

**A review of the *Bironium* Csiki, 1909
(Coleoptera: Staphylinidae: Scaphidiinae)
of New Guinea and the Moluccas**

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LÖBL I. 2021: A review of the *Bironium* Csiki, 1909 (Coleoptera: Staphylinidae: Scaphidiinae) of New Guinea and the Moluccas. *Acta Musei Moraviae, Scientiae biologicae* **106(2): 227–248**. – The species of the genus *Bironium* of New Guinea and the Moluccas are reviewed, based on morphological characters. Descriptions of the previously described species are complemented and new records are given to most of them. The type material of *Bironium longipes* (Reitter) is commented. The following ten species are described as new: *B. albertisi* sp. nov., *B. bicolor* sp. nov., *B. grande* sp. nov., *B. maindai* sp. nov., *B. ornatum* sp. nov., *B. punctatum* sp. nov., *B. riedeli* sp. nov., *B. rufulum* sp. nov., *B. striatum* sp. nov., and *B. taurus* sp. nov. Records and characters are given for an additional species remaining unnamed. A key to the species is provided.

Keywords. Insects, shining fungus beetles, taxonomy, Melanesia

Introduction

The knowledge of the *Bironium* Csiki, 1909 of New Guinea, its adjacent islands and of the Moluccas is inadequate and limited to data given in six papers providing partial taxonomic and/or distributional information (REITTER 1880, ACHARD 1924, PIC 1956, LÖBL 1975, 1989, 2015). An analogous situation concerning the *Bironium* occurring west of the Wallace line was removed recently (LÖBL *et al.* 2020). After decades of accumulating *Bironium* material, and after completing several priority projects, finally I have been able to make time to describe new species from the region and record new geographic information on previously known species.

Currently, only one species, *B. flavapex* Löbl, 2015, is known from the Moluccas, and six species, *B. basicolle* (Pic, 1956), *B. biroi* (Pic, 1956), *B. glabrum* Löbl, 1989, *B. loksai* Löbl, 1989, *B. longipes* (Reitter, 1880), and *B. maculatum* Löbl, 1989, have been described or reported from Papua New Guinea, the Indonesian Papua and West Papua, and the nearby Indonesian island of Misool. As expected, the study of new collections, mainly gathered in the ninetieth of the last century, yield significant new data filling gaps in the knowledge of the species richness and distribution. As result, 18 species are reported below, 10 of them are described as new. Thus, the *Bironium* of New Guinea is species-richer than in any similarly large Asian area (e.g., only six species of *Bironium* are known from Borneo). With respect to the extensive areas remaining *terra incognita* as far as *Bironium* is concerned, and the absence of information from islands east of the New Guinean main island, the provided data reflect major gaps in field work, and a much higher diversity of the Melanesian *Bironium* may be expected to be discovered when adequate field work will be again supported. Noteworthy seems that none of the Asian

species of *Bironium* has been found south of the Wallace line, and the absence of the genus from Australia.

Material and technique

The material studied or referred to is in the following collections:

HNMB	.....	Hungarian Natural History Museum, Budapest, Hungary
MHNG	.....	Muséum d'histoire naturelle, Geneva, Switzerland
MNHN	.....	Muséum national d'Histoire naturelle, Paris, France
NHMB	.....	Naturhistorisches Museum, Basel, Switzerland
NHMW	.....	Naturhistorisches Museum, Wien, Austria
NMEC	.....	Naturkundemuseum, Erfurt, Germany
NMPC	.....	National Museum, Prague, Czechia

The locality data of the type specimens are reproduced verbatim, and data from different labels are separated by a slash. The body length is measured from the anterior pronotal margin to the inner apical angle of the elytra. The width is measured at the widest points of the respective body parts. The form of the scutellum is that of its exposed part. The sides of the aedeagi refer to their true morphological side with the ostium situated dorsally, while in resting position rotated 90°. The basal bulb of the aedeagi is weakly sclerotized and usually deformed in dry specimens, before dissection. Therefore, its shape is not to be used as a diagnostic character. The dissected body parts are embedded in Euparal or in Canada Balsam and fixed on separate cards on the same pins as the original specimens.

Results

Key to the *Bironium* species of New Guinea and adjacent islands

- 1 Pronotum ochraceous, elytra black. *B. bicolor* sp. nov.
- Colour patter of pronotum and elytra different. 2
- 2 Elytral disc with distinct, often impressed punctures rows. Lateral parts of metaventrite with conspicuous coarse punctures. 3
- Elytral disc without puncture rows. Lateral parts of metaventrite very finely punctate. 6
- 3 Elytra uniformly black. 4
- Elytra maculate. *B. maculatum* Löbl
- 4 Antennomere XI yellowish, much lighter than preceding antennomers. Mesoventrite lacking median ridge. *B. flavapex* Löbl
- Antennomere XI about as light as antennomeres IX and X. Mesoventrite with or without median ridge. 5
- 5 Most of elytral disc coarsely punctate. Metaventrite with coarse punctures scattered over prevailing anterior surface. *B. punctatum* sp. nov.
- Most of elytral disc very finely punctate, coarse elytral punctures arrange to form two rows. Sides of metaventrite with few coarse punctures near anterior margins. *Bironium* sp.

- 6 Elytra bicolorous. 7
 – Elytra uniformly reddish-brown to black. 8
- 7 Pronotum ochraceous, or ochraceous along lateral and anterior margins and with large dark spot. Hypomera ochraceous. Elytral disc with punctation usually uneven, on small part of disc coarser than on prevailing discal surface.
 ***B. longipes* (Reitter)**
 – Pronotum and hypomere entirely black. Elytral disc with punctation entirely very fine, similar to pronotal punctation. ***B. ornatum* sp. nov.**
- 8 Elytral punctation to large part much coarser than pronotal punctation. 9
 – Elytra and pronotum with similar, very fine punctation. 10
- 9 Body black, 3.0 to 3.2 mm long. Mesoventrite with robust mesal ridge. Apical part of parameres delimited by notch. ***B. grande* sp. nov.**
 – Body-length 2.20 to 2.35 mm. Mesoventrite with mesal ridge. Apical part of parameres not delimited by notch. ***B. striatum* sp. nov.**
- 10 Small species, body-length less than 1.8 mm. ***B. maindai* sp. nov.**
 – Larger species, body-length exceeding 1.8 mm. 11
- 11 Elytra with basal striae entire, joined to lateral striae. Mesoventrite usually with distinct mesal ridge. 12
 – Elytra with basal striae interrupted at level of humeral areas, not joined to lateral striae. Mesoventrite with or without mesal ridge. 15
- 12 Parameres each split to form long ventral lobe extended nearly to level of apex of dorsal lobe. ***B. biroi* (Pic)**
 – Parameres of not split. 13
- 13 Median lobe of aedeagus with two robust, prominent processes situated mesally, anterior bases of parameres. ***B. taurus* sp. nov.**
 – Median lobe of aedeagus without ventral processes. 14
- 14 Middle part of parameres not expanded. Mesoventrite very finely striate.
 ***B. basicolle* (Pic)**
 – Middle part of parameres expanded to form large lobes. Mesoventrite lacking striae. ***B. albertisi* sp. nov.**
- 15 Metanepisterna broad, about 0.06–0.07 mm wide. Internal sac of aedeagus with roof-like shaped distal sclerites and pair of proximal angulate, narrow sclerites. ***B. loksai* Löbl**
 – Metanepisterna narrow, about 0.01–0.02 mm wide. Internal sac of aedeagus with proximal narrow, transverse rod. ***B. glabrum* Löbl**
- 16 Mesoventrite lacking mesal ridge. Metanepisterna very narrow, to large part concealed. Parameres narrowed and strongly sclerotized apically.
 ***B. rufulum* sp. nov.**
 – Mesoventrite with mesal ridge. Metanepisterna distinct, about 0.04–0.05 mm wide. Parameres broad and weakly sclerotized apically. ***B. riedeli* sp. nov.**

***Bironium albertisi* sp. nov.**

(Figs 1–6)

Type material. Holotype ♂, PAPUA N. G. Morobe Prov., S Aseki, 1750 m 14.IV.1998, sifted A. Riedel (MHNG). Paratype ♀, with the same data as the holotype (MHNG).

