

## RESEARCH ARTICLE

## A taxonomic review of the Neotropical weevil genus *Bondarius* (Coleoptera: Curculionidae)

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<https://zoobank.org/E6618C9B-E5BA-49E2-9C71-2A36351AB288>

**ABSTRACT.** The eight species of *Bondarius* Rosado-Neto, 2006 are distributed in South, Central and North America, and the Caribbean: *B. tuberculatus* (Boheman, 1836), *B. subrufus* (Fiedler, 1936), *B. breyeri* (Brèthes, 1910), *B. fuscoaneus* (Boheman, 1843), *B. sublaevicollis* (Hustache, 1939), *B. nitidus* (Champion, 1902), *B. spinipes* (Champion, 1902) and *B. pectoralis* (Suffrian, 1872). This study presents a taxonomic review of the genus and redescription of the known species, provides illustrations of the external morphology, mouthparts and genitalia of males and females, and an identification key to species.

**KEY WORDS.** Molytinae, morphology, Sternechini, systematics, taxonomy.

### INTRODUCTION

*Bondarius* Rosado-Neto, 2006 belongs to Molytinae: Sternechini. The diagnostic character of the genus is the presence of an elytro-tergal type stridulation apparatus. Rosado-Neto (2006) presented a generic diagnosis, and a taxonomic identification key for groups of species that included eight species, *B. breyeri* (Brèthes, 1910), *B. fuscoaneus* (Boheman, 1843), *B. nitidus* (Champion, 1902), *B. pectoralis* (Suffrian, 1872), *B. spinipes* (Champion, 1902), *B. sublaevicollis* (Hustache, 1939), *B. subrufus* (Fiedler, 1936) and *B. tuberculatus* (Boheman, 1836) (= type species of the genus). Based on the presence or absence of teeth on the posterior femur, the author divided *Bondarius* into three groups of species: *B. tuberculatus*, *B. subrufus* and *B. fuscoaneus*. The *B. tuberculatus* and *B. subrufus* groups do not have teeth on the posterior femur, differing from the *B. fuscoaneus* group, while the *B. subrufus* group is distinguished from the *B. tuberculatus* group by the presence of transverse wrinkles on the prothorax. The *B. tuberculatus* group includes *B. nitidus*, *B. breyeri* and *B. tuberculatus*, while the *B. fuscoaneus* group includes *B. pectoralis*, *B. spinipes* and *B. sublaevicollis*, and

the *B. subrufus* group is represented only by *B. subrufus*. The elytro-tergal apparatus of the genus was described in detail by dos Santos and Rosado-Neto (2010).

*Bondarius* is distributed in South America, Central and North America (Mexico), including Cuba. *Bondarius tuberculatus* feeds on seeds of *Canavalia brasiliensis* Mart. ex Benth. (Bondar 1928a, 1928b, 1930a, 1930b, Bleiler et al. 1988, Rosenthal 1986) and *B. fuscoaneus* (Bahia) damages the tips of the *Andira pisonis* Mart., known as “angelim-branco” Bondar (1939, 1941). Both plant hosts belong to the legume family Fabaceae.

The original descriptions of the species of *Bondarius*, minus two outlined below, do not include illustrations of the external morphology and genitalia of males and females. The species described by Champion (1902), *B. spinipes* and *B. nitidus*, are exceptions for which there are plates with details on the external morphology, legs and elytra, but not the male and female genitalia and mouthparts,

We present a comprehensive morphological review of the adults of the known species *Bondarius*. This review contains detailed descriptions, data on geographic distribution, photographs of the habitus, illustrations of diagnostic

and useful taxonomic characters including the external morphology, genitalia and mouthparts. A taxonomic key including all species is also presented.

## MATERIAL AND METHODS

This study is based on the examination of 122 specimens obtained on loan from the following institutions: (AMNH) American Museum of Natural History, New York, USA; (ASUCOB) C.W. O'Brien Collection, Arizona State University, Tempe, Arizona, U.S.A; (CMNC) Canadian Museum of Nature, National Museum of Natural Sciences, Ottawa, Canada; (DZUP) Coleção Entomológica Padre Jesus Santiago Moure, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil; (HAHC) Henry and Anne Howden Collection, Ottawa, Canada (now at CMNC); (IPKE) Senckenberg Deutsches Entomologisches Institut, Frankfurt, Germany (now SDEI: Senckenberg Gesellschaft für Naturforschung); (MNHN) Museum National d'Histoire Naturelle, Paris, France; (MNRJ) Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil; (MZSP) Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil; (NHMUK) The Natural History Museum, Department of Entomology, London, United Kingdom (formerly British Museum Natural History); (NZAC) New Zealand Arthropod Collections, Auckland, New Zealand; (USNM) National Museum of Natural History, Washington, D.C., USA. Institution acronyms are abbreviated according Evenhuis (2020).

