



Review of the Neotropical *Piezonemus* Jordan with type designations, description of *Piezonemus epoch* sp. nov. from Ecuador, and notes on the tribe Piesocorynini Valentine with keys to world genera (Coleoptera: Anthribidae)

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Abstract

The Neotropical genus *Piezonemus* Jordan, 1904 (Anthribidae: Anthribinae: Piesocorynini Valentine, 1960) is reviewed. Lectotypes are designated for *Piezonemus durus* Jordan, 1904 and *P. lateralis* Jordan, 1904. A new species, *Piezonemus epoch* Trýzna, Caballero-Serrano & Carrasco **sp. nov.**, from Ecuador is described. A key to the now three known species of *Piezonemus*, and colour photographs of the types, are provided. Distinguishing features of the morphologically similar species of the genera *Piezonemus* and *Piesocorynus* Dejean, 1834 are given. A key to world genera of the tribe Piesocorynini is presented. The genus *Afrophaenotherion* Frieser, 1984 is here transferred from the tribe Stenocerini Kolbe, 1895 to the tribe Piesocorynini (**new placement**).

Resumen

Se revisa el género neotropical *Piezonemus* Jordan, 1904 (Anthribidae: Anthribinae: Piesocorynini Valentine, 1960). Se designan lectotipos para *Piezonemus durus* Jordan, 1904 y *P. lateralis* Jordan, 1904. Se describe una nueva especie, *Piezonemus epoch* Trýzna, Caballero-Serrano & Carrasco **sp. nov.**, de Ecuador. Se proporciona una clave de las tres especies conocidas de *Piezonemus* y fotografías en color de los tipos. Se indican las características distintivas de las especies morfológicamente similares de los géneros *Piezonemus* y *Piesocorynus* Dejean, 1834. Se propone una clave para todos los géneros mundiales de la tribu Piesocorynini. El género *Afrophaenotherion* Frieser, 1984 se transfiere aquí de la tribu Stenocerini Kolbe, 1895 a la tribu Piesocorynini (nueva colocación).

Key words: Anthribinae, taxonomy, types, species discovery, male genitalia, key to world genera, key to species, *Afrophaenotherion*, new tribal placement

Introduction

This article follows a previous contribution Trýzna *et al.* (2022), in which a review of the Neotropical genera *Barra* and *Brevibarra* was presented based on the study of primary types, and a new species, *Barra baruskae* Trýzna, Carrasco & Blažej, 2022, was described from Nicaragua. This work also published taxonomic notes on the Neotropical genera of the tribe Piesocorynini Valentine, 1960 (Anthribidae: Anthribinae) and a key to similar genera of this tribe, based on mandible shape, was proposed.

The tribe Piesocorynini at present comprises a total of 15 genera worldwide. Ten of which occur in the Neotropical region, some extending into the Nearctic region (*Barra* Jordan, 1904, *Barridia* Jordan, 1906, *Brachycorynus* Valentine, 1999, *Brevibarra* Jordan, 1906, *Lagopezus* Dejean, 1834, *Opisolia* Jordan, 1926, *Phaenotheriopsis* Wolfrum, 1931, *Piesocorynus* Dejean, 1834, *Piezobarra* Jordan, 1906, and *Piezonemus* Jordan, 1904), two in the Palaearctic (*Phaenotherion* Frivaldszky, 1877, and *Phaenotheriosoma* Frieser, 1978), one predominantly in southern Africa (*Phaenotheriolum* Ganglbauer, 1903), one exclusively in southern Africa (*Afrophaenotherion* Frieser, 1984, **new tribal placement**), and one genus occurring in the Oriental and the Palaearctic regions (*Botriessa* Jordan, 1928).

Neotropical genera of the tribe Piesocorynini were divided into two distinct groups based on the shape of the mandibles (Valentine 1999, Trýzna *et al.* 2022). The first group has the mandibles (outer edge) straight along their entire length, only turning sharply inwards at the very apex. The second group has the mandibles more or less bent along their entire length, or along a substantial part of it (see keys). The key to distinguishing the Neotropical genera of the tribe Piesocorynini in Trýzna *et al.* (2022) was proposed only for the group of genera with bent mandibles, as we did not have a representative of the genus *Barridia*, which belongs to the group with straight mandibles. Access to the holotype of *Barridia corticina* Jordan, 1906 from The Natural History Museum, London enabled us to provide an additional key for the group of genera with straight mandibles.

As part of the study of the tribe Piesocorynini, all other genera were studied, including those occurring outside the Neotropical region, specifically in the Palaearctic, the Oriental and the African regions. A key to these genera is provided, including illustrations of their representatives. It is therefore now possible to distinguish all the currently known genera of the tribe Piesocorynini.

In this paper, we describe a new species, *Piezonemus esPOCH* **sp. nov.**, from the Ecuadorian provinces of Orellana and Sucumbíos. The genus *Afrophaenotherion* Frieser, 1984 (from South Africa) is newly transferred from the tribe Stenocerini to Piesocorynini.

Part of the material was studied thanks to a newly initiated international research project in cooperation with Escuela Superior Politécnica de Chimborazo (ESPOCH), Riobamba, Ecuador (see Acknowledgments). However, both studied specimens of the new species come from older field research by Czech entomologists in 1996 and 2004. Material of miscellaneous Anthribidae collected in Ecuador (February-March, and November 2022 by M. Trýzna & J.C. Carrasco), which is currently being processed, comes from the Ecuadorian provinces of Tungurahua, Napo, Orellana, Sucumbíos, Chimborazo, Bolivar, Guayas, Morona-Santiago and Pastaza.

Material and methods

As part of the study of the tribe Piesocorynini, the first author had at his disposal representatives of all world genera. A list of examined species is given in Trýzna *et al.* 2022 (in Appendix A) and in the present work. The placement of the genera into tribes is based on Valentine (1960), Valentine (1999), and Alonso-Zarazaga & Lyal (1999, 2002), with additional assignments proposed by Trýzna & Valentine (2011).

In this work, we measure selected body parts as follows (all measurements are taken in a strictly dorsal position): length of head = distance from posterior (basal) margin of eyes to anteriormost part of rostrum (apex of rostrum); length of rostrum = distance from anterior margin of eyes to anteriormost part of rostrum (apex of rostrum); total body length = distance from pygidium to anterior margin of pronotum (measured dorsally) and total length of head. Antennomere I (more precisely, stalk of scape) is partially hidden in the scrobe and is hence excluded from measurement. The term ‘*dorsal ocular index*’ refers to the ratio of the minimum width of the vertex to the maximum width of the eye; it is easiest to calculate if measured as twice the minimum interocular distance / maximum width across the eyes minus minimum interocular distance (e.g. Trýzna & Baňáň 2021).

Genitalia were prepared from a gently moistened specimen from which the whole abdomen was separated and placed in a small tube with 12% potassium hydroxide solution (KOH) and heated to boiling point for several minutes until all soft tissues were adequately macerated. Genitalia were subsequently placed in distilled water for description and illustration. Finally, genitalia were stored in glycerol in a small vial mounted on the pin with the corresponding specimen. For the description of genitalia, we use the terminology of Holloway (1982) and Wanat (2007).

The label data of the type material examined are cited verbatim, including possible errors, using a slash (/) to separate lines on one label and a double slash (//) for dividing data on different labels.

The following abbreviations are used: [p]—printed, [h]—handwritten. Additional or explanatory comments by the authors are given in square brackets.

External body parts were photographed using a Nikon D850 camera in combination with a Tamron AF SP 90 mm F/2.8 Di Macro 1:1, Raynox DCR-250, Raynox MSN-202, Raynox MSN-505, with macro lens, and final images were assembled using Helicon Focus 8.1. When taking photographs of the lateral view of the body, the left side was primarily photographed. In case of the type material, the better preserved or more suitable (visible) side of the body was photographed, as re-mounting simply to obtain better pictures was not felt to be sufficiently justified.

The specimens studied are deposited in the following collections:

| | |
|------|---|
| BMNH | Natural History Museum (formerly British Museum, Natural History), London, U.K., |
| MERC | Museo de Entomología de la Escuela Superior Politécnica de Chimborazo, Riobamba, Ecuador, |
| MNHN | Muséum national d’Histoire naturelle, Paris, France, |
| MTDC | Miloš Trýzna private collection, Děčín, Czech Republic, |
| NMPC | National Museum, Prague, Czech Republic, |
| ZSMC | Zoologische Staatssammlung München, Germany. |

Results

Taxonomy

Recognition of the tribe Piesocorynini Valentine, 1960

The main morphological characters of the tribe Piesocorynini are: rostrum wider than long, underside of rostrum without deep transverse sulcus, antennae inserted laterally, antennal scrobes foveiform, not visible from above, antennal club three segmented, antennomere II as long as or longer than antennomere I, eyes entire or only weakly truncate anteriorly, eyes coarsely faceted, maximum 26 rows of ommatidia perpendicular to long axis, pronotum with dorsal transverse carina (completely basal, sub-basal or antebasal) or this carina absent (in the case of some undescribed species of *Phaenotheriopsis*, and both species of *Afrophaenotherion*) (see also Valentine 1960, 1991, 1999; Legalov 2018; Trýzna *et al.* 2022; keys to the genera: Jordan 1906; Orellana & Barrios 2021).

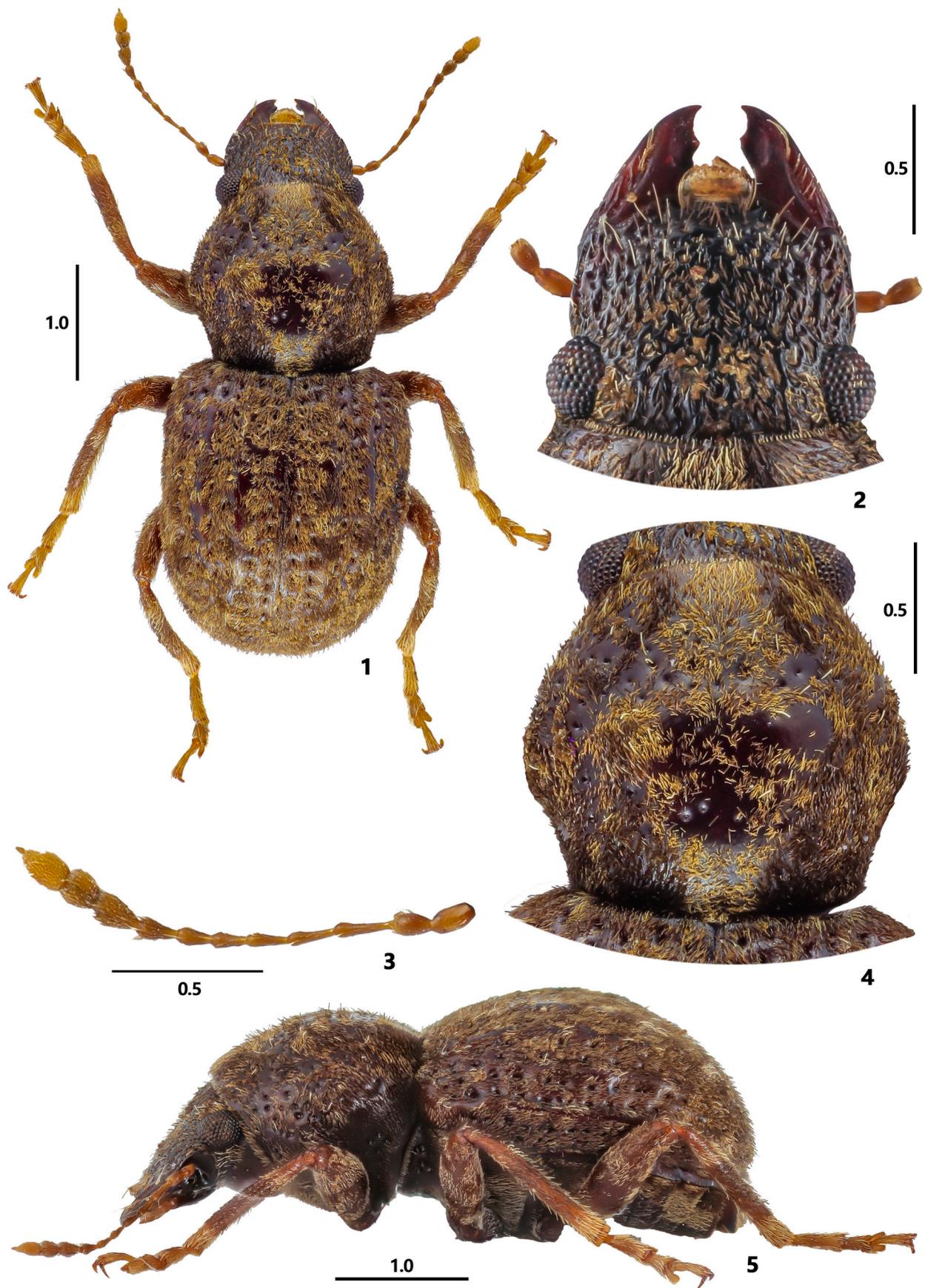
Neotropical genera of the tribe Piesocorynini can be identified using the keys below

(see also Jordan 1906: 301, Valentine 1999: 271, Trýzna *et al.* 2022: 245)

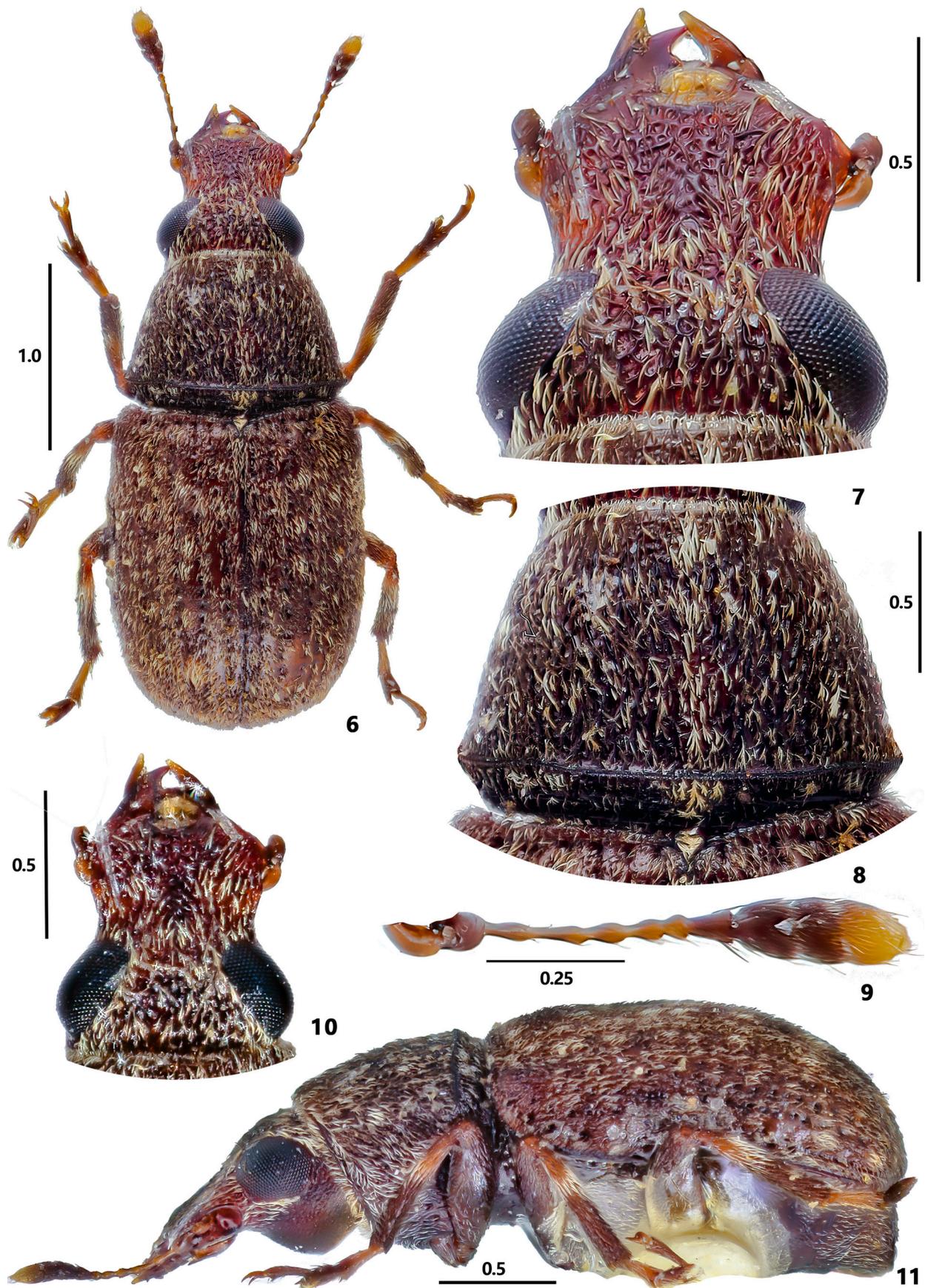
- 1 Outer edge of mandibles straight along entire length, only at the very apex do they turn sharply inwards **Group 1**
- Outer edge of mandibles more or less bent along their entire length, or along a substantial part **Group 2**

