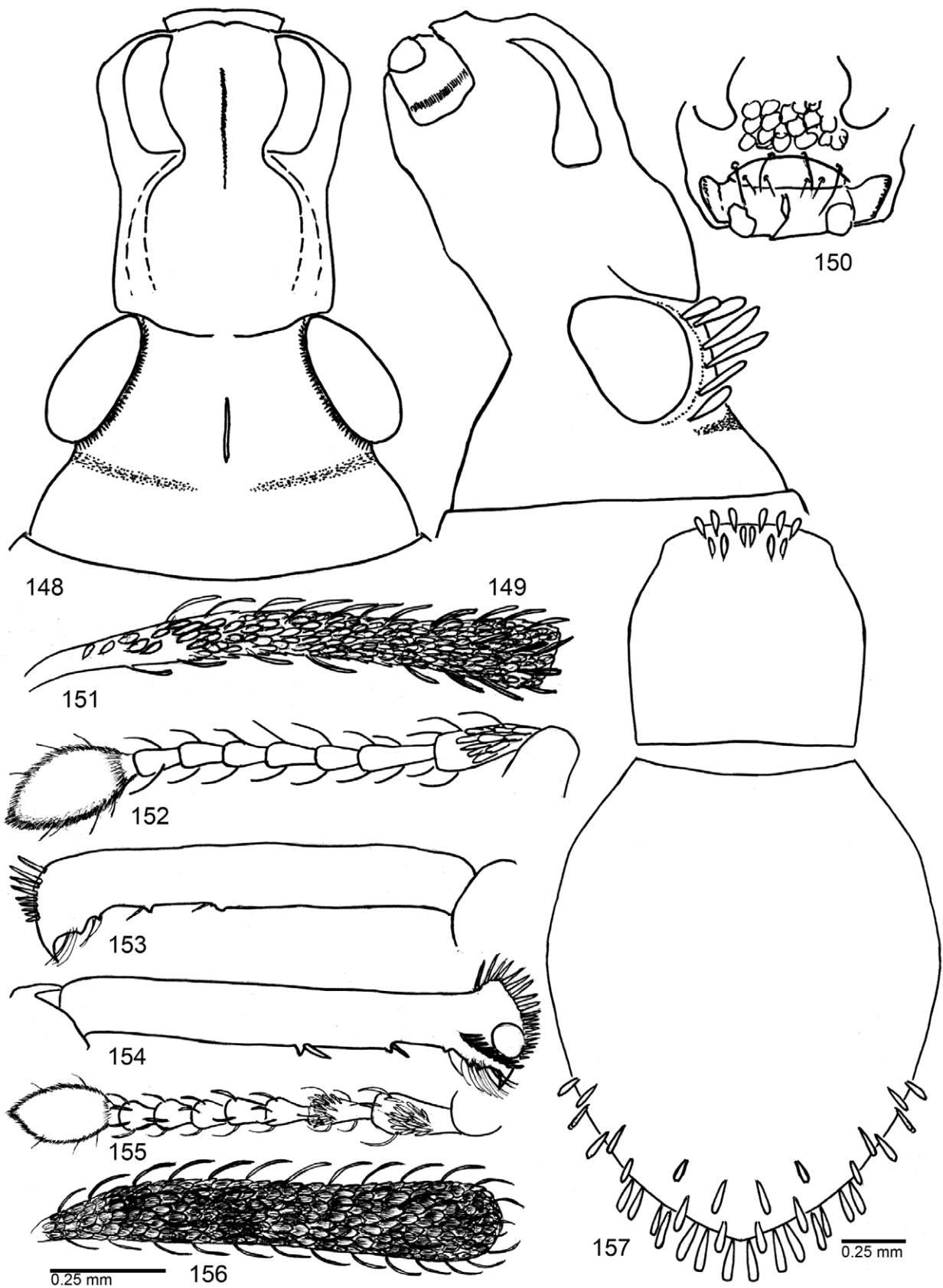




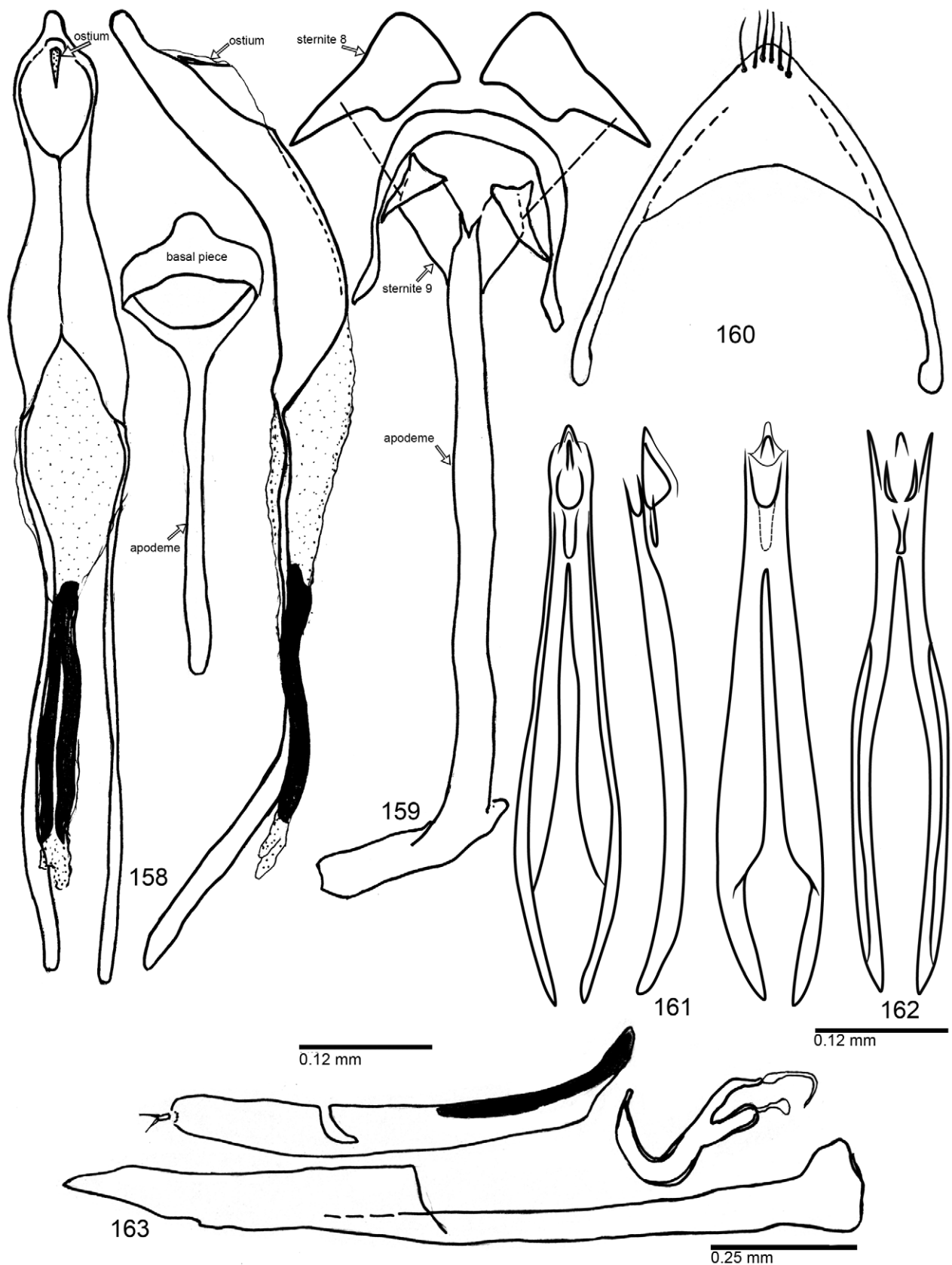
**FIGURES 129–138.** *Sphrigodellus lepidus* (Marshall), structural details. **129–130**, head, dorsal and lateral view; **131**, head capsule, anterior view; **132**, antennal funicle and club; **133**, antennal scape; **134**, protibia, external view; **135**, metatibia, internal view; **136**, metatibial internal dentation; **137**, prementum; **138**, subcutellar callosity; **139**, male pronotum and elytra shape, dorsal view.



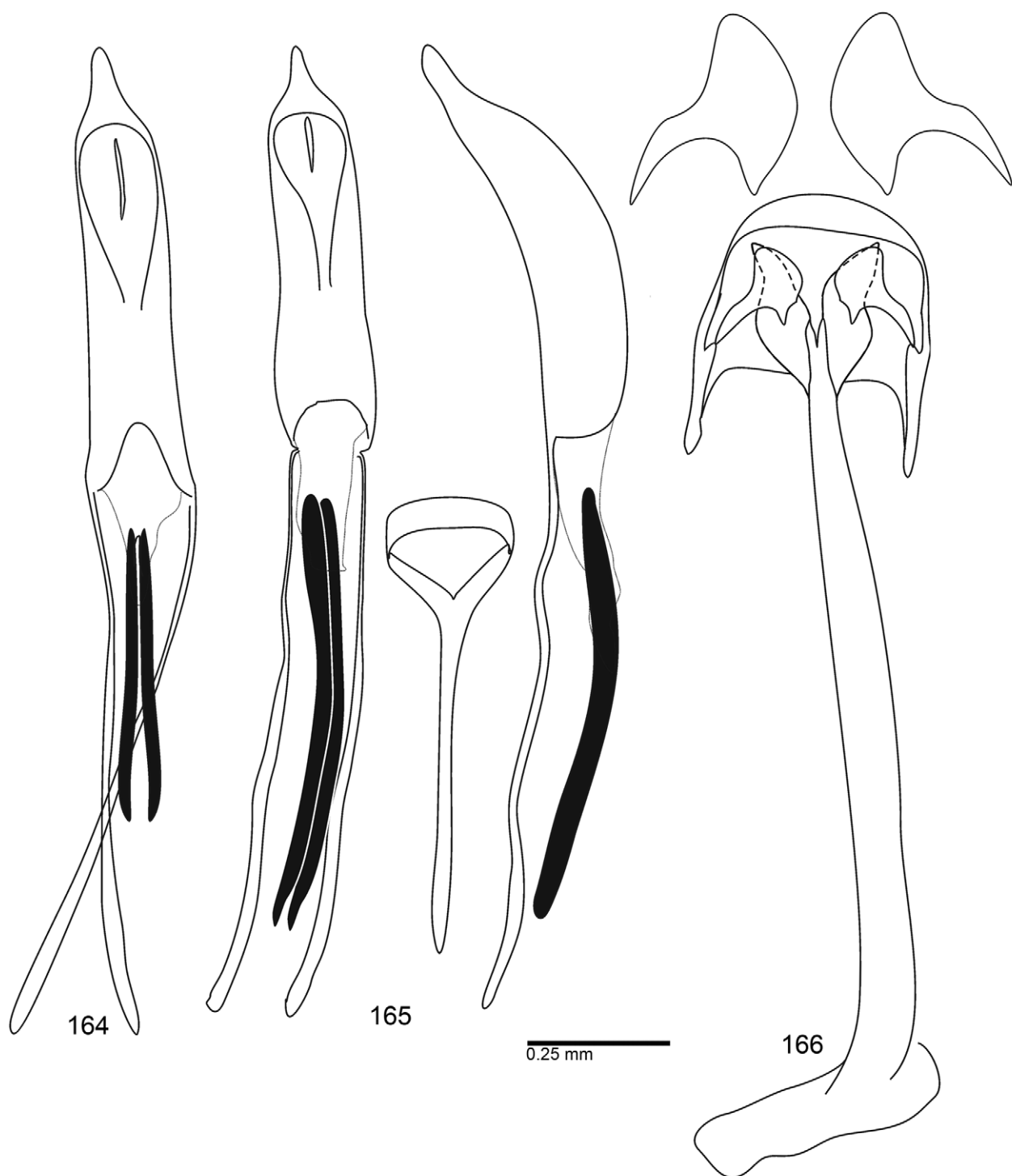
**FIGURES 140–147.** *Sphrigodellus lepidus* (Marshall), genital structures. **140**, aedeagus dorsal and lateral view; **141**, tegmen; **142**, male subgenital segments, ventral view; **143**, male sternite 8; **144**, aggonopodium, lateral, dorsal and ventral views; **145**, female tergite 8, dorsal view; **146**, spermatheca; **147**, female genitalia, lateral view.



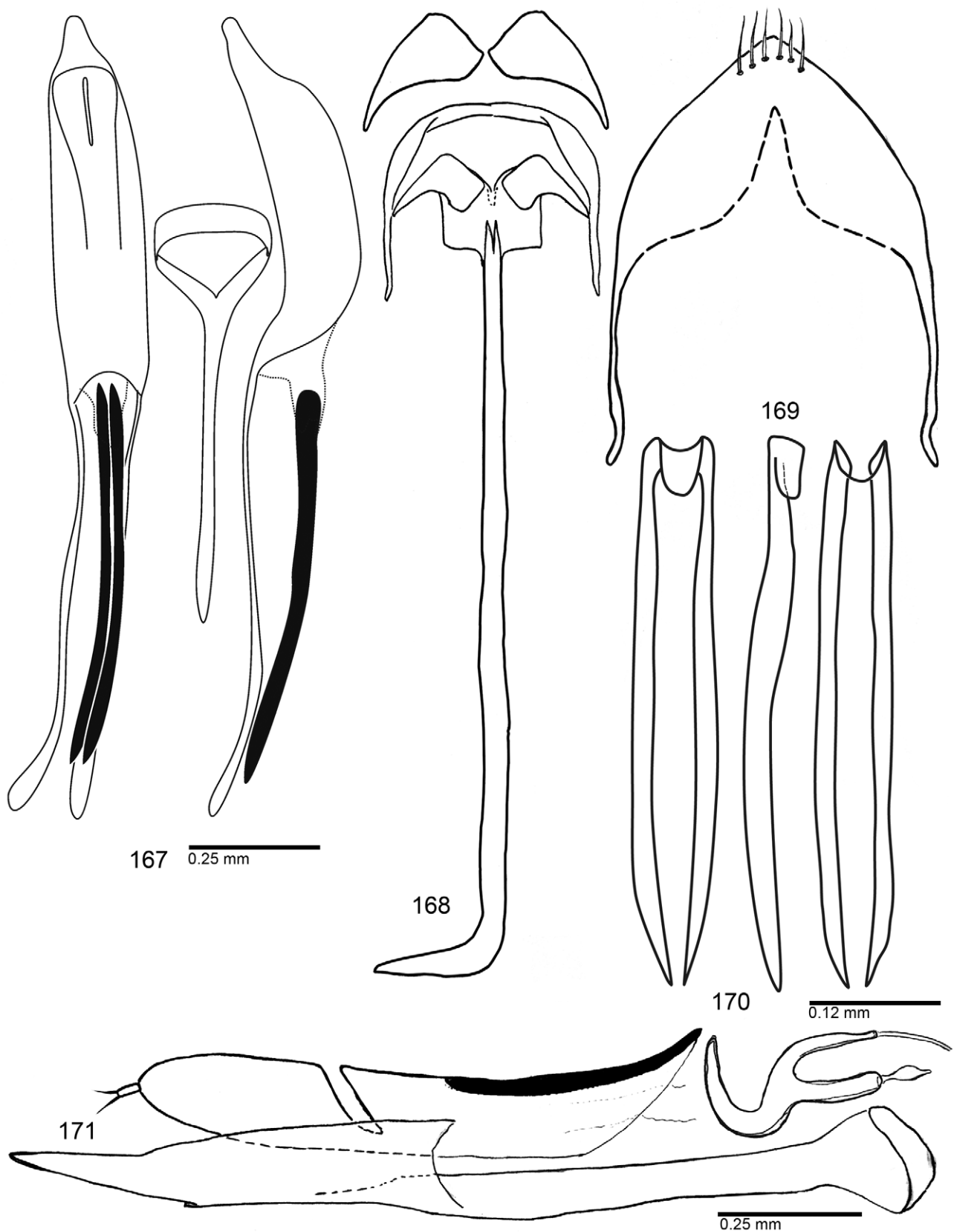
**FIGURES 148–157.** *Sphrigodellus usambaricus* sp. n. (Bamba Forest), structural details. **148–149**, head, dorsal and lateral view; **150**, head capsule, anterior view; **151**, antennal scape; **152**, antennal funicle and club; **153**, protibia, external view; **154**, metatibia, internal view; **155**, *S. sp. prope usambaricus* sp. n. (Languza Forest) antennal funicle and club; **156**, *idem*, antennal scape; **157**, male pronotum and elytra shape, dorsal view.