Description. Length 2.03 mm, width 1.27 mm. Head, thorax and elytra black, abdomen dark reddish-brown, femora and tibiae ochraceous, tarsi as tibiae or somewhat lighter, antennae light brown. Pronotum very finely punctate. Scutellum triangulate. Elytra lacking humeral humps, sulci and impressions; adsutural areas raised; sutural striae finely punctate, lateral striae impunctate; basal striae throughout deep, entire, not interrupted and joined to lateral striae. Most discal punctures about as pronotal punctures, disc with irregularly scattered, somewhat larger, and very shallow punctures. Mesoventrite convex, smooth, appearing impunctate, without impressions, with long mesal ridge extended from paxillum to posterior margin of mesocoxal process. Metaventrite not microsculptured, with elongate impression in centre, several hardly visible oblique striae converging anteriorly, toward mesal impression, few fine punctures along basal margin and in middle part of mesocoxal process; submesocoxal lines margined by several coarse punctures; centre and lateral parts of metaventrite impunctate; anterior margin of mesocoxal process below level of margin of mesoventrite. Metacoxal process oblique, with margin weakly concave, notched at lateral margins. Metanepisterna in anterior halves about 0.05 mm wide. Metanepisternal suture impunctate, straight, nearly reaching margin of metepimeron. Ventrites with punctulate microsculpture absent from lateral parts of ventrite I, appearing impunctate, coarse punctures along basal margin of ventrite I excepted. Ventrite I with low basal hump. Protarsomeres III lacking prominent ventral lobe.

♂: Protarsomeres I to III slightly widened, similar in width, each at apex about as wide as half of protibial apex. Protarsomere I about as long as protarsomeres II and III combined. Protarsomere III with apicoventral pair of long, narrow setae. Aedeagus as Figs 1–5, 1.27 mm long.

♀: Gonocoxite as Fig. 6, without gonostyle.

Distribution. Papua New Guinea.

Etymology. The species is dedicated to Luigi Maria D'Albertis (1841–1901), one of the early explorers of the fauna of New Guinea and Moluccas.

Comments. This species is similar to *B. biroi* in most external characters. It may be distinguished by the uninterrupted basal striae of the elytra, the metaventrite lacking coarse punctures and the mesoventrite lacking distinct striae. The shape of the parameres is unique in this species, notably by the presence of a small lobe posterior of expanded middle section.

***Bironium basicolle* (Pic)**

Bironium longipes Csiki, 1909: 72 (homonym).

Heteroscapa basicollis Pic, 1956: 72.

Bironium basicolle; LÖBL, 1975: 418, Figs 79, 80.

Bironium basicolle; LÖBL, 1989: 368.

Material examined. Additional specimens were not found in the examined collections.

Distribution. Papua New Guinea.

Comments. Both, *B. basicolle* (Pic) and *B. longipes* Csiki were based on specimens collected at Sattelberg, Huon Peninsula, Morobe Province. This is one of the species possessing entire basal striae joined to the lateral striae.

***Bironium bicolor* sp. nov.**

(Figs 7–10)

Type material. Holotype ♂, NEW GUINEA centr. BALIEM TAL-1700m MARCH 1992 leg. Jiří KOLIBÁČ (NHMB). Paratypes 2 ♂, INDONESIA, Papua, Jayawijaya Prov., Nalca, 1900–2100 m, 8.IX.1992, A. Riedel (MHNG).

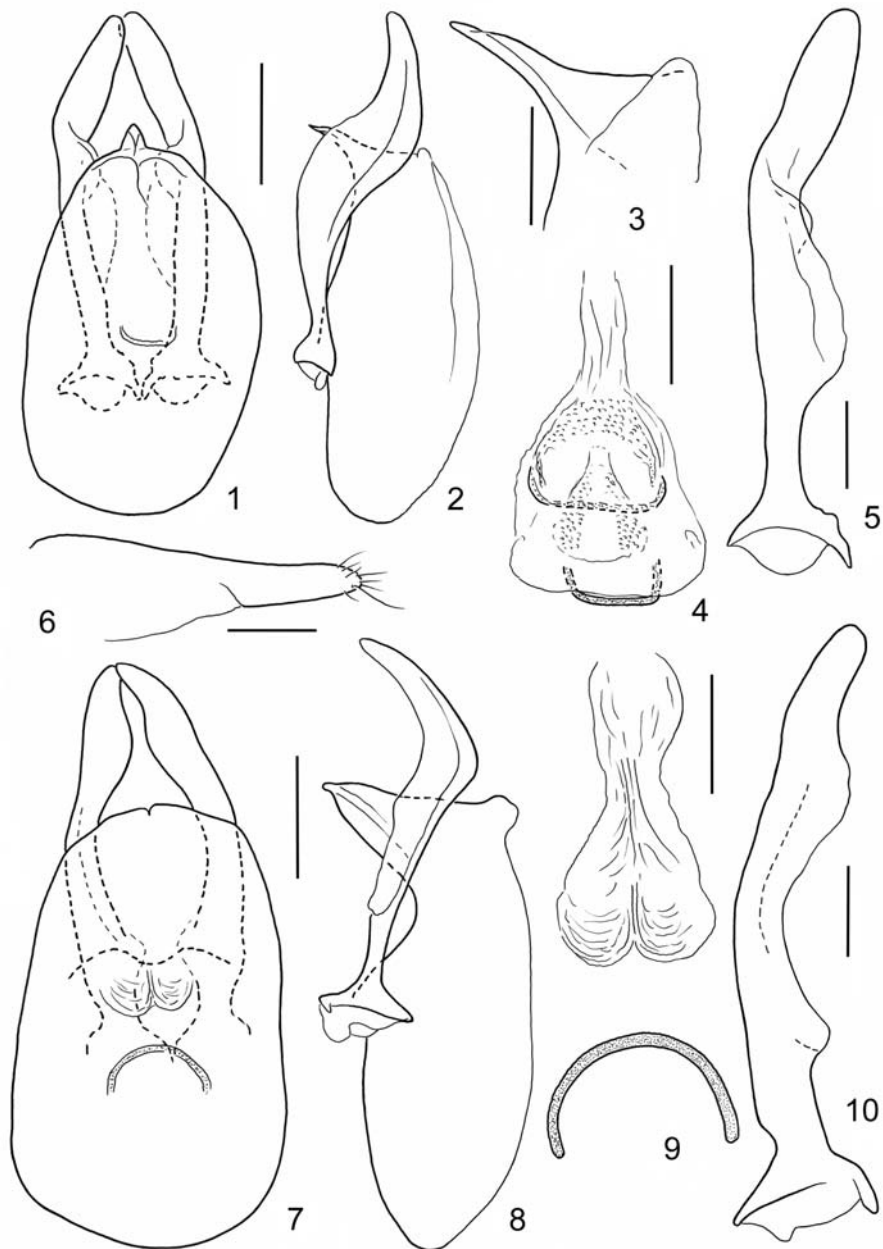
Description. Length 2.23–2.40 mm, width 1.34–1.47 mm. Head, pronotum and legs ochraceous, elytra black, hypomera and venter of thorax reddish-brown, abdomen yellowish, legs and antennae about as light as pronotum. Pronotum very finely punctate. Scutellum triangulate. Elytra lacking humeral humps, sulci and impressions; adsutural areas slightly raised; sutural and lateral striae impunctate; basal striae shortened, broadly interrupted laterally of elytral mid-width. Elytral punctation very sparse and very fine, similar to pronotal punctation. Mesoventrite convex, smooth, appearing impunctate, with short and inconspicuous mesal ridge posterior of paxillum, without impressions. Metaventricle impressed in middle, with several hardly visible oblique striae converging toward mesal impression, not microsculptured and entirely impunctate, punctures absent from submesocoxal lines; anterior margin of mesocoxal process nearly in level with margin of mesoventrite. Metacoxal process horizontal, slightly impressed, margin weakly rounded. Metanepisterna narrow, in anterior halves about 0.02–0.03 mm wide. Metanepisternal suture impunctate, curved along metepimeron and nearly reaching margin of metepimeron. Ventrites with punctulate microsculpture, appearing impunctate, few distinct punctures along basal margin excepted. Ventricle I without distinct basal hump. Protarsomeres III lacking prominent ventral lobe.

♂: Protarsomeres I to III slightly widened, similar in width, each about as wide as half of protibial apex. Protarsomere I slightly shorter than protarsomeres II and III combined. Protarsomere III with apicoventral pair of long setae gradually widened, reaching about level of mid-length of protarsomere V. Aedeagus as Figs 7–10, 0.98–1.10 mm long.

Distribution. Indonesia: Papua.

Etymology. The species epithet is a Latin adjective referring to bicolourous pattern of the elytra and pronotum.

Comments. This species may be easily distinguished from its congeners by the colour pattern, teneral specimens, as the two paratypes, excepted. The species is characterized by the aedeagal characters, and in external characters by the mesally impressed metaventricle in combination with the impunctate submesocoxal lines and the smooth mesoventrite bearing a very short mesal ridge. The parameres are similar to those of *B. borneense* Löbl. The latter species differs conspicuously by the coarse elytral punctures forming elongate rows. The “Tal” on the label of the holotype means valley in German.