Key to genera of Group 1

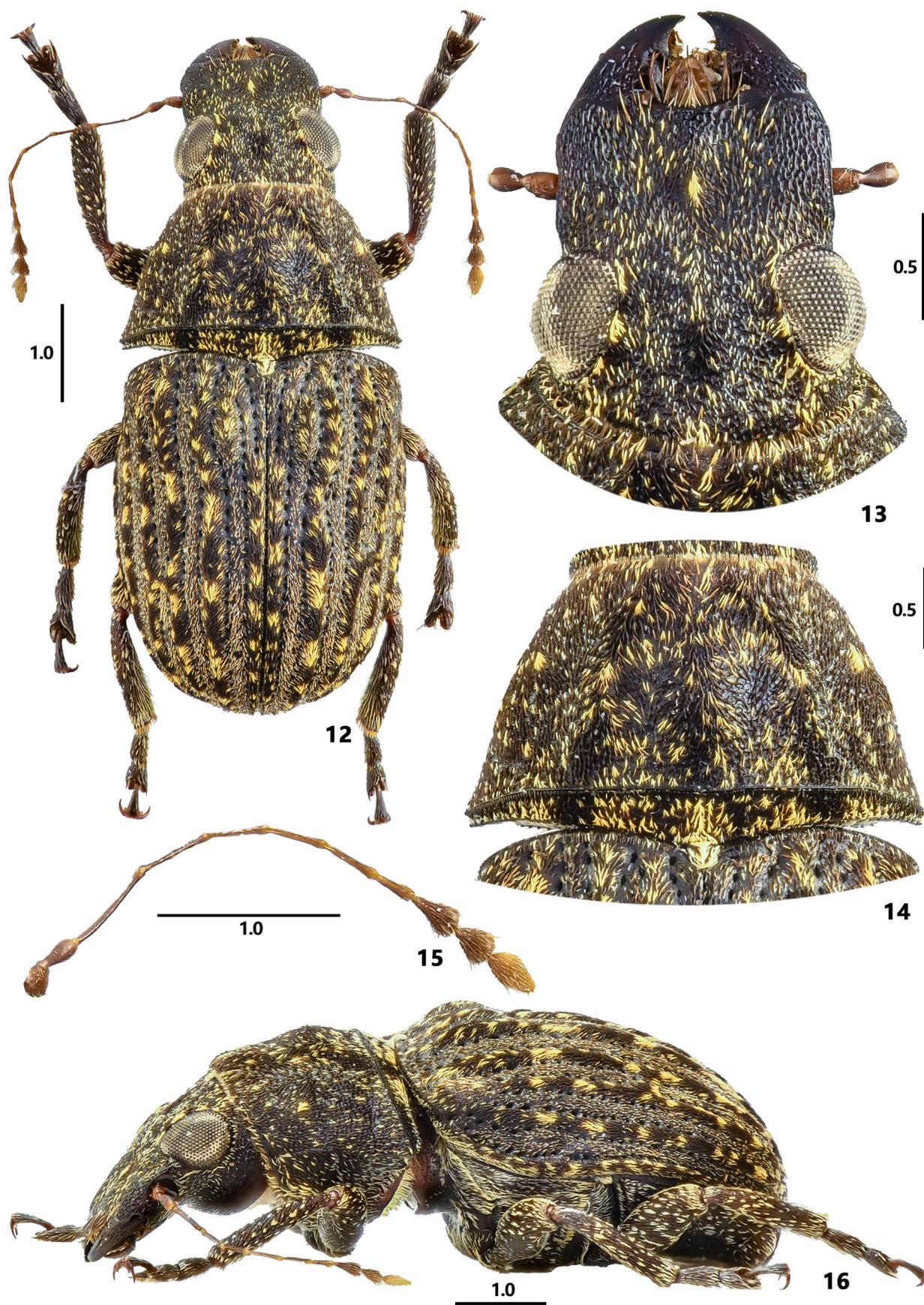
- 1 Antennae robust, individual antennomeres of funicle the same width as pedicel (figs 6–10 [from Trýzna *et al.* 2022]) ***Opisolia***
- Individual antennomeres of funicle distinctly narrower than pedicel 2
- 2 Dorsal transverse carina of pronotum distinctly basal (figs 11–15 [from Trýzna *et al.* 2022]) ***Piezobarra***
- Dorsal transverse carina of pronotum not basal, otherwise shaped: sub-basal, strongly antebasal or absent 3
- 3 Disc of pronotum with distinct dense or sparse punctures. Sides of pronotum not straight, rounded or convex or protruding laterally in dorsal view (Figs 1–5 and figs 16–20 [from Trýzna *et al.* 2022]) ***Phaenotheriopsis***
- Disc of pronotum with longitudinal wrinkles. Sides of pronotum more or less straight, conical in dorsal view, not convex laterally 4
- 4 Mesosternal process wide, widely concave apically. Space between mesocoxae as wide as width of mesofemur at its widest part. Sides of rostrum distinctly divergent anteriorly (only female holotype known) (Figs 6–11) ***Barridia***
- Mesosternal process narrow, rounded (convex) apically. Space between mesocoxae distinctly narrower than width of mesofemur at its widest part. Sides of rostrum subparallel (figs 1–5 [from Trýzna *et al.* 2022]) ***Brachycorynus***



FIGURES 1–5. *Phaenotheriopsis* sp., male (MTDC); 1, dorsal habitus; 2, head in dorsal view; 3, left antenna in dorsal view; 4, pronotum in dorsal view; 5, lateral habitus. Scale bars in mm.



FIGURES 6–11. *Barridia corticina* Jordan, 1906, holotype female (BMNH); 6, dorsal habitus; 7, head in inclined view with coarse sculpture; 8, pronotum in dorsal view; 9, right antenna in dorsal view; 10, head in dorsal view; 11, lateral habitus. Scale bars in mm.



FIGURES 12–16. *Piesocorynus aspis* (Erichson, 1847), female (MTDC); 12, dorsal habitus; 13, head in dorsal view; 14, pronotum in dorsal view; 15, right antenna in dorsal view; 16, lateral habitus. Scale bars in mm.

Note on *Phaenotheriopsis*: in Trýzna *et al.* 2022: 249, figs 16–20, a male of *Phaenotheriopsis vauriei* Valentine, 1955 (B.D. Valentine det. 2008, MTDC) is depicted as an example of a species with sub-basal dorsal transverse carina of pronotum (sub-basal sensu Holloway 1982: 187, fig. 13; in Valentine 1991: 332 it is mentioned as antebasal). However, as Valentine (1991: 332) mentions, undescribed species still exist in this genus in which the transverse carina of the pronotum is completely absent. In this work, we therefore show an example of such a species with a completely absent carina (Figs 1–5). This species comes from “Insel Guadeloupe”, and although the specimen is determined as *P. bierigi* Wolfrum, 1931 (R. Frieser det. 1956, MTDC), it belongs to an undescribed species (moreover, very small eyes are also noticeable in this species). *Phaenotheriopsis bierigi* is illustrated in Rheinheimer (2004: 226, fig. 156).

Key to genera of Group 2

- 1 Eyes very large, occupying a considerable part of head, elongate, oblique, distance between eyes as long as half of length of eye (Fig. 50). Rostrum very short, ratio of rostrum length to maximum width 0.3–0.4 (Fig. 50). Pygidium of male longer than wide, convex (Figs 46, 54, 66), as long as wide in female; pygidium of female with promontory before apical edge (Figs 70–72), this projection divided basally, or promontory lacking (in *P. epoch* **sp. nov.**, Fig. 83). Mesotibia of male with distinct spur at apex (Fig. 53). Tarsomere I of mesotarsus dilated or with spur at apex on inner side (Figs 53, 79) ***Piezonemus***
- Eyes smaller, rather oval, not distinctly oblique, distance between eyes distinctly longer than half of length of eye. Rostrum longer, ratio of rostrum length to maximum width greater than or equal to 0.5. Pygidium wider than long in both sexes, flat, always without any promontory in female. Mesotibia of male without distinct spur at apex (except *Piesocorynus lateralis*). Tarsomere I of mesotarsus not dilated at apex 2
- 2 Tibia and tarsi of all legs with distinct long and erect setae (figs 21–25 [from Trýzna *et al.* 2022]). ***Lagopezus***
- Tibia and tarsi of all legs without distinct long and erect setae 3
- 3 Antennae shorter, reaching no further than posterior margin of pronotum in both sexes. Antennomere III short, approximately the same length as II, or at most 1.2 times as long as antennomere II. Antennal scrobes nearly extending to eyes. Elytral base unequivocally straight in strictly dorsal view, shoulders more rectangular. Eyes rounded, not emarginate or truncate anteriorly (figs 62, 68–72 [from Trýzna *et al.* 2022]). ***Brevibarra***
- Antennae longer, reaching posterior margin of pronotum in both sexes. Antennomere III longer, the same length or longer than I and II together. Antennal scrobes rather distant from eyes. Elytral base at least slightly bisinuate in dorsal view, shoulders rounded. Eyes oval, weakly emarginate or truncate anteriorly. 4
- 4 Sides of pronotum convex. Dorsal transverse carina of pronotum either completely basal or antebasal; if antebasal then approaching base of pronotum at lateral angles (= distinctly curved anteriorly) (the same as in *Lagopezus*) (Figs 12–16 and figs 26–31 [from Trýzna *et al.* 2022]). ***Piesocorynus***
- Sides of pronotum straight and conical, not convex laterally. Dorsal transverse carina of pronotum sub-basal to basal or antebasal, if antebasal then parallel with posterior margin of pronotum (figs 39–43, 51–61 [from Trýzna *et al.* 2022]). ***Barra***

Note on *Piesocorynus*: in Trýzna *et al.* 2022: 251, figs 26–31, a male of *Piesocorynus dispar* (Gyllenhal, 1833) is depicted as a representative of the type species of the genus. As stated in the cited work, there are two types of position of the dorsal transverse carina of the pronotum in this genus: 1) either it is completely basal (e.g. *P. dispar*), or 2) it is distinctly antebasal, but in this case approaching the base of the pronotum at the lateral sides of the pronotum, so it is distinctly curved anteriorly (e.g. *P. aspis* (Erichson, 1847) (= *P. gracilicornis* (Jekel, 1855), synonymy according to Queiroz *et al.* 2017). For completeness, an example of such a species with antebasal dorsal transverse carina is illustrated as *P. aspis* (female, Figs 12–16). Species with a distinct antebasal carina that is parallel to the posterior margin of the pronotum do not occur in this genus.

Key to other world genera

(see also Frieser 1981, 2008)

- 1 Elytra without striae, at most with poorly visible and irregularly arranged minute punctures, elytra smooth and shiny (Figs 17–21). ***Afrophaenotherion***
- Elytral striae present, forming distinct rows of punctures 2
- 2 Larger species, 9.0–9.5 mm (Figs 22–26) ***Botriessa***
- Smaller species, 1.5–6.0 mm 3
- 3 Rostrum imperceptibly wider than long, sides of rostrum distinctly widened anteriorly (Figs 27–32). ***Phaenotherion***
- Rostrum ca. 2–3 times wider than long, sides of rostrum parallel or nearly parallel. 4

- 4 Antennal scrobes opened ventrally and posteriorly, scrobes distinctly extending under eyes in lateral view, eyes rather longitudinally oval, dorsally located, metatibiae of male curved inwards apically (Figs 33–37) *Phaenotheriosoma*
- Antennal scrobes closed ventrally and posteriorly, scrobes not extending under eyes in lateral view, eyes rather circular, laterally located, metatibiae of male straight, not curved apically (Figs 38–42) *Phaenotheriolum*

***Afrophaenotherion* Frieser, 1984, new tribal placement**

(Figs 17–21)

Afrophaenotherion Frieser, 1984: 176. Rheinheimer 2004: 38 (catalogue), 219 (fig. 80—dorsal habitus of *A. aereum* Frieser, 1984).

Type species: *Afrophaenotherion aereum* Frieser, 1984 (by original designation).

= *Afrophaenotherium*: Alonso-Zarazaga & Lyal 1999: 34 (incorrect subsequent spelling); Rheinheimer 2004: 38 (catalogue).

The genus *Afrophaenotherion* is here transferred from Stenocerini to Piesocorynini. The genus corresponds to the morphological characters for the tribe Piesocorynini mentioned in the section „Recognition of the tribe Piesocorynini“ above. Currently the genus comprises two species: *A. aereum* and *A. colonnellii* Frieser, 2010 (both from South Africa).

Frieser (1984: 176) described the genus *Afrophaenotherion* based on one species, *A. aereum* Frieser, 1984 (by monotypy and original designation). Frieser pointed out the similarity of the newly described genus to *Phaenotheriolum*, from which it mainly differs by: 1) absence of dorsal transverse carina of pronotum; 2) elytra without striae, with punctures irregularly distributed over the entire surface of elytra. Other typical morphological characters are the shiny metallic surface of the body, and pronotum and elytra with setae only very sparse or absent.

Genus *Piezonemus* Jordan, 1904

(Figs 43–86)

Piezonemus Jordan, 1904: 275. Bovie 1906: 278 (catalogue); Wolfrum 1929: 65, 1953: 27 (catalogues); Blackwelder 1947: 769 (catalogue); Valentine 1999: 271 (relationship within the tribe Piesocorynini); Rheinheimer 2004: 70 (catalogue); Trýzna *et al.* 2022: 245 (key to genera of the tribe Piesocorynini), 265 (discussion on the tribe Piesocorynini).

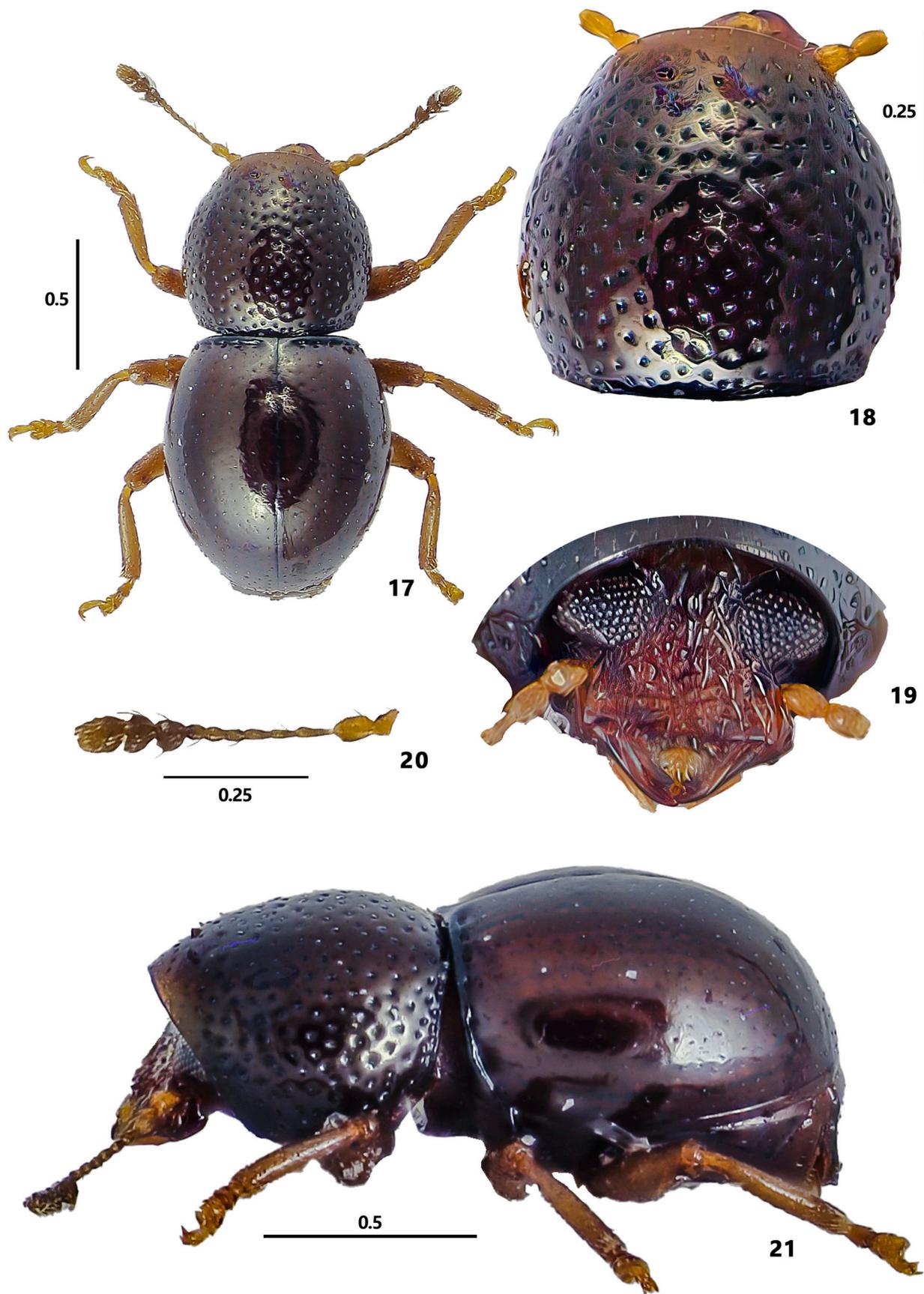
Type species: *Piezonemus durus* Jordan, 1904 (by original designation).

Redescription. Rostrum very short, distinctly wider than long (ratio of rostrum length to maximum width 0.3–0.4), flat, not carinate, indistinctly emarginate at apex, with only shallow depression before eyes. Apical half of rostrum oblique (converged) laterally. Mandibles more or less bent along the entire length, or along a substantial part, obtuse at apex. Antennal scrobes lateral, located underneath posterior part of eyes (not in front of them), upper edges cariniform. Eyes dorso-lateral, very large, occupying a considerable part of head, elongate, oblique, not emarginate or truncate in anterior part, coarsely granulate, distance between eyes as long as half of length of eye. Frons trapeziform, more or less flattened.