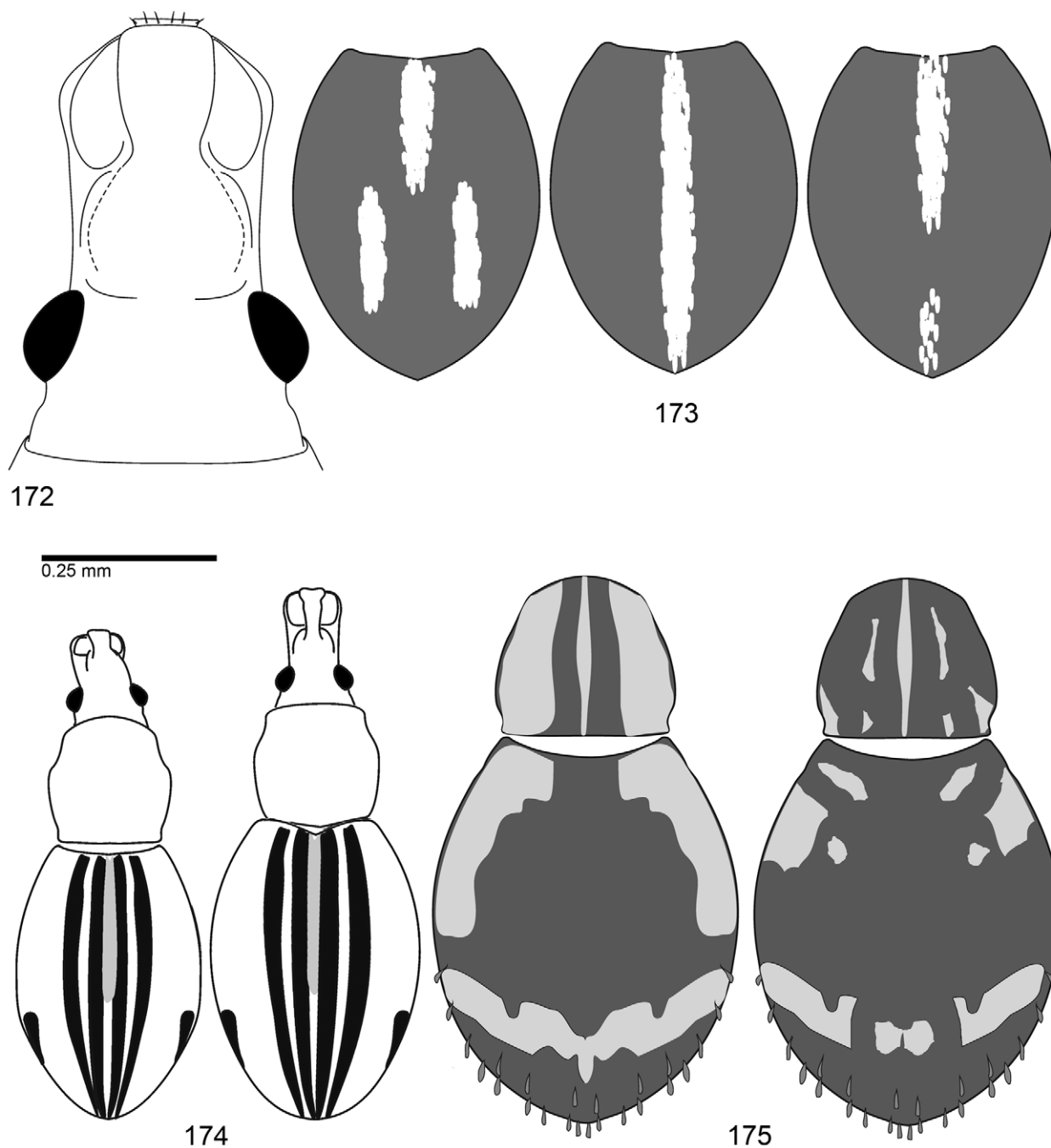
**FIGURES 158–163.** *Sphrigodellus usambaricus* sp. n., genital structures. **158**, aedeagus dorsal and lateral view; **159**, male subgenital segments, ventral view; **160**, female tergite 8, dorsal view; **161**, aggonopodium, dorsal, lateral, and ventral views (Pangani Falls); **162**, aggonopodium, dorsal views (Bamba Forest); **163**, female genitalia, lateral view.



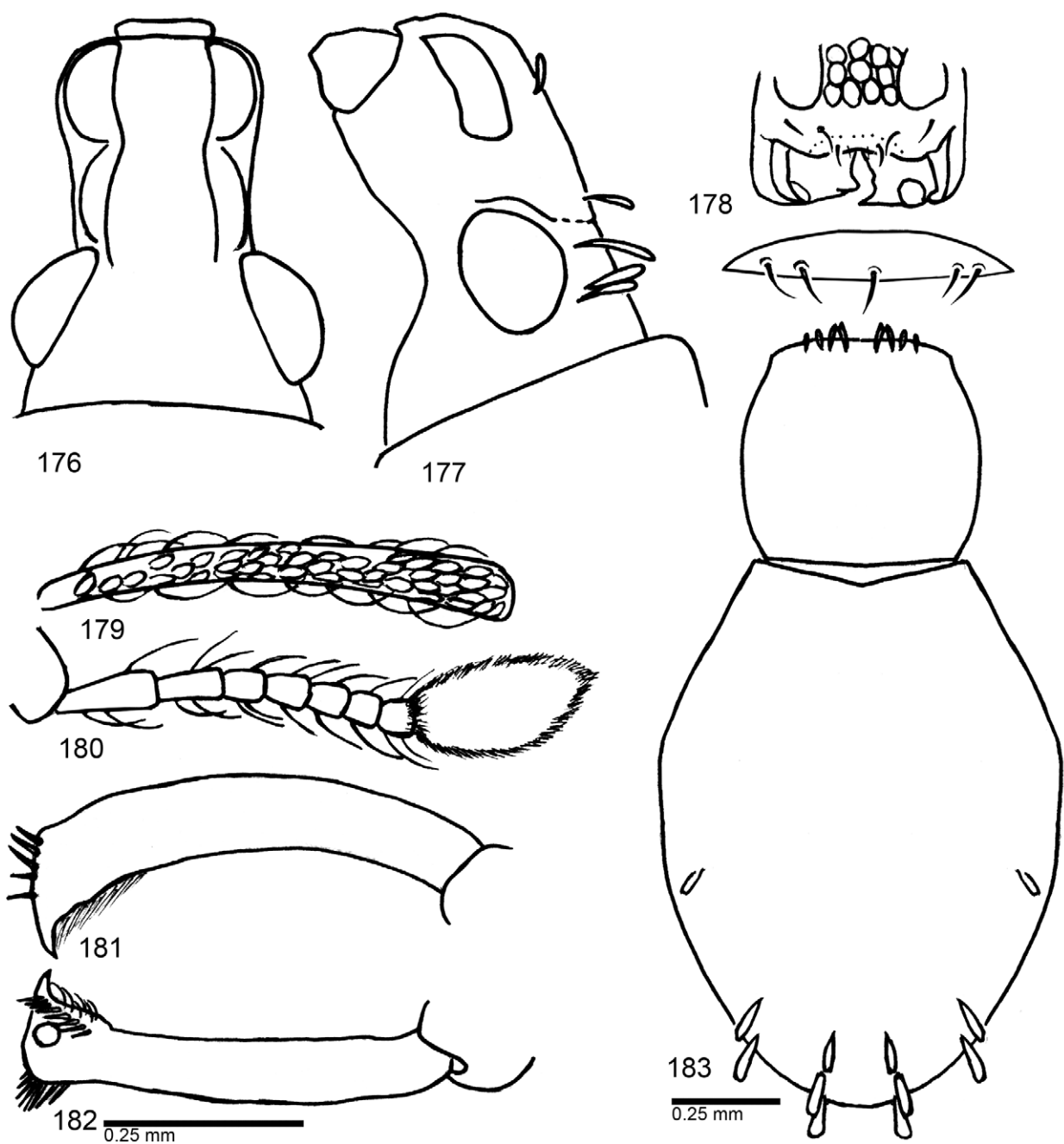
**FIGURES 164–166.** *Sphrigodellus usambaricus* sp. n., genital structures. **164**, aedeagus dorsal view (Kwangumi Forest); **165**, *S. sp. prope usambaricus* sp. n., aedeagus dorsal and lateral view (Longuza Forest); **166**, idem, male subgenital segments, ventral view.



**FIGURES 167–171.** *Sphrigodellus kwamkoroensis* sp. n., genital structures. **167**, aedeagus dorsal and lateral view; **168**, male subgenital segments, ventral view; **169**, female tergite 8, dorsal view; **170**, aggonopodium, dorsal, lateral, and ventral views; **171**, female genitalia, lateral view.

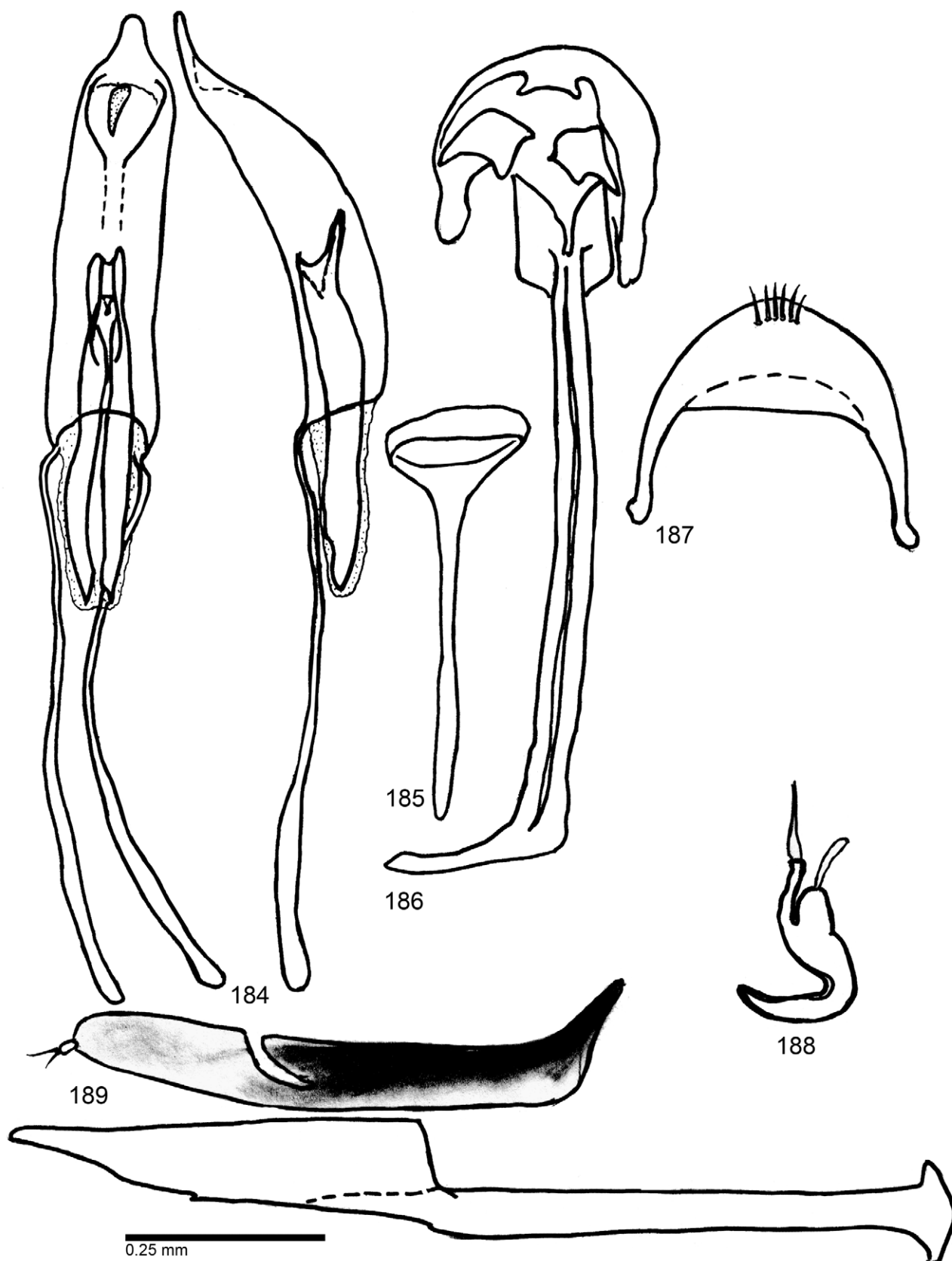


**FIGURES 172–175.** *Sphrigodellus*, structural details. **172**, *S. sp. prope usambaricus* sp. n. head, dorsal and lateral view (Longuza Forest); **173**, *S. usambaricus* sp. n., variation of elytral pattern; **174**, *Sphrigodellus kwamkoroensis* sp. n., body shape and pattern, male and female; **175**, *Sphrigodellus taitae* sp. n., variation of elytral pattern.

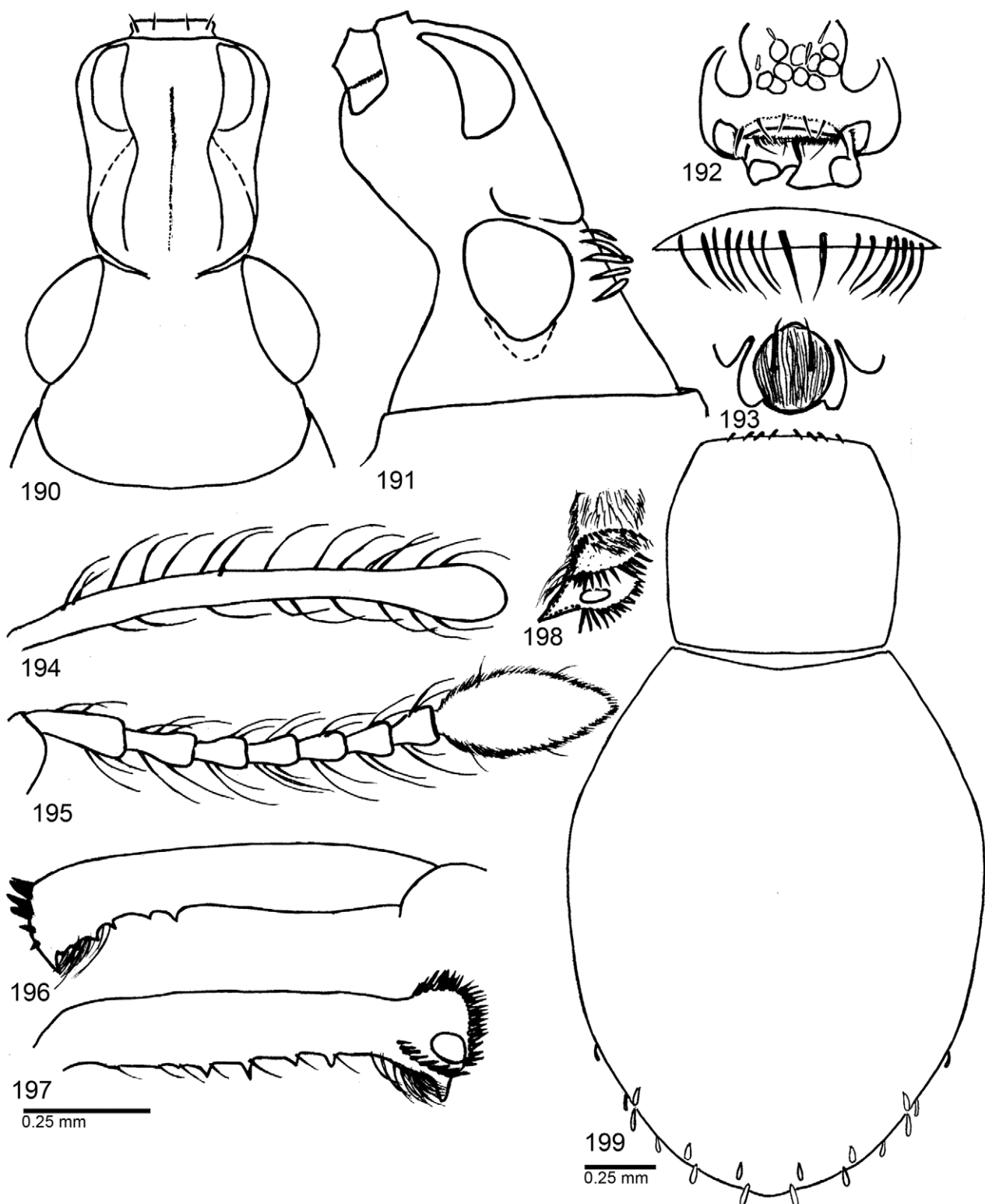


**FIGURES 176–183.** *Sphrigodellus minutus* sp. n., structural details. **176–177**, head, dorsal and lateral view; **178**, head capsule, anterior view; **179**, antennal scape; **180**, antennal funicle and club; **181**, protibia, external view; **182**, metatibia, internal view; **183**, male pronotum and elytra shape, dorsal view.