Figs 1–10. 1–6, *Bironium albertisi* sp. nov.: 1, 2 – Aedeagus in dorsal and lateral views, scale = 0.2 mm; 3 – Tip of median lobe in lateral view, scale = 0.1 mm; 4 – Internal sac, scale = 0.1 mm; 5 – Paramere in ventral view, scale 0.1 mm; 6 – Gonocoxite, scale = 0.05 mm. 7–10, *Bironium bicolor* sp. nov.: 7, 8 – Aedeagus in dorsal and lateral views, scale = 0.2 mm; 9 – Internal sac, scale = 0.1 mm; 10 – Paramere in ventral view, scale = 0.1 mm.

***Bironium biroi* (Pic)**

(Figs 11–14)

Heteroscapa biroi Pic, 1956:71.

Bironium biroi; LÖBL, 1975: 419, Figs 81, 82.

Bironium biroi; LÖBL, 1989: 368.

Material examined. PAPUA NEW GUINEA: 9, Morobe Prov., Tekadu-Kakaro, Ivinka Riv. Stat., 170 m, 3.III.1998, sieved, A. Riedel (MHNG); 1, Morobe Prov., Wau, 1150 m, 17.V.1992, G. Cuccodoro [#2C] (MHNG); 1, same data but 19.V.1992 [#4A] (MHNG); 1, Morobe Prov., Wau, Kilolo Creek, 26.VIII.1968, I. Loksa (HNMB); 1, Morobe Prov., Biaru Rd., Kaisenic, 1050 m, 28.V.1992, G. Cuccodoro [#11C] (MHNG); 1, Morobe Prov., Aiewa near Poiu, S Aseki, 1750 m, 14.IV.1998, A. Riedel (MHNG); 20, Sandaun Prov., S Mianmin, 1000 m, 19.V.1998, sieved, A. Riedel (MHNG); 1, same data but 900–1200 m (MHNG); INDONESIA: 1, Papua, Merauke Prov., Asmat, Senggo, trail to Abai, ca 100 m, 15–17.VI.1994, A. Riedel (MHNG); 1, Papua, Nabire Prov., rd Nabire-Ilaga km 54, 03°29'517" S, 135°43'913"E, 750 m, VI. 1998, M. Balke (NMEC); 2, same data but X.1997, 250 m and 750 m respectively (NMEC); Papua, Paniai Prov., Nabire, Puspensaat, km 54, 500–700 m, 13–16.VIII.1991, A. Riedel (MHNG); 4, West Papua, Manokwari Prov., Testega, 1200 m, 13.IV.1993; 3, Moluccas, Aru Isl., Wokan, 22.8.1991, D. Agosti [F91036, leaf litter] (MHNG).

Distribution. Papua New Guinea; Indonesia: Papua, West Papua, Moluccas.

Comments. This species was based on two specimens from Sattelberg, on the Huon Peninsula, Morobe Province. It differs drastically from its congeners by the parameres split to form two long lobes. The aedeagus illustrated in LÖBL (1975) has the internal sac extruded and the figures given in that paper lack detail. Therefore, new illustrations (Figs 11–13) are given here. The followings characters are newly given: elytra with basal striae entire, joined to lateral striae; lateral striae fairly coarsely punctate; male protarsomere I about as wide as half of protibial apex, somewhat longer than protarsomeres II and III combined; protarsomeres III slightly lobed, with long apicoventral setae not widened. Gonocoxite as Fig. 14, without gonostyle. The specimens from the island Wokan are only 1.88–1.97 mm long, smaller than specimens from New Guinea, and have the median part of the metaventrite deeper impressed and more coarsely punctate. The shape of the narrow basal sclerite of the internal sac varies from circular to oval.

***Bironium flavapex* Löbl**

Bironium flavapex Löbl, 2015: 170, Figs 16–19.

Material examined. Additional specimens not found in the new collections.

Distribution. Indonesia: Moluccas, Morotai Island.

Comments. The followings characters are here newly given: male protarsomere I about as wide as half of protibial apex, shorter than protarsomeres II and III combined; protarsomeres III slightly lobed, with long ventral setae not widened.

***Bironium glabrum* Löbl**

Bironium glabrum Löbl, 1989: 370, Figs 4–6.

Material examined. Additional specimens not found in the new collections.

Distribution. Papua New Guinea.

Comments. The species was based on two specimens from Popondetta and Kokoda, both in the Oro Province. The following characters are here newly given: male protarsomere I nearly as wide as half of protibial apex, slightly shorter than protarsomeres II and III combined; protarsomeres III not lobed, with long ventral setae not widened.

***Bironium grande* sp. nov.**

(Figs 15–19)

Type material. Holotype ♂, PAPUA N. G. Morobe Prov. leg. A. Riedel / Aseki, Oiwa, 1600–1700 m, 11–12.III.1998 (MHNG). Paratype ♀, Papua New Guinea, Eastern Highlands, Kassem Pass, XI. 1957, J. Sedlacek (MHNG).

Description. Length 3.0–3.20 mm, width 1.77–1.92 mm. Head and body black, with apex of abdomen lighter. Femora and tibiae black, tarsi blackish-brown. Antennae blackish. Pronotum very finely punctate. Scutellum rounded. Elytra with distinct humeral humps; adsutural areas raised; sutural striae with scattered, fine punctures; basal striae shortened, broadly interrupted laterally of elytral mid-width, lateral striae finely punctate in anterior halves. Elytra lacking sulci and impressions, punctation near sutural and lateral striae, and at bases very fine, similar to pronotal punctation, on apical fourth somewhat less fine, on prevailing discal surface rather coarse and irregular. Mesoventrite hardly convex, with robust mesal ridge nearly reaching margin of mesocoxal process, and with oblique striae. Metaventrite impunctate, not microsculptured; impressed mesally; mesocoxal process below level of mesoventrite, longitudinally striate. Metacoxal process slightly oblique, with transverse margin. Metanepisterna narrow, near anterior margins about 0.04 mm wide, weakly widened apically. Metanepisternal suture impunctate, straight and nearly reaching margin of mesepimeron. Abdomen very finely punctate, except for distinct punctures along basal margin of ventrite I. Mesal area of ventrite I lacking basal bump, with strigulate microsculpture becoming punctulate near apical margin, lateral parts of ventrite I not microsculptured. Ventrites II to IV and base of ventrite V with strigulate microsculpture, prevailing surface of ventrite V with punctulate microsculpture. Protarsomeres III lacking prominent ventral lobe.

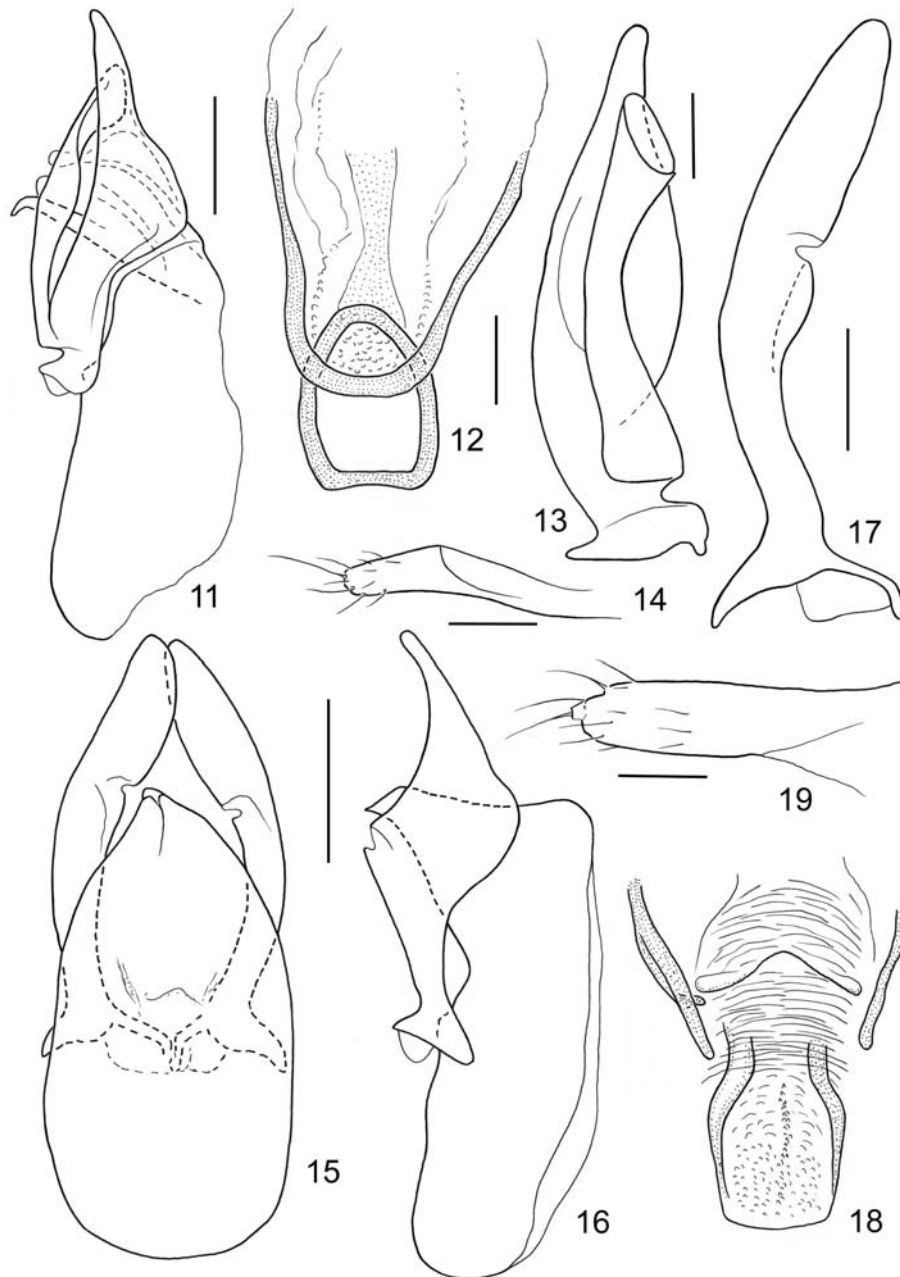
♂: Protarsomeres I to III moderately widened, similar in width, each about as wide as two thirds of protibial apex. Protarsomere III longer than following three tarsomeres combined, with apicoventral pair of long setae not widened. Aedeagus as Figs 15–18, 1.50 mm long.