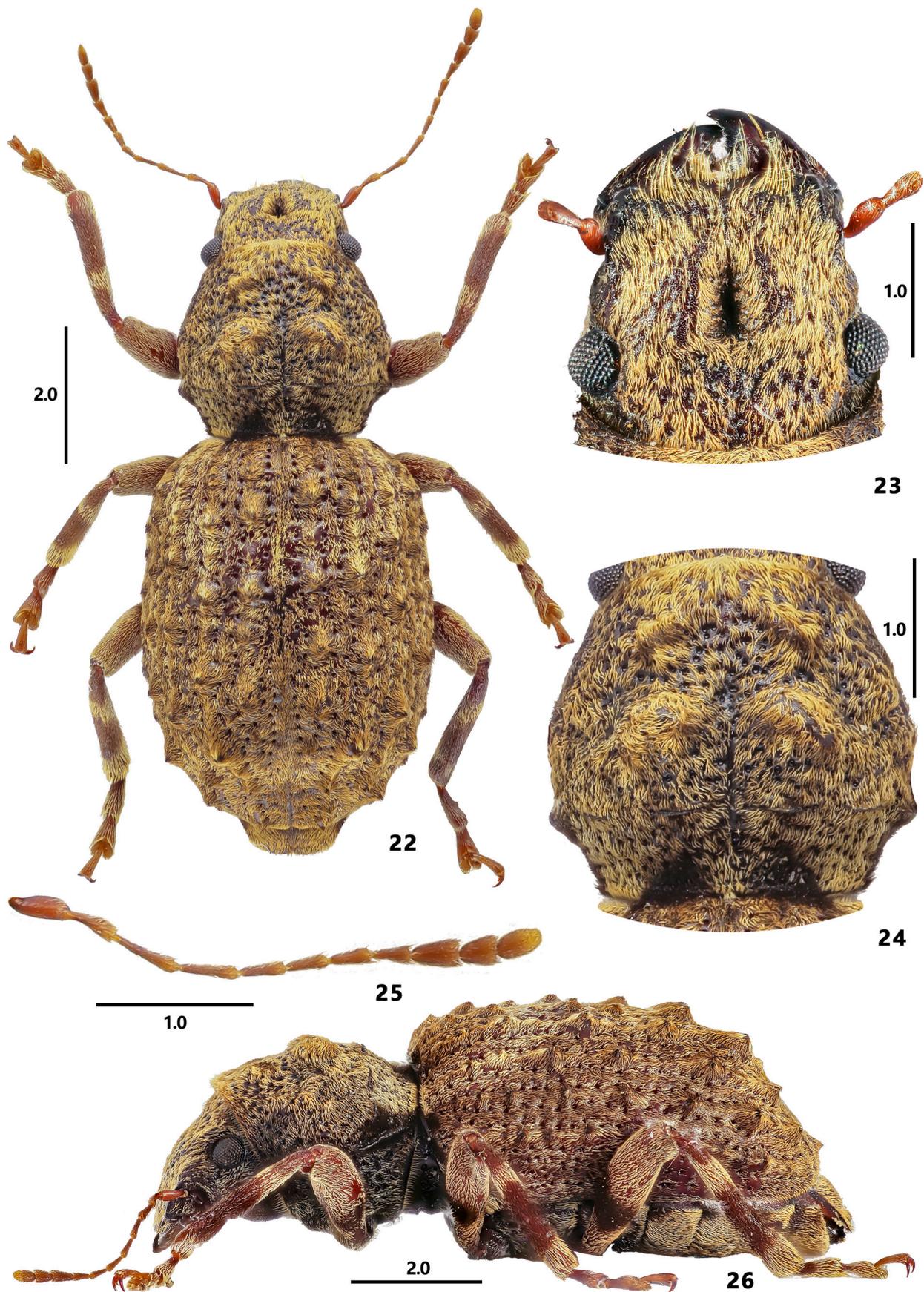
Pronotum always wider than long, conical, from dorsal transverse carina narrowed anteriorly, disc of pronotum moderately convex. Dorsal transverse carina sub-basal to basal, always complete. Lateral carinae of pronotum present, extending at most to middle of pronotum, or shorter. Basal longitudinal carinulae (sensu Jordan 1928: 151, Trýzna & Baňar 2021: 558) present. Pygidium of male distinctly longer than wide, convex, rounded at apex.

Pygidium of female differently shaped: in *P. durus* with distinct promontory before apical edge, this projection divided basally; in *P. lateralis* this promontory is not so high and not so deeply divided as in *P. durus*; in *P. epoch* **sp. nov.** without any promontory, rather flat.

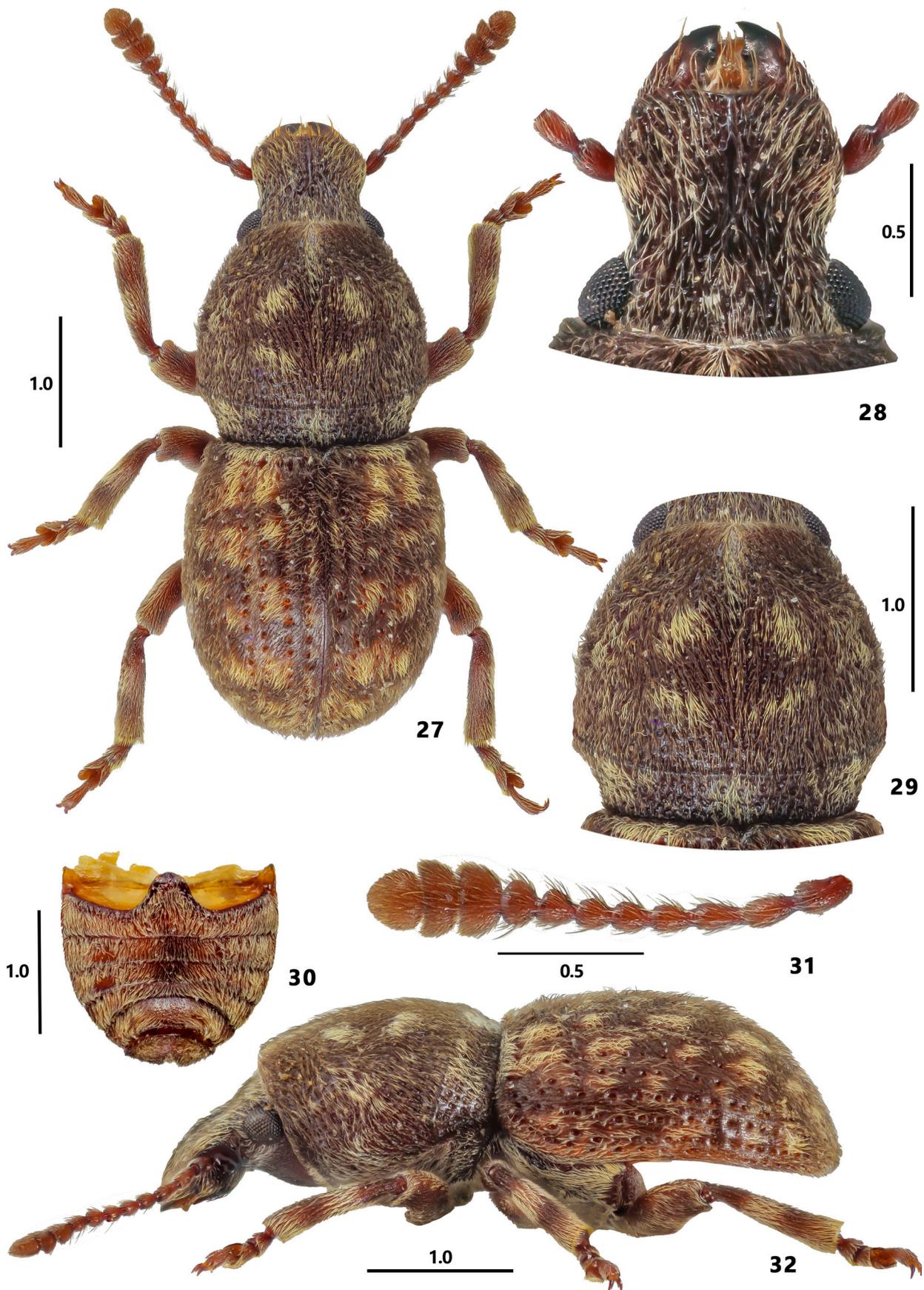
Mesotibia of male with small, short spine at apex in all species. Tarsomere I of mesotarsus widely dilated at apex on inner side in *P. durus* and *P. lateralis*; tarsomere I of protarsus and mesotarsus with distinct spur at apex in male of *P. epoch* **sp. nov.**



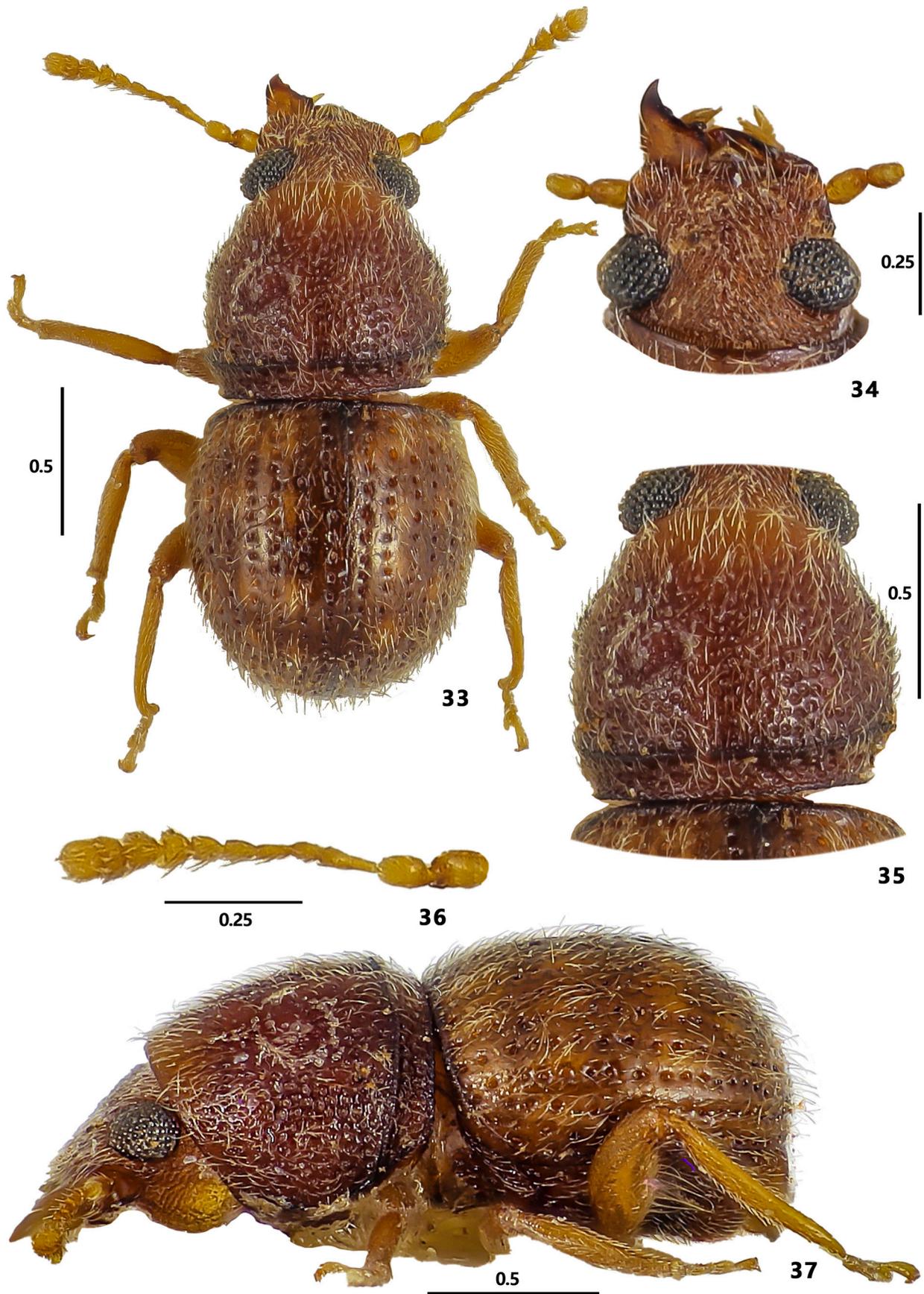
FIGURES 17–21. *Afrophaenotherion colonnellii* Frieser, 2010, paratype male (MTDC); 17, dorsal habitus; 18, pronotum in dorsal view; 19, head in dorsal view; 20, left antenna in dorsal view; 21, lateral habitus. Scale bars in mm.



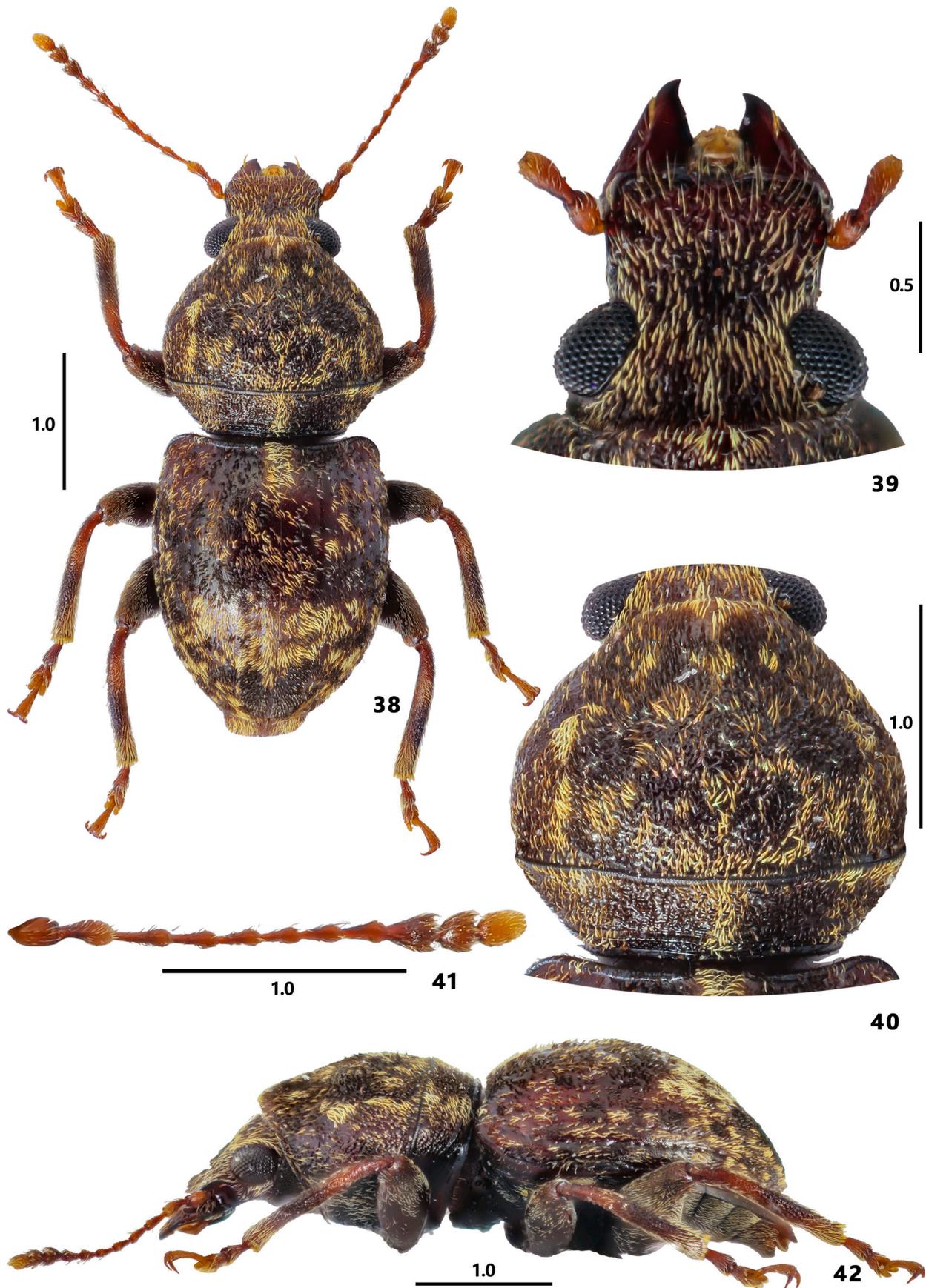
FIGURES 22–26. *Botriessa sepidiopsis* Jordan, 1928, female (MNHN); 22, dorsal habitus; 23, head in dorsal view; 24, pronotum in dorsal view; 25, right antenna in dorsal view; 26, lateral habitus. Scale bars in mm.



FIGURES 27–32. *Phaenotherion pulskyi* Frivaldszky, 1877, male (MTDC); 27, dorsal habitus; 28, head in dorsal view; 29, pronotum in dorsal view; 30, abdomen in ventral view; 31, left antenna in dorsal view; 32, lateral habitus. Scale bars in mm.



FIGURES 33–37. *Phaenotheriosoma loebli* Frieser, 1978, male (MTDC); 33, dorsal habitus; 34, head in dorsal view; 35, pronotum in dorsal view; 36, left antenna in dorsal view; 37, lateral habitus. Scale bars in mm.



FIGURES 38–42. *Phaenotheriolum musculum* Frieser, 1984, male (MTDC); 38, dorsal habitus; 39, head in dorsal view; 40, pronotum in dorsal view; 41, right antenna in dorsal view; 42, lateral habitus. Scale bars in mm.