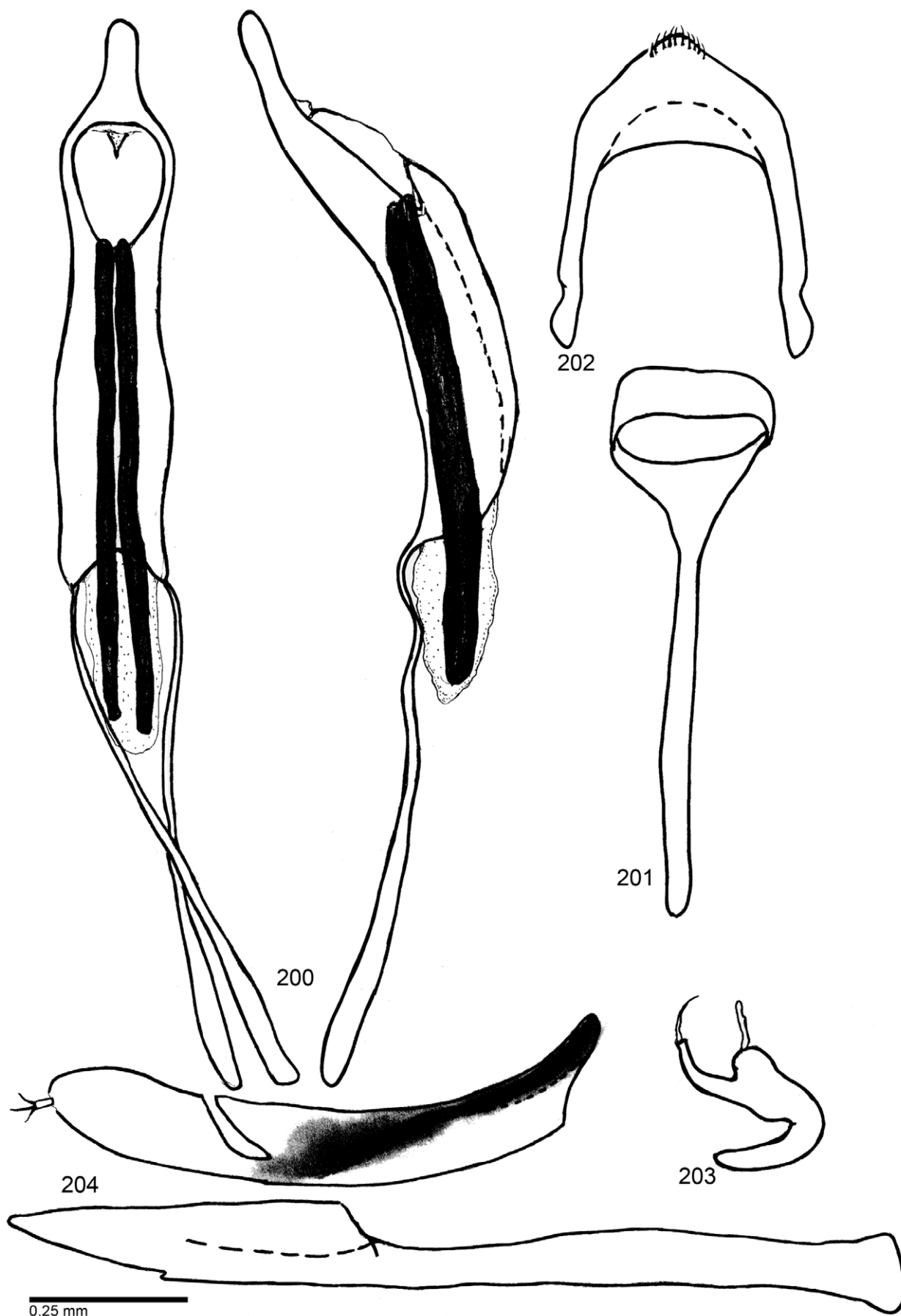




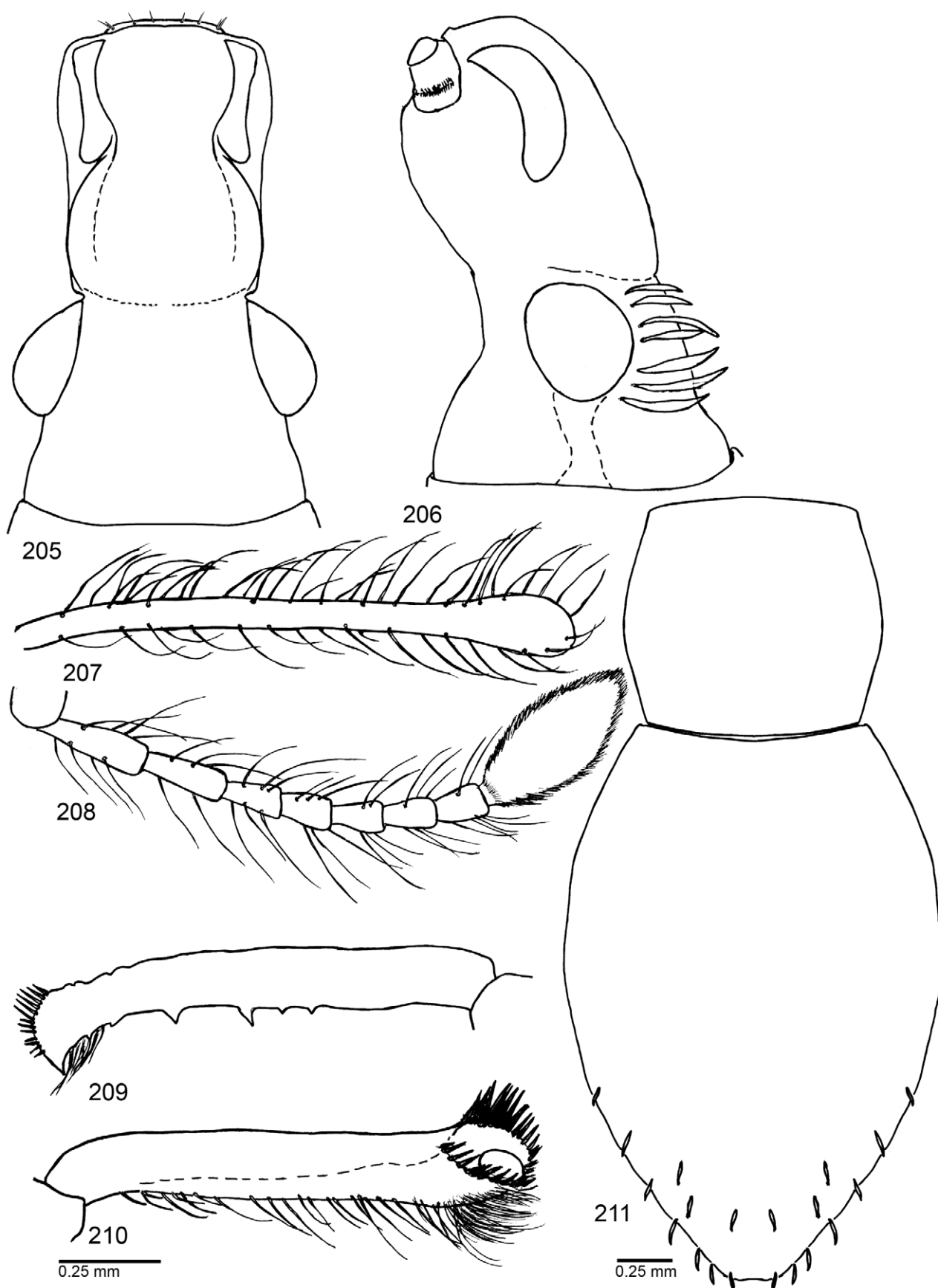
**FIGURES 184–189.** *Sphrigodellus minutus* sp. n., genital structures. **184**, aedeagus dorsal and lateral view; **185**, tegmen; **186**, male subgenital segments, ventral view; **187**, female tergite 8, dorsal view; **188**, spermatheca; **189**, female genitalia, lateral view.



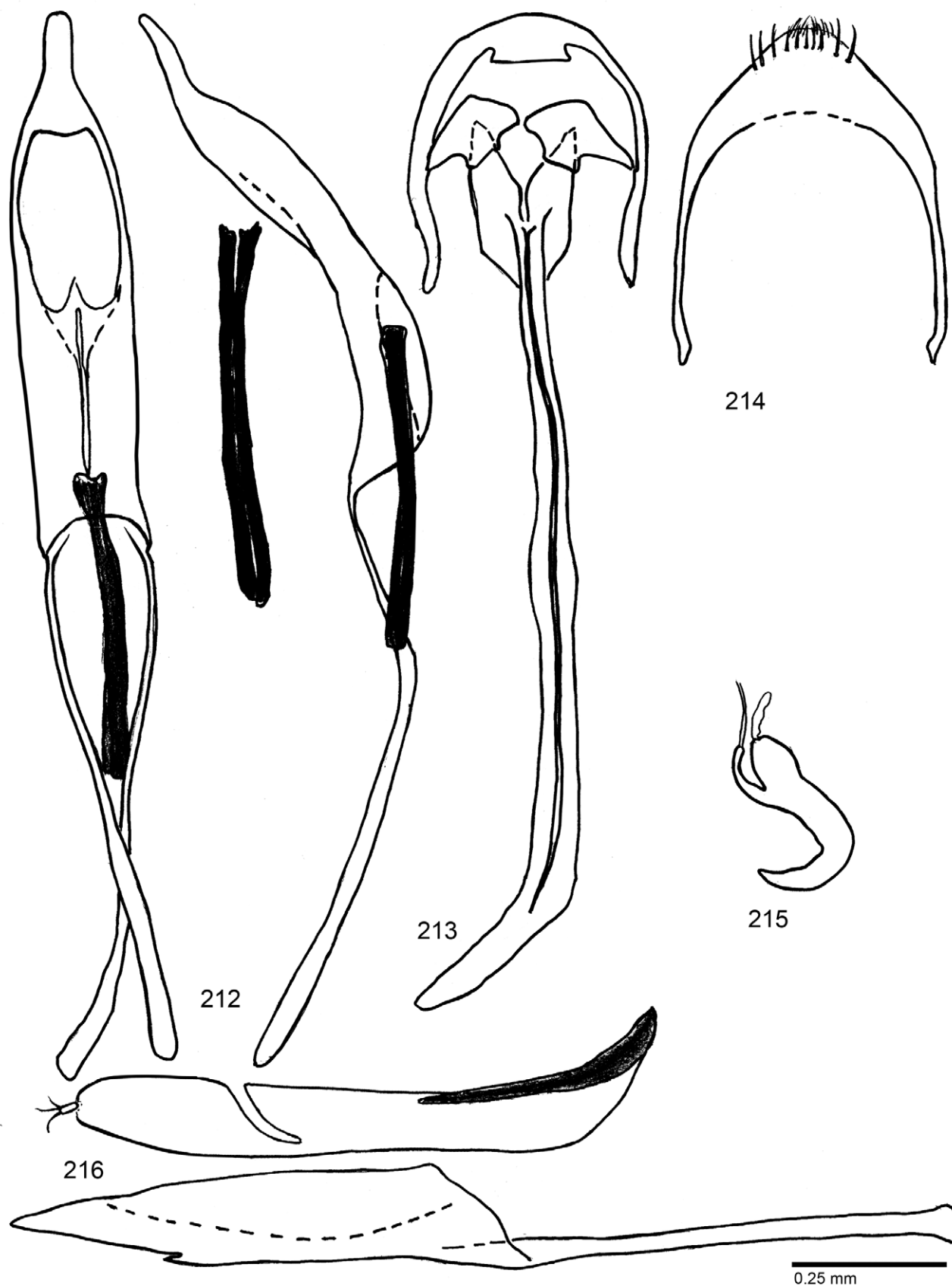
**FIGURES 190–199.** *Sphrigodellus gusarovi* sp. n., structural details. **190–191**, head, dorsal and lateral view; **192**, head capsule, anterior view; **193**, prementum; **194**, antennal scape; **195**, antennal funicle and club; **196**, protibia, external view; **197**, metatibia, internal view; **198**, metatibial apex external view; **199**, male pronotum and elytra shape, dorsal view.



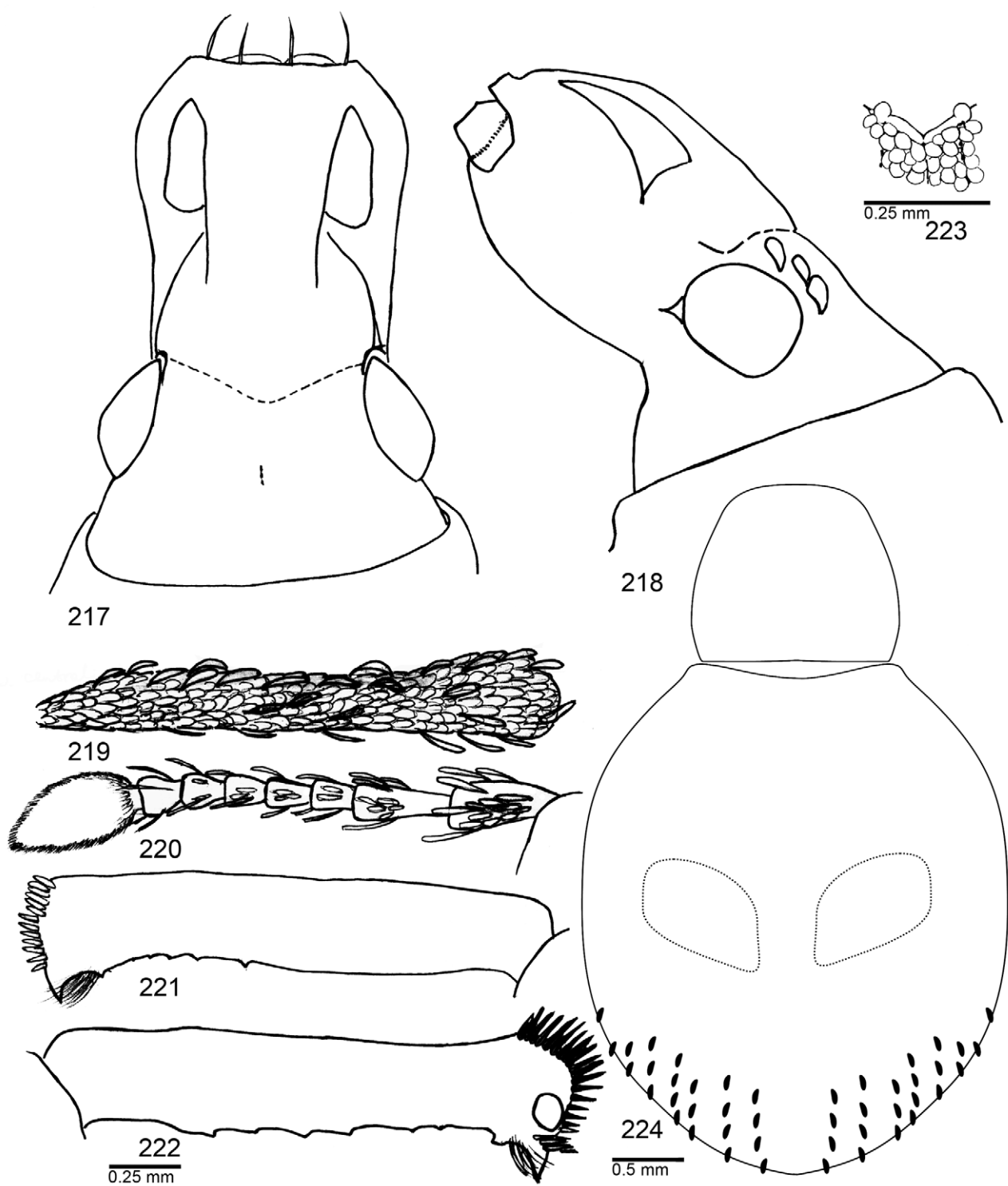
**FIGURES 200–204.** *Sphrigodellus gusarovi* sp. n., genital structures. **200**, aedeagus dorsal and lateral view; **201**, tegmen; **202**, female tergite 8, dorsal view; **203**, spermatheca; **204**, female genitalia, lateral view.