♀: Gonocoxite with gonostyle, as Fig. 19.

Distribution. Papua New Guinea.

Etymology. The species epithet is a Latin adjective meaning large.

Comments. The species may be distinguished from its Papuan congeners by the body-size. Only four Asian species, *B. feai* (Achard, 1914), *B. grouvellei* (Achard, 1920), *B. tonkineum* (Pic, 1922) and *B. yunnanum* Löbl, 2020, have the body 3 mm long, or more than 3 mm long, in combination with the entirely black pronotum and elytra. This new species differs also conspicuously from the Papuan congeners by the punctate ventrites and the ventrite I having microsculpture to part consisting of striae. The narrow notch



Figs 11–19. 11–14, *Bironium biroi* (Pic): 11 – Aedeagus in lateral view, scale = 0.2 mm; 12 – Internal sac, scale = 0.05 mm; 13 – Paramere in ventral view, scale = 0.1 mm; 14 – Gonocoxite, scale = 0.05 mm. 15–19, *Bironium grande* sp. nov.: 15, 16 – Aedeagus in dorsal and lateral views, scale = 0.4 mm; 17 – Paramere in ventral view, scale = 0.2 mm; 18 – Internal sac, scale = 0.05 mm; 19 – Gonocoxite, scale = 0.05 mm.

situated posterior of the expanded apical section of the parameres is a unique character, and the gonostyle separates this species from the remaining Papuan *Bironium* known in females.

***Bironium loksai* Löbl**

Bironium loksai Löbl, 1989: 368, Figs 1–3.

Material examined. Additional specimens not found in the new collections.

Distribution. Papua New Guinea.

Comments. The species was based on four specimens from Wau, Morobe Prov., Papua New Guinea. The followings characters are here newly given: elytra with basal striae entire, joined to lateral striae; male protarsomere I about as wide as half of protibial apex, nearly as long as protarsomeres II and III combined; protarsomeres III lacking prominent ventral lobes, with long ventral setae slightly widened apically. The latter characters state is diagnostic.

***Bironium longipes* (Reitter, 1880)**

(Fig. 20)

Scaphicoma longipes Reitter, 1880: 49.

Heteroscapha longipes; ACHARD, 1924: 31.

Bironium longipes; LÖBL, 1989: 373, Figs 9–11.

Type material. Lectotype (by inference) ♀, Mysol [handwritten] / *Scaphicoma Mysol longipes* m [handwritten] / *longipes* Reitt [handwritten] / TYP REITTER [printed] / *Lectotypus* [printed, red] / *Bironium longipes* Reitt. [handwritten] det. Löbl 1991 [printed] (NMPC).

Material examined. INDONESIA: 2, Misool (NMPC, MHNG); 2, West Papua, Sorong Prov., Salawatti Island, Wayom, 0–610 m, 8.XI.1996, A. Riedel (MHNG); 2, West Papua, 130 km SE Kalmana, Omba (=Yamor) river, 10–20 km from coast, S 4°05'49", E 134°54'09", 10–20 m, 9–11.II.2011, A. Skale (NMEC); 1, West Papua, Fakfak prov., ca 20 km W Timika, SP 7, 30 m, 8–9.I.1996, A. Riedel (MHNG); 5, West Papua, Manokwari Prov., Gn. Meja, 200 m, 21–24.VIII.1991, A. Riedel (MHNG); 1, Papua, Jayapura, Sentani, Cyclops Mts, 300–1400 m, 10.VIII.1991, A. Riedel (MHNG); 4, Papua, Jayawijaya Prov., Wamena, Angguruk-Tanggeam, 1500–1800 m, 28–29.IX.1991, A. Riedel (MHNG); 2, Jayawijaya Prov., Emdoman, 900–1200 m, 29.IX.1993, A. Riedel (MHNG); 1, Papua, Jayawijaya Prov., Samboka, upper Kolf river, ca 200 m, 10–14.X.1996, A. Riedel (MHNG); PAPUA NEW GUINEA: 4, Sandaun Prov., S Mianmin, 900–1200 m, 19.V.1998, A. Riedel (MHNG); 2, Sandaun Prov., N Mianmin, 700–1100 m, 20.V.1998, A. Riedel (MHNG); 1, Madang Prov., Ohu Village near Gum River, S 5°13', E 145°41', 150 m, I–II.2001, L. Čížek (NHMB).

Distribution. Indonesia: Misool, West Papua and Papua; Papua New Guinea.

Comments. REITTER (1880) based this species on an unknown number of specimens from “Mysol” (=Misool). The E. Reitter’s collection of exotic scaphidiines was purchased by R. Oberthür (HORN *et al.* 1990), and the bulk of the R. Oberthür collection is housed in the MHNN. Thus, I have assumed that also the type material of *B. longipes* is in the Paris collection (LÖBL 2018), although not found there while my visit. ACHARD (1924) stated to have received from R. Oberthür the type (“le type”) and transferred the species to *Heteroscapha* Achard, 1914 (a junior synonym of *Bironium*; see LÖBL 1971). As the number of original specimens is unknown, ACHARD (1924) designated the lectotype by

inference, and this specimen is in the NMPC. The present concept of *B. longipes* (Reitter) is based on this specimen examined previously and redescribed in LÖBL (1989), though re-examined for the present study. It complies with the original Reitter's description.

The followings characters are here newly given: Elytra with basal striae interrupted at level of humeral areas; male tarsomere I about as wide as half of protibial apex, shorter than tarsomeres II and III combined; tarsomeres III not lobed, with long, not flattened ventral setae; gonocoxite without gonostyle (Fig. 20).

***Bironium maculatum* Löbl**

(Fig. 21)

Bironium maculatum Löbl, 1989: 371, Figs 7, 8.

Material examined. PAPUA NEW GUINEA: 2, Morobe Distr., Lea, H. Franz (NHMW, MHNG); 1, Morobe Distr., Wau, 1150 m, 19.V.1992, G. Cuccodoro (MHNG); 1, Morobe Distr., above Wau, 1400 m, 16.V.1992, G. Cuccodoro (MHNG); 2, Morobe Distr., Mt. Kaindi, 1350 m, 24.V.1992, G. Cuccodoro (MHNG); 1, Morobe Distr., Lakekamu Basin, Tekadu, 200–400 m, 28.II.–1.III.1998, A. Riedel (MHNG).

Distribution. Papua New Guinea.

Comments. This species was based on two specimens collected in 1957 at Popondetta and Kokoda (Oro Province), respectively. The followings characters are here added: ventrite I with small basomedian hump, male protarsomere I about as wide as three fourth of protibial apex and about as long as protarsomeres II and III combined; protarsomeres III weakly lobed, with long, not widened apicoventral setae; gonocoxite as Fig. 21, without gonostyle.