Piezonemus durus Jordan, 1904

(Figs 43–61, 70–72)

Piezonemus durus Jordan, 1904: 276. Bovie 1906: 278 (catalogue); Wolfrum 1929: 65, 1953: 27 (catalogues); Blackwelder 1947: 769 (catalogue); Valentine 1999: 271 (relationship within the tribe Piesocorynini); Rheinheimer 2004: 70 (catalogue); Trýzna *et al.* 2022: 252, figs 32–38 (32—dorsal habitus, 33—head, 34—pygidium, 35—pronotum, 36—antenna, 37—mesotibia and mesotarsus, 38—lateral habitus).

Type locality. Brazil: “Jatahy, Prov. Goyaz”

Type material. Lectotype, male (designated here, Figs 43–48, 102): ‘Type [p, typical round label with red margin used in BMNH]’ // ‘Jatahy. / Prov. Goyas. [p] / *Piezonemus / durus.* / Type. 1904 / N. Z. p. 276 [= Novitates Zoologicae, page 276] [h]’ // ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ // ‘LECTOTYPE / *Piezonemus durus* / Jordan, 1904 / M. Trýzna design., 2023’ [red, p] (BMNH). Female: ‘Jatahy’ / (GOYAZ) [p] // ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ (BMNH); ‘PARALECTOTYPE / *Piezonemus durus* / Jordan, 1904 / M. Trýzna design., 2023’ [red, p] (BMNH). Other paralectotypes not examined directly by the first author: Unsexed, 1 ex.: ‘Jatahy’ / (GOYAZ) [p] // ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ (BMNH). Unsexed, 3 exx.: ‘Jatahy. / Prov. Goyas. [p]’ // ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ (BMNH). Unsexed, 2 exx.: ‘Jatahy. / Prov. Goyas. Brésil [p, green paper]’ // 1 with ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ and the other with ‘Pres. E. Gowing-Scopes. / Brit. Mus. 1968-131 // *Piezonemus / durus* / 1904 Jord. [h] / Karl Jordan det. [p]’ (BMNH).

Note. Jordan (1904: 276) stated only “a series”, without the exact number of specimens of the type series. Lectotype and 7 Paralectotypes are listed above.

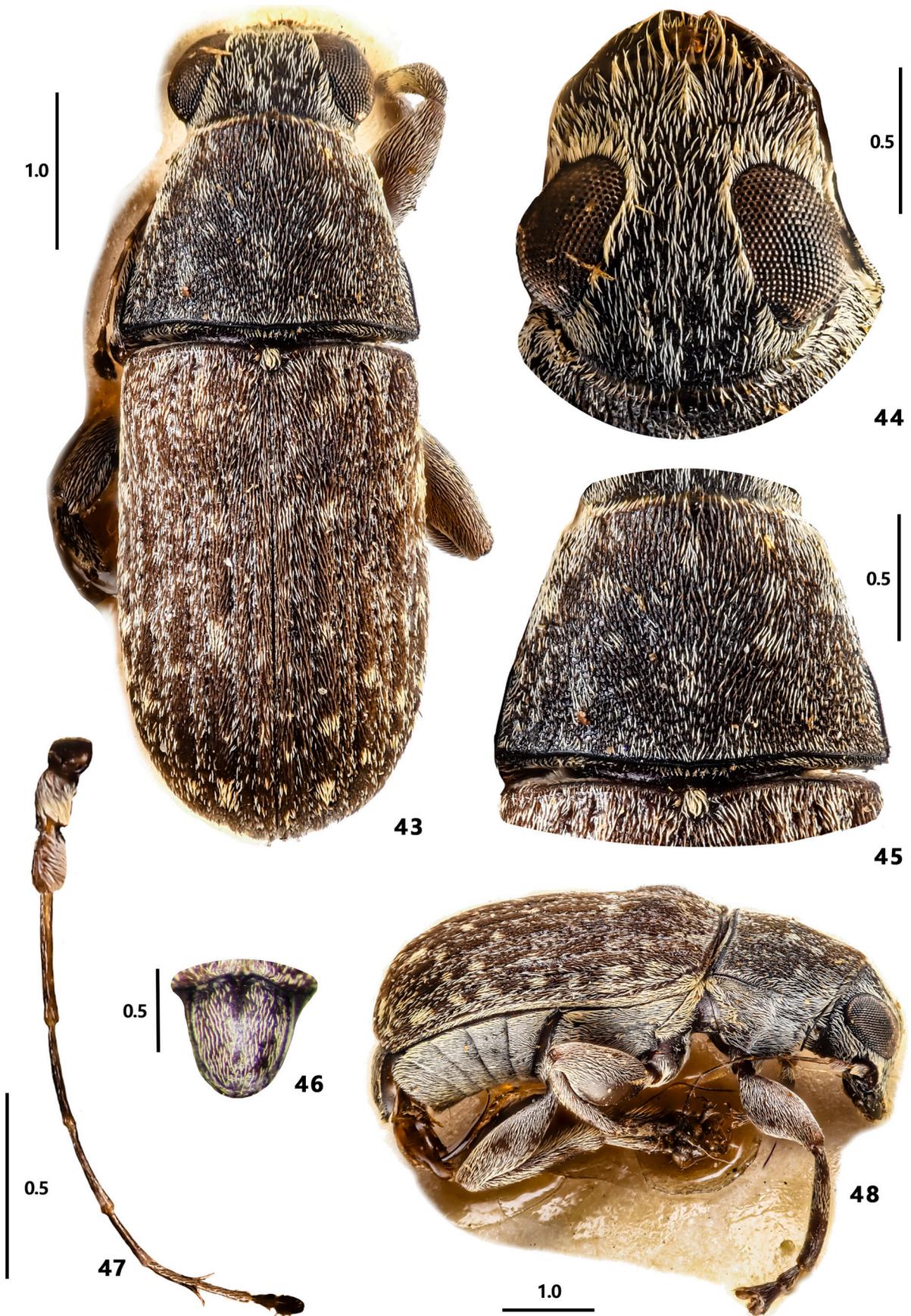
Other material: 1 male: ‘Sta. Cruz / Bolivia [p]’ // ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ (BMNH). 1 male (Figs 49–55): Ecuador, Sucumbios prov., Shushufindi, S 0°42’, W 77°19’, 200–400 m, 4.–18.xii.2004, Zd. Mráček leg. (MTDC). 2 males: Ecuador, Morona-Santiago [province], 30 km NE of Macas, 21.ii.2022, Cascada de Musap, 1085 m, S 02°07’45”, W 77°55’58”, M. Trýzna & J.C. Carrasco leg. (1 male with dissected terminalia (Figs 56–61) in MTDC, 1 male in MERC).

Identification. Coloration of the cuticle dark, black to dark brown, basic setae of the upper part of the body dark, with sparse tomentum of whitish grey setae, denser on the head and scutellum. Lower part of body with dense greyish setae. Small irregular clusters of greyish setae on even-numbered elytral intervals, rest of intervals dark, most noticeable on elytral intervals II, IV and VI. Antennomeres rufous brown, only antennomeres IX and X dark brown to black. Legs dark brown, femora, tibiae covered with grey setae. Colour pattern as in Figs 43–55, 72. Male tarsomere I of mesotarsus shorter than others together (Figs 49, 53) and dilated at apex on inner side. Pygidium of male elongate, ratio of the maximum length to maximum width 1.24 (Figs 46, 54), pygidium of female with distinct promontory before apical edge, this projection high and deeply divided basally (Fig. 70). Eyes shorter (cf. Figs 44, 50—*P. durus*; and 63—*P. lateralis*), dorsal ocular index 0.91 in male. Body size ca. 5.3–5.5 mm.

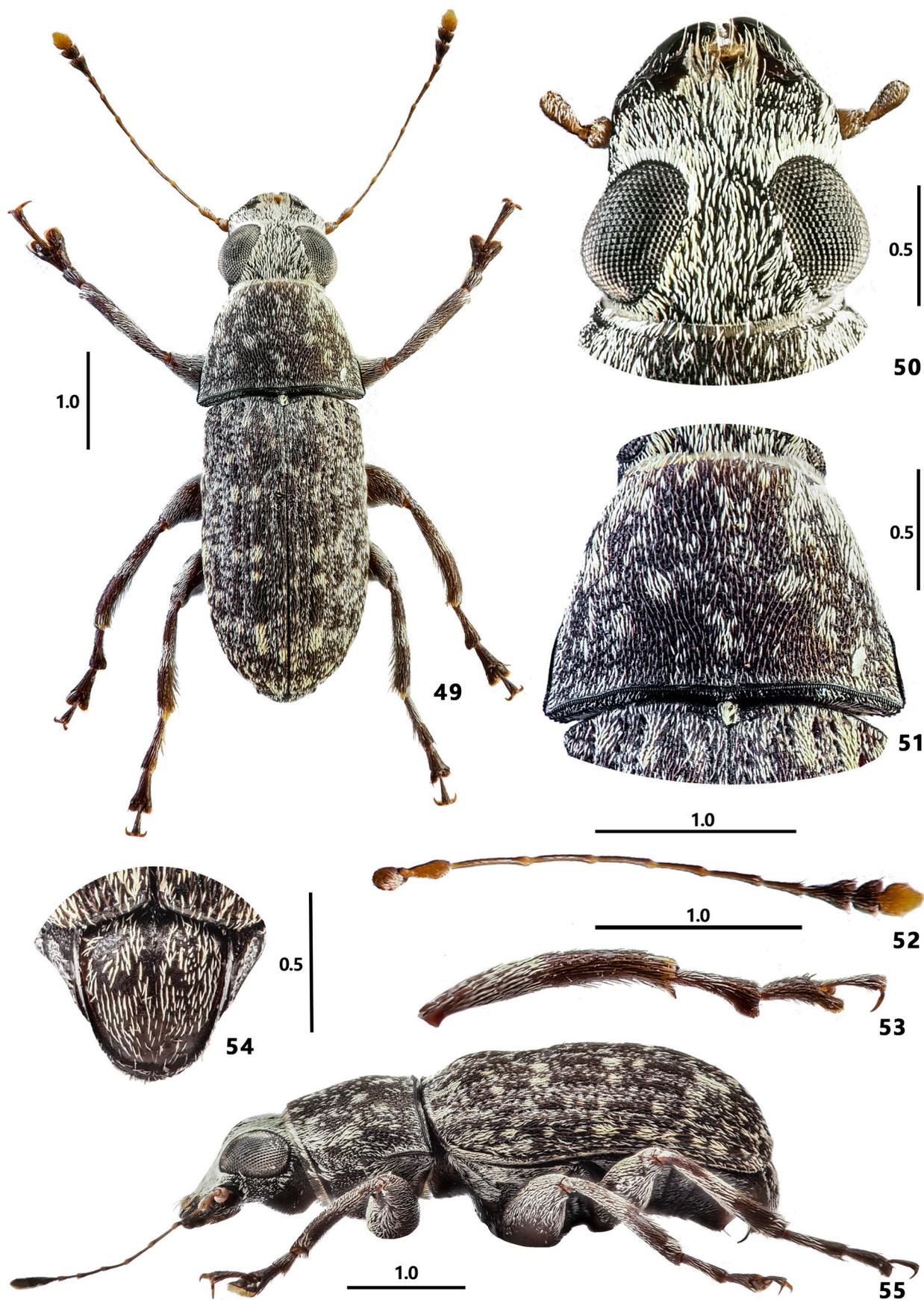
Lectotype, male (Figs 43–48). *Measurements* (in mm): Total body length—5.36. Head: total length—0.86, length of rostrum—0.19, maximum width of rostrum—1.07, length of eye—0.71, maximum width across eyes—1.31, minimum distance between eyes—0.41. Antenna: length of segments: II—0.21, III—0.34, IV—0.28, V—0.26, VI—0.21, VII—0.18, VIII—0.21, IX—0.21, X—0.11, XI—0.20, width of segment IX—0.14. Pronotum: maximum length—1.38, maximum width—1.95, minimum width—1.25. Elytra: maximum length—3.20, maximum width—1.90. Pygidium: maximum length—0.46, maximum width—0.37.

Male genitalia and associated structures (Figs 57–61). Aedeagus (Fig. 59) long, narrow, widest in apical part, this part rectangular. Pedon narrow, its base 2x wider than the rest of pedon, this apical part almost the same width along its entire length. Tectum broadly triangular, form equilateral triangle. Apodemes of aedeagus long, slightly longer than the part from bridge to apex of aedeagus, almost parallel. Bridge of aedeagus inconspicuously developed. Tegmen (Fig. 61) robust, moderately wide, with strongly sclerotized basal piece, apodeme of tegmen wide, straight, shorter than body of tegmen. Apex of tegmen moderately broad, almost bare. Structure of internal sac as in Fig. 60. Segment VIII (Fig. 57) moderately sclerotized, longer than wide, trapezoidal, anterior part wider than basal part, anterior margin of tergite VIII slightly sinusoidal outside. Sternal lobes of sternite VIII very small, irregularly triangular. Apodeme of sternite VIII present, but indistinct. Sternite IX (= spiculum gastrale) (Fig. 58) with symmetrical divergent arms, apodeme straight. Length of apodeme ca. 2.75x as long as arms.

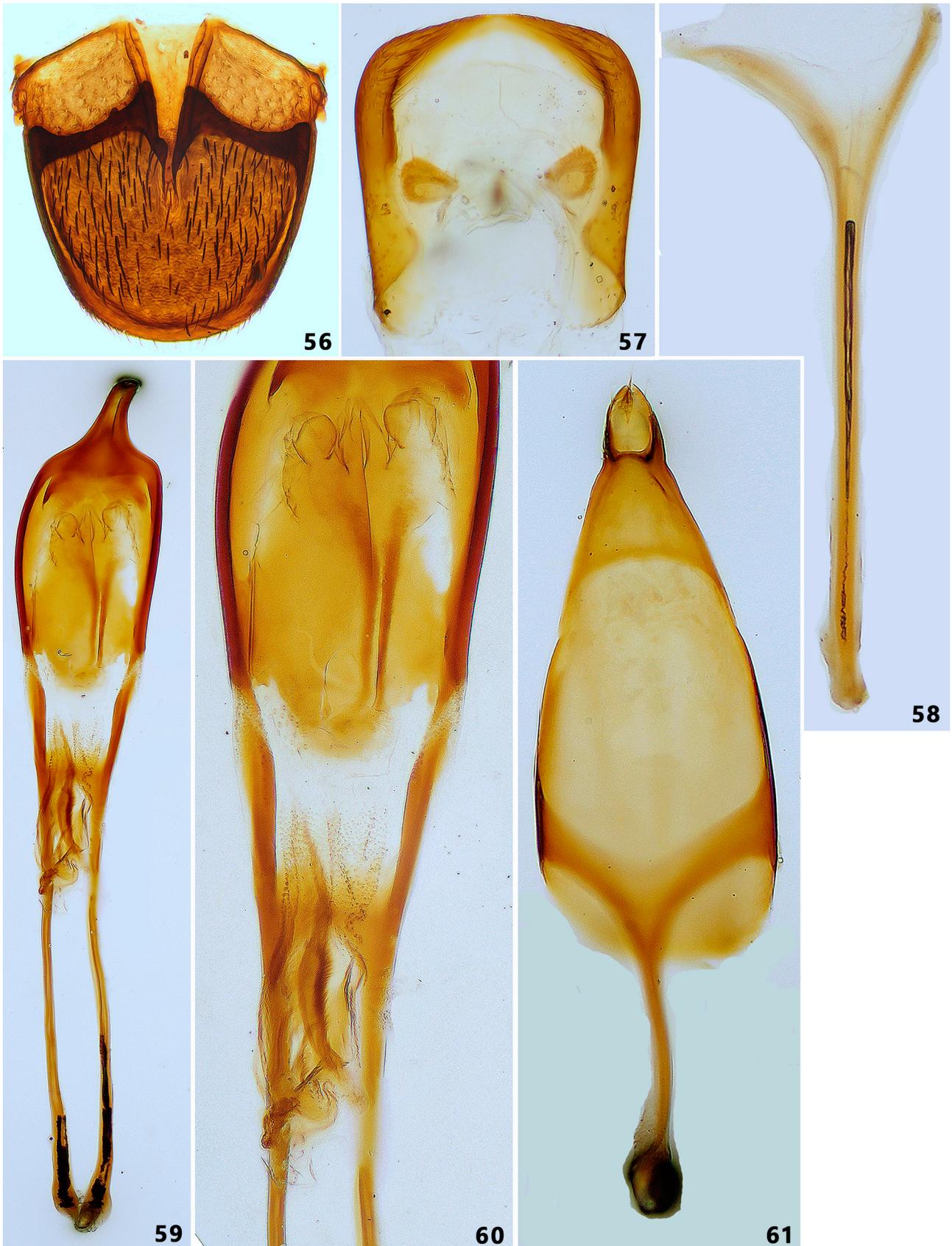
Distribution. Brazil (Jordan 1904, Rheinheimer 2004), Ecuador, Bolivia.



FIGURES 43–48. *Piezonemus durus* Jordan, 1904, lectotype male (BMNH); 43, dorsal habitus; 44, head in dorsal view; 45, pronotum in dorsal view; 46, pygidium; 47, right antenna in dorsal view; 48, lateral habitus. Scale bars in mm.



FIGURES 49–55. *Piezonemus durus*, male (MTDC); 49, dorsal habitus; 50, head in dorsal view; 51, pronotum in dorsal view; 52, left antenna in dorsal view; 53, right mesotibia and mesotarsus; 54, pygidium; 55, lateral habitus. Scale bars in mm.



