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The Pselaphinae (Coleoptera: Staphylinidae) of Madagascar. VIII. Revision of the myrmecophilous clavigerine genus *Apoderiger* Wasmann, 1897

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Abstract. The Clavigeritae genus *Apoderiger* Wasmann, 1897 with three known species occurring in Madagascar is revised. Three new species, *Apoderiger banari* sp. nov., *A. grandis* sp. nov. and *A. sikorai* sp. nov. are described. Morphological structures of the genus are illustrated in detail for *A. sikorai*. The key for the *Apoderiger* genus group and males of *Apoderiger* as well as a map of the distribution of the genus are provided.

Keywords. Clavigeritae, Clavigerini, taxonomy, new species.

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Introduction

The supertribe Clavigeritae Leach, 1815 with 114 genera and 366 extant species is one of the most important, exclusively myrmecophilous monophyletic groups of Insecta Linnaeus, 1758 (Hlaváč *et al.* 2021). The diversity of Clavigeritae is especially high in Madagascar where 36 genera and 70 species are known. All species and 35 genera are endemic to this fourth largest world island. Only one species of the genus *Radamides* Wasmann, 1897 is also known from the Republic of South Africa. It is obvious that many species, even genera, are still waiting their discovery and the final diversity of the supertribe will be considerably higher.

Apoderiger Wasmann, 1897 was established for one species, *Apoderiger cervinus* Wasmann, 1897 and together with the genus *Trymalius* Fairmaire, 1898 was placed in the tribe Apoderigerini Jeannel, 1954 (Jeannel 1954). According to Jeannel (1954), the tribe was characterized by: (1) total absence of the punctuation on the body surface; (2) very long antennae having 4 antennomeres [sic!, antennae are trimerous] where the last antennomere is very long and suddenly dilated to form a club at its extremity; (3) presence of a lateral fold which is a prolongation of the humeral carina; and (4) by long, slender legs. Later, Jeannel (1960) described *Micrapoderiger* Jeannel, 1960 and included it into Apoderigerini and he described a new subspecies, *Apoderiger cervinus torticornis* Jeannel, 1960. In these two works, Jeannel

illustrated the habitus of all three genera. Célis (1970) enlarged the definition of the tribe by having the depression of the composite tergite lacking trichomes; he elevated *Apoderiger torticornis* Jeannel, 1960 to the species level and provided the key to two species of *Apoderiger*. Dajoz (1982) proposed the genus *Soalala* Dajoz, 1982 for *Soalala spinosa* Dajoz, 1982 and incorrectly placed it into the tribe Thysdariini Jeannel, 1954. In the world catalogue of genera of Pselaphinae Latreille, 1802 (Newton & Chandler 1989) the genus *Ambrosiger* Silvestri, 1926 was included into Apoderigerini, while *Soalala* remained in Thysdariini. Finally, Besuchet (2008) synonymized *Soalala* with *Apoderiger* and Hlaváč *et al.* (2021) synonymized the tribes Apoderigerini and Thysdariini with Clavigerini Leach, 1815 based on molecular data.

The aim of this paper is the revision and redefinition of the genus *Apoderiger* with the description of three new species as well as to provide the list of all known localities of all species of the genus together with the distribution map.

Material and methods

Specimens prepared for the morphological study were examined with a Leica S8APO stereoscopic microscope with diffuse lighting at magnifications up to 128×. Electron micrographs were produced using a JEOL 6380 LV scanning electron microscope. Habitus images were taken with a Canon EOS 6D in combination with a Canon MP-E65 1–5× macro lens; final images were composed from partial photographs using Helicon Focus 7.0. and post-processed in Adobe Photoshop 2020.

The aedeagi were studied using a Zeiss transmitted-light microscope at magnifications up to 500×, and were dissected and preserved in Euparal on the plastic label pinned together with the specimen. All drawings were made using a drawing tube.

The head length was measured from the anterior margin of the pronotum to the anterior margin of the frontal rostrum; head width was measured across the eyes; the elytral length was measured along the suture, the width means maximum width of pronotum, elytra, etc. The body length is a combined length of the head, pronotum, elytra, and abdomen. Length of basal and apical parts of median lobe were measured in dorsal view.

The terminology applied here follows Chandler (2001), except we use ‘ventrite’ instead of ‘sternite’ when discussing ventral thoracic structures. Paired structures are treated singular. Description is for males, the differences for females are treated in the sexual dimorphism section.

Label data are cited verbatim, with slashes (/) separating lines of text. The comments of the author are in square brackets. All labels of the studied material are printed. All type specimens were provided with the following red printed label: “HOLOTYPE”, “LECTOTYPE”, “PARATYPE”, “PARALECTOTYPE” or “SYNTYPE *APODERIGER*” relevant species name, “P. Hlaváč det., 2023”.

Institutional abbreviations

MHNG = Muséum d’Histoire Naturelle, Geneva, Switzerland (Giulio Cuccodoro)
MMBC = Moravian Museum, Brno, Czech Republic
NMW = Naturhistorisches Museum Wien, Wien (Vienna) (Harald Schillhammer)
PCPH = private collection of Peter Hlaváč, Prague, Czech Republic

Abbreviations for morphological terms

III–IX = visible tergites
amtp = anterior metaventral process
bst = basistipes

cd = cardo
cl = clypeus
gp = gular plate
hyg = hypomeral groove
hyr = hypomeral ridges
ihy = inner hypomeral region
lb = labrum
lpcf = lateral procoxal fovea
md = mandible
mn = mentum
mpat = mesotibial preapical tooth
msvp = mesoventral process
mtvp = posterior metaventral process
mxp = maxillary palpi
ohy = outer hypomeral region
ps = peg-like sensilla
psp = prosternal process
pst = prosternum
ptp = posterior tentorisl pits
sbl = tarsal subapical tooth
tpat = tarsal preapical tooth

Results

Taxonomy

Class Insecta Linnaeus, 1758
Order Coleoptera Linné, 1758
Superfamily Staphylinoidea Latreille, 1802
Family Staphylinidae Latreille, 1802
Subfamily Pselaphinae Latreille, 1802
Supertribe Clavigeritae Leach, 1815

Tribe **Clavigerini** Leach, 1815

All Clavigeritae of Madagascar are currently assigned to the tribe Clavigerini as newly defined by Hlaváč *et al.* (2021). There are apparently four genera in this tribe which resemble each other and are easily separated from others. *Ambrosiger* Silvestri, 1926 (from Macao, China), *Apoderiger*, *Micrapoderiger* and *Trymalius* (all three from Madagascar) are all originally placed in the tribe Apoderigerini (Newton & Chandler, 1989). All these genera share a smooth surface of the forebody, trimerous antennae with the terminal antennomere very long and dilated distad to form a distal club, and the composite tergite lacking trichomes. *Ambrosiger*, *Micrapoderiger* and *Trymalius* are monogeneric and *Apoderiger* after this revision contains six species.