***Bironium maindai* sp. nov.**

(Figs 22–25)

Type material. Holotype ♂: WEST PAPUA: Foja Mountains mosses and leaves, forest stream, 200 m 2°27'32.37"S 138°46'30.19"E leg. Tobias Mainda 28.05. (MHNG). Paratype ♂, with the same data as the holotype (MHNG).

Description. Length 1.47–1.60 mm, width 0.83–0.90 mm. Head and body black, legs ochraceous, tibiae and tarsi lighter than femora, antennae light brown. Pronotum very finely punctate. Scutellum triangulate. Elytra lacking humeral humps; adsutural areas flat; sutural and lateral striae impunctate; basal striae deep, shortly interrupted at level of humeral areas, discal punctation about as fine as pronotal punctation, hardly visible at 100 times magnification. Mesoventrite convex, appearing impunctate, not microsculptured, with short ridge present only on paxillum, few very shallow striae between mesocoxal cavities. Median part of metaventrite hardly convex, with anterior margin conspicuously impressed below margin of mesoventrite, lacking obvious longitudinal striae, not microsculptured, with pair of coarse punctures in centre; metacoxal process horizontal, with margin shallowly notched in middle, lateral notches deeper and narrower than median notch. Lateral parts of metaventrite lacking coarse punctures. Submesocoxal lines with a few coarse punctures. Metanepisterna evenly, about 0.03 mm wide. Metanepisternal suture impunctate, curved posteriad, nearly reaching margin of metepimeron. Ventrites lacking microsculpture. Ventrite I without

basomedian hump, with few rather fine punctures along basal margin. Protarsomeres lacking prominent ventral lobe.

♂: Protarsomeres I to III hardly widened, similar in width, protarsomere I slightly wider than half of protibial apex. Protarsomere III about as long as following two tarsomeres combined, with apicoventral pair of long setae of not widened. Aedeagus as Figs 22–25, 0.59 mm long.

Distribution. Indonesia: Papua.

Etymology. The species is named in honour of its collector, Tobias Mainda (Nauen, Germany).

Comments. This species may be readily distinguished from the remaining species by its small body-size. It is also characterized by the reduced ridge of the mesoventrite in combination with the metaventrite lacking striae. The shape of the parameres, as seen in ventral view, with angulate inner margin posterior of narrowed basal section, is also diagnostic for the species.

***Bironium ornatum* sp. nov.**

(Figs 26–30)

Type material. Holotype ♂, INDO: Irian Jaya, Monokwari Distr. Maibri vill. Arfak Mts., 1570m 6–19.xii. J. Horák leg. (MHNG). Paratype ♀, with the same data as the holotype (MHNG).

Description. Length 2.50–2.56 mm, width 1.40–1.50 mm. Head and thorax black. Elytra black, each with two ochraceous spots. Anterior spot transverse, expanded near sutural stria; interval between anterior spot and sutural stria somewhat shorter than interval to anterior elytral margin and about as large as interval to lateral stria. Abdomen blackish with dark brown apical segments. Antennae brown, legs blackish-brown, darker than antennae. Pronotum very finely punctate. Scutellum triangulate. Elytra lacking humeral humps; adsutural areas raised; sutural striae impunctate, lateral striae with few punctures; basal striae entire, very shallow and hardly visible in level of humeral areas, discal punctation about as fine as pronotal punctation on prevailing elytral surface, distinctly coarser punctures scattered on middle third of disc. Mesoventrite conspicuously convex, appearing impunctate, with sharply delimited mesal ridge extended from paxillum to apical third of mesal length, lacking striae. Median part of metaventrite flat between mesocoxae, with anterior margin well below margin of mesoventrite, bearing few longitudinal striae, not microsculptured; apical stripe and centre impressed, flattened; metacoxal process horizontal, with bisinuate margin. Lateral parts of metaventrite lacking coarse punctures. Submesocoxal lines punctate. Metanepisterna evenly about 0.08 mm wide. Metanepisternal suture impunctate, slightly sinuate, not curved along metepimeron, nearly reaching margin of metepimeron. Ventrite I without basomedian hump, with strigulate microsculpture, distinctly punctate along basal margin. Following ventrites with punctulate microsculpture. Protarsomeres lacking prominent ventral lobe.

♂: Protarsomeres I to III distinctly widened, protarsomere I about as wide two thirds of protibial apex, following two tarsomeres narrower, protarsomere I as long as following

two tarsomeres. Apicoventral pair of long setae of protarsomere III not widened apically. Aedeagus as Figs 26–29, 0.98 mm long.

♀: Gonocoxite as Fig. 30, without gonostyle.

Distribution. Indonesia: West Papua.

Etymology. The species epithet is a Latin adjective meaning provided and referring to the presence of elytral spots.

Comments. This species may be easily distinguished from the congeners by the elytral spots, in combination with the pattern of elytral punctation. It is also characterized by the mesoventrite strongly convex and lacking striae, and the inner margin of the parameres notched posterior of bases.

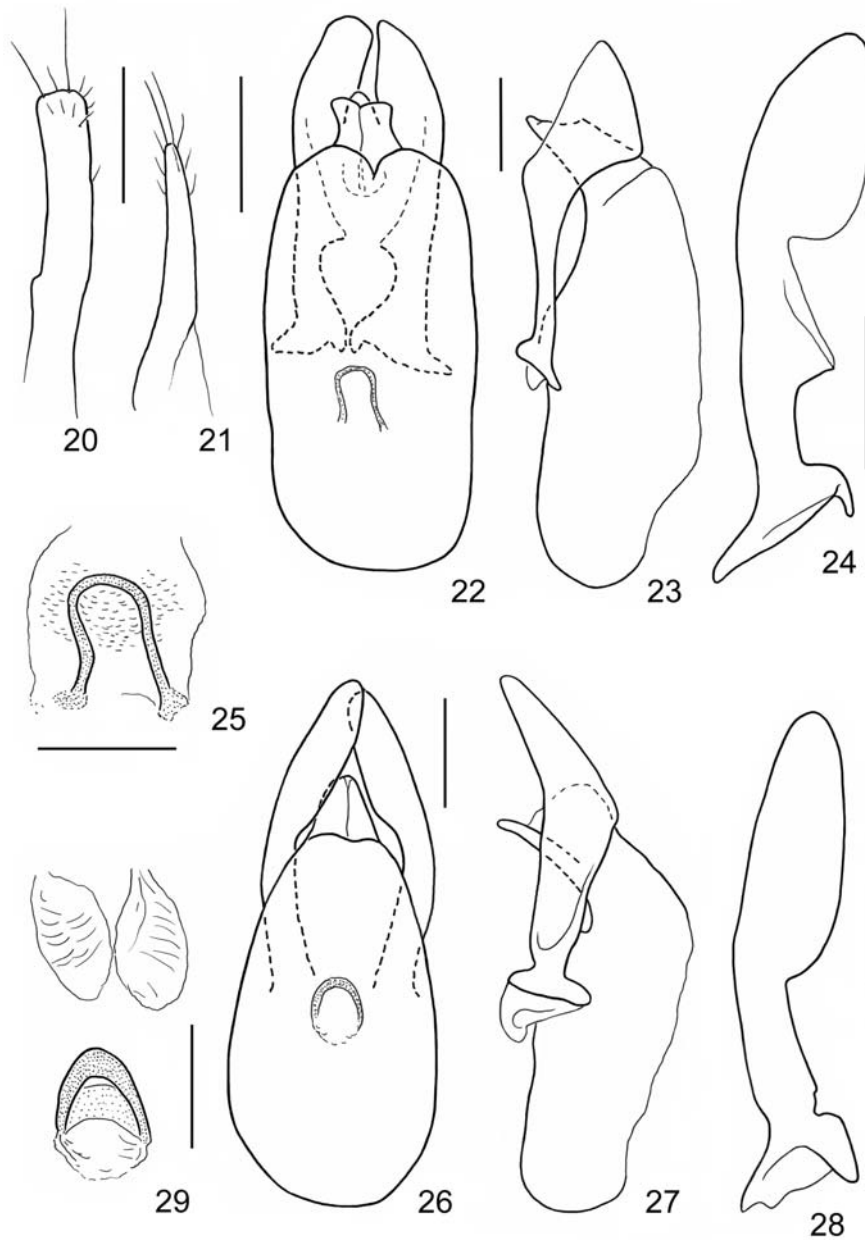
***Bironium punctatum* sp. nov.**

(Figs 31–36)