Species descriptions are based on morphological characters of the male and female, including exoskeleton and genitalia. The terminology for external morphology and mouthparts follows Ting (1936), Lyal (2014) and Oberprieler et al. (2014); for the male genitalia, dos Santos and Rosado-Neto (2010); and for the female genitalia, Gaiger and Vanin (2008) and dos Santos and Rosado-Neto (2010). We also followed the online glossary of weevil characters proposed by Lyal (2019) and Torre-Bueno (1989).

For the preparation of the mouthparts and genitalia, dried specimens were boiled for a few minutes in water and neutral detergent to soften the tissues and then dissected under a Leica MZ12 stereoscopic microscope. Since the mouthparts are very small and extremely retracted within the apex of the rostrum, direct dissection might cause considerable damage. To overcome this difficulty, the apex of the rostrum was cut with a sharp-bladed scalpel and boiled in 10% KOH for approximately two to three minutes. After this, the apical ventral surface of the rostrum, just below the mandibles, was cut and opened longitudinally, leaving the mouthparts loose and easily removable.

To prepare the genitalia, the abdomen was entirely removed after boiling in water with detergent and cut laterally along the pleural region, and the tergum was reflected. The genitalia were removed and boiled in 10% KOH to macerate soft tissues. Then, the genitalia and mouthparts were washed in distilled water, dehydrated in 70, 80 and 90% alcohol series, and clarified by gently boiling in 10 volumes of hydrogen peroxide. After drying, the abdomen was glued to the body of the same specimen from which it was removed. The mouthparts and genitalia were stored in plastic microtubes with glycerin.

The measurements were based on dos Santos and Rosado-Neto (2010) as follow: body length (BL) was measured from the anterior margin of eyes along the midline to the apex of elytra. Rostrum: total length (RL), was measured in dorsal view, from the apex (excluding mandibles) to the anterior margin of eyes; the width (RW) was measured at its widest point; the length of the pronotum (PL) was measured along the midline, from the apex to the base, whereas its width (PW) was measured transversely at the widest point. The width of the pronotum was expressed as the ratio PW/PL. Elytra: the length of elytra (EL) was measured along the midline, from the anterior margin to the apex length, whereas its width (EW) was measured between the humeri. Proportions of elytra were expressed as the ratio EL/EW. Eyes: interocular distance (IO): distance between the eyes, measured on the frons. Antenna: length of scape (LE); width of scape (WE); length of funicle (LF). Measurements are in millimeters.

Photographs were obtained using a Leica MZ16 stereomicroscope with a coupled image capture system Leica DFC 500 and Leica LAS 3D Viewer e LAS Montage, version 4.7. at the Coleção Entomológica Padre Jesus Santiago Moure (DZUP).

The sequence of species descriptions in the text follows the order of species in the taxonomic key.