Key to the genera of the Apoderiger Wasmann, 1897 genus group

1. Pronotum with well-defined, transversal antebasal sulcus ..... ***Ambrosiger*** Silvestri, 1926
– Pronotum lacking transversal antebasal sulcus 2

2. Elytra with lateral fold, which is a prolongation of the humeral carina 3
– Elytra lacking lateral fold and humeral carina ..... ***Micrapoderiger*** Jeannel, 1960

3. Head long, clearly longer than wide; pronotum lacking median antebasal fovea .... ***Apoderiger*** Wasmann, 1897
– Head short, at most slightly longer than wide; pronotum with large median antebasal fovea .... ***Trymalius*** Fairmaire, 1898

Genus ***Apoderiger*** Wasmann, 1897

Apoderiger Wasmann, 1897: 263. Type species: *Apoderiger cervinus* Wasmann, by monotypy.
Soalala Dajoz, 1982: 512. Type species: *Soalala spinosa* Dajoz, by original designation; synonymy in Besuchet, 2008: 65.

Apoderiger – Jeannel 1954: 312 (redescription); 1960: 202 (in key); 1960: 203. — Célis 1970: 248 (diagnosis, key to species). — Besuchet 2008: 65 (synonymy of *Soalala*).

Diagnosis

Head elongate, at least twice as long as wide; temples shorter than frontal rostrum; lacking frontal foveae, with pair of minute dorsal tentorial pits, situated behind eyes. Neck region subcylindrical, long, about as long as or slightly shorter than posterior part of head capsule, separated from head capsule by deep occipital constriction, partly retracted into prothorax. Antenna trimerous; terminal antennomere very long, dilated and curved distally, its apex truncate, with dense short and long setae. Pronotum transverse, clearly wider than long, lacking antebasal and lateral foveae. Elytra more than 1.50 × as wide as long; lacking basal foveae; humeri strongly prominent; posterior margin of elytron lacking trichomes. Abdomen with composite tergite convex, lacking impressions, keels and lacking trichomes; three paratergites of composite tergite present, first paratergite in anterior portion with trichome; posterior margin of composite tergite with pair of small, bump-like, wide-distant or with pair of long, triangular, short-distant projections. Legs long and slender; femur lacking interlocking ridge; mesotibia differently modified in pre or apical portion. Aedeagus elongate, slender, 2.5–3.0 × as long as wide; basal bulb well-separated from distal lobe; endophallus with or lacking sclerites; dorsal diaphragm round or elliptical.

Description

Body (Fig.1). Yellowish-brown, elongated, more about 2.5 × as long as wide. Length 1.4–2.2 mm.

Head. Elongate, at least twice as long as wide, widest at level of eyes; rostrum narrow, rounded at anterior margin; eyes oval, slightly prominent, situated slightly behind midpoint of head capsule; temples shorter than frontal rostrum, behind eyes slightly convergent posteriad; lacking frontal foveae, with pair of minute dorsal tentorial pits, situated behind eyes; clypeus partly visible on sides. Neck region subcylindrical, long, about as long as or slightly shorter than posterior part of head capsule, separated from head capsule by deep occipital constriction, partly retracted into prothorax, with well-defined gular plate (Fig. 2A); posterior tentorial pits (Fig. 2A; *ptp* = gular foveae of Chandler 2001) small, circular, well-separated, situated in front of transverse impression demarcating neck region ventrally; pre-tentorial gular-submental region elongate, subrectangular and smooth.

Antenna. Trimerous (Fig. 2C–E), semi-circular in cross-section, very long, exceeding posterior margin of pronotum; scape slightly longer than pedicel, both small, subrectangular; terminal antennomere (flagellomere) very long, more than 10 × as long as wide, dilated distad and variably shaped, curved distally, its apex truncate, with dense short and long setae.

Mouthparts. Rudimentary but well-developed, completely hidden in transversally elliptical bucal cavity (Fig. 2A–B); labium with transverse, sub-rectangular mentum (Fig. 2A–B), anterior margin of mentum slightly rounded, its anterior half with long setae placed in two rows, lacking ligula. Maxilla reduced,

with large, hemispherical cardo (Fig. 2B); basistipes (Fig. 2B) minuscule, with one seta; galea and lacinia atrophied. Maxillary palpi (Fig. 2B) reduced to one palpomere. Mandibles (Fig. 2B) ovaly projecting on outer portion. Labrum (Fig. 2B) transverse with almost straight anterior margin; anteroventral margin with some peg-like sensilla (Fig. 2B); clypeus (Fig. 2B) large, transverse, with rounded anterior margin which is bearing bunch of long setae.

Pronotum. Transverse, clearly wider than long, about half of length of head; lacking squamouse setae; lateral margin rounded, in anterior and posterior half convergent; lacking antebasal and lateral foveae; lacking sulci or carinae.

Prosternum (Fig. 3A). Laterally fused with hypomera; basisternal region longer than coxal region, with sparse setae, with pair of small, widely separated asetose lateral procoxal foveae (Fig. 3A; *lpcf* = term of Chandler 2001; in fact, these foveae are situated on prosternum, anterad procoxal cavities), median procoxal fovea absent; prosternal process (Fig. 3A) rounded, not separating procoxae. Hypomera divided by incomplete hypomeral ridges (Fig. 3A) into narrow, elongate inner hypomeral region (Fig. 3A) and broad, smooth outer hypomeral region (Fig. 3A), latter with shallow hypomeral groove (Fig. 3A).

Mesonotum and metanotum. Not studied.

Mesoventrite. Fused with metaventrite, with sparse setae being denser on metaventral disc, lacking foveae; mesocoxae separated, width of isthmus about half of diameter of mesocoxal cavity; mesoventral and anterior metaventral process subequal in length, truncate; disc of metaventrite slightly convex in