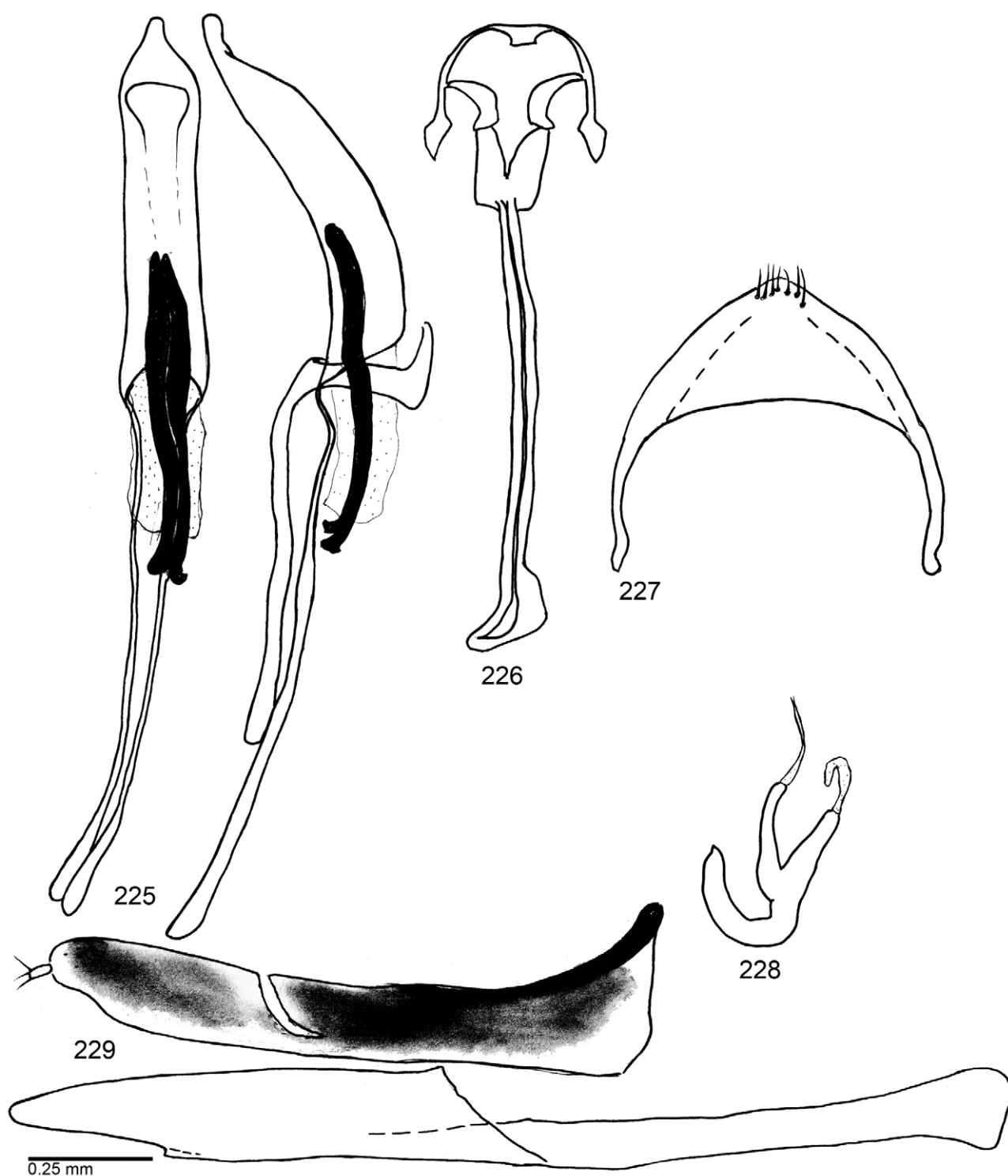
**FIGURES 205–211.** *Sphrigodellus nasutus* sp. n., structural details. **205–206**, head, dorsal and lateral view; **207**, antennal scape; **208**, antennal funicle and club; **209**, protibia, external view; **210**, metatibia, internal view; **211**, male pronotum and elytra shape, dorsal view.



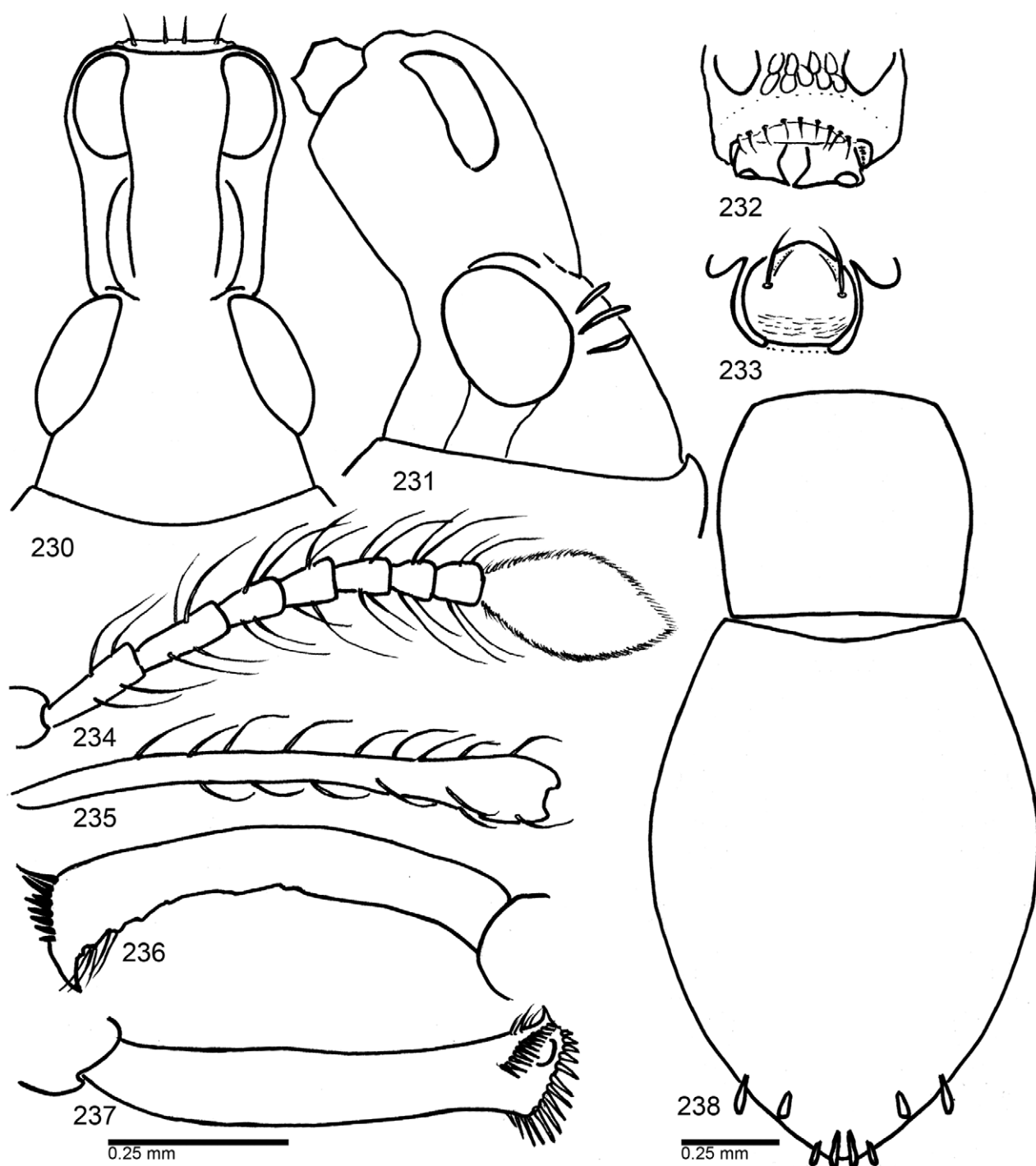
**FIGURES 212–216.** *Sphrigodellus nasutus* sp. n., genital structures. **212**, aedeagus dorsal and lateral view; **213**, male subgenital segments, ventral view; **214**, female tergite 8, dorsal view; **215**, spermatheca; **216**, female genitalia, lateral view.



**FIGURES 217–224.** *Sphrigodellus centralis* (Hustache), structural details. **217–218**, head, dorsal and lateral view; **219**, antennal scape; **220**, antennal funicle and club; **221**, protibia, external view; **222**, metatibia, internal view; **223**, subcutellar callosity; **224**, male pronotum and elytra shape, dorsal view.

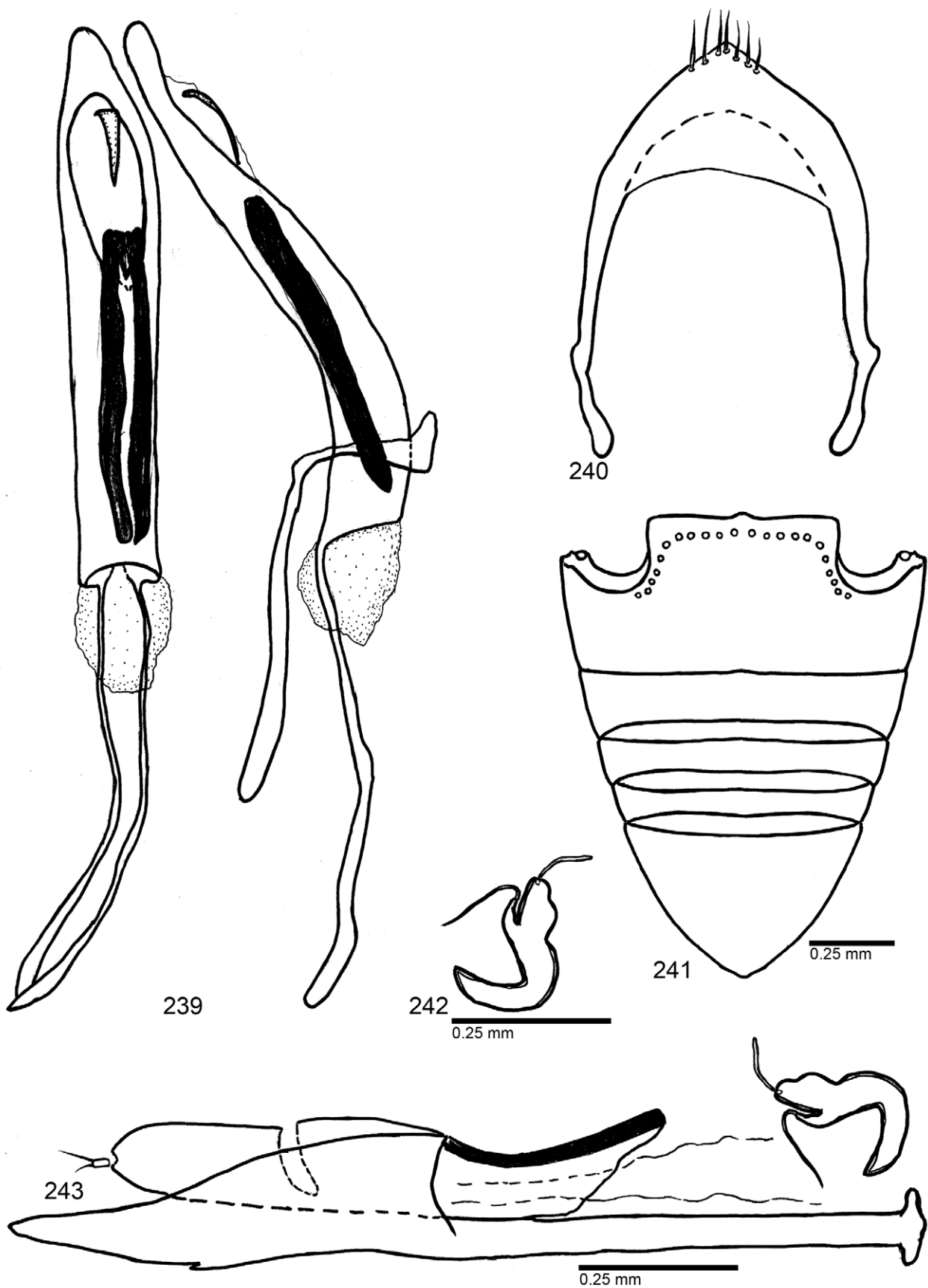


**FIGURES 225–229.** *Sphrigodellus centralis* (Hustache), internal morphological structures. **225**, aedeagus dorsal and lateral view; **226**, male subgenital segments, ventral view; **227**, female tergite 8, dorsal view; **228**, spermatheca; **229**, female genitalia, lateral view.

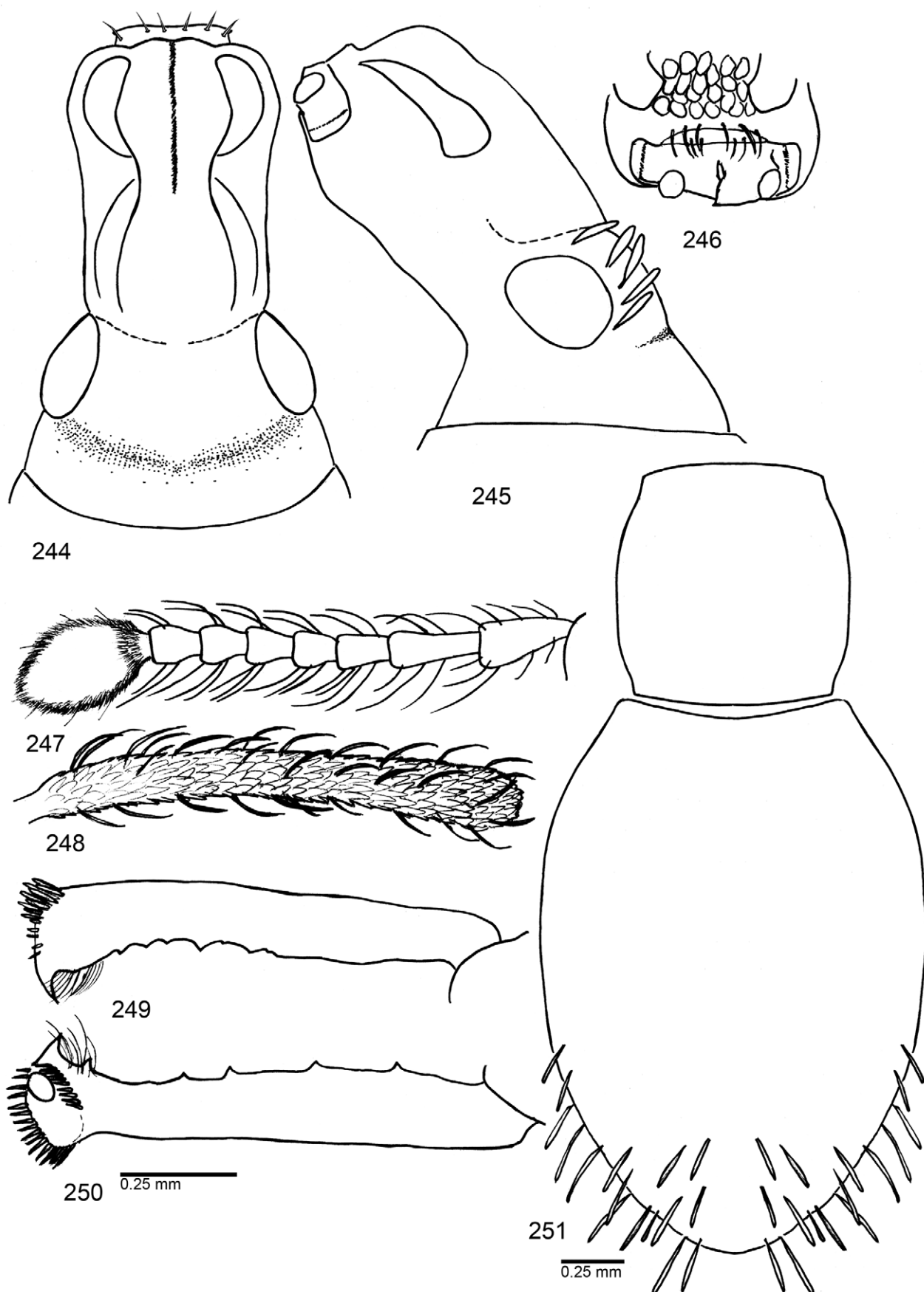


**FIGURES 230–238.** *Sphrigodellus parecola* sp. n., structural details. **230–231**, head, dorsal and lateral view; **232**, head capsule, anterior view; **233**, prementum; **234**, antennal funicle and club; **235**, antennal scape; **236**, protibia, external view; **237**, metatibia, internal view; **238**, male pronotum and elytra shape, dorsal view.