## TAXONOMY

### *Bondarius* Rosado-Neto, 2006

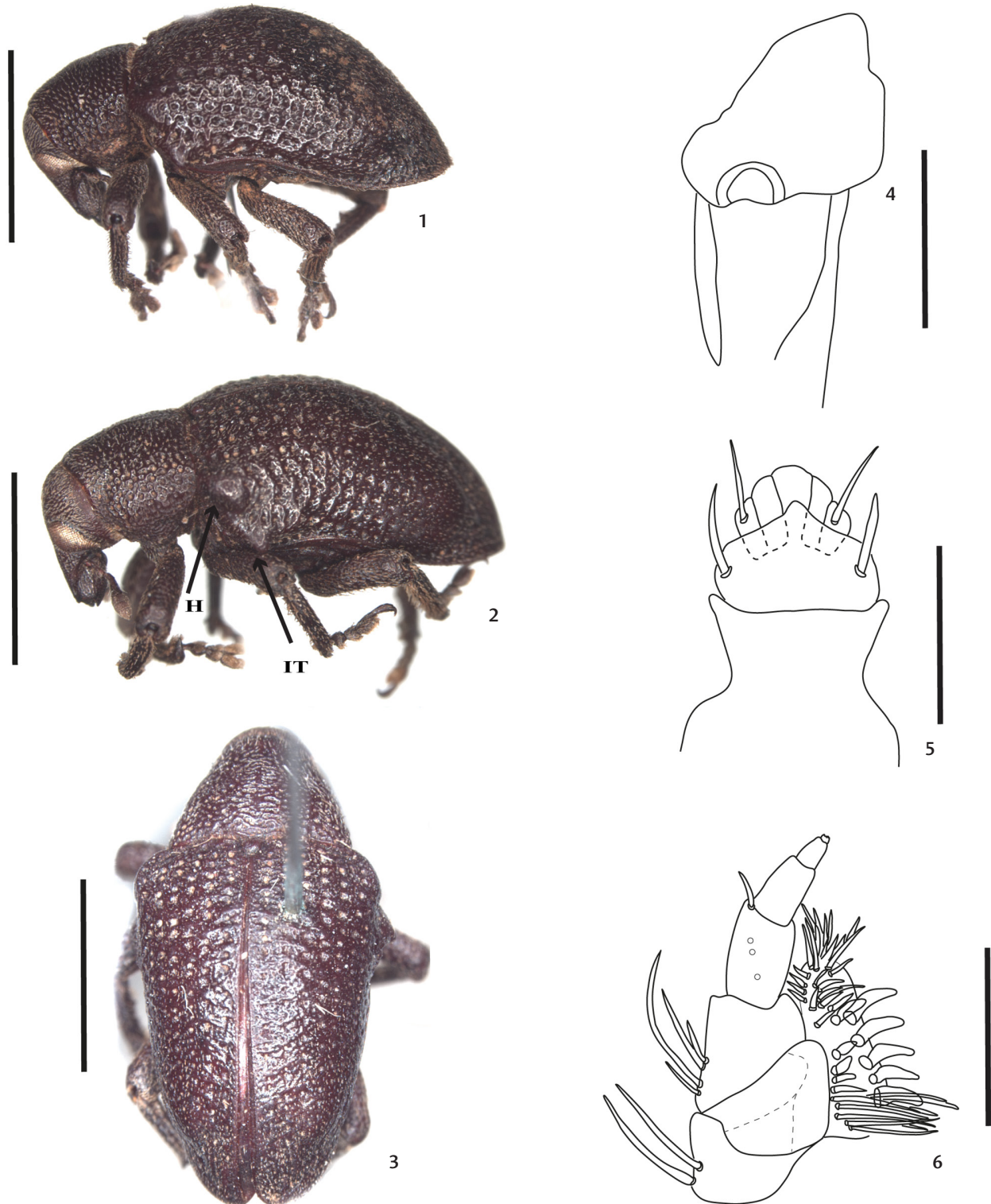
Type species: *Sternechus tuberculatus* Boheman, 1836, by original designation *Bondarius* Rosado-Neto, 2006: 164.

Diagnosis. Prothorax usually with three well-developed lateral tubercles; when tubercles are not developed, the prothorax is laterally crenate. Postocular vibrissae elongate. Elytra with well-defined apical connections between striae 3–6 and 7–8 or with stria 3 apparently joined with striae 6, 7 and 8. Setal fringe present at the base of each elytron.

Forecoxae with three tubercles near posterior margin. Femora generally without teeth (unarmed), except for hind femur, often toothed. Tibiae with a ventral submedian tooth. Abdomen with elytro-tergal stridulatory apparatus. Spermathecal duct as long as bursa copulatrix.