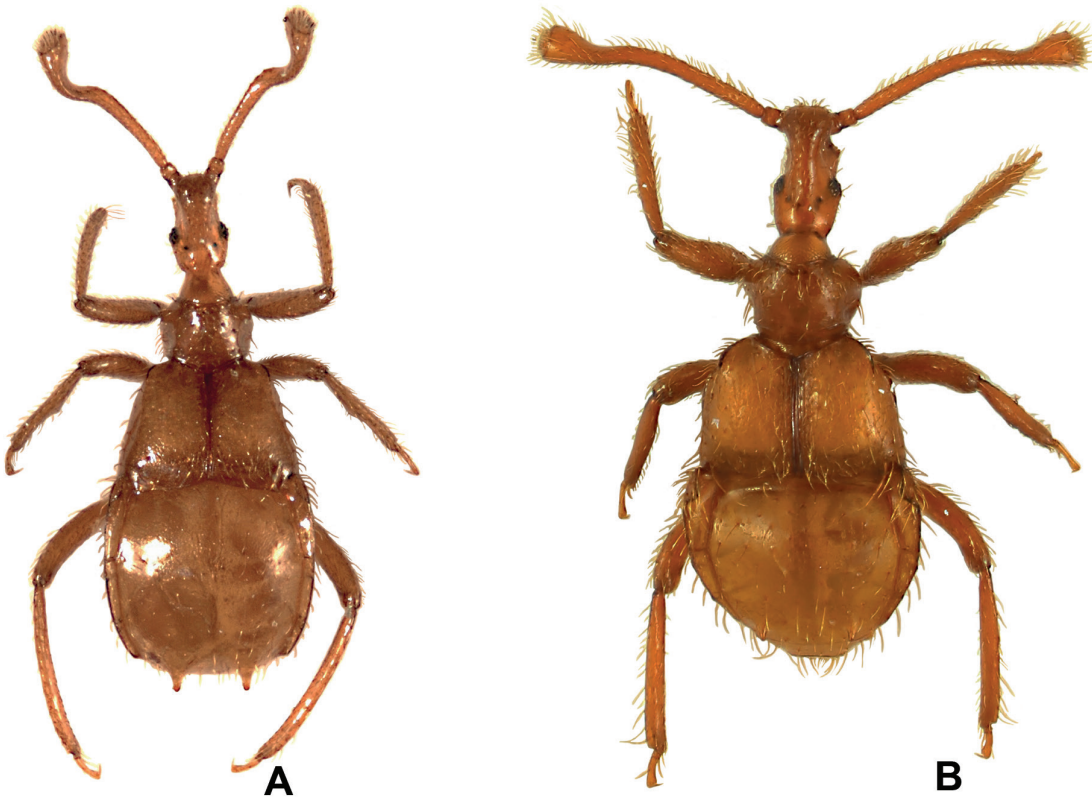

Fig. 1. Dorsal habitus of male. **A**. *Apoderiger torticornis* Jeannel, 1960, holotype (MNHN). **B**. *Apoderiger banari* sp. nov., holotype (PCPH).

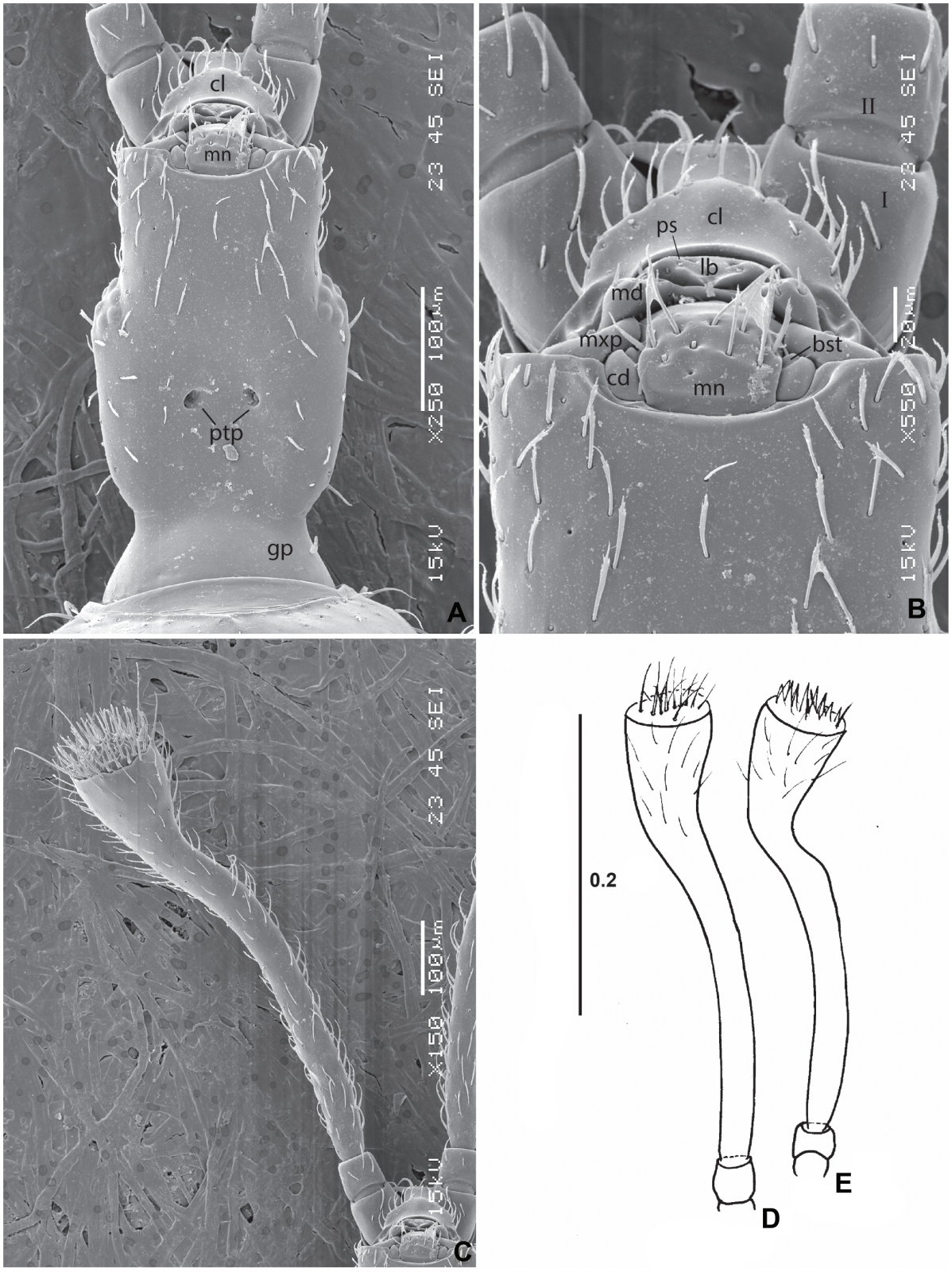

Fig. 2. *Apoderiger sikorai* sp. nov., paratype, ♂ (PCPH). **A**. Head in ventral view. **B**. Mouth part. **C–D**. Antenna. **E**. *Apoderiger torticornis* Jeannel, 1960, holotype, ♂ (MNHN), antenna. Abbrevations: *bst* = basistipes; *cd* = cardo; *cl* = clypeus; *gp* = gular plate; *lb* = labrum; *md* = mandible; *mn* = mentum; *mxp* = maxillary palpi; *ps* = peg-like sensilla; *ptp* = posterior tentorisl pits.

anterior part, declining to posterior margin, lacking projection, patch of trichome-like setae or strong median longitudinal keel; metaventral posterior process (Fig. 3A) wide, short, with straight posterior margin or long, semitriangular, with pointed and setose projecting posterior part exceeding part of abdominal sternites.

Elytra. 1.60–1.70 × as wide as long, 1.50–1.70 × as long as pronotum, with unevenly distributed short setae; lacking basal foveae; with or without discal and sutural striae; postero-lateral corner of elytron obliquely bevelled mesad, lacking projection; humeri strongly prominent; posterior margin of elytron lacking trichomes.

Abdomen. With composite tergite convex, lacking impressions or keels, lacking trichomes; three paratergites of composite tergite present, first paratergite in anterior portion with trichome; posterior margin of composite tergite with pair of small, bump-like, wide-distant or with pair of long, triangular, short-distant projections.

Abdomen (Fig. 3B). With first visible sternite (III) narrow, more than 6 × as short as second visible sternite (IV) which is almost twice as long as third (V); all sternites simple, lacking any modification.

Legs. Moderately long and slender; femur lacking interlocking ridge; mesotibia differently modified in pre or apical portion, sometimes with mesotibial preapical tooth (Fig. 3C); tarsomere 1 minuscule (Fig. 3C), 2 much longer, 3 considerably longer than 2, with subtriangular distal lamella (Fig. 3C).