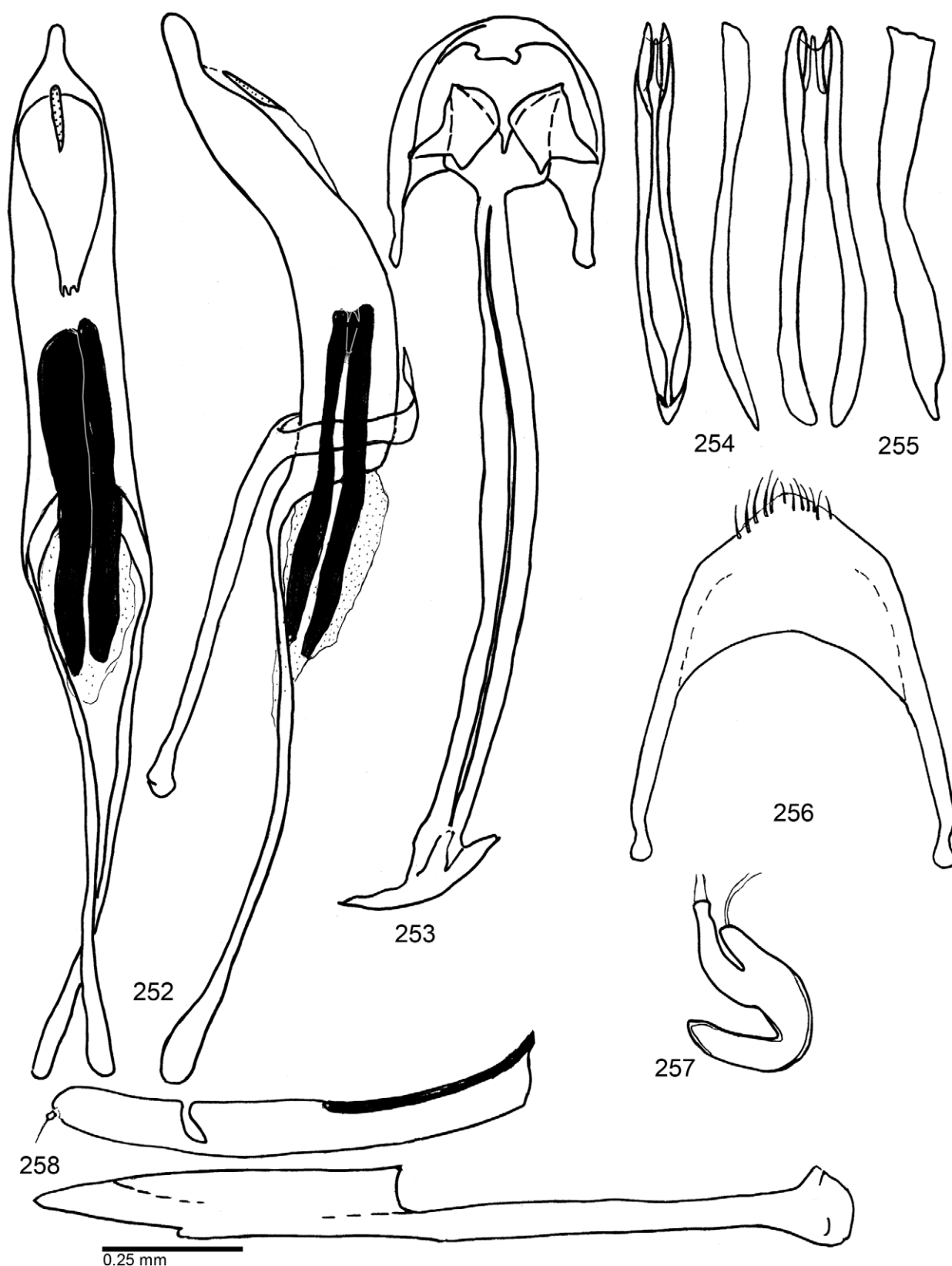




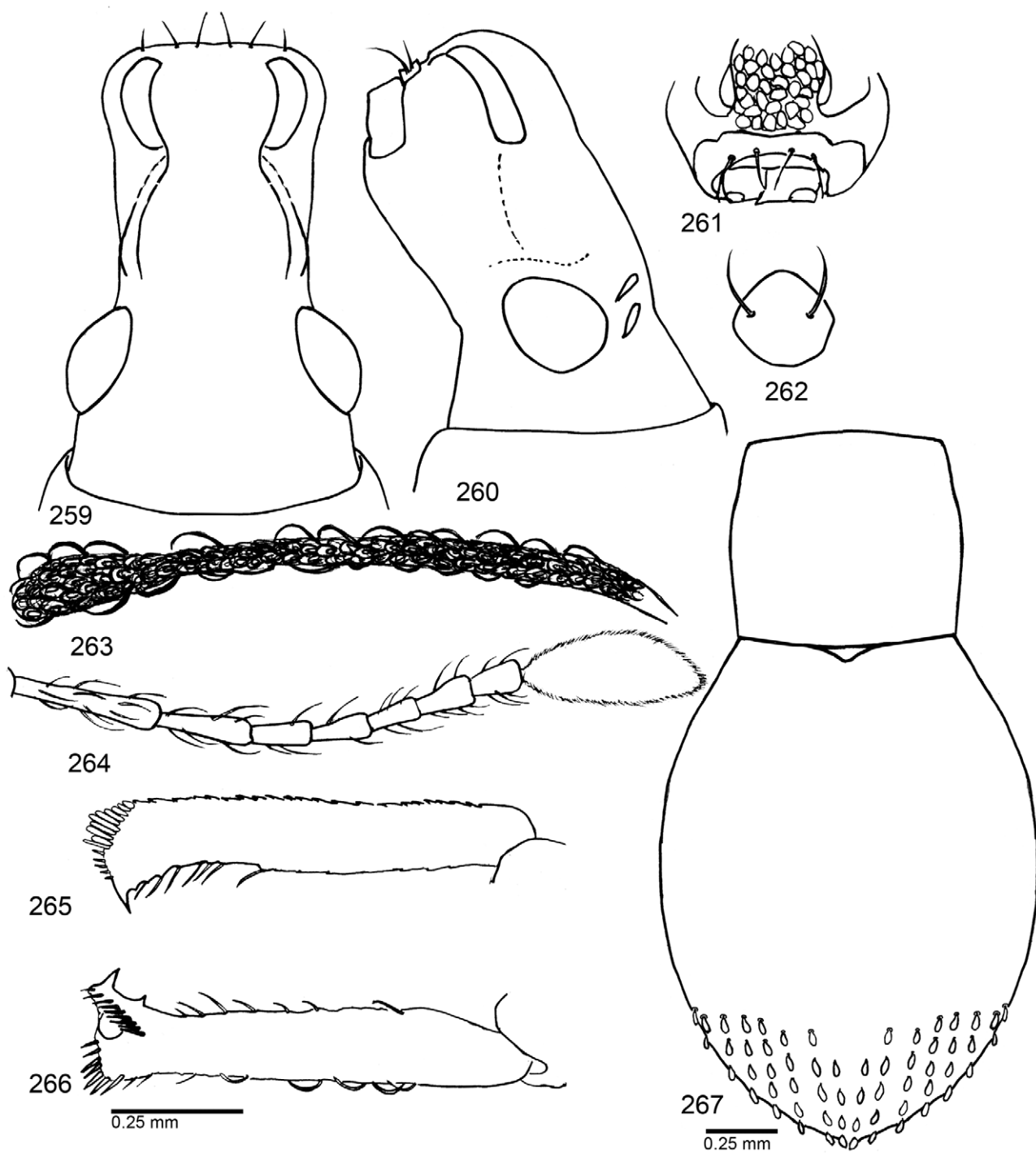
**FIGURES 239–243.** *Sphrigodellus parecola* sp. n., genital structures. **239**, aedeagus dorsal and lateral view; **240**, female tergite 8, dorsal view; **241**, female ventrites; **242**, spermatheca; **243**, female genitalia, lateral view.



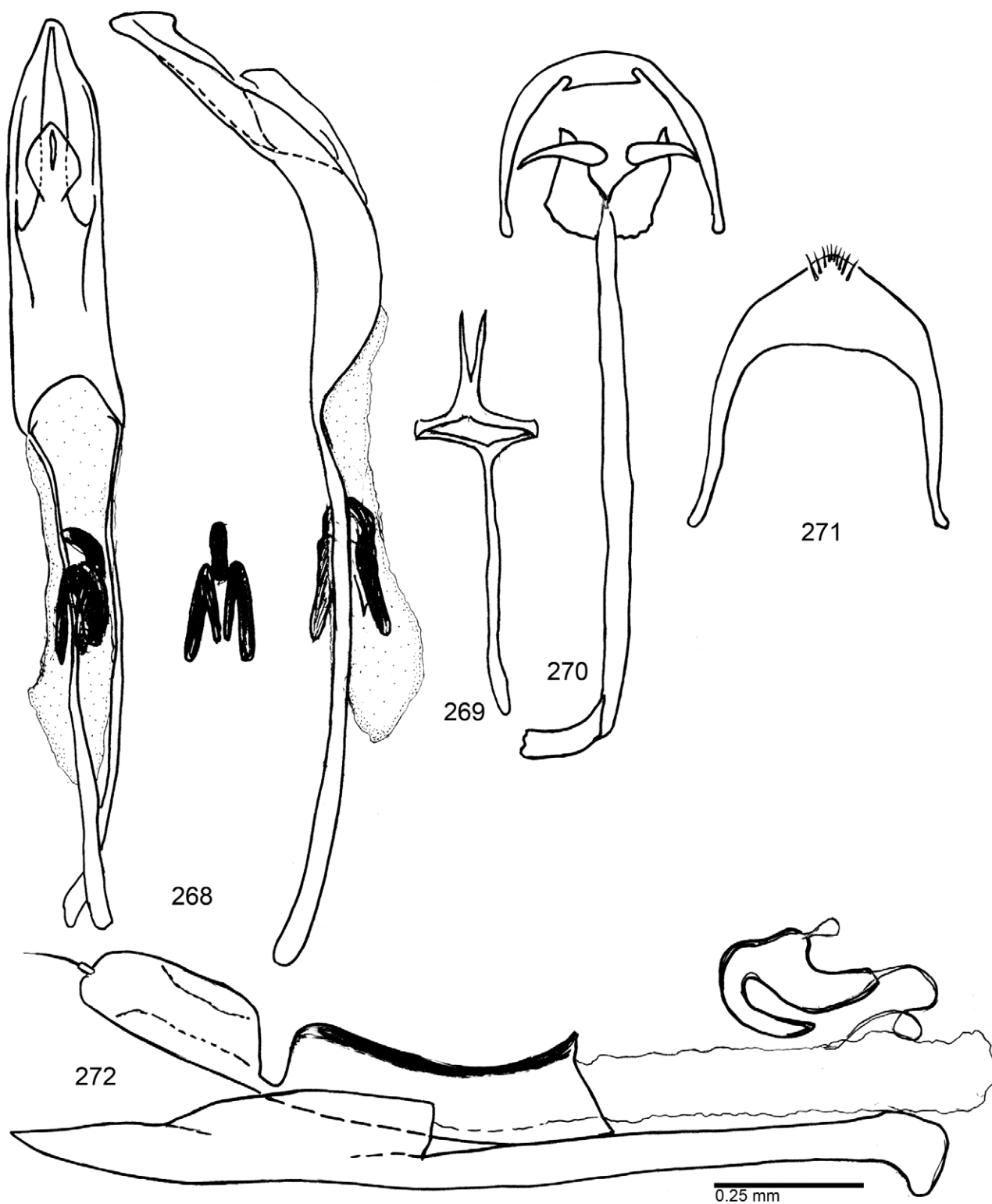
**FIGURES 244–251.** *Sphrigodellus nguruensis* sp. n., structural details. **244–245**, head, dorsal and lateral view; **246**, head capsule, anterior view; **247**, antennal funicle and club; **248**, antennal scape; **249**, protibia, external view; **250**, metatibia, internal view; **251**, male pronotum and elytra shape, dorsal view.



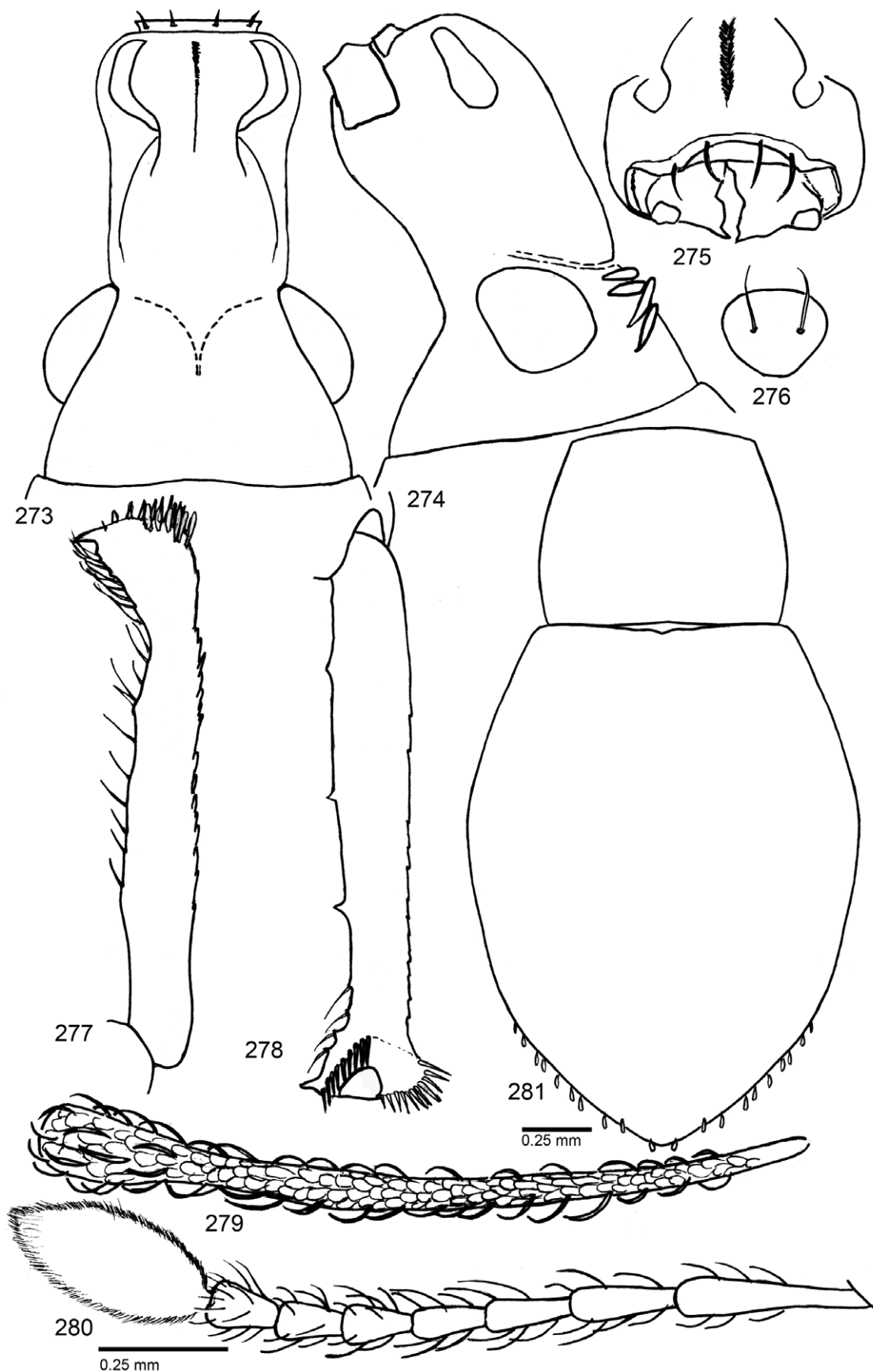
**FIGURES 252–258.** *Sphrigodellus nguruensis* sp. n., genital structures. **252**, aedeagus dorsal and lateral view; **253**, male subgenital segments, ventral view; **254**, aggonopodium, dorsal and lateral view, holotype; **255**, idem, paratype; **256**, female tergite 8, dorsal view; **257**, spermatheca; **258**, female genitalia, lateral view.



**FIGURES 259–267.** *Sphrigodellus viridegriseus* sp. n., structural details. **259–260**, head, dorsal and lateral view; **261**, head capsule, anterior view; **262**, prementum; **263**, antennal scape; **264**, antennal funicle and club; **265**, protibia, external view; **266**, metatibia, internal view; **267**, male pronotum and elytra shape, dorsal view.



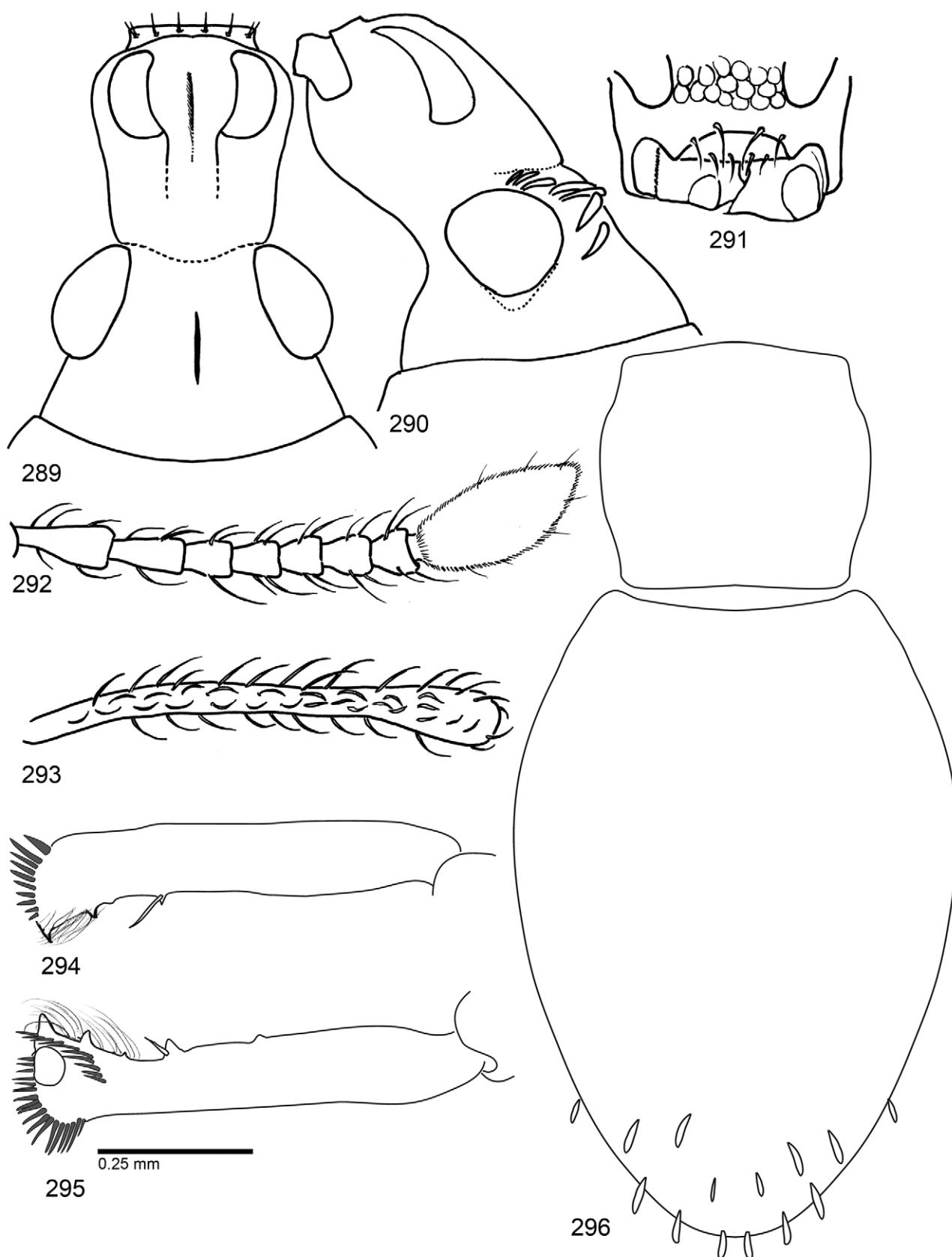
**FIGURES 268–272.** *Sphrigodellus viridegriseus* sp. n., genital structures. **268**, aedeagus dorsal and lateral view; **269**, tegmen; **270**, male subgenital segments, ventral view; **271**, female tergite 8, dorsal view; **272**, female genitalia, lateral view.