FIGURES 56–61. *Piezonemus durus*, male (MTDC), dissected terminalia; 56, pygidium; 57, segment VIII in ventral view; 58, sternite IX (= spiculum gastrale) in ventral view; 59, aedeagus in dorsal view; 60, internal sac of aedeagus in dorsal view; 61, tegmen in ventral view.

Piezonemus lateralis Jordan, 1904

(Figs 62–69)

Piezonemus lateralis Jordan, 1904: 276. Bovie 1906: 278 (catalogue); Wolfrum 1929: 65, 1953: 27 (catalogues); Blackwelder 1947: 769 (catalogue); Valentine 1999: 271 (relationship within the tribe Piesocorynini); Rheinheimer 2004: 70 (catalogue), 226 (fig. 153—dorsal habitus).

Type locality. Brazil: “Jatahy, Prov. Goyaz”

Type material. Lectotype, male (designated here, Figs 62–67, 103): ‘Type [p, typical round label with red margin used in BMNH]’ // ‘Jatahy. / Prov. Goyas. [p] / Piezonemus / lateralis / Type. 1904 / N. Z. p. 276 [= Novitates Zoologicae, page 276] [h]’ // ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ // ‘LECTOTYPE / *Piezonemus lateralis* / Jordan, 1904 / M. Trýzna design., 2023’ [red, p] (BMNH). Paralectotypes not examined directly by the first author: Unsexed, 5 exx.: ‘Jatahy. / Prov. Goyas. [p]’ // ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ (BMNH). Unsexed, 2 exx.: ‘Jatahy’ / GOYAZ [p] // 1 with ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ and the other with ‘Pres. E. Gowing-Scopes. / Brit. Mus. 1968-131 // Piezonemus / lateralis / 1904 Jord. [h] / Karl Jordan det. [p]’ (BMNH).

Note. Jordan (1904: 276) stated only “a series”, without the exact number of specimens of the type series. Lectotype and 7 Paralectotypes are listed above.

Other material. Male (Figs 68–69): ‘Hansa Humboldt / Sta. Catherina / Brasilien Reitter [p]’ // ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ // ‘3. Piezonemus / lateralis Jord. [h]’ (BMNH). Male: ‘Salobro prov de Bahia / Bresil / E. Gounelle, 6.7.1885 [p]’ // ‘Karl Jordan Coll. / B.M. 1940-109. [p]’ (BMNH).

Identification. The coloration of the body is very similar to almost identical to that in *P. durus*. Colour pattern as in Figs 62–68. Male tarsomere I of mesotarsus distinctly longer than others together (Fig. 69). Pygidium of male elongate, ratio of the maximum length to maximum width 1.36 (Fig. 66), pygidium of female also with distinct promontory before apical edge, but this projection is not so high and not deeply divided basally as in *P. durus*. Eyes longer (cf. Figs 44, 50—*P. durus*; and 63—*P. lateralis*), dorsal ocular index 0.66 in male. Body size 4.5–4.9 mm.

Lectotype, male (Figs 62–67). *Measurements* (in mm): Total body length—4.86. Head: total length—0.86, length of rostrum—0.23, maximum width of rostrum—0.93, length of eye—0.66, maximum width across eyes—1.21, minimum distance between eyes—0.30. Antenna: length of segments: II—0.21, III—0.36, IV—0.36, V—0.26, VI—0.24, VII—0.20, VIII—0.21, IX—0.19, X—0.13, XI—0.19, width of segment IX—0.14. Pronotum: maximum length—1.13, maximum width—1.63, minimum width—1.13. Elytra: maximum length—2.90, maximum width—1.60. Pygidium: maximum length—0.64, maximum width—0.47.

Distribution. Brazil, Paraguay (Jordan 1904, Rheinheimer 2004).

Piezonemus epoch Trýzna, Caballero-Serrano & Carrasco sp. nov.

<http://zoobank.org/urn:lsid:zoobank.org:act:5F81CC8A-04B9-4643-AB11-3EFE8013DFB0>

(Figs 73–89)

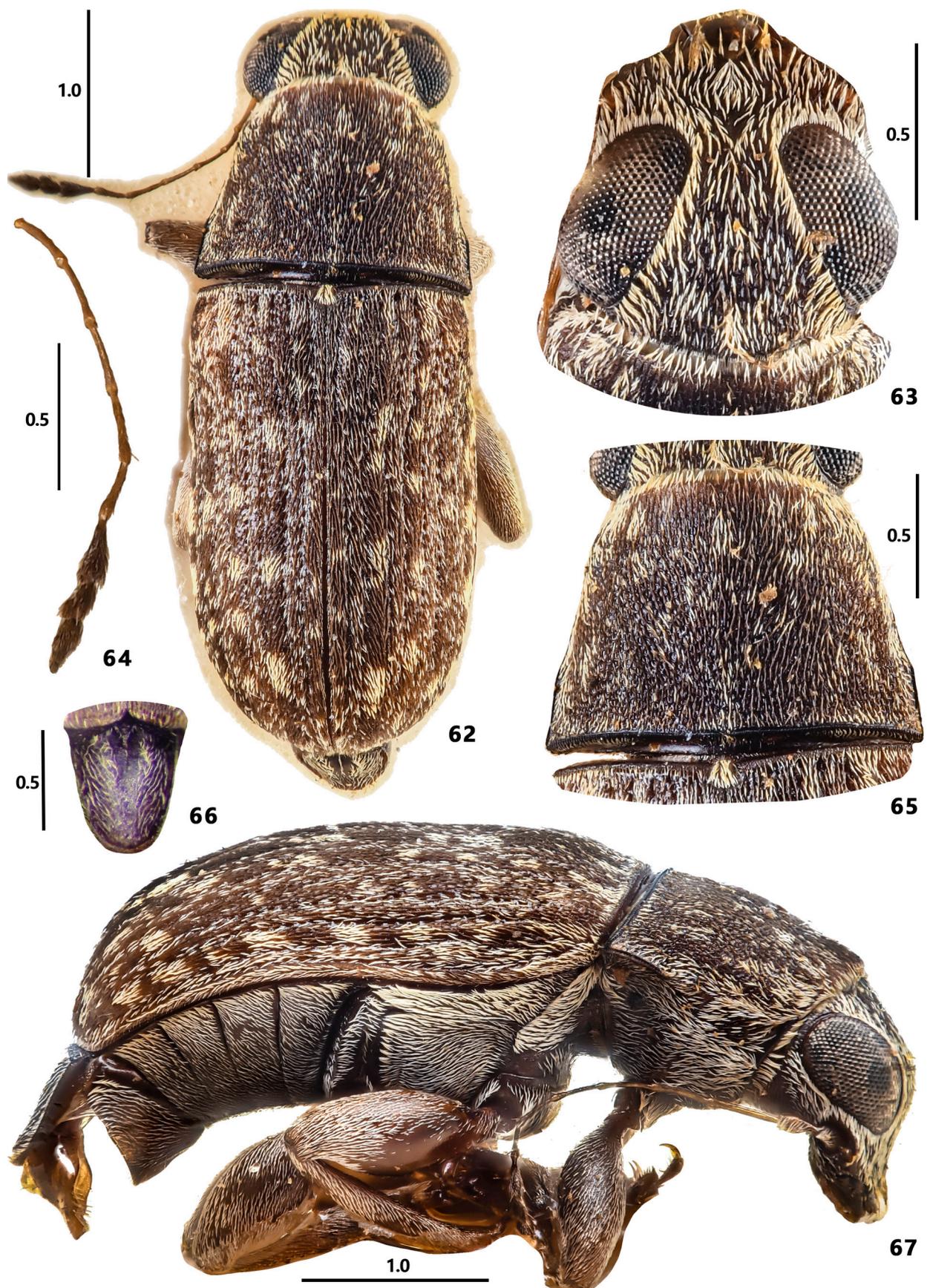
Type locality. Ecuador, Orellana province, Loreto env. near El Coca [= Puerto Francisco de Orellana], remnants of natural forest [ca. S 0°42′, W 77°19′]

Type material. Holotype, male (Figs 73–80): ‘Ecuador, Napo distr. / Loreto [now in Orellana province] / 17.2.-14.3.1996 / J. Strnad leg. [p]’ // ‘Piezonemus / lateralis / Jord. [h] / det. R. Frieser 199[p]6[h]’ (NMPC). **Allotype, female:** (Figs 81–86): ‘Ecuador, 4.-18.xii. 2004 / prov. Sucumbios, Shushufindi / (S 0°11′, W 76°38′) / 200-400 m, Zd. Mráček leg.’ // Piesocorynus / sp. [h] / det: B.D. Valentine [p] ’10 [h] [= 2010] (MTDC).

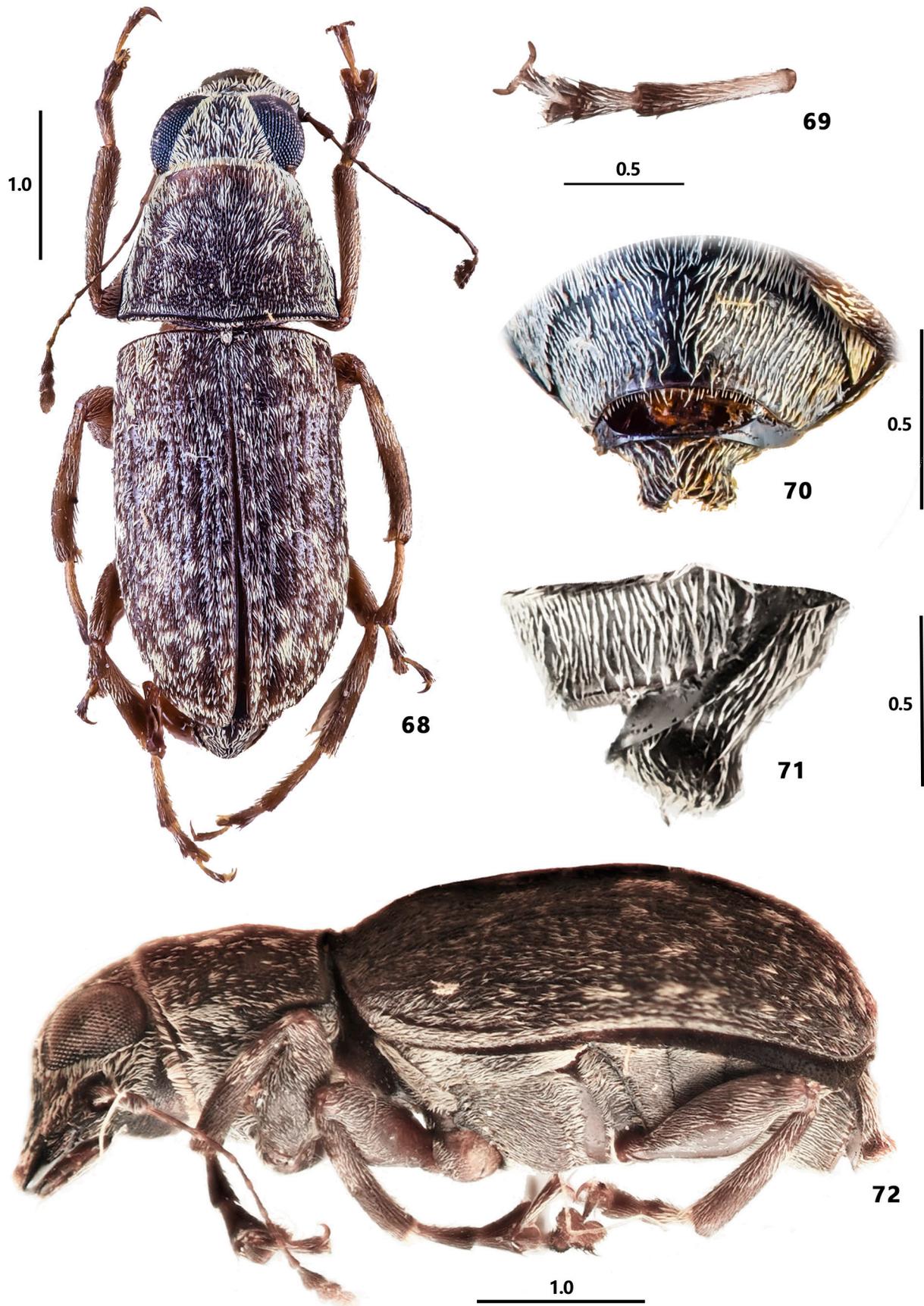
Red label [p] HOLOTYPE (or ALLOTYPE) / *Piezonemus epoch* sp. nov. / M.Trýzna, V.Caballero-Serrano / & J.C.Carrasco det., 2024.

Identification. The coloration of the body is similar to that in both previous species, but in general, coloration of head, pronotum, elytra and legs is more yellowish (rather more greyish in the previous two species). Elytra yellowish in apical and lateral parts, while disc of elytra black.

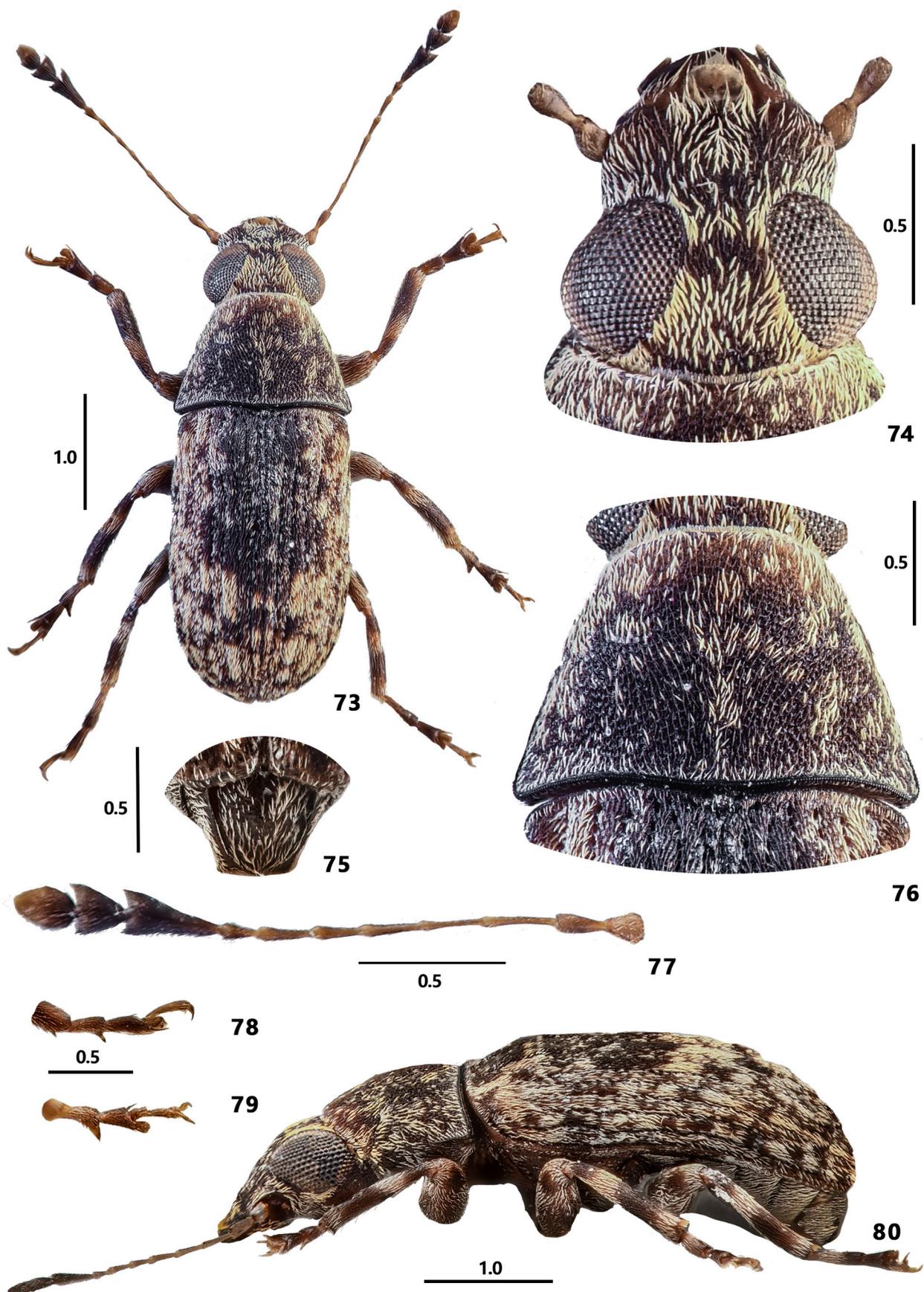
Male tarsomere I of protarsus with spine on lower part (Fig. 78), tarsomere I of mesotibia continuously flowing to spur with a wide base (Figs 73, 79) (dilated at apex on inner side in both previous species). Pygidium of female without any promontory.