Aedeagus (Fig. 4A–J). Elongate, slender, 2.5–3.0 × as long as wide; basal bulb well-separated from distal lobe, ratio length of basal bulb / length of distal lobe variable 0.9–2.4; endophallus with or lacking sclerites; dorsal diaphragm round or elliptical.

Sexual dimorphism

Females always with short, wide posterior metaventral process, mesotibia always simple, lacking any kind of modification.

Host ant

Paratrechina amblyops rubescens (Forel, 1892) is the only host ant known so far for the genus.

Distribution

The centre of the distribution of the genus *Apoderiger* is the eastern part of central Madagascar, where four species are present, *A. banari* sp. nov., *A. sikorai* sp. nov. in the massif Anjozorobe – Andasibe, *A. cervinus* on the Imerina Plateau and one, the most southern record of an undescribed species, in the Ranomafana National Park. There are three isolated species located more to the north, *A. spinosus* on the western coast, Soalala district, *A. grandis* sp. nov. on northeastern part, Manongarivo Special Reserve and *A. torticornis* in Antongil Bay, north-eastern part (Fig. 5).

Remarks

Two well-defined groups of species can be recognized within the genus which are readily separated by the different structure of a pair of projections on the posterior margin of the composite tergite. The first group, containing *A. spinosus* (Dajoz, 1982) and *A. sikorai* sp. nov., has posterior margin of composite tergite with pair of small, bump-like, wide-distant projections and strongly curved distal portion of terminal antennomere. The second group, with *A. torticornis*, *A. grandis* sp. nov. and *A. banari* sp. nov., has posterior margin of composite tergite with pair of long, triangular, short-distant projections which are or not exceeding posterior margin of abdomen and slightly curved distal portion of terminal

antennomere. Except *A. cervinus*, because of unknown male, the remaining species of the genus can be separated using the following key.

Key to males

(*Apoderiger cervinus* is missing in the key because the male of this species is unknown).

1. Posterior margin of composite tergite with pair of small, bump-like, wide-distant projections (*A. spinosus* species group) 2
– Posterior margin of composite tergite with pair of long, triangular, short-distant projections (*A. torticornis* species group) 3

2. Small species, about 1.40 mm long; apex of mesotibia with inner projection .... ***A. spinosus*** (Dajoz, 1982)
– Large species, about 1.70–1.85 mm long; apex of mesotibia lacking inner projection, only with small preapical tooth (Fig. 3C) ..... ***A. sikorai*** sp. nov.

3. Triangular paired projections on posterior portion of composite tergite shorter, not exceeding posterior margin of abdomen; posterior subtriangular metaventral process exceedingly over first visible sternite (III) ..... ***A. banari*** sp. nov.
– Triangular paired projections on posterior portion of composite tergite longer, clearly exceeding posterior margin of abdomen; posterior metaventral process wide, short, with almost straight posterior margin, not exceedingly over first visible sternite (III) 4

4. Elytra with discal and sutural striae; large species, about 2.2 mm long; head less than 1.60 × as long as pronotum ..... ***A. grandis*** sp. nov.
– Elytra lacking discal and sutural striae; small species, about 1.8–1.9 mm long; head more than 1.75 × as long as pronotum ..... ***A. torticornis*** Jeannel, 1960

Apoderiger torticornis Jeannel, 1960
Figs 1A, 2E, 4A–B, 5

Apoderiger cervinus torticornis Jeannel, 1960: 203. Type locality: Ambodivoangy, near Maroantsetra. Types: unknown number of syntypes (MNHN).

Apoderiger torticornis – Célis 1970: 249 (redescription, raised to species level status).

Diagnosis

Last antennomere slightly curved in distal portion; posterior metaventral process short, wide with straight margin; elytra lacking sutural and discal striae; composite tergite in posterior portion with pair of long, triangular, closely separated projections with rounded apex, which are clearly exceeding posterior margin of abdomen; mesotibia with median tooth; aedeagus 2.67 × as long as wide; endophallus lacking sclerites.

Type material

Lectotype (here designated)
MADAGASCAR • ♂; six labels "R. Maroantsetra / Ambodivoangy / J. Vadon 15.X.55" [white, printed and handwritten], "♂ [white, printed]//"fourmilière / enterrée" [white, handwritten]// "HOLOTYPUS" [red, printed], "*Apoderiger / torticornis* Jeann. / Det. Célis 1970" [white, handwritten]//"SYNTYPE / *APODERIGER / torticornis* Jeannel / P. Hlaváč des., 2020" [red, printed]; MNHN. The lectotype is accompanied with two, undetermined host ants.

Paralectotypes (2 ex.)
MADAGASCAR • 1 ♂; six labels "Ambodivoangy / J. Vadon" [white, printed] // "Fourmilière" [white, handwritten] // "♂" [white, printed] // "PARATYPUS [red, printed] // *Apoderiger / torticornis* Jeann. / Det. Célis 1970" [white, handwriten] // "PARALECTOTYPE / *APODERIGER / torticornis* Jeannel / P. Hlaváč des., 2020" [red, printed]; MNHN • 1 ♀; five labels "Ambodivoangy / J. Vadon" [white, printed] // "♀" [white, printed] // "PARATYPUS" [red, printed] // "*Apoderiger / torticornis* Jeann. / Det. Célis 1970" [white, handwriten] // "PHOTO (P. Krásenský) / P. Hlaváč, Prague" [yellow, printed] // "PARALECTOTYPE / *APODERIGER / torticornis* Jeannel / P. Hlaváč des., 2020" [red, printed]; MNHN.

Description

Body. Yellowish-brown, more elongated, 2.35 × as long as wide; body 1.85–1.90 mm long and about 0.60 mm wide.

Head. Elongate, 2.00–2.10 × as long as wide, about 1.8 × as long as pronotum.

Antenna. Trimerous, 0.70–0.75 mm long, terminal antennomere slightly curved in distal portion.

Pronotum. Transverse, 1.80–1.85 × as wide as long.

Metaventrite. With large, triangular median impression, posterior metaventral process short, wide with straight margin.

Elytra. 1.60–1.70 × as wide as long, 1.50–1.60 × as long as pronotum; lacking sutural and discal striae; humeri strongly projecting; lateral margin with some stout setae; posterior elytral margin in lateral third with cutout between two, short teeth.

Abdomen. 1.85–1.90 × as long as elytra; composite tergite in posterior portion with pair of long, triangular, closely separated projections with rounded apex, which are clearly exceeding posterior margin of abdomen.

Mesotibia. With obtuse, short median tooth; last mesotarsomere simple.

Aedeagus (Fig. 4A–B). Elongate, 2.67 × as long as wide; basal bulb and distal lobe well-separated, ratio length of basal bulb / length of distal lobe 2.40; endophallus lacking sclerites; dorsal diaphragm elliptical.

Sexual dimorphism

As for the genus.

Distribution

Madagascar (Antongila Bay).

Remarks

Apoderiger torticornis is related to *A. banari* sp. nov. and *A. grandis* sp. nov. sharing with both species a pair of long, triangular, short distant projections on the posterior portion of the composite tergite. It is separated from *A. banari* by having a pair of triangular, short distant projections longer, exceeding posterior margin of composite tergite (shorter, not exceeding posterior margin in *A. banari*) and having posterior metaventral process wide and short (subtriangular and long in *A. banari*). From *A. grandis* it

is readily separated by body smaller than 2 mm (2.2 mm in *A. grandis*) and having elytra lacking discal and sutural striae which are well-defined in *A. grandis*.