**FIGURES 273–281.** *Sphrigodellus kiverengei* sp. n., structural details. 273–274, head, dorsal and lateral view; 275, head capsule, anterior view; 276, prementum; 277, protibia, external view; 278, metatibia, internal view; 279, antennal scape; 280, antennal funicle and club; 281, male pronotum and elytra shape, dorsal view.

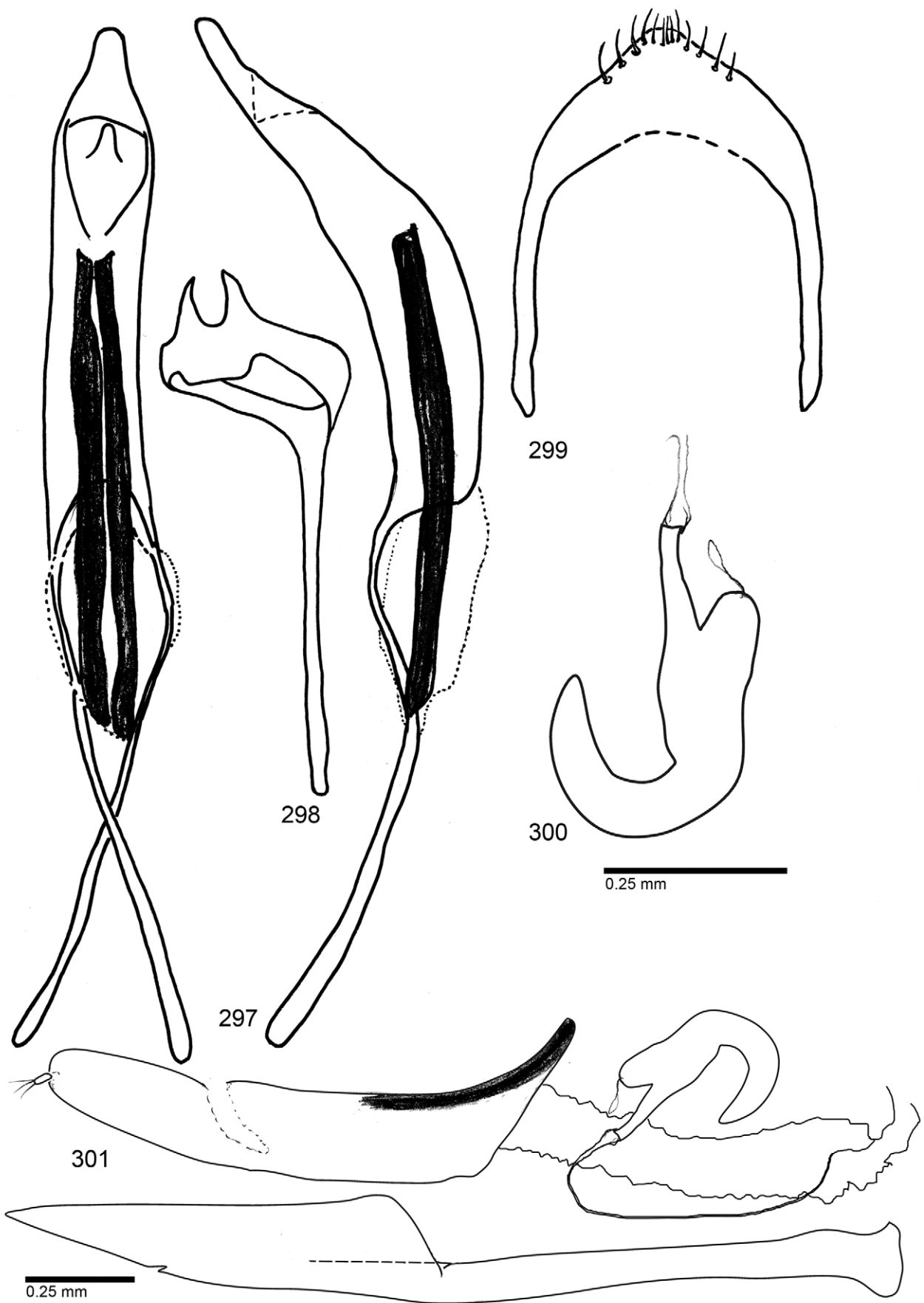


**FIGURES 282–288.** *Sphrigodellus kiverengei* sp. n., genital structures. **282**, aedeagus dorsal and lateral view; **283**, male subgenital segments, ventral view; **284**, aggonopodium, dorsal view; **285**, tegmen; **286**, female tergite 8, dorsal view; **287**, spermatheca; **288**, female genitalia, lateral view.

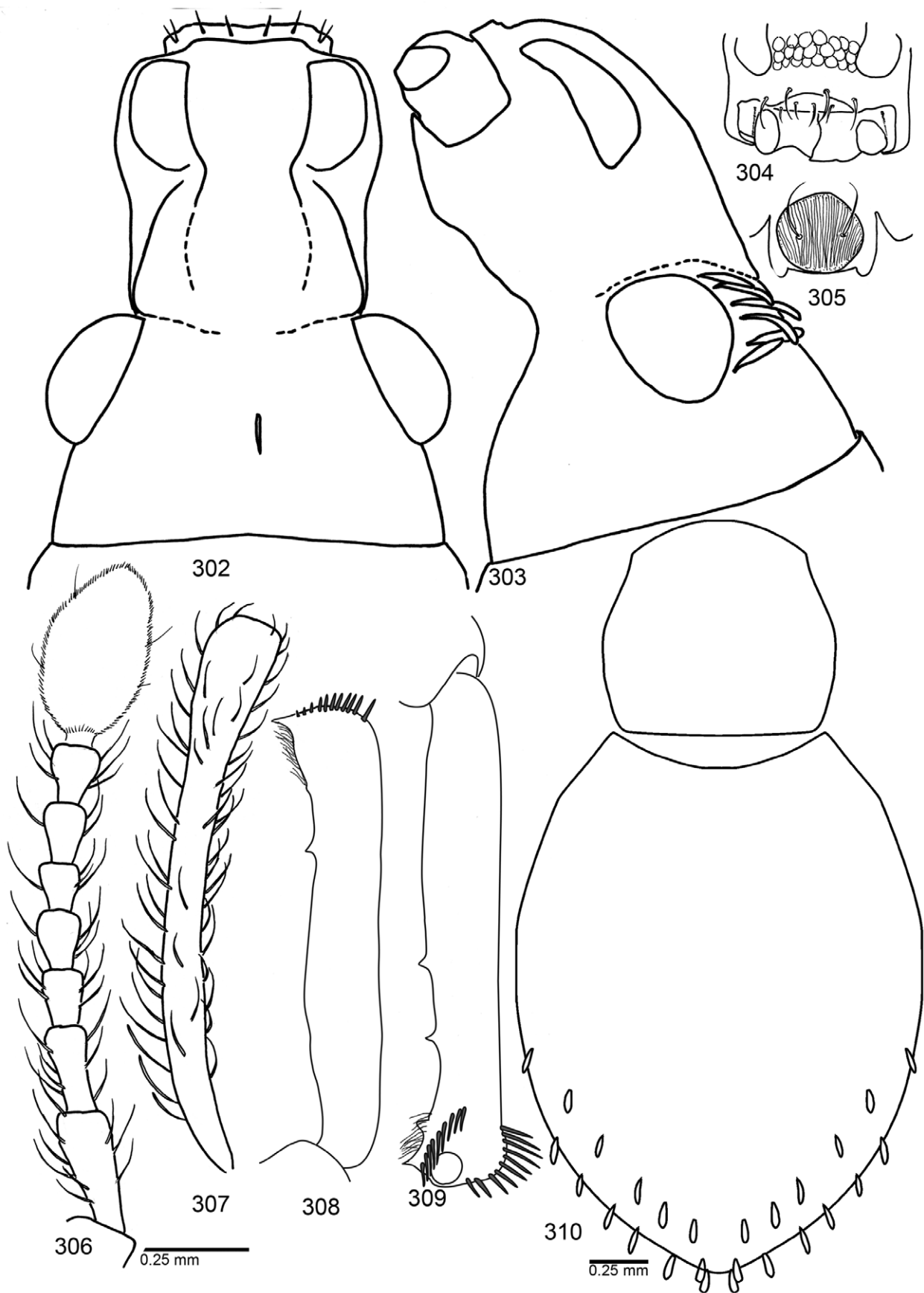


**FIGURES 289–296.** *Sphrigodellus aberdarecola* sp. n., structural details. **289–290**, head, dorsal and lateral view; **291**, head capsule, anterior view; **292**, antennal scape; **293**, antennal funicle and club; **294**, protibia, external view; **295**, metatibia, internal view; **296**, male pronotum and elytra shape, dorsal view.

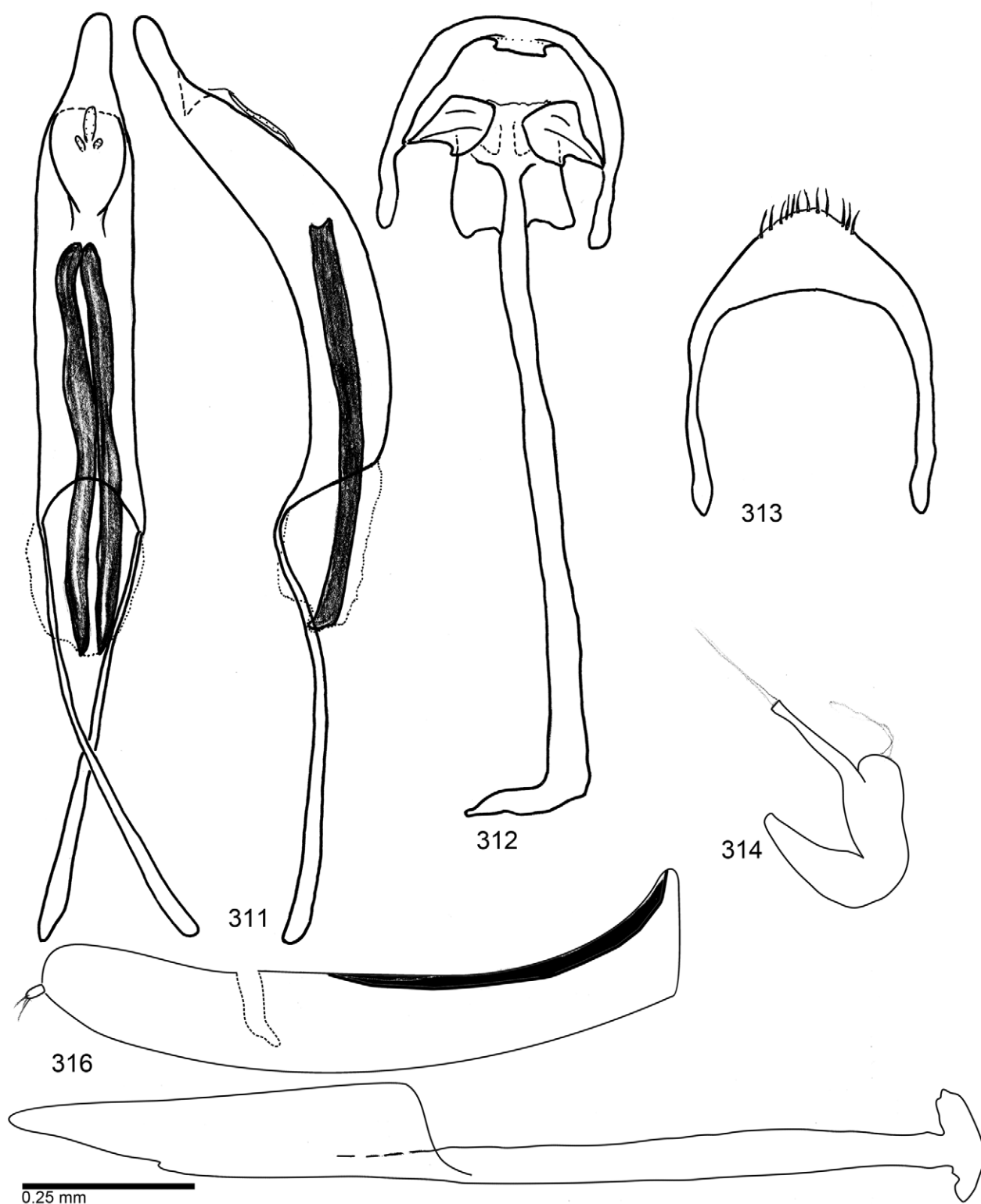




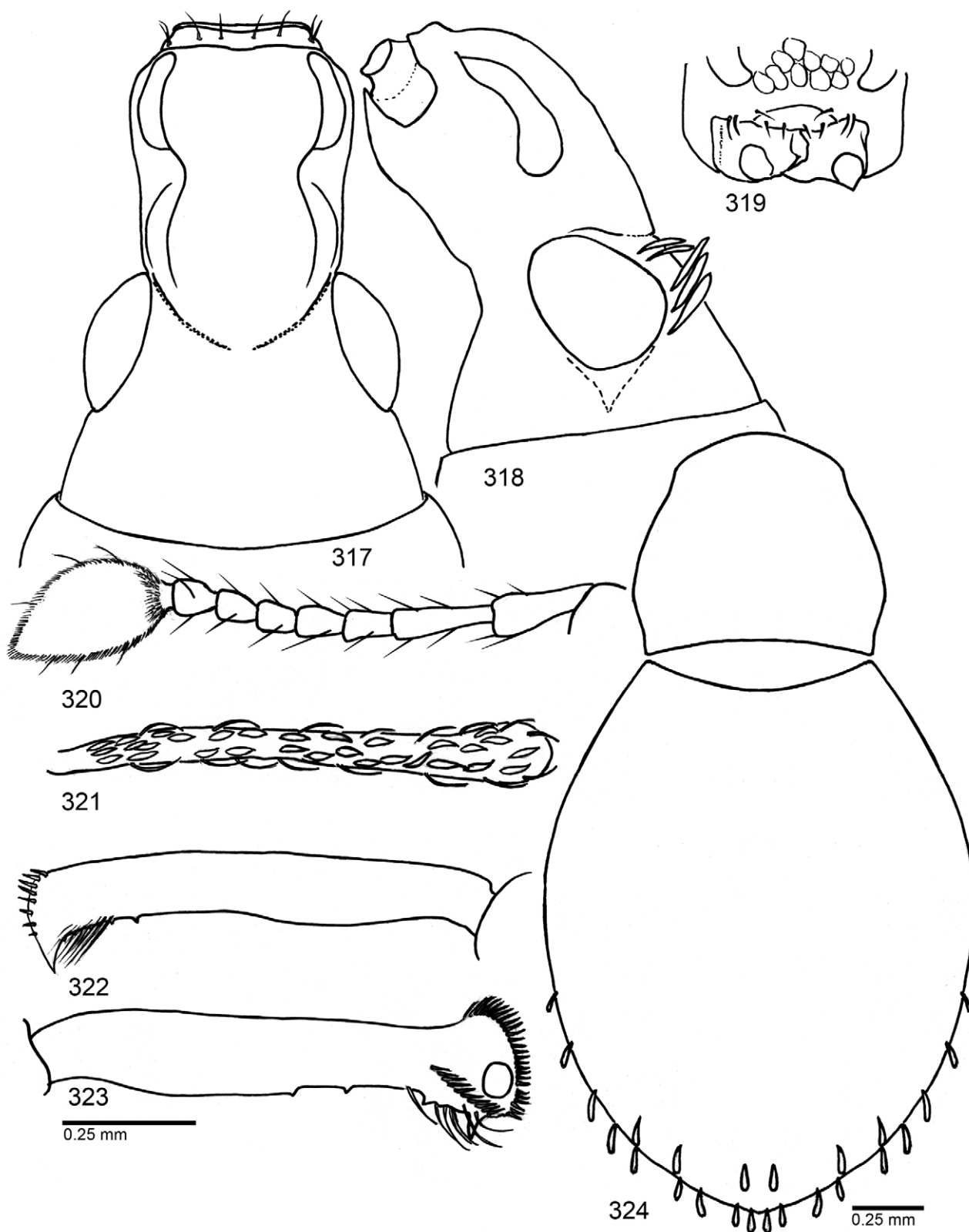
**FIGURES 297–301.** *Sphrigodellus aberdarecola* sp. n., genital structures. **297**, aedeagus dorsal and lateral view; **298**, tegmen; **299**, female tergite 8, dorsal view; **300**, spermatheca; **301**, female genitalia, lateral view.