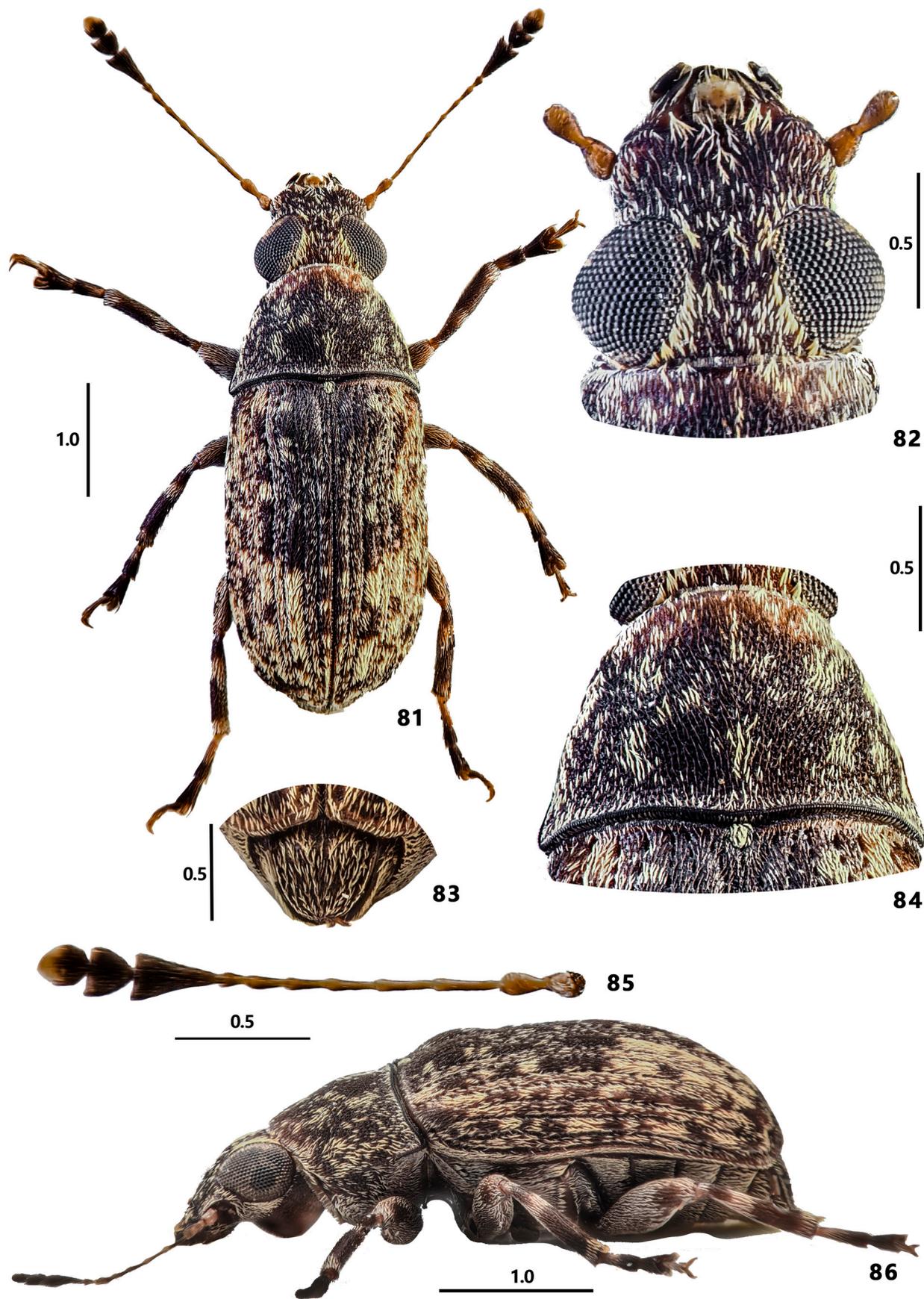
FIGURES 62–67. *Piezonemus lateralis* Jordan, 1904, lectotype male (BMNH); 62, dorsal habitus; 63, head in dorsal view; 64, left antenna in dorsal view; 65, pronotum in dorsal view; 66, pygidium, 67, lateral habitus. Scale bars in mm.



FIGURES 68–72. 68–69, *Piezonemus lateralis*, male (BMNH): 68, dorsal habitus; 69, left mesotarsus; 70–72, *Piezonemus durus*, paralectotype female (BMNH): 70, last abdominal ventrite (V) and pygidium in ventral view; 71, ditto in lateral view; 72, lateral habitus. Scale bars in mm.



FIGURES 73–80. *Piezonemus esPOCH* sp. n., holotype male (NMPC); 73, dorsal habitus; 74, head in dorsal view; 75, pygidium; 76, pronotum in dorsal view; 77, right antenna in dorsal view; 78, right protarsus; 79, right mesotarsus; 80, lateral habitus. Scale bars in mm.



FIGURES 81–86. *Piezonemus esPOCH* sp. n., allotype female (MTDC); 81, dorsal habitus; 82, head in dorsal view; 83, pygidium; 84, pronotum in dorsal view; 85, left antenna in dorsal view; 86, lateral habitus. Scale bars in mm.

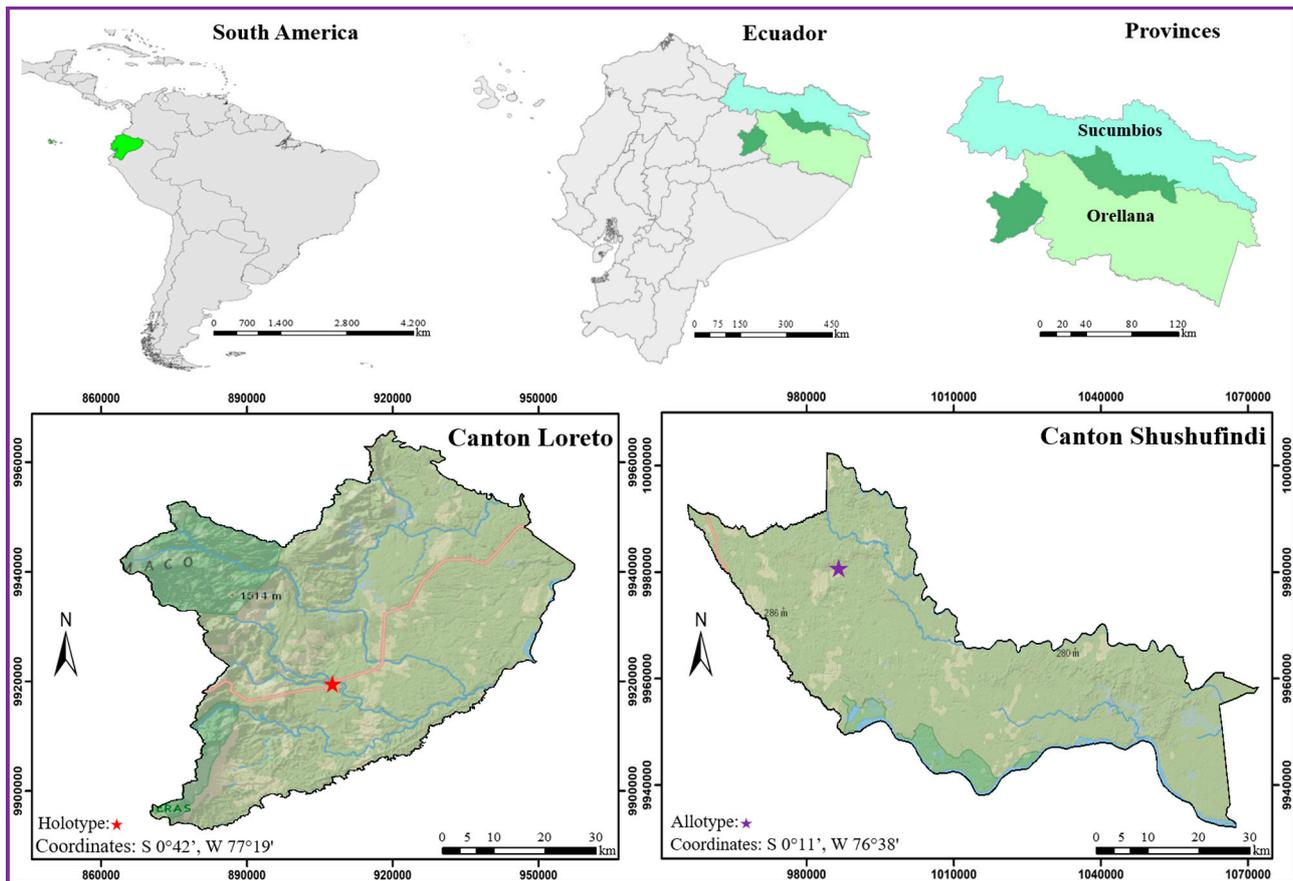


FIGURE 87. *Piezonemus epoch* sp. n., distribution map.

Description. Holotype, male (allotype, female) (Figs 73–86). *Measurements* (in mm): Total body length—4.41 (4.41). Head: total length—0.86 (0.86), length of rostrum—0.30 (0.33), maximum width of rostrum—0.79 (0.77), length of eye—0.60 (0.57), maximum width across eyes—1.04 (1.09), minimum distance between eyes—0.27 (0.27). Antenna: length of segments: II—0.20 (0.17), III—0.27 (0.26), IV—0.21 (0.21), V—0.21 (0.20), VI—0.16 (0.14), VII—0.17 (0.14), VIII—0.13 (0.10), IX—0.34 (0.33), X—0.19 (0.17), XI—0.21 (0.20), width of segment IX—0.20 (0.20). Pronotum: maximum length—0.98 (1.00), maximum width—1.50 (1.55), minimum width—0.88 (0.90). Elytra: maximum length—2.55 (2.63), width in humeral part—1.50 (1.55). Pygidium: maximum length—0.50 (0.50), maximum width—0.44 (0.53).

Coloration of the cuticle of entire body generally dark brown to black. Disc of elytra black, margins and apical part brown, abdominal ventrites and pygidium dark brown. Antennae light brown, antennomeres IX–XI black, only apical half of XI dark brown. Labrum distinctly yellow, mandibles light brown with black outer edges. Legs brown, tarsomeres IV–II with lighter basal part than apical, III–V rather yellowish.

Vestiture (Figs 73–80 male, 81–86 female). Head (Figs 74, 82) with sparse appressed yellowish setae, setae denser on upper margin of eyes. Antennomeres I–VIII (Figs 77, 85) almost bare, only with sporadic fine setae located in the apical half of the antennomeres, IX–XI with short appressed black dense setae. Disc of pronotum (Figs 76, 84) with appressed yellowish setae forming irregular and interrupted longitudinal stripe in central part and also slightly denser on lateral sides. Lower side of pronotum with denser yellowish to whitish setae. Elytra (Figs 73, 80–81, 86) covered with appressed yellowish setae particularly in apical and lateral parts, disc of elytra with black setae (surface is not abraded here as it might seem). Meso-, metasternum and all abdominal ventrites covered with dense yellowish to whitish setae. All femora with sparse appressed yellowish setae, each tibia with subdecumbent setae forming two yellowish rings in post-basal and apical part, part between rings covered with dark brown setae. Basal part of tarsomeres I–II with light-coloured setae only in basal part, rest of these tarsomeres brown, III–V with light-coloured setae. Pygidium covered with longer sparse yellowish setae.



FIGURES 88–89. *Piezonemus esoch* sp. n., Ecuador, Loreto env., collecting site.

Structure. Head (Figs 74, 82) noticeably short, rostrum flat, without any carinae, only with indistinct depression before eyes. Sides of rostrum short, only imperceptibly widening apically. Ratio of rostrum length to maximum width 0.38 in male, 0.43 in female. Dorsal and lateral part of rostrum only with very fine sculpture. Eyes strikingly large, dorsal ocular index 0.70 in male, 0.66 in female. Ratio of maximum width across eyes to maximum width of rostrum 1.32 in male, 1.42 in female.

Antennae (Figs 73, 77, 81, 85) reaching posterior margin of pronotum, however, do not reach half of elytra in both sexes. Scape and pedicel distinct, at least 2 times as wide as antennomeres III on apical parts, VIII shorter and nearly the same width as VII, IX–XI not forming compact club, but with only separated antennomeres, IX 1.7 times longer than wider (1.65 times in female), X as wide as long (wider than longer in female), X ovoid.

Pronotum (Figs 76, 84) conical, sides straight, only weakly convex in female, pronotum transverse, ratio of its length to maximum width ca. 0.65 in both sexes, widest at dorsal transverse carina, from here strongly narrowed anteriorly. Dorsal transverse carina basal, slightly bisinuate, widely and shallow emarginate in middle posteriorly, continuous to sides, here forming weakly protruding sharp lateral angle. Lateral carinae of pronotum distinct, protruding, not reaching to half of length of pronotum (Figs 80, 86). Basal longitudinal carinulae of pronotum present, but due to basal dorsal transverse carina, extremely short. Disc of pronotum moderately convex.

Elytra (Figs 73, 81) sub-oval, sides parallel, humeri developed, apical part of elytra broadly rounded. Ratio of the maximum length to maximum width of elytra ca. 1.70 in both sexes. Elytra with pair of indistinct bumps in sub-basal part. Elytral striae with distinct punctures, elytral intervals ca. 3 times as wide as foveae, fovea often weakly longitudinal, spaces between foveae shorter than individual fovea.

Legs. Male: protibia and mesotibia with small, short spine at apex (see Fig. 78—spine on apical part of protibia). Tarsomere I of protarsus with delicate but visible spine on lower part (Fig. 78), tarsomere I of mesotarsus continuous to spur with a wide base (Figs 73, 79). Female: protibia, mesotibia and tarsomeres simple, without any spine or spur.

Abdomen shorter than broad. Pygidium slightly convex, widely rounded, longer than wider in male, wider than longer in female. Ratio of the maximum length to maximum width 1.14 in male, 0.94 in female. Pygidium of female without any promontory.

Etymology. The species name *epoch* is dedicated in honor of the Escuela Superior Politécnica de Chimborazo (acronym ESPOCH) in recognition of the support given for the development of the research project Entomofauna IDIPI 281 (see Acknowledgements).

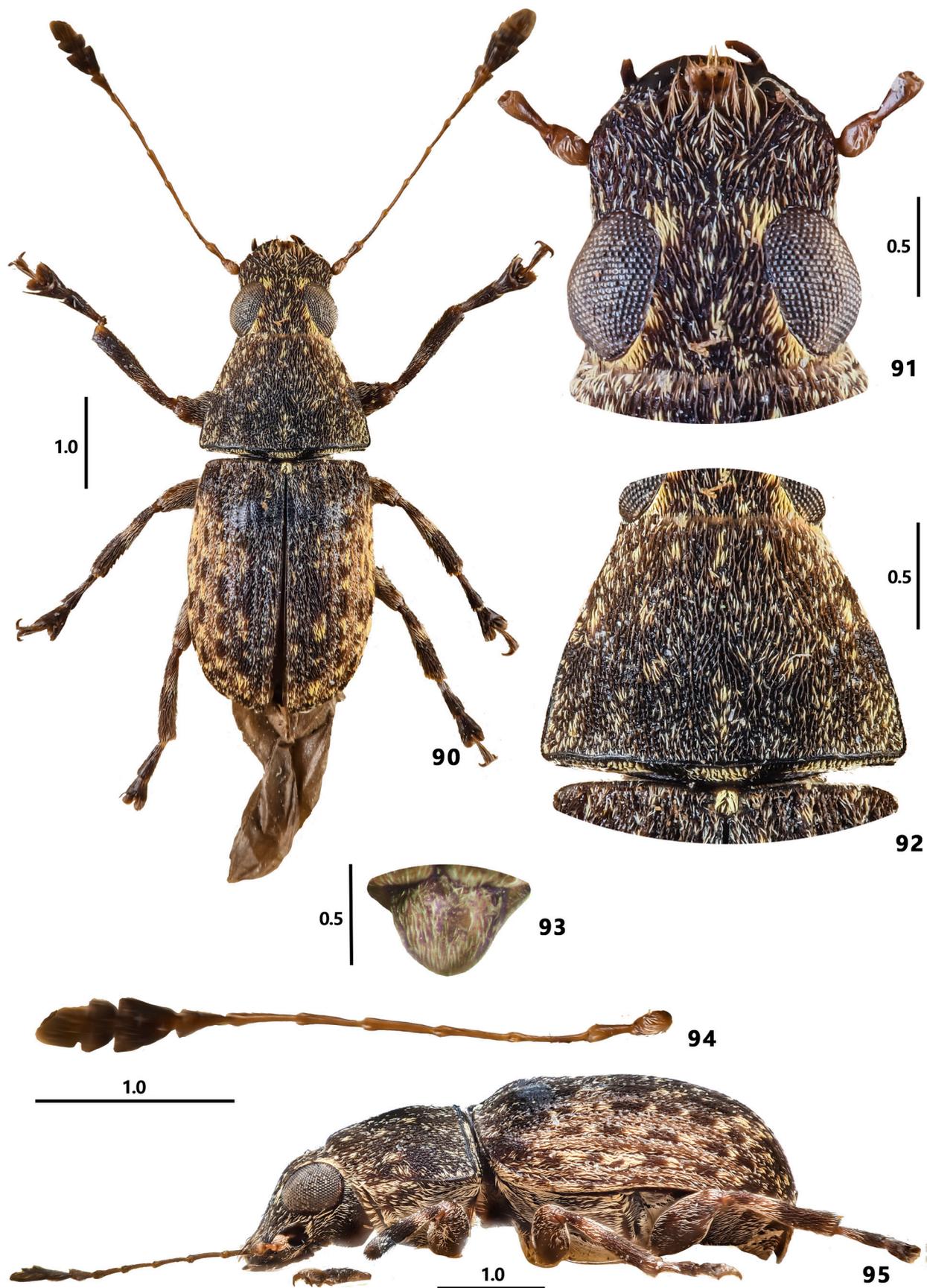
Collecting circumstances. Both specimens of the type series were collected by beating smaller twigs of fallen branches of unidentified deciduous trees inside natural forests.