Host ant

Paratrechina amblyops rubescens (Forel, 1892).

Apoderiger sikorai sp. nov.
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Figs 2A–C, 3A–C, 4C–D, 5

Diagnosis

Last antennomere slightly curved in distal portion; posterior metaventral process long, slender, parallel-sided with two separate setae; lacking sutural and discal striae; composite tergite in posterior portion with pair of small, bump-like, widely separated projections; mesotibia simple; aedeagus 2.50× as long as wide; endophallus with sclerite; dorsal diaphragm semicircular.

Etymology

Named after the collector of the type serie, Mr Sikora.

Type material

Holotype
MADAGASCAR • ♂; one label "Mdgk. Sikora/Andrangolaoka [Manjakandriana, forest east from lake Mantasoa, 1389 m]" [white, printed and handwritten]; NMW.

Paratypes (7 ex.)
MADAGASCAR • 3 ♂♂, 2 ♀♀, 1 ex.; same data as for holotype; NMW, PCPH • 1 ♂; one label "ASB/May 2011/01 MADAGASCAR/Andasibe N.P.; ´Belle vue; 2.v./2011; S18°56'51.5" E48°25'31.8"/1029 m; sifting forest litter; Winkler/app. extr.; L.S. Rahanitriniaina lgt."; PCPH.

Description

Body. Yellowish-brown, more elongated, about 2.40–2.50× as long as wide; body 1.70–1.80 mm long and about 0.72 mm wide.

Head. Elongate, 2.15–2.30× as long as wide, 1.90–2.00× as long as pronotum.

Antenna. Trimerous, 0.74–0.75 mm long, terminal antennomere slightly curved in distal portion.

Pronotum. Transverse, 1.47× as wide as long.

Metaventrite. With large median impression, posterior metaventral process long, slender, parallel-sided with two separate setae.

Elytra. 1.70–1.75× as wide as long, 1.60–1.70× as long as pronotum; lacking sutural and discal striae; humeri strongly projecting; lateral margin with some stout setae; posterior elytral margin in lateral third with pair of subequal teeth.

Abdomen. 1.60–1.80× as long as elytra; composite tergite in posterior portion with pair of small, bump-like, widely separated projections.

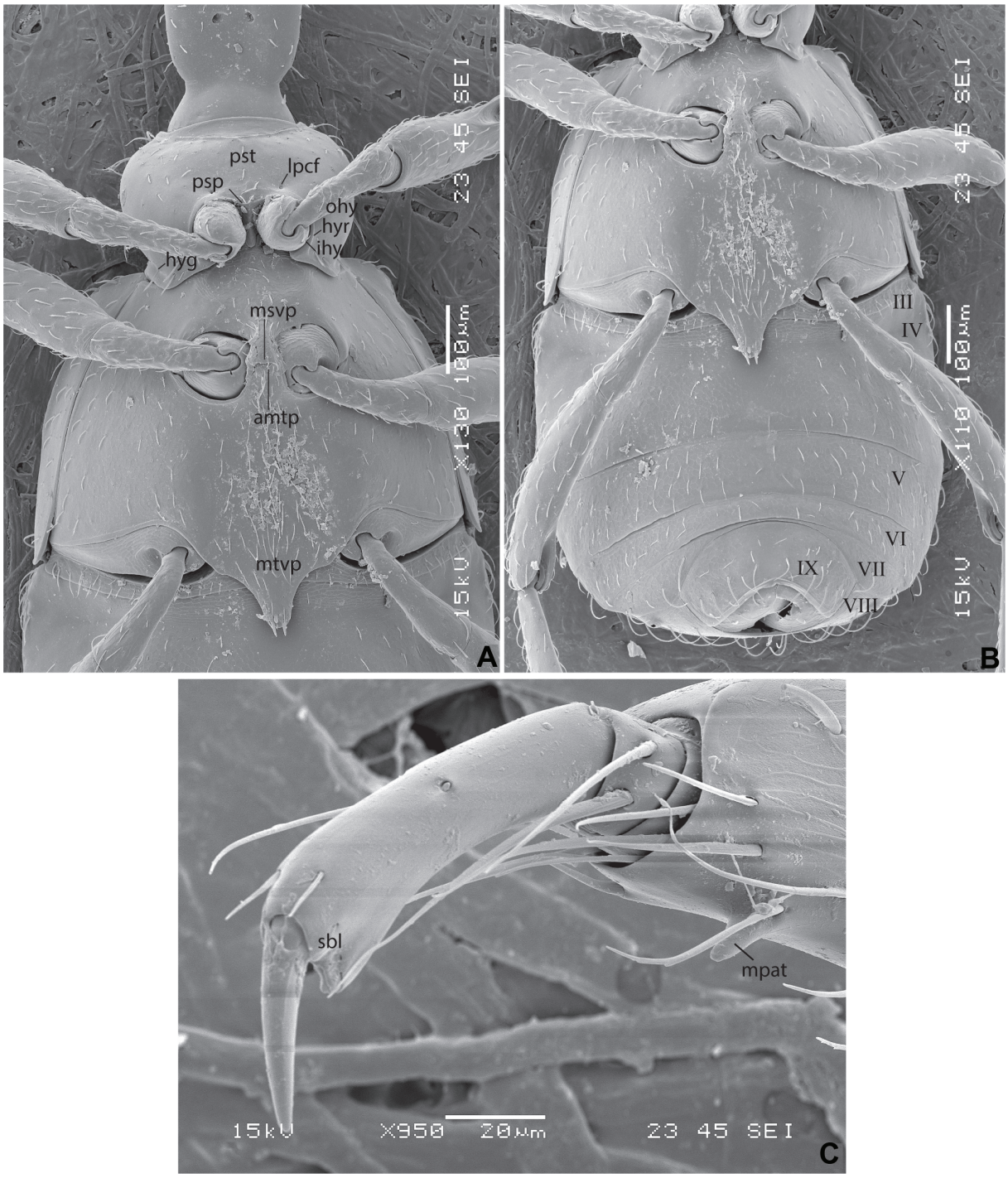

Fig. 3. *Apoderiger sikorai* sp. nov., paratype, ♂ (PCPH). **A**. Prosternum and metaventrite. **B**. Metaventrite and abdomen. **C**. Distal part of tibia and tarsus. Abbrevations: *amtp* = anterior metaventral process; *ihy* = inner hypomeral region; *hyr* = hypomeral ridges; *hyg* = hypomeral groove; *lpcf* = lateral procoxal fovea; *msvp* = mesoventral process; *mtvp* = posterior metaventral process; *ohy* = outer hypomeral region; *psp* = prosternal process; *pst* = prosternum; *sbl* = tarsal subapical tooth; *tpat* = tarsal preapical tooth; III–IX = visible tergites.

Mesotibia. Simple, last tarsomere with distal, sharp lamella.

Aedeagus (Fig. 4C–D). Elongate, 2.50 × as long as wide, distal lobe with round apex; basal bulb and distal lobe well-separated, ratio length of basal bulb / length of distal lobe 1.20; endophallus with sclerite having two differently shaped arms; dorsal diaphragm semicircular.