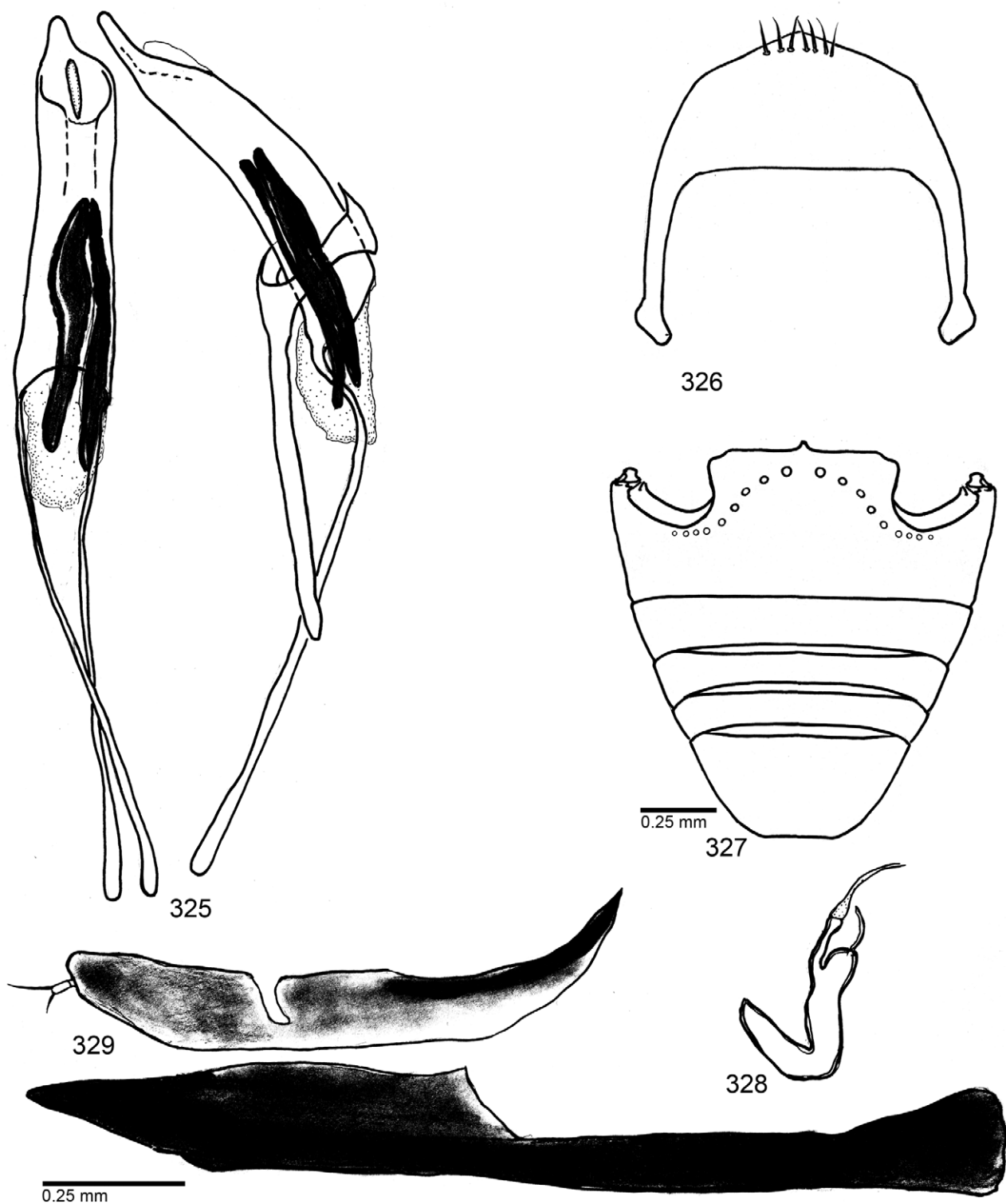
**FIGURES 302–310.** *Sphrigodellus sundi* sp. n., structural details. **302– 303**, head, dorsal and lateral view; **304**, head capsule, anterior view; **305**, prementum; **306**, antennal funicle and club; **307**, antennal scape; **308**, protibia, external view; **309**, metatibia, internal view; **310**, male pronotum and elytra shape, dorsal view.



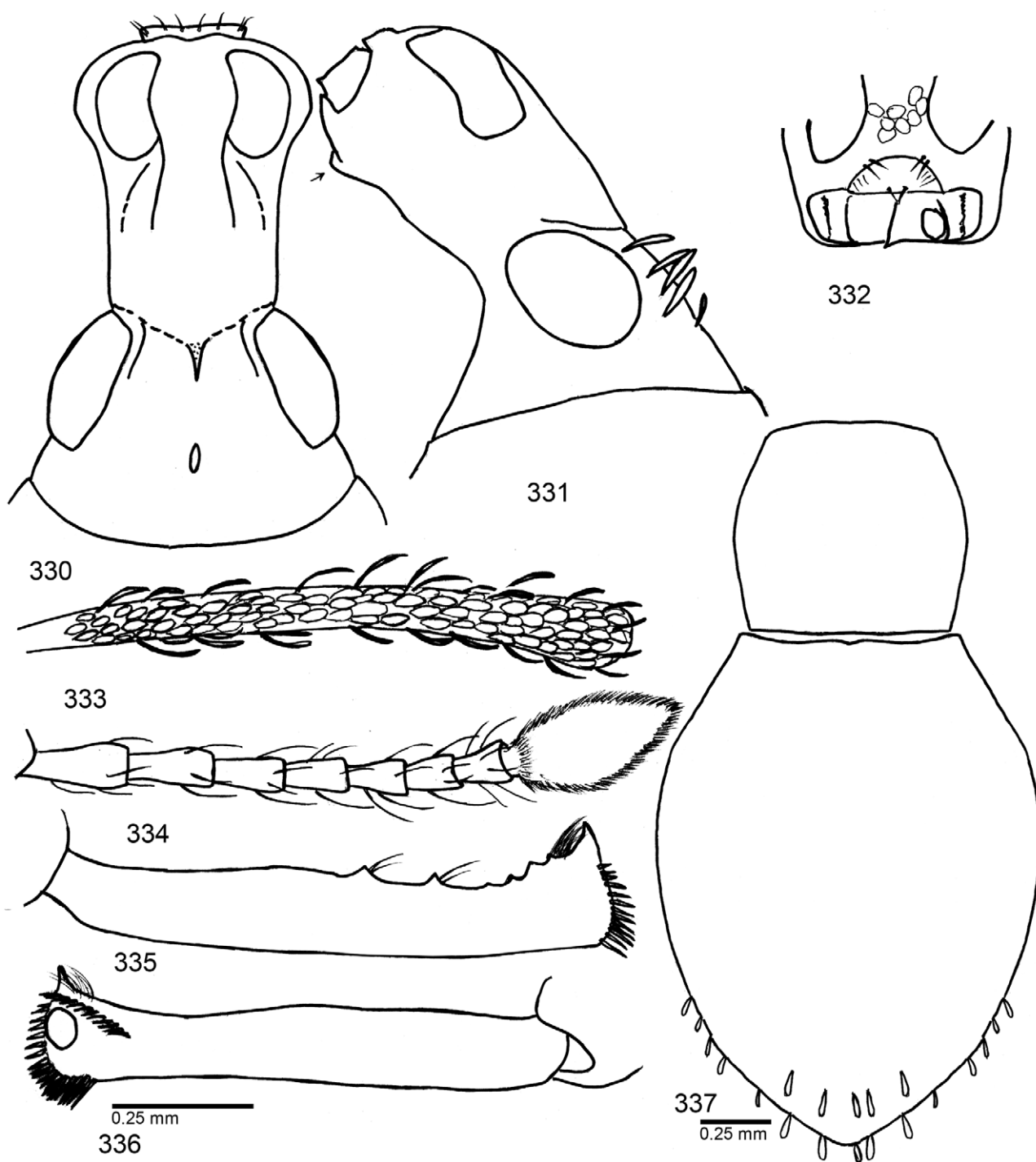
**FIGURES 311–316.** *Sphrigodellus sundi* sp. n., genital structures. **311**, aedeagus dorsal and lateral view; **312** male subgenital segments, ventral view; **313**, female tergite 8, dorsal view; **314**, spermatheca; **316**, female genitalia, lateral view.



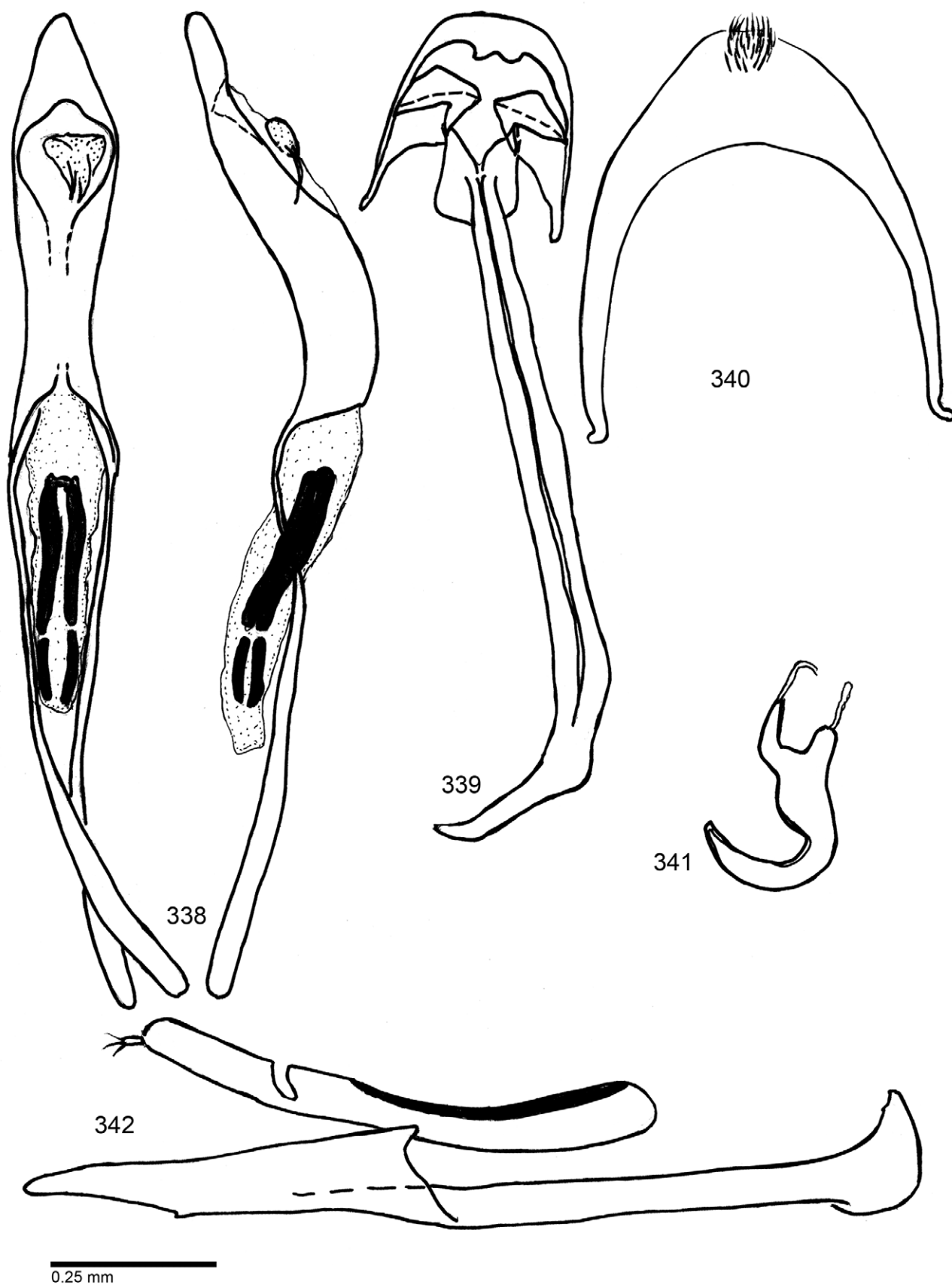
**FIGURES 317–324.** *Sphrigodellus taitae* sp. n., structural details. **317– 318**, head, dorsal and lateral view; **319**, head capsule, anterior view; **320**, antennal funicle and club; **321**, antennal scape; **322**, protibia, external view; **323**, metatibia, internal view; **324**, male pronotum and elytra shape, dorsal view.



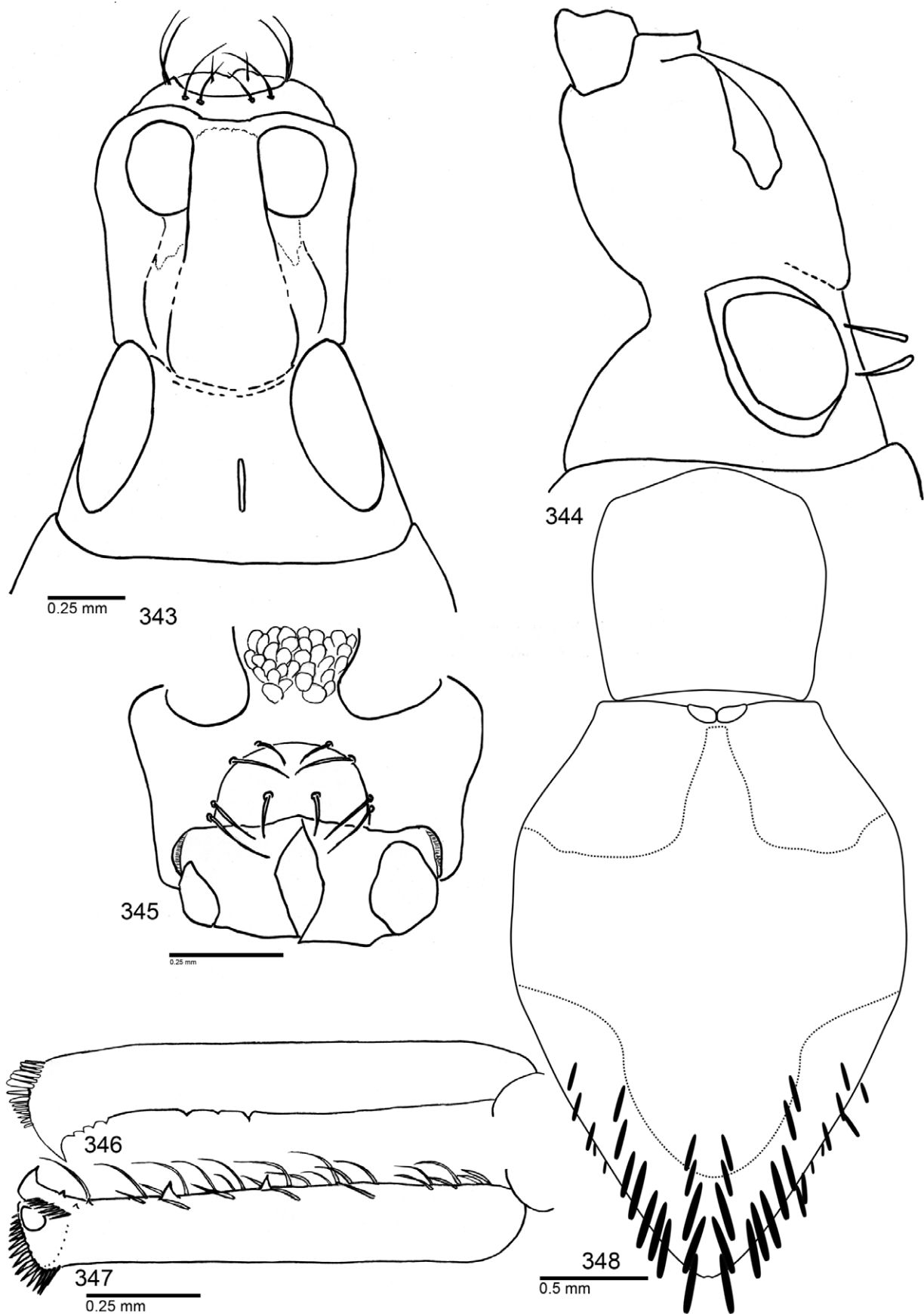
**FIGURES 325–329.** *Sphrigodellus taitae* sp. n., genital structures. **325**, aedeagus dorsal and lateral view; **326**, female tergite 8, dorsal view; **327**, male ventrites; **328**, spermatheca; **329**, female genitalia, lateral view.