**Redescription.** Total length 4.5 to 15.8 mm. Integument light to dark reddish-brown. Vestiture: generally, with dark, moderately elongate, thin to tick, sparse to dense, rusty yellow or scales lacteous. Rostrum variable in shape, short, thick, sometimes depressed (Figs 1, 2), long, straight or curved in lateral view in some species (Figs 40, 41, 92, 93), smooth or wrinkled, punctation and coverage variable, with or without an apical groove. Scrobes deep, latero-dorsal, partly visible in dorsal view, obliquely directed posteriorly, reaching lower anterior margin of eye; ventrally separated by strong basal tubercle (Fig. 57) or by elongate or obsolete carina. Antenna with scape claviform, shorter to longer than funicle; usually longer than funicular articles 1, 2 and 3 combined (Fig. 75); inserted medially or near apex of rostrum. Funicle with seven articles, 1<sup>st</sup> article generally the longest, 2<sup>nd</sup> article elongate or subtransverse, shorter than or subequal to 1<sup>st</sup> article; articles 3–7 transverse, widening toward the clava, the latter with 4 articles, oval, short, apex acuminate, pubescent, sutures straight or nearly so (Fig. 75). Mouthparts: mandibles bi-toothed (Fig. 17), mandibles with inner margin sinuated and apical tooth weak (Fig. 4). Maxillae with palpifer, basal and subbasal articles of maxillary palps transverse, or longer than wide, 3<sup>rd</sup> article conical. Long and short setae present on palpifer, stipes and palps. Mala generally perpendicular to the axis of the palp, with an external straight margin. Dorsally, with two areas: basal (lacinia) and apical (galea). Dorsal surface sometimes toothed, covered with setae that vary from thin to large, long to short; basal area with numerous long and small setae. Lacinia with strong and robust teeth, varying from short to long, narrow to wide, curved to straight, some species with apical teeth narrower than basal teeth; teeth from 5–8 (Figs 6, 19). Basal area ventrally with group of small and strong teeth, occasionally also present on apical portion (Fig. 6). Suture between stipes and lacinia conspicuous in most of the species. Labium with ligula and palpal articles strongly fused with each other and with the prementum (Fig. 18). Prementum rectangular, transverse, or as long as wide, sides straight or round, converging toward anterior margin; basal margin straight or slightly sinuous, apical margin clearly distinct, subtriangular to round, glabrous or bearing 1 or 2 pairs of short and long setae; labial palp separated, flattened, transverse or elongate, symmetrical or asymmetrical, gla-

brous or with two pairs of long latero-basal setae, ligula visible; apex straight or round (Fig. 18). Head globose, punctation sparse to dense, with a few anastomosing punctures particularly near the eyes, giving a wrinkled appearance; eyes subcontiguous on the forehead, acuminate or round on posterior margin, with anterior margin oblique or round. Prothorax subtrapezoidal or cylindrical, uniformly convex dorsally (Fig. 16). Anterior margin curved and ocular lobes absent or almost imperceptible; posterior margin bisinuate, with or without a rim, postocular vibrissae elongate (Fig. 14). Punctation consisting of shallow and small to moderately deeper and larger punctures (Fig. 16); punctures anastomosing laterally, giving a wrinkled appearance, or anastomosing over entire pronotum, forming transversal wrinkles (Fig. 3); disk with (Fig. 16) or without a smooth median longitudinal line. Laterally with 2–3 tubercles variously developed, more or less arranged in rows, or with obsolete tubercles (Fig. 20). Scutellar shield oval or heart-shaped, small, glabrous or covered with sparse, short and fine setae (Fig. 16). Elytra generally convex, degree of convexity variable between species; wide or narrow, ascending on basal 1/3, slightly descending toward the apex (Fig. 15); junction between apexes round or slightly diverging; 1.07 to 1.46 times longer than its humeral width (Fig. 16). Anterior margin of elytra bisinuate, wider than prothorax; setae present on each elytron beside the scutellar shield. Humeri globose or flattened, variously developed, truncate at base (Fig. 2); infrahumeral tubercle strong, conical, perpendicular or not to the elytral surface, wide at base, with apex acute or round, sometimes slightly curved posteriorly (Fig. 2). Elytra with 10 striae, punctation variable in size and shape; punctures thin or thick, deep or shallow, close or wide apart, with or without marginal granules. Generally, deeper punctures up to the dorsal 1/2, becoming progressively shallow toward the apex. Striae joining apically in the following order: 1–10, 2–9, 3–8, 4–5, 6–7 (Fig. 22). Species with a developed apical callus have stria 3 apparently united with striae 6, 7 and 8. First, 2<sup>nd</sup> and 4<sup>th</sup> interstriae near the base, convex, forming an elongate tubercle; or transversely convex, giving a wrinkled aspect; or all flattened. Prosternal process a short triangle interrupted between coxae (Fig. 56). Three tubercles variously developed near the anterior margin, behind the forecoxae (Fig. 21). Mesepisternum and mesepimeron subtriangular, uniform and without significant variation. Mesoventrite wide or narrow, apex truncated or concave; mesoventral process between coxae narrow, in some species with a somewhat prominent (Fig. 56). Metasternum developed, anterior margin with a rim prominent following the