Sexual dimorphism

As for the genus.

Distribution

Madagascar (Anjozorobe-Andasibe massif).

Remarks

A. sikorai sp. nov. is related to *A. spinosus* sharing a pair of small, bump-like, wide-distant projections on the posterior portion of the composite tergite. It is separated from *A. spinosus* by larger body over 1.7 mm long (length of *A. spinosus* 1.4 mm) and having mesotibia lacking inner projection which is well-defined in *A. spinosus*.

Host ant

Unknown.

Apoderiger spinosus (Dajoz, 1982)
Figs 4E–F, 5

Soalala spinosus Dajoz, 1982: 513. Type locality: Madagascar Ouest, Soalala. Types: HT ♂ MNHN.

Diagnosis

Last antennomere strongly curved in distal portion; posterior metaventral process long, slender, subtriangular with bunch of about 6 long setae; lacking sutural and discal striae; composite tergite in posterior portion with pair of small, bump-like, widely separated projections; mesotibia with modified distal portion; aedeagus 2.60 × as long as wide; endophallus lacking sclerites.

Type material

Holotype

MADAGASCAR • ♂; six labels "Madagascar: SOALALA / forêt cotière II.1973 / litière A. Peyrieras" [blue, handwritten] // "HOLOTYPE" [red, printed] // "*Soalala spinosa* / n. g., n. sp. / Dajoz 1981" [blue, handwritten] // "MUSÉUM PARIS" [blue, printed] // "*Apoderiger* Wasm. / = *Soalala* Dajoz / Cl. Besuchet / dét. III 1988" [white, printed and handwritten]; MNHN.

Description

Body. Yellowish-brown, less elongated, 2.30 × as long as wide; body 1.40 mm long and 0.60 mm wide.

Head. Elongate, 2.25 × as long as wide, about 2.1 × as long as pronotum.

Antennae. Trimerous, 0.76 mm long, terminal antennomere strongly curved in distal portion.

Pronotum. Transverse, 1.54 × as wide as long.

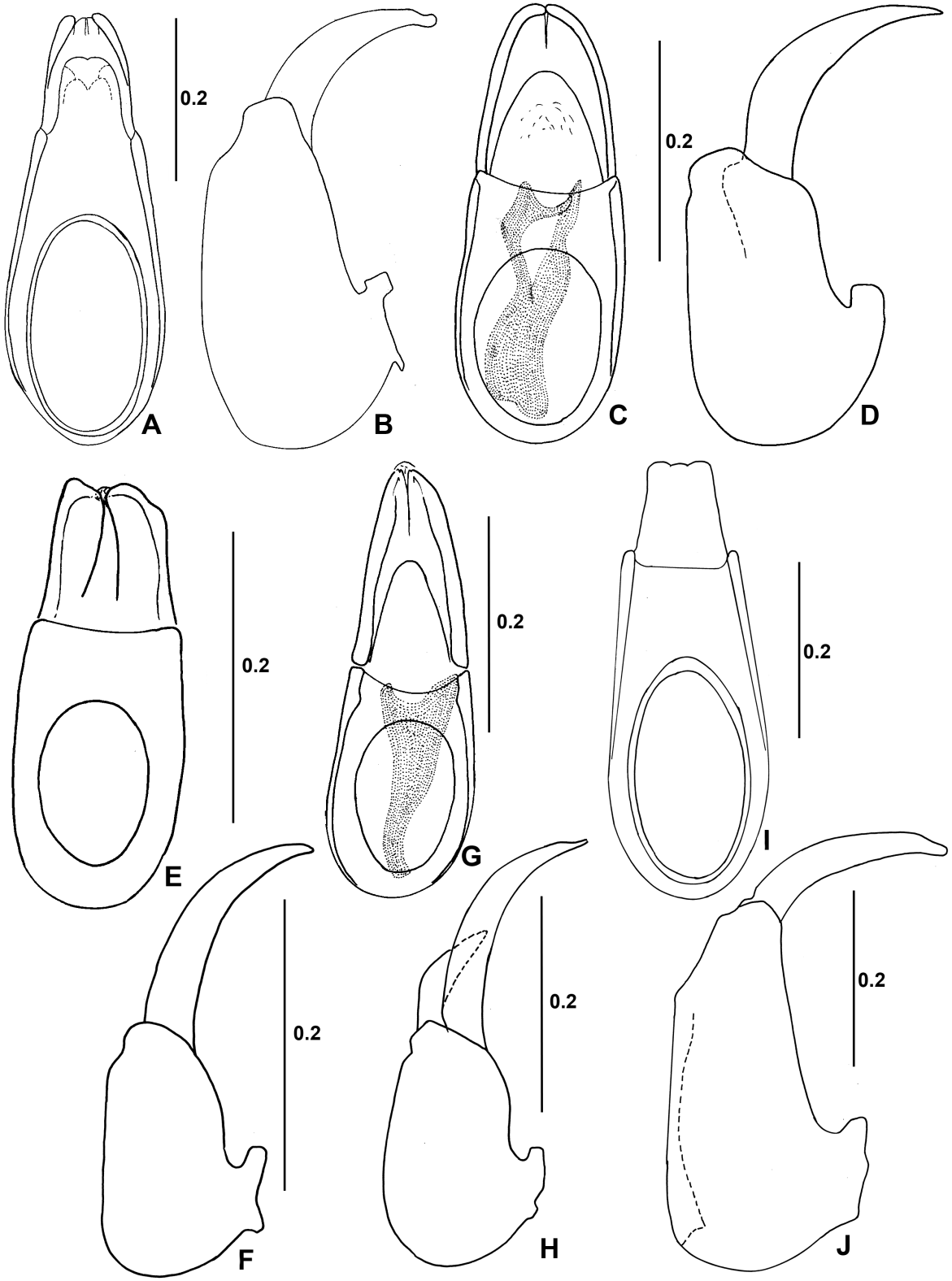

Fig. 4. Dorsal and lateral view of aedeagus. **A–B**. *Apoderiger torticornis* Jeannel, 1960, lectotype (MNHN). **C–D**. *Apoderiger sikorai* sp. nov., paratype (NMW). **E–F**. *Apoderiger spinosus* (Dajoz, 1982), holotype (MNHN). **G–H**. *Apoderiger banari* sp. nov., holotype (PCPH). **I–J**. *Apoderiger grandis* sp. nov., holotype (MHNG).

Metaventrite. With large median impression, posterior metaventral process long, slender, subtriangular with bunch of about 6 long setae.

Elytra. 1.70× as wide as long, 1.55× as long as pronotum; lacking sutural and discal striae; humeri strongly projecting; lateral margin with some stout setae; posterior elytral margin in lateral third sinuate, with sharp spine on posterior outer corner.

Abdomen. 1.35× as long as elytra; composite tergite in posterior portion with pair of small, bump-like, widely separated projections.

Mesotibia. With large, curved apophysis almost as long as simple mesotarsomere.

Aedeagus (Fig. 4E–F). Elongate, 2.60× as long as wide; basal bulb and distal lobe well-separated, ratio length of basal bulb / length of distal lobe 1.70; endophallus lacking sclerites; dorsal diaphragm elliptical.

Sexual dimorphism

As for the genus.