**FIGURES 330–337.** *Sphrigodellus lineatus* sp. n., structural details. **330–331**, head, dorsal and lateral view; **332**, head capsule, anterior view; **333**, antennal funicle and club; **334**, antennal scape; **335**, protibia, external view; **336**, metatibia, internal view; **337**, male pronotum and elytra shape, dorsal view.

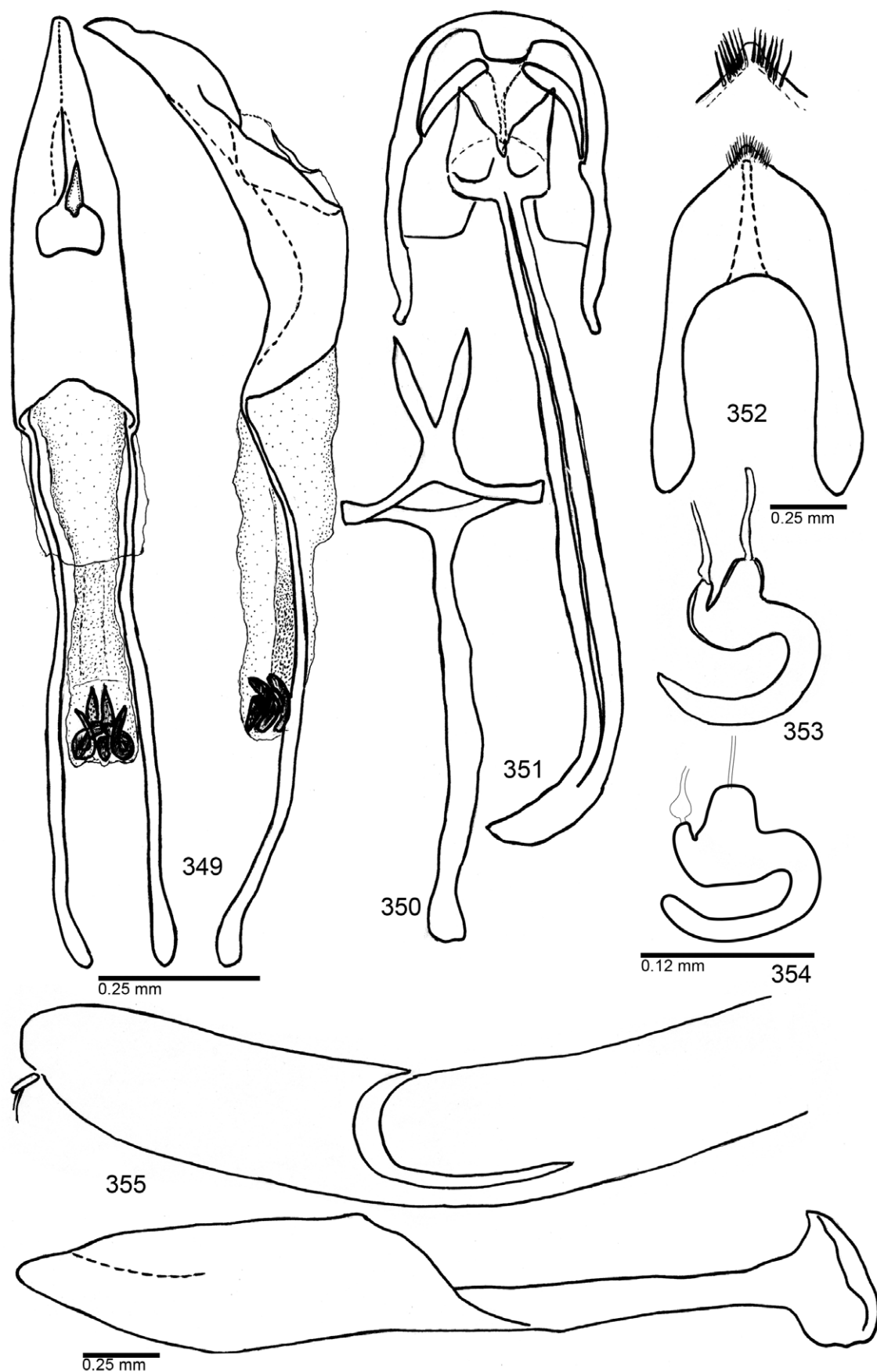


**FIGURES 338–342.** *Sphrigodellus lineatus* sp. n., genital structures. **338**, aedeagus dorsal and lateral view; **339** male subgenital segments, ventral view; **340**, female tergite 8, dorsal view; **341**, spermatheca; **342**, female genitalia, lateral view.

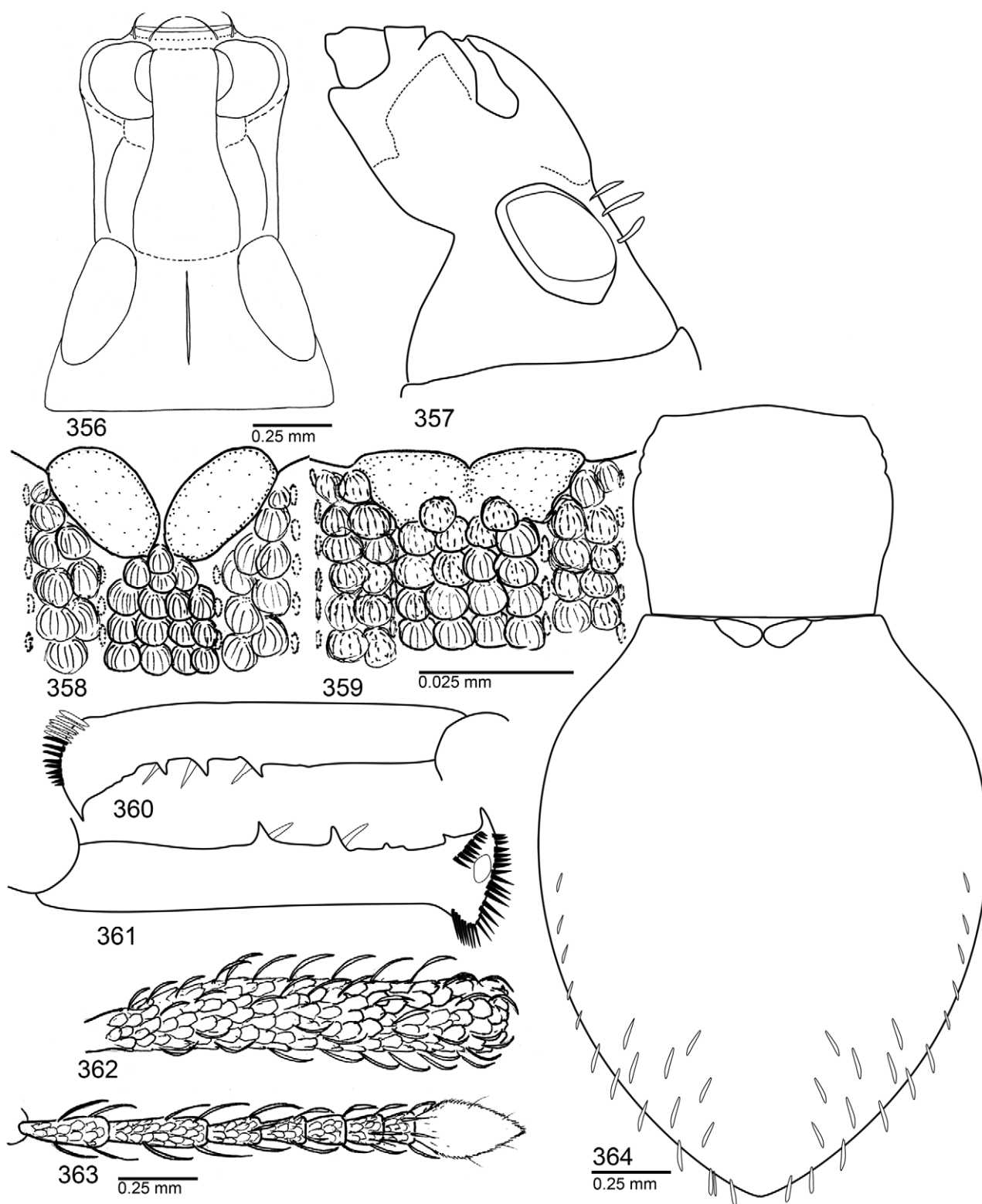


**FIGURES 343–348.** *Oncophyes amoenus* (Hartmann) (Mazumbai Forest), structural details. **343–344**, head, dorsal and lateral view; **345**, head capsule, anterior view; **346**, protibia, external view; **347**, metatibia, internal view; **348**, male pronotum and elytra shape, dorsal view.

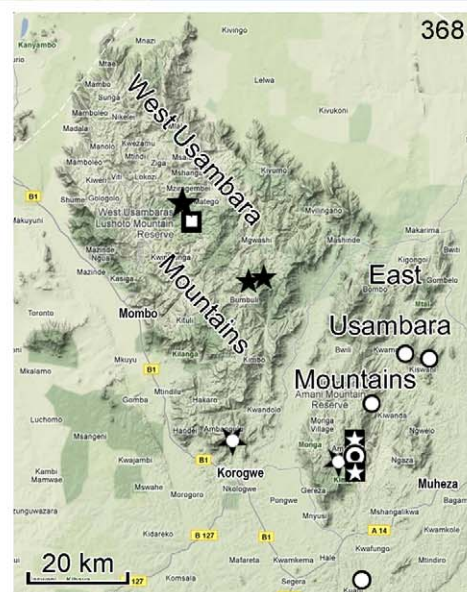
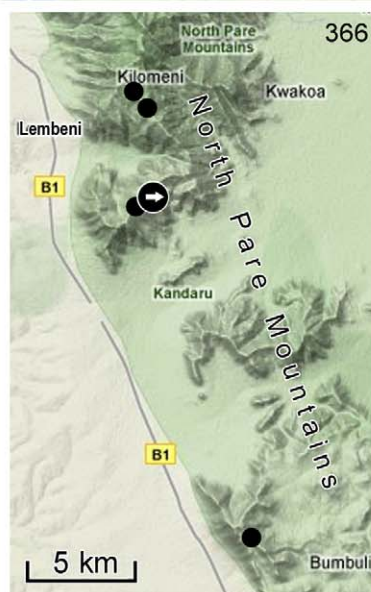
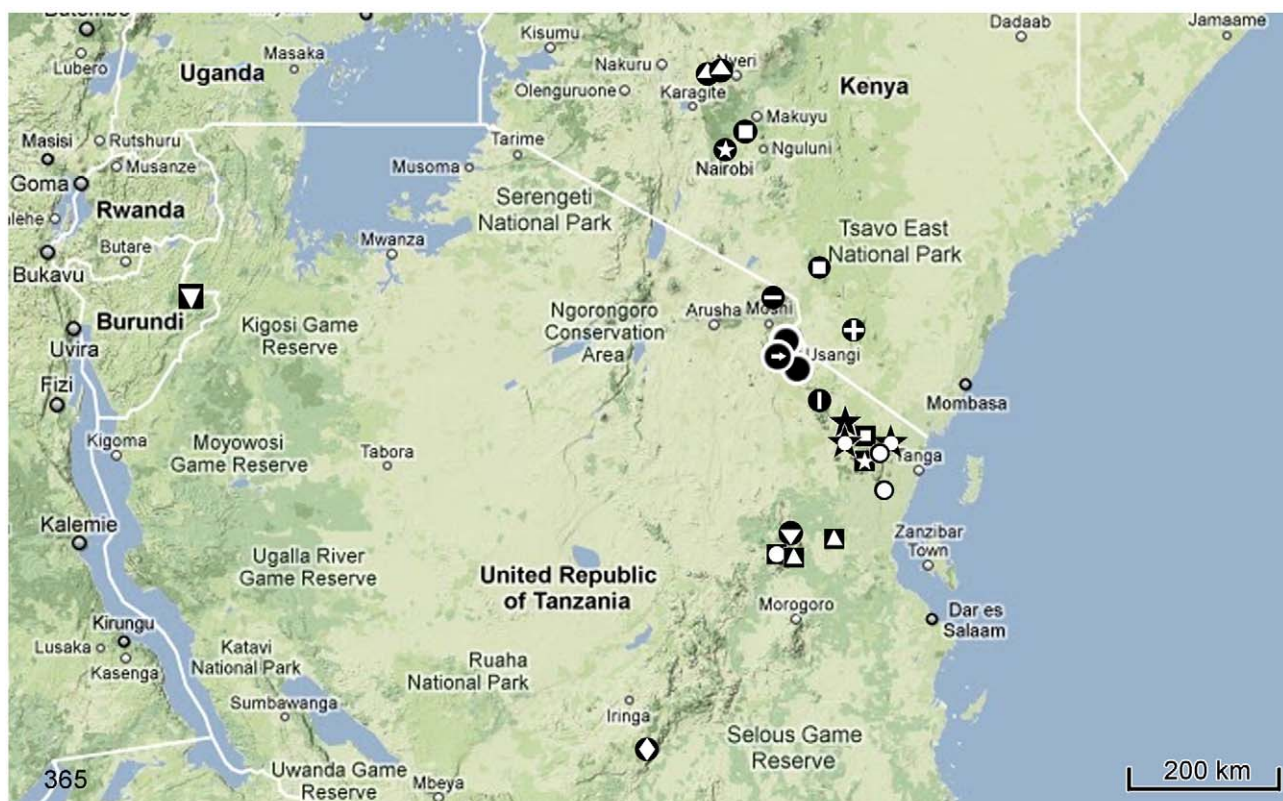




**FIGURES 349–355.** *Oncophyes amoenus* (Hartmann) (Mazumbai Forest) and *Oncophyes cadoderoides* sp. n. (fig. 354, Amani Forest), genital structures. **349**, aedeagus dorsal and lateral view; **350**, tegmen; **351**, male subgenital segments, ventral view; **352**, female tergite 8, dorsal view; **353–354**, spermatheca; **355**, female genitalia, lateral view.



**FIGURES 356–364.** *Oncophyes cadoderoides* sp. n. (Ambangulu Forest) and *Oncophyes amoenus* (Hartmann) (Fig. 359, Mazumbai Forest), structural details. **356–357**, head, dorsal and lateral view; **358–359**, subcutellar callosity; **360**, protibia, external view; **361**, metatibia, internal view; **362**, antennal scape; **363**, antennal funicle and club; **364**, male pronotum and elytra shape, dorsal view.



#### Legend to maps

*Cadoderus* spp.: □ 1 □ 2 ▣ 3 ▤ 4 ▥ 5

*Oncophyes* spp.: ★ 6 ☆ 7

*Sphrigodellus* spp.: ○ 8 ○ 9 ● 10 ● 11 ● 12 ● 13

○ 14 + 15 ☆ 16 ▲ 17 ● 18 ● 19 ● 20 ● 21

**FIGURES 365–368.** Distribution records for *Cadoderus* Marshall, *Sphrigodellus* Marshall and *Oncophyes* Marshall. **365**, East Africa; **366**, North Pare Mts., central part; **367**, South Pare Mts.: Chome Natural Reserve; **368**, Usambara Mts. **1**, *Cadoderus grebennikovi* sp. n.; **2**, *C. weisei* sp. n. and *C. mysticus* (Faust); **3**, *C. bellus* (Faust); **4**, *C. olivaceus* sp. n.; **5**, *C. burundi* sp. n.; **6**, *Oncophyes amoenus* (Hartmann); **7**, *O. cadoderoides* sp. n.; **8**, *Sphrigodellus lineatus* sp. n.; **9**, *S. usambaricus* sp. n.; **10**, *S. gusarovii* sp. n.; **11**, *S. nasutus* sp. n.; **12**, *S. kiverengei* sp. n. and *S. viridegriseus* sp. n.; **13**, *S. nguruensis* sp. n.; **14**, *S. lepidus* sp. n.; **15**, *S. taitae* sp. n.; **16**, *S. centralis* (Hustache); **17**, *S. aberdarecola* sp. n.; **18**, *S. sundi* sp. n.; **19**, *S. parecola* sp. n.; **20**, *S. minutus* sp. n.; **21**, *S. kwamkoroensis* sp. n. Mapping data © 2012 Google.





**FIGURES 369–376.** Typical biotopes and host plants of some *Sphrigodellus* species. **369**, cloud forest at Kizungoa Mt., (North Pare, Alt. 1700 m), habitat of *S. nasutus* sp. n.; **370**, *Psychotria* sp. (Rubiaceae), host plant of *S. nasutus* sp. n.; **371**, semi-dry forest at north slope of Kiverenge Mt. (North Pare, Alt. 1500 m), habitat of *S. kiverengei* sp. n. and *S. viridegriseus* sp. n.; **372**, *Myrsine africana* (Myrsinaceae), host plant of *S. kiverengei* sp. n. and *S. viridegriseus* sp. n.; **373**, cloud forest at slope of Shengena Mt., Chome N.P. (South Pare, Alt. 2000 m), habitat of *S. gusarovi* sp. n.; **374**, *Psychotria* sp. (Rubiaceae), host plant of *S. gusarovi* sp. n.; **375**, montane forest in Chome N.P. (South Pare, Alt. 1400–1900 m), habitat of *S. minutus* sp. n.; **376**, unidentified host plant of *S. minutus* sp. n.