Distribution. Ecuador, Orellana (holotype) and Sucumbíos (allotype) provinces (Fig. 87).

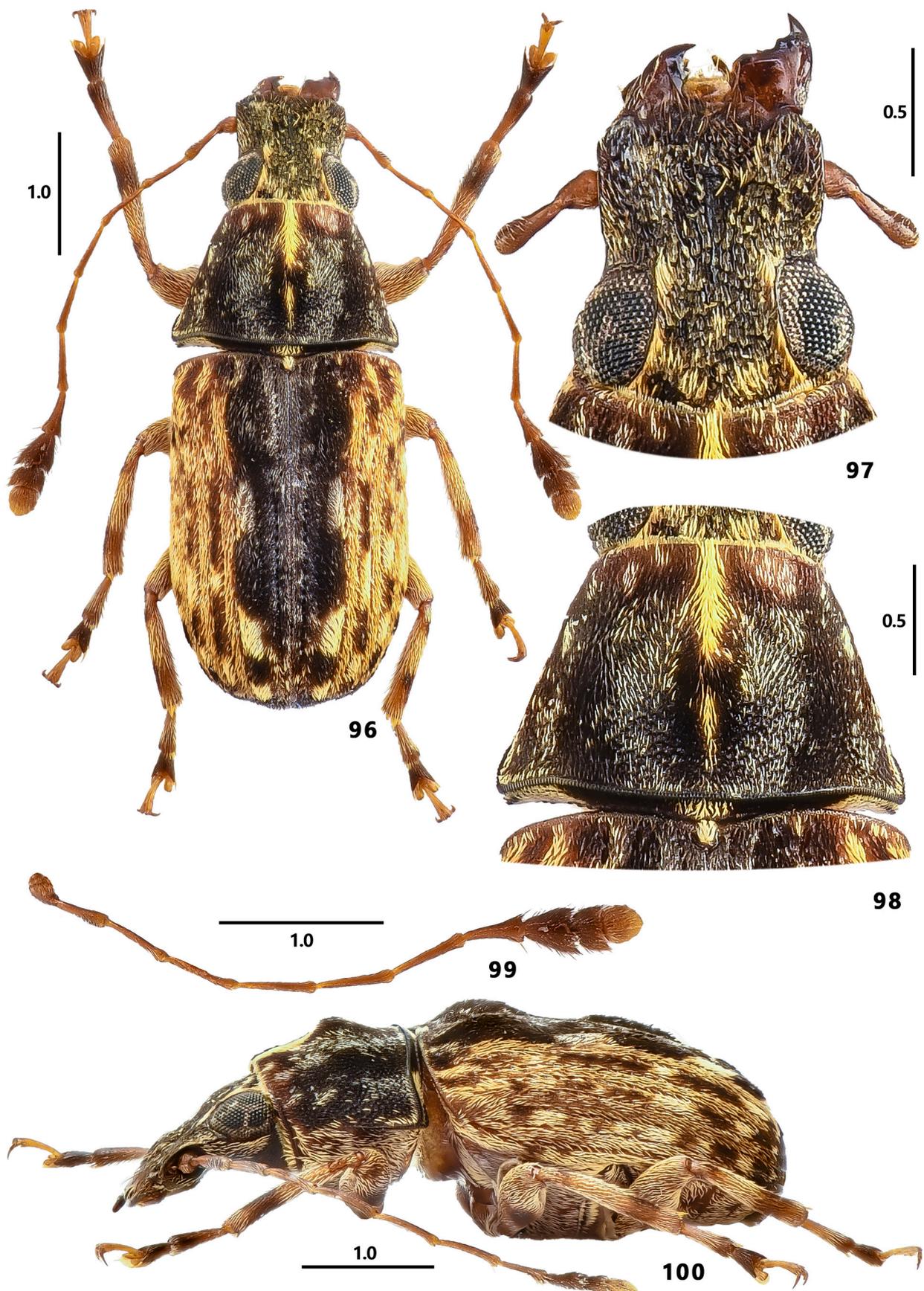
Differential diagnosis. The new species differs from both other species of *Piezonemus* mainly by the male protibia and mesotibia with a small, short spine at apex, and tarsomere I of the protarsus with a delicate spine on lower part, and tarsomere I of mesotibia with a distinct spur. Males of two other species lack these spines or spur. The female of the new species has a simple, convex pygidium, without any promontory, while both other species have a bifurcated promontory on the apical part. For more details see key below.

Key to *Piezonemus* species

- 1 Male: tarsomere I of protarsus and mesotarsus with distinct spur at apex in male (Figs 78–79). Female: pygidium flat, without any promontory (Fig. 83) *Piezonemus epoch* sp. nov.
- Male: tarsomere I of protarsus and mesotarsus without distinct spur at apex in male, only tarsomere I of mesotarsus dilated at apex on inner side (Fig. 53). Female: pygidium with bifurcated promontory (Figs 70–72) 2
- 2 Male: tarsomere I of mesotarsus shorter than others together (Fig. 53), pygidium elongate, ratio of the maximum length to maximum width 1.24 (Figs 46, 54). Female: pygidium with distinct promontory before apical edge, this projection high and deeply divided basally (Fig. 70). Eyes shorter (Figs 44, 50) *Piezonemus durus*
- Male: tarsomere I of mesotarsus distinctly longer than others combined (Fig. 69), pygidium obviously elongate, ratio of the maximum length to maximum width 1.36 (Fig. 66). Female: pygidium with distinct promontory before apical edge, but this projection not so high and not deeply divided basally. Eyes longer (Fig. 63) *Piezonemus lateralis*



FIGURES 90–95. *Piesocorynus lateralis* Jordan, 1906, holotype male (BMNH); 90, dorsal habitus; 91, head in dorsal view; 92, pronotum in dorsal view; 93, pygidium; 94, left antenna in dorsal view; 95, lateral habitus. Scale bars in mm.



FIGURES 96–100. *Piesocorynus obliquus* Frieser, 1978, paratype male (MTDC); 96, dorsal habitus; 97, head in dorsal view; 98, pronotum in dorsal view; 99, left antenna in dorsal view; 100, lateral habitus. Scale bars in mm.



FIGURES 101–104. Original labels. 101, *Barridia corticina*; 102, *Piezonemus durus*; 103, *Piezonemus lateralis*; 104, *Piesocorynus lateralis* (all in BMNH).

Notes on *Piezonemus* and confusion with some species of the genus *Piesocorynus*

During the study of Neotropical species of the tribe Piesocorynini in world collections, misidentifications between the similar genera *Piezonemus* and *Piesocorynus* were found, as well as confusion caused by abbreviated scientific names on determination labels. For specimens labelled as '*P. lateralis* Jordan', it is not clear whether *Piezonemus lateralis* Jordan, 1904 or *Piesocorynus lateralis* Jordan, 1906 is intended. Moreover, the two species, and the two genera, are somewhat similar and are confused in collections.

Furthermore, both specimens of the new species described here, *Piezonemus epoch* sp. nov., have been misidentified in the past. The holotype (male) was previously determined as *Piezonemus lateralis* (R. Frieser det. 1996), and the allotype (female) had been determined as *Piesocorynus* sp. (B.D. Valentine det. 2010).

In addition, one specimen determined by R. Frieser as *Piezonemus lateralis* (R. Frieser det. 1953) was found in his collection (now in ZSMC), which, however, belongs to the genus *Piesocorynus*, specifically to the species *P. obliquus* Frieser, 1978, which Robert Frieser described himself, but he did not include this specimen in the type series.

It follows from the above, that distinguishing the genera *Piezonemus* and *Piesocorynus* can be difficult. We help to resolve these inaccuracies by illustrating the type material of the relevant species. Therefore, we studied the holotype (male from Panama) and paratype (male from Guatemala) (both in BMNH) of *Piesocorynus lateralis*, and the holotype (male from Brazil, in ZSMC) and two paratypes (male and female from Brazil, MTDC) of *Piesocorynus obliquus*. The main distinguishing features of both species are:

Piesocorynus lateralis (Figs 90–95): disc of pronotum convex, simple, without bumps, uniform coloured (Figs 92, 95). Dorsal transverse carina of pronotum straight (Fig. 92). Elytra almost flat, with only faint pair of bumps in sub-basal part (Fig. 95). Size 5.5–5.8 mm. Distribution: Central America (Panama, Guatemala, Mexico).

Piesocorynus obliquus (Figs 96–100): disc of pronotum with one central and two lateral bumps, with narrow longitudinal contrasting yellow strip in central part (Figs 98, 100). Dorsal transverse carina of pronotum bisinuate (Fig. 98). Elytra with pair of distinct bumps in sub-basal part (Fig. 100). Size 2.5–4.0 mm. Distribution: South America (Brazil).

Corrigendum of partly incorrect original spelling

In the paper Trýzna *et al.* (2022) we described the new species *Barra baruskae* Trýzna, Carrasco & Blažej, 2022 from Nicaragua. In one case (on page 244) an incorrect spelling was given as *Barra baruska*. This obvious inadvertent error (*lapsus calami*) is corrected herein in accordance with ICZN, Article 32.5.1. The correct scientific name of this taxon is *Barra baruskae*, as stated several times throughout the text and figures.

Conclusion

The present contribution is essentially the second part of the study of the genera of the tribe Piesocorynini, and thus loosely follows from Trýzna *et al.* 2022.

In general, during the study of the genera of the tribe Piesocorynini it was found that some taxa, especially the genera *Piesocorynus*, *Phaenotheriopsis* and *Barra* comprise mixtures of a number of different lineages and require detailed redefinition (see also Discussion in Trýzna *et al.* 2022).

Although we have studied relevant type and other material in the Natural History Museum, London (primarily coll. K. Jordan), in the Zoologische Staatssammlung München (coll. R. Frieser), and in the private collection of the first author, we are aware of the fact, that detailed study of the Neotropical representatives of the tribe Piesocorynini is not possible without studying the materials deposited in North and South American museums and other institutions. Therefore, it is necessary to consider both contributions only as a brief outline towards the study of the genera of the tribe Piesocorynini, especially with regard to the Neotropical region.

Dedication

The first author dedicated this contribution to Barry D. Valentine, who made a significant contribution to the knowledge of Anthribidae, especially from the Nearctic and the Neotropical Regions.

Barry Dean Valentine was born on June 6, 1924 in New York City, New York and passed away on July 1, 2018 in Columbus, Ohio. Barry started his education at Cornell University in 1942, but completed his master's degree in Zoology at the University of Alabama in 1953. After working at Harvard University and the University of Southern Mississippi, Barry returned to Cornell University, where he received his Ph.D. degree in Entomology in 1960. He then moved to Columbus, Ohio where he began teaching at Ohio State University, and here, as professor of zoology, taught at the Departments of Entomology and Biology for almost 30 years. The study of insects, but also amphibians and reptiles, was his passion. Barry published more than 50 original scientific works and six book chapters. Due to his encyclopedic knowledge and extensive collection of Anthribidae, Barry was widely recognized as the leading expert in his field. He undertook many field trips in the USA, Central America, Africa, Europe and parts of South America. Barry published works on Anthribidae mainly from the Nearctic and the Neotropical Regions. Of the important ones, I mention at least *The genera of the weevil family Anthribidae North of Mexico* (Valentine 1960), *A review of Nearctic and some related Anthribidae* (Valentine 1999) or *A Catalogue of West Indies Anthribidae* (Valentine 2003). Other important works include, for example *The Anthribidae of the Seychelles and Mascarene Islands: taxonomy, keys, and a bibliographic catalogue* (Valentine 1989). He also published articles in the field of herpetology.

Barry donated his entire life's work on anthribids, including specimens and library, to the Smithsonian Museum, Washington, D.C., with his other collections donated mainly to the Ohio State University, University of Oklahoma, University of Florida, University of Kentucky, Carnegie Mellon University and University of Alabama.

I started working with Barry in 1995, when we exchanged many letters (later emails) dealing with various taxonomic and ecological problems in Anthribidae. Our collaboration resulted in the writing of the chapter Anthribidae in the *Catalogue of Palaearctic Coleoptera* (Trýzna & Valentine 2011), which we worked on for many years. The entire period of this work was characterized by feverish activity, when it was necessary to decide which species should be included in the study area and to summarize their geographical distribution, but we also exchanged specimens and rare literature. Thus, Barry remains in my mind as a patient teacher, excellent collaborator and respected friend.

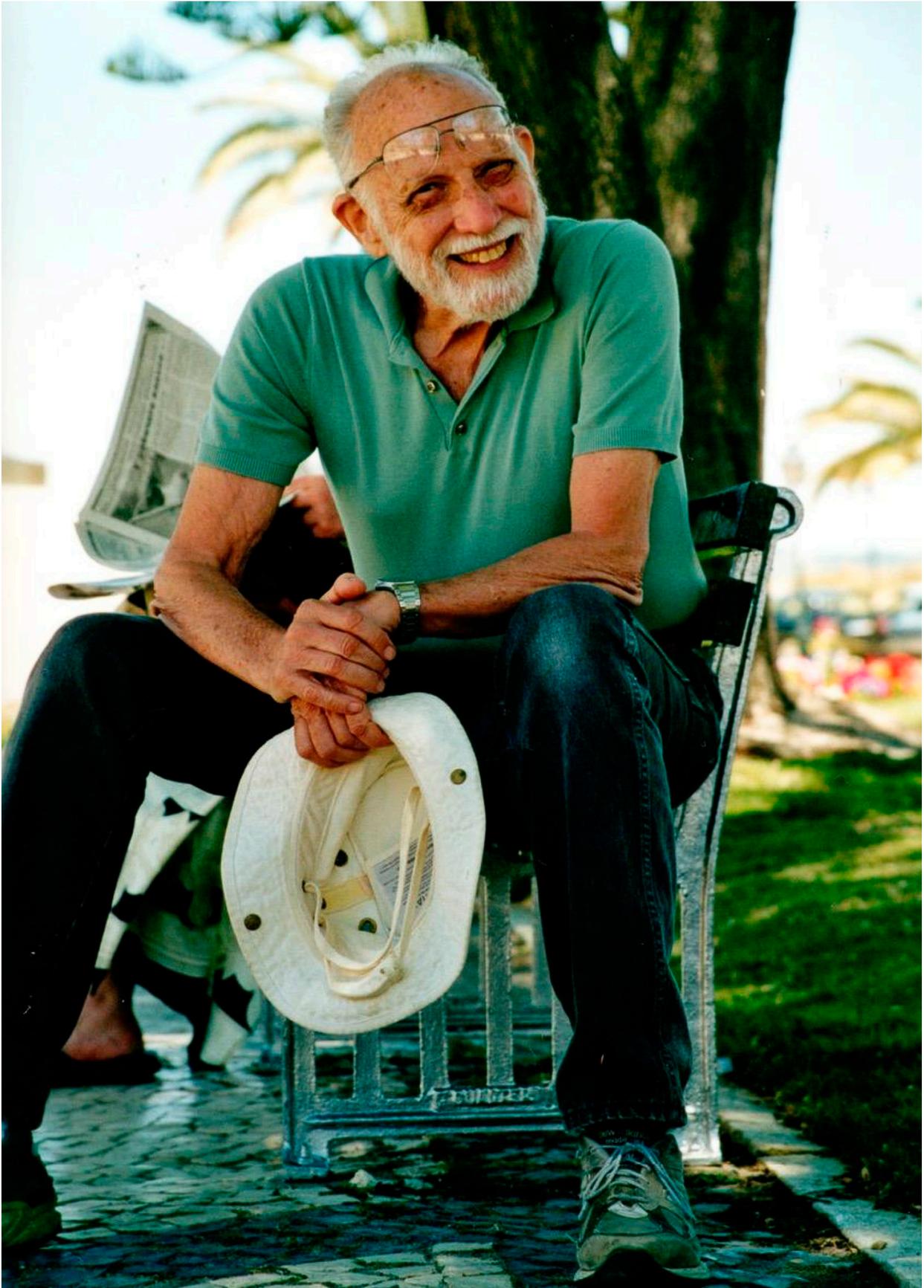
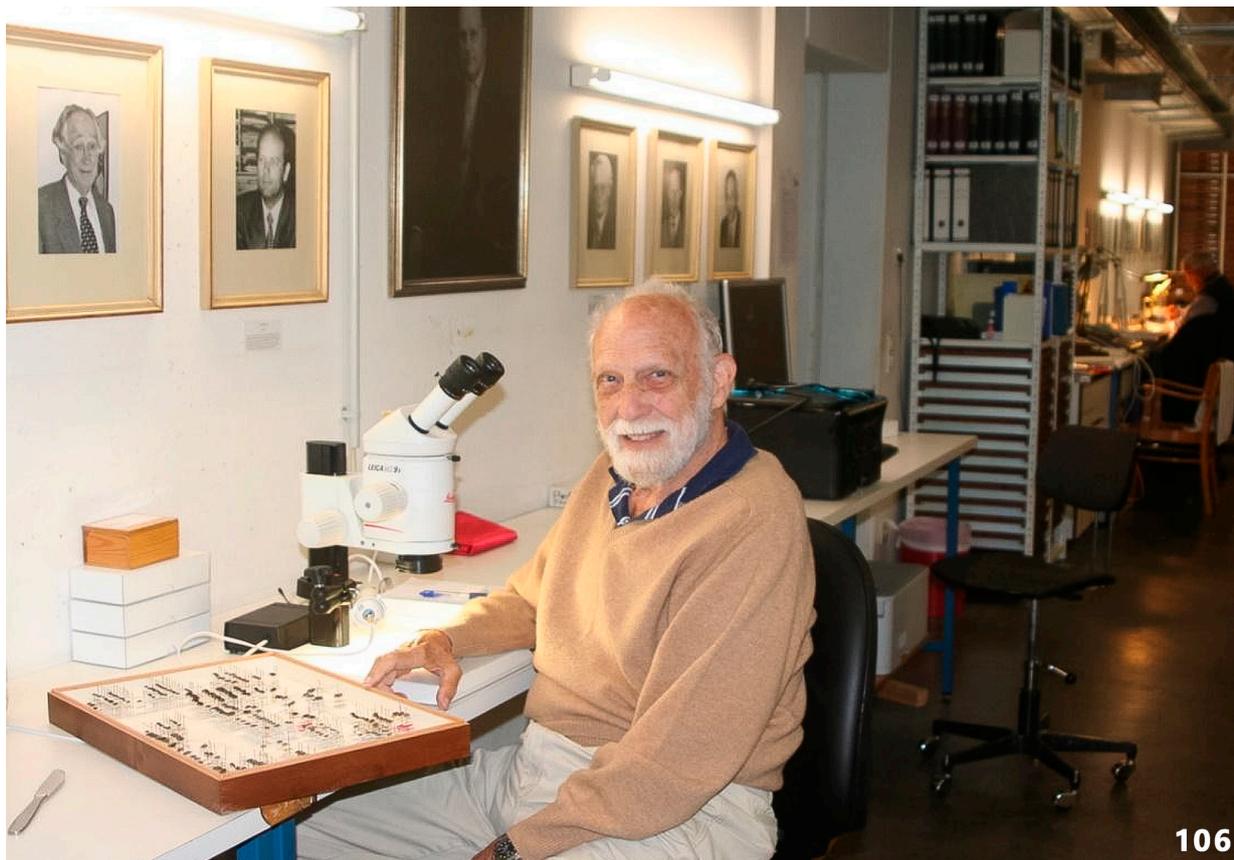


FIGURE 105. B.D. Valentine with his typical Stetson. Undated. Photograph: Archive of Nancy Valentine-Urbschat and Buena Valentine.