Distribution

Madagascar (Soalala district).

Remarks

See remarks for *A. sikorai*.

Host ant

Unknown.

Apoderiger cervinus Wasmann, 1897
Fig. 5

Apoderiger cervinus Wasmann, 1897: 264. Type locality: Annanarivo in der Provinz Imerina [Antananarivo, province Imerina]. Types: 5 syntype specimens should be deposited in MNHN (Jeannel 1954: 313).

Apoderiger cervinus – Jeannel 1954: 313 (redescription, habitus, aedeagus); 1960: 203 (diagnosis, distribution, host ants). — Célis 1970: 248 (redescription).

Diagnosis

Last antennomere strongly curved in distal portion; composite tergite in posterior portion with pair of small, bump-like, widely separated projections; mesotibia simple; distal portion of last tarsomere with distal, acute lamella.

Type material

Lectotype (here designated)
MADAGASCAR • ♀; seven labels "Madagascar / (Sikora)" [white, handwritten] // "TYPE" [red, printed] // "♀" [white, printed] // "*Apoderiger* / *cervinus* Wasm. / n. g. n. sp. Type" [white, handwritten] // "MUSÉUM PARIS / 1952 / COLL. R. OBERTHÜR" [blue, printed] // "*Apoderiger* / *cervinus* Wasm / Cl.

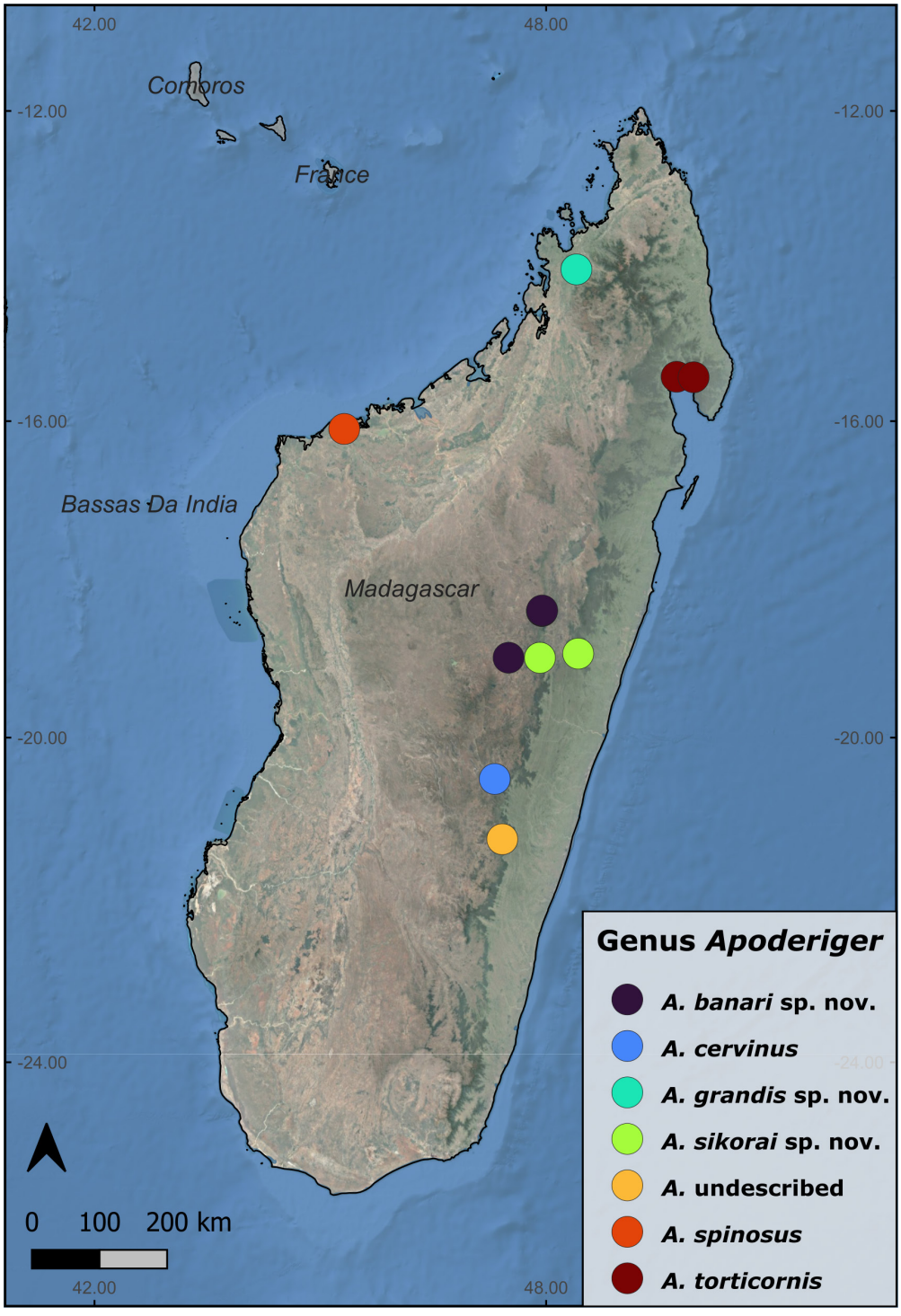

Fig. 5. Distribution map of *Apoderiger* Wasmann, 1897.

Besuchet / dét 2007" [white, printed and handwritten] // "LECTOTYPE / *APODERIGER* / *cervinus* Wasmann / P. Hlaváč des., 2023" [red, printed]; MNHN.

Description

Body. Yellowish-brown, less elongated, about 2.2 × as long as wide; body 1.73 mm long and 0.78 mm wide.

Head. Elongate, about 2.38 × as long as wide, 2.07 × as long as pronotum.

Antenna. Trimerous, 0.76 mm long, terminal antennomere strongly curved in distal portion.

Pronotum. Transverse, 1.60 × as wide as long.

Elytra. 1.75 × as wide as long, 1.60 × as long as pronotum; lacking sutural and discal striae; humeri strongly projecting; lateral margin with some stout setae; posterior elytral margin in lateral third with cutout between two teeth, inner one larger, triangular, outer one small.

Abdomen. 1.58 × as long as elytra; composite tergite in posterior portion with pair of small, bump-like, widely separated projections.

Mesotibia. Simple, distal portion of last tarsomeres with distal, acute lamella.

Sexual dimorphism

Male unknown.

Distribution

Madagascar (Imerina Plateau).

Remarks

This species belongs to the group of species characterized by having the posterior margin of composite tergite with pair of small, bump-like, wide-distant projections and antennomere 3 in distal portion strongly curved but as long as a male is not found, its further position remains unclear.

Host ant

Paratrechina amblyops rubescens (Forel, 1892).

Apoderiger banari sp. nov.
urn:lsid:zoobank.org:act:E1448F76-E539-4269-8ED8-6DE7D68EE9DA
Figs 1B, 4G–H, 5

Diagnosis

Terminal antennomere slightly curved in distal portion; metaventral process long, slender, parallel-sided with two separate setae; composite tergite in posterior portion with pair of short, triangular, sharp projection which are not exceeding posterior margin of abdomen; mesotibia modified in distal portion; aedeagus strongly elongate, 2.95 × as long as wide; endophallus with large sclerite.