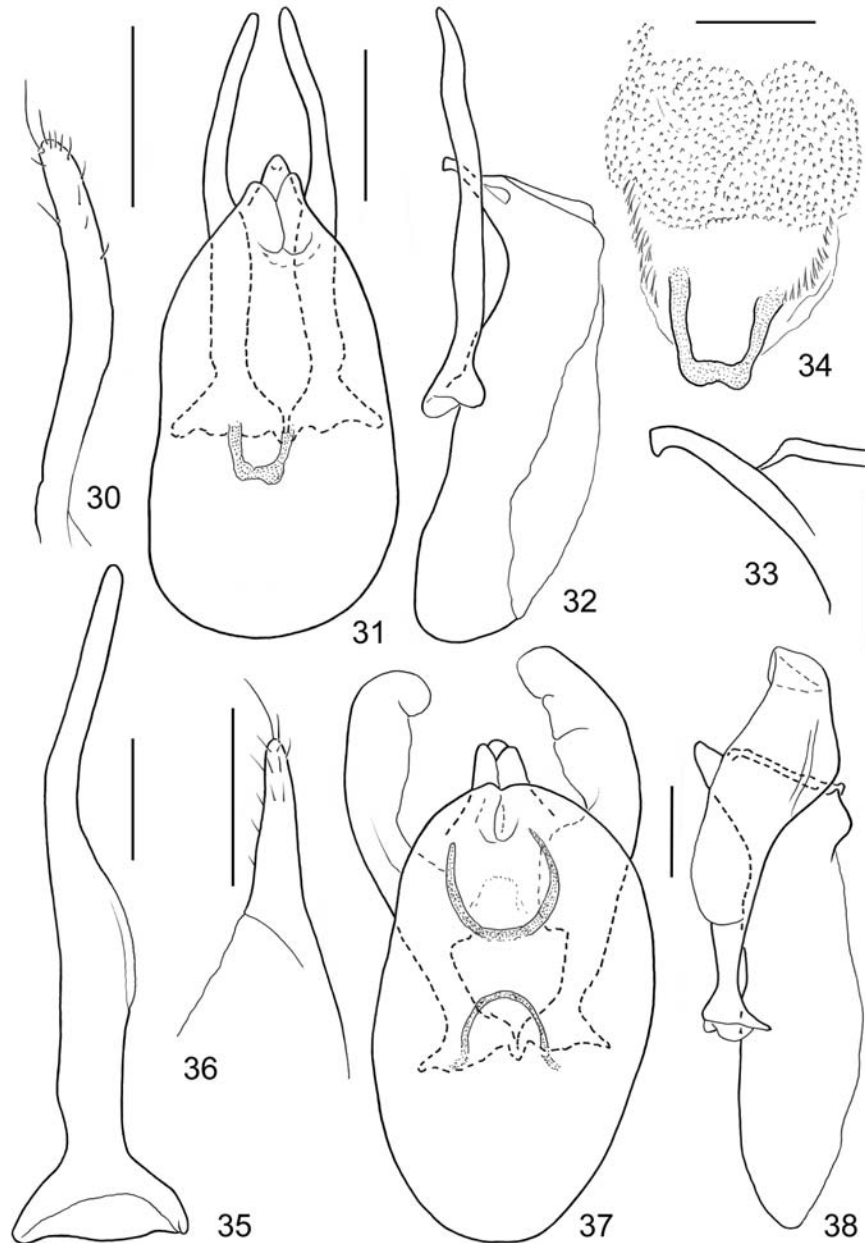
Type material. Holotype ♂: IRIAN JAYA Prov. Jayawijaya, Samboka Upper Kolf River, ca 200 m, 10–14.X.96, Riedel (MHNG). Paratypes 2 ♂, 2 ♀, with the same data as the holotype; 1 ♀, Papua, Jayawijaya Prov., Lereh, 300–550 m, 25.I.1996, A. Riedel (MHNG); 1 ♀, Papua, Jayawijaya Prov., Sumo – Uarn, 100–1000 m, 26–27.VI.1994, A. Riedel (MHNG).

Description. Length 1.95–2.15 mm, width 1.20–1.34 mm. Head, thorax and elytra black or blackish-brown, abdomen very dark brown, light brown to yellowish apical segments excepted. Legs reddish-brown, with tarsi lighter than tibiae, antennae light brown. Pronotum very finely punctate. Scutellum rounded. Elytra lacking humeral humps; adsutural areas hardly raised; sutural and lateral striae punctate; basal striae entire, very shallow and hardly visible at humeral areas. Elytral disc impunctate along base and lateral striae, with very fine, hardly visible punctation on apical third; prevailing discal surface coarsely punctate. Coarse punctures forming two longitudinal rows, outer row impressed, interval between rows somewhat raised. Mesoventrite weakly convex, with well delimited mesal ridge extended from paxillum nearly to apical margin and with longitudinal striae evanescent anteriorly; area near lateral margins of mesocoxal process densely punctate and uneven. Metaventrite not microsculptured. Median part of metaventrite with minute hump between mesocoxae, flat anterior of hump, impressed posterior of hump, with anterior margin below margin of mesoventrite, bearing few longitudinal striae at each side of mesocoxal process; hump and area posterior of hump irregularly punctate; apical stripe flat, not impressed; metacoxal process horizontal, with rounded margin. Lateral parts of metaventrite coarsely punctate, except near apical margin. Submesocoxal lines coarsely punctate. Metanepisterna narrow, about 0.03 mm wide. Metanepisternal suture impunctate, straight, not curved along metepimeron, reaching or nearly reaching margin of metepimeron. Ventrite I without basomedian hump, with punctulate microsculpture, distinctly punctate along basal margin. Following ventrites with punctulate microsculpture. Protarsomeres lacking prominent ventral lobe.

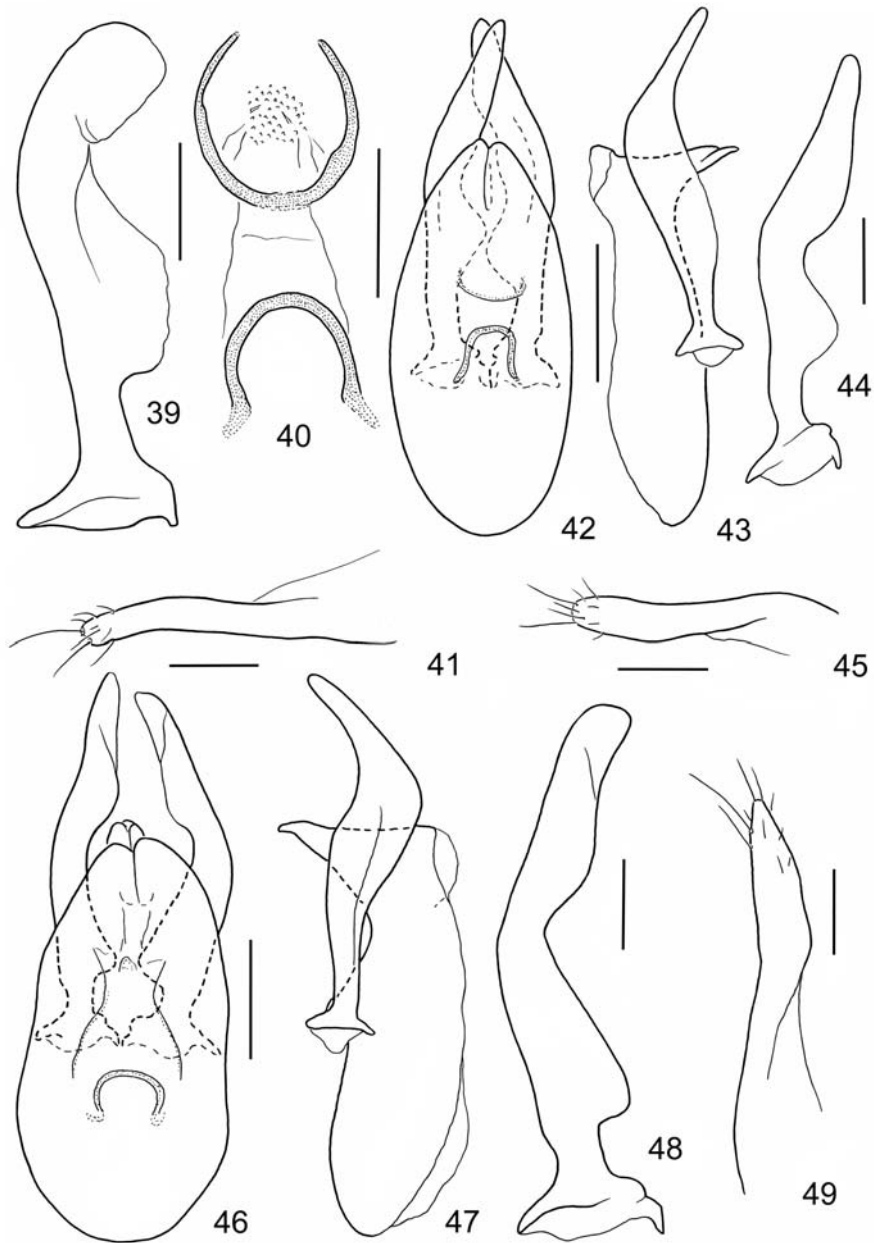
♂: Protarsomeres I to III distinctly widened, protarsomere I about as wide as two thirds of protibial apex, somewhat shorter than following two tarsomeres combined;



Figs 20–29. 20 – *Bironium longipes* (Reitter): gonocoxite, scale = 0.1 mm. 21 – *Bironium maculatum* Löbl: gonocoxite, scale = 0.1 mm. 22–25, *Bironium maindai* sp. nov.: 22, 23 – Aedeagus in dorsal and lateral views, scale = 0.1 mm; 24 – Paramere in ventral view, scale = 0.1 mm; 25 – Internal sac, scale = 0.1 mm. 26–29, *Bironium ornatum* sp. nov.: 26, 27 – Aedeagus in dorsal and lateral views, scale 0.2 mm; 28 – Paramere in ventral view, scale = 0.2 mm; 29 – Internal sac, scale = 0.1 mm.