Figures 1–6. *Bondarius subrufus*: (1, 3–6) male, (2) female; (1–2) habitus in lateral view; (3) habitus in dorsal view; (4) mandible left; (5) labium; (6) maxillae left. Scale bars: 1–3 = 2 mm, 4–6 = 1 mm.



curvature of the hindcoxae (Fig. 56). Metepisternum wide, elongate, with variable cover and punctation. Metepimeron small and concealed below margin of elytra. Abdomen with ventrites 1+2 as long as ventrites 3+4+5 combined; suture between ventrites 1 and 2 sinuous, sometimes conspicuous, sometimes not; suture between remaining ventrites straight and deep. Anterior margin of ventrite 1 with an edge following curvature of coxae; 3<sup>rd</sup> and 4<sup>th</sup> longer, subequal; 5<sup>th</sup> always transverse, with apical margin round or truncated, median surface flat in both sexes. Presence of the stridulatory apparatus elythro-tergal. Legs: forecoxae globose, subcontiguous, slightly separated from each other by the prosternal process. Midcoxae globose, separated from each other by the mesosternal process. Hind coxae transverse. Trochanter small and transverse. Femora claviform or cylindrical; with oblique-transversal wrinkles, more conspicuous on the hind femora, highlighting the median longitudinal carina; ventrally unarmed or toothed, or with teeth only on the hind pair of legs (Figs 60, 61). Tibiae compressed to cylindrical, smooth or with strong longitudinal carinae on all faces, lateral or ventral carinae weak. Foretibiae slightly longer and curved, midtibiae and hind tibiae almost straight. Ventrally, all tibiae present variation in crenulation, strong to weak, and in the degree of development of the median tooth (Fig. 60). Apex of tibiae with mucro and premucro variously developed, sexually dimorphic: premucro obsolete in males, developed in females, dorsal carina obsolescent in corbel area. Tarsal claws simple, fused and short. Genitalia. Male: median lobe as long as or slightly shorter than apodemes; apex round, straight, or acuminate, curved ventrally or posteriorly, from a lateral view with ventral curvature (Fig. 97); apex wider or narrower than base, or widening toward the apex; basal apodemes uniform, with slight variation in thickness and degree of basal sinuosity (Figs 23, 24); internal sac with microvilosities, generally with two opercular plates near the falotreme. Falotreme and plates variable in shape, placed dorsally and apically (Fig. 86); flagellum sclerotized, tubular, short to long. Tegmen with dorsal lobes subequal and diverging from each other (Fig. 9). Sternite 8 with subtriangular and subtransverse plates joined through a membrane slightly pubescent at apex. Spiculum gastrale variable and curved at apex (Fig. 10). Abdominal tergite 8 uniform in all species. Female: Abdominal tergite 8 rectangular or trapezoidal, transverse, base wider than apex, with sides parallel or round starting at base or basal 1/3; apex truncated or round, with uniform to irregular crenulations (Fig. 27), with or without median notch (Fig. 40); covered with short and long setae on apex

and dorsum, variable in number. Abdominal sternite 8: ventral spicule straight, with or without enlarged base; shorter than or as long as apical lobes; external margin straight, curved, or sinuous, apex covered with dense to sparse, short to elongate setae (Fig. 28). Coxites oval, large, with sclerotization and surface uniform and glabrous. Styles cylindrical, distinct, apex covered with short and elongate, sparse to dense setae (Fig. 29). Bursa copulatrix membranous, without sclerites, generally longer than the vagina. Spermatheca curved; ramus either more developed than or subequal to collum. Spermathecal gland membranous, larger than spermatheca; spermathecal duct thin, as long as bursa copulatrix, inserted below the common oviduct at the of base bursa copulatrix (Fig. 29).

**Sexual dimorphism:** Females with long and narrow rostrum, sometimes with apical portion curved (rostrum shorter, thicker, and straight in males); punctation of rostrum shallow and sparser (deep and denser in males); antennae inserted medially on the rostrum (inserted apically in males); foretibiae with premucro and mucro equally developed (pre-mucro obsolete in males).