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FIGURES 106–107. 106, B.D. Valentine in Zoologische Staatssammlung München, Germany, 2011. Photograph: Archive of Nancy Valentine-Urbschat and Buena Valentine; 107, B.D. Valentine in Sarasota, Florida, 2016. Photograph credit: David Dennis.

Acknowledgements

We would like to thank the executives of Escuela Superior Politécnica de Chimborazo in Riobamba, Ecuador (ESPOCH), namely Ing. Byron Vaca Barahona, Ph.D., Rector; Ing. Pablo Vanegas, Ph.D., Research Vicerector; Ing. Rosa Castro Ph.D., Dean of Natural Resources Faculty; as well as executives of Czech University of Life Sciences Prague, namely Prof. Ing. Petr Sklenička, CSc., Rector; Prof. Ing. Jan Banout, Ph.D., Dean of the Faculty of Tropical AgriSciences, for supporting our international research project ‘*The studies on biodiversity of entomofauna in the different natural and agricultural localities in Ecuador*’. Ing. Ondřej Šafránek, Field Researcher of the Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague, conducted the Czech part of the expedition to Ecuador in 2022.

Material from Ecuador was acquired under permit number MAAE-ARSFC-2022-2196 issued by the Ministry of Environment, Water and Ecological Transition of Ecuador (MAATE).

The research received support from the SYNTHESYS Project (<http://www.synthesys.info>) which is financed by the European Community Research Infrastructure Action under the FP7 ‘Capacities’ Program (visit of Miloš Trýzna to Natural History Museum, London) with the kind co-operation of Maxwell V.L. Barclay. Michael Balke and Dita Abraham Balke were helpful during the study visit of Miloš Trýzna at the Zoologische Staatssammlung München, Germany. We are indebted to Maxwell V.L. Barclay, Robert Anderson, José Ricardo M. Mermudes and Samanta Orellana for reading the manuscript and valuable comments. We acknowledge Vladimír Štrunc (Rožnov pod Radhoštěm, Czech Republic, www.insect-books.com) for preparing colour macro-photographs and final tables, and Petr Baňář for preparing figures of male genitalia of *Piezonemus durus* (Figs 56–61) and raw photos 1–11 and 17–42. For loan of the type material of *Piezonemus durus*, *Piezonemus lateralis* and *Piesocorynus lateralis*, and especially for long-term general support, we acknowledge our colleague and friend Maxwell V.L. Barclay.

References

- Alonso-Zarazaga, M.A. & Lyal, C.H.C. (1999) *A world catalogue of families and genera of Curculionoidea (Insecta: Coleoptera) (Excepting Scolytidae and Platypodidae)*. Entomopraxis S.C.P. Edition, Barcelona, 315 pp.
- Alonso-Zarazaga, M.A. & Lyal, C.H.C. (2002) Addenda and corrigenda to ‘A World Catalogue of Families and Genera of Curculionoidea (Insecta: Coleoptera)’. *Zootaxa*, 63, 1–37.
<https://doi.org/10.11646/zootaxa.63.1.1>
- Blackwelder, R.E. (1947) Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. *Bulletin of United States National Museum*, 185 (5), 765–925.
<https://doi.org/10.5479/si.03629236.185.765>
- Bovie, A. (1906) Catalogue des Anthribides. *Annales de la Société Entomologique de Belgique*, 49, 218–334.
- Dejean, P.F.M.A. (1834) s.n. In: *Catalogue des Coléoptères de la collection de M. le Comte Dejean. Fasc. 3*. Méquignon-Marvis & Sons, Paris, pp. 177–256.
<https://doi.org/10.5962/bhl.title.8771>
- Frieser, R. (1978) Einige neue südamerikanische Anthribiden (Coleoptera: Anthribidae). *Folia Entomologica Hungarica*, 31 (1), 31–35.
- Frieser, R. (1981) Die Anthribiden der Westpaläarktis einschließlich der Arten der UdSSR (Coleoptera, Anthribidae). *Mitteilungen der Münchner Entomologischen Gesellschaft*, 71, 33–107.
- Frieser, R. (1984) Ein weiterer Bericht zur Anthribidenfauna Afrikas (Coleoptera: Anthribidae). *Revue Zoologique Africaine*, 98 (1), 165–182.
- Frieser, R. (2008) Bestimmungstabellen der Anthribiden des Indischen Subkontinents (Coleoptera: Anthribidae). *Acta Coleopterologica*, 24 (2), 3–137.
- Holloway, B.A. (1982) *Anthribidae (Insecta: Coleoptera). Fauna of New Zealand. Vol. 3*. Science Information Division, DSIR, Wellington, 272 pp.
- ICZN [International Commission on Zoological Nomenclature] (1999) *International Code of Zoological Nomenclature. 4th Edition*. International Trust for Zoological Nomenclature, London, xxix + 306 pp.
- Jordan, K. (1904) American Anthribidae. *Novitates Zoologicae*, 11, 242–309.
- Jordan, K. (1906) Fam. Anthribidae. In: Sharp, D., Blandford, W.F.H. & Jordan, K. (Eds.), *Biologia Centrali-Americana. Insecta. Coleoptera. Vol. 4 (6)*. Porter, London, pp. 299–383, tabs. 10–14. [unpaginated]
- Jordan, K. (1928) Some Anthribidae collected by R. E. Turner in South Africa. *Novitates Zoologicae*, 34, 151–158.
<https://doi.org/10.5962/bhl.part.11789>
- Legalov, A.A. (2018) Annotated key to weevils of the world. Part 1. Families Nemonychidae, Anthribidae, Belidae, Ithyceridae, Rhynchitidae, Brachyceridae and Brentidae. *Ukrainian Journal of Ecology*, 8 (1), 780–831.

- Orellana, K.S. & Barrios, H. (2021) Catalogue of the Anthribidae (Coleoptera: Curculionoidea) of Panama, including new country records and a key to genera. *Zootaxa*, 4904 (1), 1–71.
<https://doi.org/10.11646/zootaxa.4904.1.1>
- Queiroz, F.Á., Elgueta, M. & Mermudes, J.R.M. (2017) Taxonomy of *Hylotribus* Jekel (Coleoptera: Anthribidae, Anthribinae): new synonymies, combinations and type designations. *Zootaxa*, 4227 (2), 173–195.
<https://doi.org/10.11646/zootaxa.4227.2.2>
- Rheinheimer, J. (2004) Illustrierter Katalog und Bibliographie der Anthribidae der Welt (Insecta: Coleoptera). *Mitteilungen des Entomologischen Vereins Stuttgart*, 39 (1–2), 1–243.
- Trýzna, M., Carrasco, J.C. & Blažej, L. (2022) Review of the Neotropical genera *Barra* Jordan and *Brevibarra* Jordan, with description of a new species of *Barra* from Nicaragua, notes on the tribe Piesocorynini Valentine, and new records of *Brevibarra* from Brazil and Ecuador (Coleoptera: Anthribidae). *Zootaxa*, 5213 (3), 243–268.
<https://doi.org/10.11646/zootaxa.5213.3.3>
- Trýzna, M. & Baňář, P. (2021) Description of a new genus and species, *Portentus marschneri* (Coleoptera: Anthribidae), from Penang National Park, Malaysia. *Zootaxa*, 5004 (4), 551–563.
<https://doi.org/10.11646/zootaxa.5004.4.4>
- Trýzna, M. & Valentine, B.D. (2011) Anthribidae. In: Löbl, I. & Smetana, A. (Eds.), *Catalogue of Palaearctic Coleoptera. Vol. 7*. Apollo Books, Stenstrup, pp. 64–66 + 90–107.
- Valentine, B.D. (1960) The genera of the weevil family Anthribidae North of Mexico (Coleoptera). *Transactions of the American Entomological Society*, 86 (1), 41–85. [<http://www.jstor.org/stable/25077797>]
- Valentine, B.D. (1989) The Anthribidae of the Seychelles and Mascarene Islands: taxonomy, keys, and a bibliographic catalogue (Coleoptera). *Insecta Mundi*, 3, 233–246.
- Valentine, B.D. (1991) Four new species of *Phaenotheriopsis* from Hispaniola and Puerto Rico (Coleoptera: Anthribidae). *The Coleopterists Bulletin*, 45 (4), 331–340.
- Valentine, B.D. (1999) A review of Nearctic and some related Anthribidae (Coleoptera). *Insecta Mundi*, 12, 251–296. [article was published in 1999, although volume year is 1998].
- Valentine, B.D. (2003) A Catalogue of West Indies Anthribidae (Coleoptera). *Insecta Mundi*, 17 (1–2), 49–67.
- Wanat, M. (2007) Alignment and homology of male terminalia in Curculionoidea and other Coleoptera. *Invertebrate Systematics*, 21, 147–171.
<https://doi.org/10.1071/IS05055>
- Wolfrum, P. (1929) Anthribidae. In: Schenkling, S. (Ed.), *Coleopterorum Catalogus auspiciis et auxilio*. W. Junk, Berlin, pp. 1–145.
- Wolfrum, P. (1953) Anthribidae. In: Hincks, W.D. (Ed.), *Coleopterorum Catalogus Supplementa. Vol. 102*. W. Junk, 's-Gravenhage, pp. 1–63.

APPENDIX A. List of species of the world genera examined during the study of the tribe Piesocorynini (in alphabetical order). The localities of the studied specimens are indicated in parentheses. Underline—type species of the genus.

Afrophaenotherion: *A. aereum* Frieser, 1984 (South Africa), *A. colonnellii* Frieser, 2010 (South Africa);
Barra: *B. baruskae* Trýzna, Carrasco & Blažej, 2022 (holotype and paratype (both males) from Nicaragua), *B. gounellei* Jordan, 1904 (holotype and paratype (both males) from Brazil), *B. salamandrina* Frieser, 1983 (paratype male from Brazil);
Barridia: *B. corticina* Jordan, 1906 (holotype female from Guatemala);
Botriessa: *B. cylindricollis* Frieser, 1999 (Nepal), *B. sepidiopsis* Jordan, 1928 (Myanmar);
Brachycorynus: *B. distentus* (Frieser, 1983) (USA: Texas), *B. rectus* (LeConte, 1876) (USA: Florida);
Brevibarra: *B. scotosagis* Jordan, 1906 (holotype female from Panama; Brazil, Costa Rica Ecuador);
Lagopezus: *L. hirtipes* Lacordaire, 1866 (Brazil), *L. tenuicornis* (Fabricius, 1801) (Ecuador, French Guiana, Nicaragua);
Opisolia: *O. lenis* Jordan, 1931 (Chile: Juan Fernandez Isls.);
Phaenotheriolum: *P. endroedyi* Frieser, 1981 (South Africa), *P. espagnoli* (Gonzalez, 1969) (Spain), *P. fossulatum* Frieser, 1981 (South Africa), *P. grandicollis* Frieser, 1981 (South Africa), *P. hispidum* Frieser, 1978 (Turkey), *P. musculum* Frieser, 1984 (South Africa), *P. porcatum* Frieser, 1994 (South Africa), *P. suturalis* Frieser, 1984 (South Africa), *P. vestitum* Frieser, 1984 (South Africa);
Phaenotherion: *P. bodemeyeri* Wolfrum, 1956 (Turkey), *P. capense* Wolfrum, 1959 (South Africa), *P. fasciculatum* Reitter, 1891 (Italy), *P. ganglbaueri* (Apfelbeck, 1918) (Greece), *P. knirschi* Breit, 1912 (Ukraine: Krim), *P. pulskyi* Frivaldszky, 1877 (Romania), *P. strejceki* Frieser, 1995 (Krasnodar: Sochi), *P. zellichii* Ganglbauer, 1903 (Montenegro);
Phaenotheriopsis: *P. vauriei* Valentine, 1955 (Bahamas), *Phaenotheriopsis* sp. (Guadeloupe);
Phaenotheriosoma: *P. brachati* Frieser, 1995 (Turkey), *P. loebli* Frieser, 1978 (Israel), *P. meybohmi* Frieser, 2010 (Turkey);
Piesocorynus: *P. alternans* Jordan, 1904 (Brazil), *P. aspis* (Erichson, 1847) (Ecuador, French Guiana, Suriname), *P. dispar* (Gyllenhal, 1833) (Brazil), *P. homoeus* Jordan, 1904 (Suriname), *P. inops* Frieser, 1978 (Ecuador), *P. lateralis* Jordan, 1906 (holotype from Panama, paratype from Guatemala; USA: Oklahoma, Alabama), *P. mixtus* LeConte, 1876 (USA: Texas), *P. moestus* (LeConte, 1824) (USA: Georgia, Florida), *P. nigritulus* Frieser, 1978 (two paratypes from Brazil, MTDC), *P. obliquus* Frieser 1978, holotype (ZSMC) and two paratypes from Brazil), *P. plagifer* Jordan, 1904 (Nicaragua), *P. pullinus* Jordan, 1937 (Brazil), *P. strigifer* Jordan, 1906 (Panama), *P. suturalis* Jordan, 1904 (Brazil, French Guiana), *P. tessellatus* Schaeffer, 1906 (USA: Arizona), *P. tristis* Jekel, 1855 (Brazil);
Piezobarra: *P. sparsilis* Jordan, 1906 (Costa Rica);
Piezonemus: *P. durus* Jordan, 1904 (lectotype male and paralectotype female from Brazil; Bolivia, Ecuador), *P. lateralis* Jordan, 1904 (lectotype male from Brazil).

APPENDIX B. List of full locality data of depicted specimens (in alphabetical order). Date from material mentioned in the text is not repeated here.

Afrophaenotherion colonnellii Frieser, 2010 (paratype male: South Africa, W. Cape, rd R44, 10 km E of Hermanus, 34.24.29 S, 19.20.40 E, 16.xi.2005, E. Colonnelli) (Figs 17–21);
Barridia corticina Jordan, 1906 (holotype female: Duenas, Guatemala, G.C. Champion) (Figs 6–11, 101);
Botriessa sepidiopsis Jordan, 1928 (H^{te} Birmanie, Mines des Rubis, 1200^m–2300^m, Doherty 1890) (Figs 22–26);
Phaenotheriolum musculum Frieser, 1984 (South Africa, Eastern cape, Hogsback, 970–1300 m, 32°35'S, 26°56'–57'E, 5.-7.xii.2006, J. Janák leg.) (Figs 38–42);
Phaenotherion pulskyi Frivaldszky, 1877 (Romania, Pod. Babadagu, Slava Rusa env., 114 m, N44 51.787, E28 38.221, 4.v.2009, lgt. J. Krátký) (Figs 27–32);
Phaenotheriopsis sp. (Insel Guadeloupe) (Figs 1–5);
Phaenotheriosoma loebli Frieser, 1978 (Israel, SE Haifa, Karmel-Berg, Nordhang, 300 m, 8.ii.1987, Schawaller & Schmalfluss) (Figs 33–37);

Piesocorynus aspis (Erichson, 1847) (Ecuador, Orellana prov., 25 km SW of Coca, 23.xi.2022, Carachupa Pakcha, 298 m, S 00°33'34'', W 77°09'29'', M. Trýzna & J.C. Carrasco leg.) (Figs 12–16);
Piesocorynus lateralis Jordan, 1906 (holotype male: [Panama] V. [= Volcan] de Chiriqui, 2-3000 ft., Champion) (Figs 90–95, 104);
Piesocorynus obliquus Frieser, 1978 (paratype male: Brasilien, Nova Teutonia [now Seara], 27°11'B, 52°23'L, 300–500 m, xi. 1977, Fritz Plaumann leg.) (Figs 96–100).