Figs 30–38. 30 – *Bironium ornatum* sp. nov.: gonocoxite, scale = 0.05 mm. 31–36, *Bironium punctatum* sp. nov.: 31, 32 – Aedeagus in dorsal and lateral views, scale = 0.2 mm; 33 – Tip of median lobe, scale = 0.05 mm; 34 – Internal sac, scale = 0.05 mm; 35 – Paramere in ventral view, scale = 0.1 mm; 36 – Gonocoxite, scale = 0.05 mm. 37–38, *Bironium riedeli* sp. nov.: Aedeagus in dorsal and lateral views, scale = 0.1 mm.



Figs 39–49. 39–41, *Bironium riedeli* sp. nov.: 39 – Paramere, ventral view, scale = 0.1 mm; 40 – Internal sac, scale = 0.1 mm; 41 – Gonocoxite, scale = 0.05 mm. 42–45, *Bironium rufulum* sp. nov.: 42, 43 – Aedeagus in dorsal and lateral views, scale = 0.2 mm; 44 – Paramere in ventral view, scale = 0.1 mm; 45 – Gonocoxite, scale = 0.05 mm. 46–49, *Bironium striatum* sp. nov.: 46, 47 – Aedeagus in dorsal and lateral views, scale = 0.2 mm; 48 – Paramere in ventral view, scale = 0.1 mm; 49 – Gonocoxite, scale = 0.05 mm.

protarsomeres II and III slightly narrower than protarsomere I. Apicoventral pair of long setae of protarsomere III not flattened apically. Aedeagus as Figs 31–35, 0.86 mm long.

♀: Gonocoxite as Fig. 36, without gonostyle.

Distribution. Indonesia: Papua.

Etymology. The species epithet is a Latin adjective meaning punctate.

Comments. This species may be readily distinguished from its congeners having similar body-colour by the pattern of the elytral punctation combined with the coarsely punctate lateral parts of the metaventricle, and the presence of a hump situated between mesocoxae. The comparatively narrow parameres lacking lobes are similar to those in *B. flavapex* while the hook-like shape of the apex of the median lobe is unique.

***Bironium riedeli* sp. nov.**

(Figs 37–41)

Type material. Holotype ♂, Irian Jaya Prov. Jayawijaya, Borne 1500–2000 m, 12–15.8.1992, Riedel [24] (MHNG). Paratypes 2 ♂, 1 ♀, with the same data as the holotype (MHNG).

Description. Length 1.92–1.98 mm, width 1.17 mm. Head and body uniformly ochraceous, appendages slightly lighter. Pronotum very finely punctate. Scutellum triangulate. Elytra lacking humeral humps; adsutural areas not or slightly raised; sutural striae with few fine punctures or impunctate, lateral striae impunctate; basal striae widely interrupted at level of humeral areas; discal punctation irregular, to part similar to pronotal punctation, very shallow and hardly visible at 100 times magnification. Mesoventrite convex, with well delimited mesal ridge extended from paxillum nearly to apical margin, impunctate, lacking microsculpture, with hardly visible longitudinal striae on mesocoxal process. Metaventricle not microsculptured, entirely very finely punctate. Median part of metaventricle flattened, with anterior margin below level of margin of mesoventrite, with hardly visible longitudinal striae; apical stripe flat, not impressed; metacoxal process inflexed, with margin notched near coxae. Submesocoxal lines with few coarse punctures. Metanepisterna narrow, about 0.04–0.05 mm wide. Metanepisternal suture impunctate, mostly straight, curved apically, reaching near to margin of metepimeron. Ventricle I without basomedian hump, not microsculptured, coarsely punctate along basal margin. Following ventrites with punctulate microsculpture. Protarsomeres lacking prominent ventral lobe.

♂: Protarsomeres I to III hardly widened, protarsomere I slightly wider than half of protibial apex, following two tarsomeres still somewhat narrower. Protarsomere I somewhat longer than following two tarsomeres combined. Apicoventral pair of long setae of protarsomere III not flattened apically. Aedeagus as Figs 37–40, 0.64–0.67 mm long.

♀: Gonocoxite as Fig. 41, without gonostyle.

Distribution. Indonesia: Papua.

Etymology. The species is dedicated to Alexander Riedel (Karlsruhe, Germany) who significantly contributed to the knowledge of New Guinean beetles and collected most of the scaphidiines dealt in the present paper.

Comments. This species may be distinguished by the shape of the parameres of the sclerotized structures of the internal sac. In external characters it is similar to *B. basicolle*, *B. loksai* and *B. glabrum* (see the key).

***Bironium rufulum* sp. nov.**

(Figs 42–45)

Type material. Holotype ♂, INDO: West Papua Manokwari Prov. Testega, 1200 m 13.IV.93, A. Riedel (MHNG). Paratypes 5 ♀, with the same data as the holotype (MHNG).

Description. Length 1.80–2.0 mm, width 1.02–1.80 mm. Head, thorax, elytra and legs uniformly rufous, abdomen lighter, with apical segments yellowish, antennae yellowish. Pronotum very finely punctate. Scutellum triangulate. Elytra lacking humeral humps; adsutural areas hardly raised; sutural and lateral striae impunctate; basal striae interrupted at level of humeral areas; discal punctation as fine as pronotal punctation. Mesoventrite convex, lacking mesal ridge, impunctate, not microsculptured and not striate. Metaventrite not microsculptured, impunctate. Median part of metaventrite flattened between mesocoxae, with anterior margin below level of margin of mesoventrite, distinct longitudinal striae extended to mid-length; centre with large, shallow impression situated posterior of mid-length; apical stripe flat, not impressed; metacoxal process horizontal, margin notched in middle and near coxae. Submesocoxal lines with few coarse punctures. Metanepisterna to large part concealed, exposed posterior section about 0.01–0.02 mm wide. Metanepisternal suture impunctate, curved apically, ending well anterior margin of metepimeron. Ventricle I without basomedian hump, not microsculptured, lacking puncture row along basal margin. Following ventrites with punctulate microsculpture. Protarsomeres lacking prominent ventral lobe.

♂: Protarsomeres I to III hardly widened, protarsomere I about as wide as half of protibial apex, following two tarsomeres hardly narrower. Protarsomere I nearly as long as following two tarsomeres combined. Apicoventral pair of long setae of protarsomere III not flattened apically. Aedeagus as Figs 42–44, 0.70 mm long.

♀: Gonocoxite as Fig. 45, without gonostyle.

Distribution. Indonesia: West Papua.

Etymology. The species epithet is a Latin adjective meaning rufous.

Comments. The species may be distinguished from most Papuan congener by the mesoventrite lacking, or having a reduced mesal ridge, as it is in *B. basicolle*, *B. bicolor*, *B. flavapex*, and *B. maindai*. These four species have elytra with entire basal striae and wider exposed parts of the metanepisterna, and two of them, *B. maindai* and *B. bicolor*, differ drastically by their body size and colour pattern, respectively. The habitus and the aedeagus of *B. rufulum* are similar to those of *B. riedeli*, suggesting relationships. However, the mesoventrite with a robust mesal ridge, and the subquadrate lobes and the broad apical section of the parameres of the latter species are diagnostic.

***Bironium striatum* sp. nov.**

(Figs 46–49)

Type material. Holotype ♂, IRIAN JAYA Jayapura Prov., leg. A. Riedel / Lereh 300–550 m, 25.I.1996 / from base of dead palm leaves (MHNG). Paratypes 6 ♀, with the same data as the holotype (MHNG).