Etymology

Patronymic, named after my good friend and an excellent collector of litter-dwelling beetles, Peter Baňař, Brno, Czech Republic, who collected many interesting pselaphines in Madagascar.

Type material

Holotype

MADAGASCAR • ♂; one label "AJR/ Jan 2019/ sift 7 C MADAGASCAR/Anjozorobe forest 15.i.2019/sifting forest litter by big tree 1331m/S18°24.47.4' E47°56.33.1'/Winkler app. extr. P. Baňař lgt." [white, printed]; PCPH.

Paratypes (11 ex.)

MADAGASCAR • 4 ♂♂, 1 ♀; same data as for holotype; MMBC, PCPH • 1 ♂, 1 ♀; one label "AJR/ Jan 2019/ sift 8 C MADAGASCAR/Anjozorobe forest 17.i.2019/sifting litter by big *Pandanus,* 1394 m/S18°24.35.5' E47°56.43.0'/Winkler app. extr. P. Baňař lgt." [white, printed]; PCPH • 1 ♂; one label "Mdgk. Sikora/Andrangolaoka [Manjakandriana, forest east from lake Mantasoa, 1389 m]" [white, printed and handwriten]; NMW • 2 ♂♂, 1 ♀; one label "AJR/ Jan. 2024 MADAGASCAR/Anjozorobe forest, 6-9.I.2024/S18°24'35"E, 46°56'45" +/- 500 m/1290–1420 m, sifting forest/Winkler app. extraction, P. Hlaváč lgt." [white, printed]; PCPH.

Description

Body (Fig. 2). Yellowish-brown, less elongated, about 2.1–2.2 × as long as wide; body 1.65–1.70 mm long and 0.77–0.80 mm wide.

Head. Elongate, about 2.3 × as long as wide, about 1.7 × as long as pronotum.

Antenna. Trimerous, 0.75–0.85 mm long, terminal antennomere slightly curved in distal portion.

Pronotum. Transverse, 1.5–1.7 × as wide as long.

Metaventrite. With large median impression, posterior metaventral process long, slender, parallel-sided with two separate setae.

Elytra. 1.70–1.85 × as wide as long, 1.50–1.70 × as long as pronotum; lacking sutural and discal striae; humeri strongly projecting; lateral margin with some stout setae; posterior elytral margin in lateral half with two teeth, inner one larger, triangular, outer one sharp, spine-like.

Abdomen. 1.35–1.45 × as long as elytra; composite tergite in posterior portion with pair of short, triangular, sharp projection with are not exceeding posterior margin of abdomen.

Mesotibia. With last tarsomere bearing two sharp thorns in distal portion; distal portion of last mesotarsomere with acute lamella.

Aedeagus (Fig. 4G–H). Wlongate, about 2.95 × as long as wide, with slightly convergent distal lobe; basal bulb and distal lobe well-separated, ratio length of basal bulb/length of distal lobe 0.95; endophallus with large sclerite; dorsal diaphragm elliptical.

Sexual dimorphism

As for the genus.

Distribution

Madagascar (Anjozorobe).

Remarks

See Remarks for *A. torticornis*.

Host ant

Unknown.

Apoderiger grandis sp. nov.
urn:lsid:zoobank.org:act:CCB3380D-0F5D-487A-AC52-A323DFABD8C1
Figs 4I–J, 5

Diagnosis

Last antennomere slightly curved in distal portion; posterior metaventral process short, wide with straight margin; elytra with sutural and discal striae; composite tergite in posterior portion with pair of long, triangular, closely separated projections clearly exceeding posterior margin of abdomen; mesotibia with median tooth; aedeagus 2.75× as long as wide, endophallus lacking sclerite.

Etymology

Named after the large size of the body.

Type material

Holotype

MADAGASCAR • ♂; two labels "MADAGASCAR: Antsira-/nana: R.S. Manongarivo/20.4 km SW 219° Antana-/mbao, 1860 m, 14°2.72'S/48°24.06'E, 3.xi.1998" [white, printed]//"FMHD#9S-375, montane/rainforest, sifted litter, Winkler, B.L. Fisher,/BF#1990/FIELD MUS. NAT. HIST." [white, printed]; MNHG.

Description

Body. Yellowish-brown, more elongated, about 2.35× as long as wide; body 2.20 mm long and 0.93 mm wide.

Head. Elongate, about 1.94× as long as wide, about 1.55× as long as pronotum.

Antenna. Trimerous, 0.71 mm long, terminal antennomere slightly curved in distal portion.

Pronotum. Transverse, 1.25× as wide as long.

Metaventrite. Flat, triangular, with median, thin carina, posterior metaventral process short, wide with straight margin.

Elytra. 1.67× as wide as long, 1.50× as long as pronotum; sutural stria entire, weakly defined; discal stria reaching distal third of elytral length; humeri strongly projecting; lateral margin with some stout setae; posterior elytral margin in lateral third with cutout, lacking teeth.

Abdomen. 1.87× as long as elytra; composite tergite in posterior portion with pair of long, triangular, closely separated projections with rounded apex, which are clearly exceeding posterior margin of abdomen.

Mesotibia. With obtuse, short median tooth; last tarsomere simple.

Aedeagus (Fig. 4I–J). Elongate, 2.75× as long as wide, distal lobe rhomboidal, with three small lobes; basal bulb and distal lobe well-separated, ratio length of basal bulb/length of distal lobe 3.1; endophallus lacking sclerite; dorsal diaphragm elliptical.

Sexual dimorphism

As for the genus.

Distribution

Madagascar (Manongarivo Special Reserve).

Remarks

See remarks for *A. torticornis*.

Host ant

Paratrechina amblyops rubescens (Forel, 1892).

Apoderiger sp.

Material examined

MADAGASCAR • 1 ♀; one label "RNF/ Sept. 2012/ 11 MADAGASCAR/Ranomafana N.P.; 8.x.2012/S21°15'54.4" E47°25'01.8"; 1003 m/Talatakely, sifting litter, Winkler/app. extr. L.S. Rahanitriniaina lgt." [white, printed]; PCPH.

Distribution

E Madagascar.

Remarks

This is the most southern *Apoderiger* so far known in Madagascar. Because the male is not available, we prefere not to describe it.

Discussion

Apoderiger is placed in the tribe Clavigerini, closely related to three genera, *Trymalius*, *Micrapoderiger* both from Madagascar and *Ambrosiger* from China (Macao). This group of genera is well separated from the rest of the tribe Clavigerini by the completely smooth body lacking punctuation, by very long, trimerous antennae having antennomere 3 very long and suddenly dilated to form a club at its extremity, by the presence of a lateral fold which is a prolongation of the humeral carina and by long and slender legs. The majority of genera of Clavigerini (54 genera, 56.3%) are monospecific, this is also the case of 22 genera in Madagascar. *Apoderiger*, together with *Antalaha* Jeannel, 1954 and *Novofustiger* Wasmann, 1893, with six species are the largest genera of the tribe in Madagascar.

The geographic distribution of *Apoderiger* spans the northern half of Madagascar and none have been so far recorded from the offshore islands. The absence of the genus from the southern part of the island most probably indicates that these areas are poorly collected. So, more collecting effort is needed to produce any conclusions about the biogeographic history and the distribution of *Apoderiger*.

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