Description. Length 2.20–2.35 mm, width 1.32–1.35 mm. Head, thorax and elytra dark reddish-brown to blackish, abdomen lighter than thorax, appendages ochraceous to yellowish. Pronotum very finely punctate. Scutellum triangulate. Elytra lacking humeral humps; adsutural areas flat or slightly raised; sutural and lateral striae punctate; basal striae entire, joined to lateral striae; discal punctation sparse, irregular, to part similar to pronotal punctation, very shallow and hardly visible at 100 times magnification, most punctures much larger than pronotal punctures, well visible at 15 times magnification. Mesoventrite slightly convex, with well delimited mesal ridge extended from paxillum to apical margin, impunctate, lacking microsculpture, with conspicuous longitudinal to oblique striae on mesocoxal process. Metaventricle not microsculptured, entirely very finely punctate. Median part of metaventricle slightly convex, with anterior margin below level of margin of mesoventrite, short longitudinal striae between mesocoxae and oblique mesal striae, shallowly impressed posterior centre; apical stripe somewhat convex, not impressed; metacoxal process inflexed, with margin sinuate, notched near coxae. Submesocoxal lines margined by fairly fine punctures and elongate striae. Metanepisterna about 0.03–0.05 mm wide. Metanepisternal suture impunctate, straight, curved along margin of metepimeron. Ventricle I without basomedian hump, with punctulate microsculpture, distinctly punctate along basal margin. Following ventrites with well visible punctulate microsculpture. Protarsomeres lacking prominent ventral lobe.

♂: Protarsomeres I to III slightly widened, protarsomere I about as wide as half of protibial apex, following two tarsomeres hardly narrower. Protarsomere I about as long as following three tarsomeres combined. Apicoventral pair of long setae of protarsomere III not flattened apically. Aedeagus as Figs 46–48, 0.93 mm long.

♀: Gonocoxite as Fig. 48, without gonostyle.

Distribution. Indonesia: Papua.

Etymology. The species epithet is a Latin adjective meaning striate.

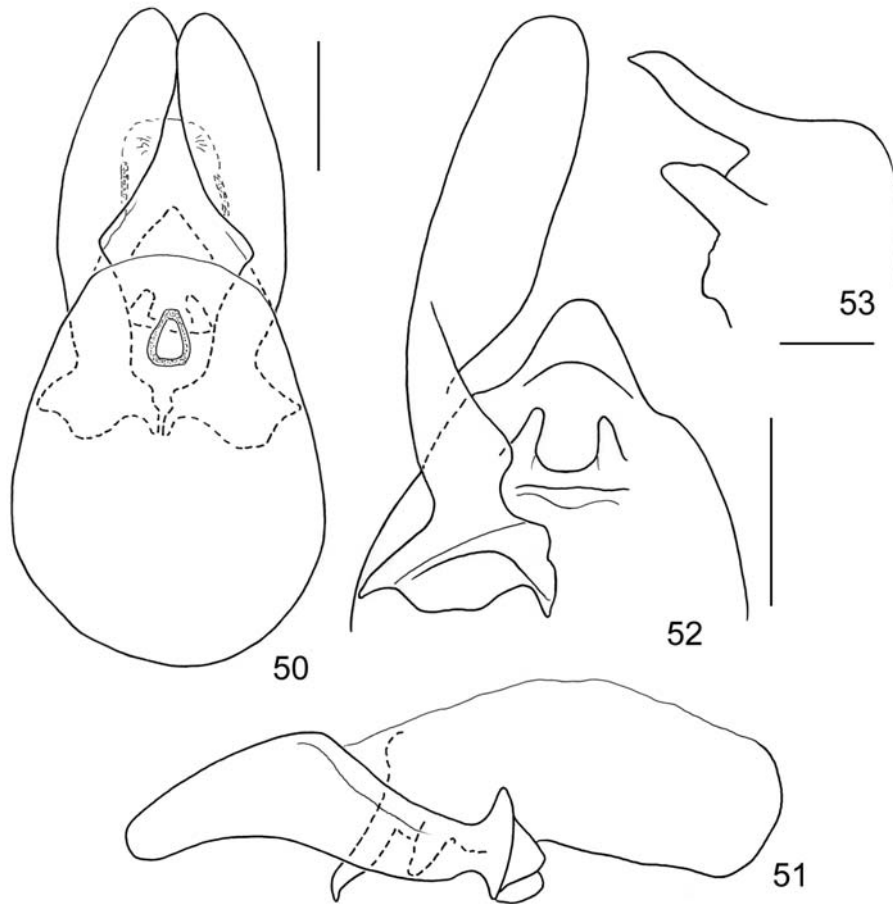
Comments. This species may be distinguished from its Papuan congeners by the striae marginating submesocoxal lines. Its aedeagal characters are similar to those of *B. riedeli* and *B. rufulum*, the middle section of the parameres is significantly narrower than that of these two species, and the internal sac has a single, narrow semi-circular sclerite.

***Bironium taurus* sp. nov.**

(Figs 50–53)

Type material. Holotype ♂, IRIAN JAYA Jayawijaya Prov., Borme. 1000–1300 m, 13–18.VIII.92, leg. A. Riedel (MHNG).

Description. Length 2.45 mm, width 1.48 mm. Head and thorax blackish, elytra, abdomen and appendages brown or reddish-brown. Pronotal punctation extremely fine and scattered, hardly visible at 100 times magnification. Scutellum triangulate. Elytra lacking humeral humps; adsutural areas distinctly raised; sutural and lateral striae sparsely punctate; basal striae entire, joined to lateral striae; prevailing discal punctation similar to pronotal punctation, several larger punctures scattered on disc. Mesoventrite convex, impunctate, lacking microsculpture, with well delimited mesal ridge extended



Figs 50–53. *Bironium taurus* sp. nov.: 50, 51 – Aedeagus in dorsal and lateral views, scale = 0.2 mm; 52 – Paramere and apical half of median lobe, in ventral view, scale = 0.2 mm; 53 – Apical part on median lobe, in lateral view, scale = 0.1 mm.

from paxillum nearly to apical margin and becoming lower and broader apically, and with striae on mesocoxal process. Metaventricle not microsculptured, entirely very finely punctate. Median part of metaventricle impressed, with anterior margin below level of margin of mesoventrite, longitudinally striate between mesocoxae, deeply impressed at centre of anterior margin; with two coarse admesal punctures; apical stripe somewhat flattened, not impressed; metacoxal process inflexed, with slightly concave margin. Submesocoxal lines margined by coarse punctures. Metanepisterna about 0.05 mm wide.

Metanepisternal suture impunctate, straight, ending comparatively far from margin of metepimeron. Ventrite I without basomedian hump, with punctulate microsculpture evanescent on lateral areas, impunctate along basal margin. Following ventrites with well visible punctulate microsculpture. Protarsomeres lacking prominent ventral lobe.

♂: Protarsomeres I to III widened, protarsomere I about as wide two thirds of protibial apex, following two tarsomeres narrower. Protarsomere I about as long as following two tarsomeres combined. Apicoventral pair of long setae of protarsomere III not flattened apically. Aedeagus as Figs 50–53, 1.20 mm long.

Distribution. Indonesia: Papua.

Etymology. The species epithet is a Latin noun meaning bull. It refers to the two prominent processes of the median lobe of the aedeagus.

Comments. This species is unique in having robust processes on the ventral side of the aedeagus, near bases of the parameres. It may be also distinguished from most congeners by the conspicuously elongate widened part of the parameres. In external characters it is similar to *B. albertisi* from which it may be readily distinguished by the impressed median part of the metaventrite and the impunctate basal margin of ventrite I.

Bironium sp.

Material examined. 1 ♀, labelled: Nlle Guinée I. Salawati [handwritten by J. Achard] (NMPC).

Distribution. Indonesia, West Papua: Raja Ampar Group, Salawati Island.

Comments. This unnamed species, similar to *B. punctatum*, was previously recognized as new about 100 years ago by J. Achard who labelled the specimen as the unpublished name “*Heteroscapha papuanum* n. sp”. The species may be readily distinguished from *B. punctatum* by the elytra having basal striae interrupted at level of the humeral areas, the coarse elytral punctures forming two longitudinal impressed rows, and absent from the remaining discal surface, the mesoventrite smooth, lacking a median ridge, the median part of the metaventrite convex, lacking striae, bearing two coarse punctures situated between the mesocoxal cavities and three or four coarse punctures on the lateral part of the metaventrite near its anterior margin. Nevertheless, it seems preferable to keep this species unnamed as long as male characters are unknown.

Acknowledgements

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