**Geographic distribution.** Central America (Guatemala, Nicaragua, Costa Rica, Panama), North America (Mexico, and Cuba), South America (Colombia, Venezuela, Trinidad and Tobago, French Guiana, Peru, Brazil, Bolivia, Paraguay, Argentina).

#### Key for identification to the species of *Bondarius* Rosado-Neto, 2006

1. Femora unarmed..... 2
- 1'. Femora (or at least hind femora) toothed (Figs 60, 61) ..... 5
2. Pronotum with anastomosing punctures, forming transversal wrinkles (Fig. 3) ..... *B. subrufus* (Fiedler, 1936)
- 2'. Pronotum without anastomosing punctures, not forming transversal wrinkles ..... 3
3. Pronotum without anastomosing punctures with a smooth, median longitudinal line (Fig. 16)..... *B. tuberculatus* (Boheman, 1836)
- 3'. Pronotum without a smooth a median longitudinal line ..... 4
4. Rostrum 1.6 times longer than its basal width; scrobes not separated ventrally by a strong basal tubercle; mesoventral process between coxae, wide and truncated..... *B. nitidus* (Champion, 1902) (Figs 30–32)
- 4'. Rostrum 1.9 times longer than its basal width; scrobes separated ventrally by a strong basal tubercle (Fig. 57);

- mesoventral process between coxae tuberculiform ....  
.....*B. breyeri* (Brèthes, 1910) (Figs 43–45)
5. Elytra with maculae (Fig. 55) ..... 6
- 5'. Elytra without maculae (Fig. 71) ..... 7
6. Dark, ring-shaped maculae with deep punctation medially on elytra elytra.....  
.....*B. sublaevicollis* (Hustache, 1939) (Fig. 53–55)
- 6'. Dark maculae with shallow punctation in longitudinal stripes.....  
.....*B. fuscoaeenus*. (Boheman, 1843) (Figs 69–71)
7. Rostrum 2.0 times longer than its basal width.....  
.....*Bondarius spinipes* (Champion, 1902) (Figs 83, 84)
- 7'. Rostrum 3.5 times longer than its basal width.....  
.....*Bondarius pectoralis* (Suffrian, 1872) (Figs 92, 93).

### *Bondarius subrufus* (Fiedler, 1936)

Figs 1–13

*Chalcodermus subrufus* Fiedler, 1936: 282 (description, key); 1937: 37 (redescription); Blackwelder, 1947: 857 (catalog); Papp, 1979: 99 and 110 (catalog).

*Sternechus subrufus*; Kuschel, 1955: 299 (new combination); Wibmer & O'Brien, 1986: 180 (catalog); 1989: 10 (catalog).

*Sternechus vulgaris* Mendes, 1962: 132 (description "pars"); Wibmer & O'Brien, 1986: 180 (catalog); Rosado-Neto, 2006 (synonym).

*Bondarius subrufus*; Rosado-Neto, 2006 (new combination, systematics).

**Redescription.** Integument reddish-black to reddish-brown; covered with small, elongate, moderately dense setae (Figs 1–3). Rostrum short, wide, 1.0 times its basal width; punctation deep, dense and wrinkled (Figs 1, 2). Scrobes ventrally separated by a strong basal process (Fig. 57). Antennae with scape shorter than funicle. Mouthparts: mandibles with inner margin sinuated and apical tooth weak (Fig. 4). Palpifer and basal articles of maxillary palp longer than wide; palpifer and stipes with variable number of setae; lacinia with five teeth (Fig. 6); prementum rectangular, sides straight, parallel; one pair of lateral setae; anterior margin triangular; labial palps transverse, symmetrical and short, laterally with one pair of basal setae (Fig. 5). Eyes acuminate ventrally, posterior margin sinuate; interocular space 1.3 times the apical width of scape. Prothorax subcylindrical, parallel-sided, slightly narrowed anteriorly, with median longitudinal line; punctation deeper, dense, with anastomosing punctures forming transversal wrinkles (Fig. 3); lateral tubercles weakly developed. Elytra 1.2 times longer than their humeral width; striae with shallow and dense punctures, progressively smaller toward the apex; interstriae convex medially and basally (Figs 1, 2). Legs: punctation

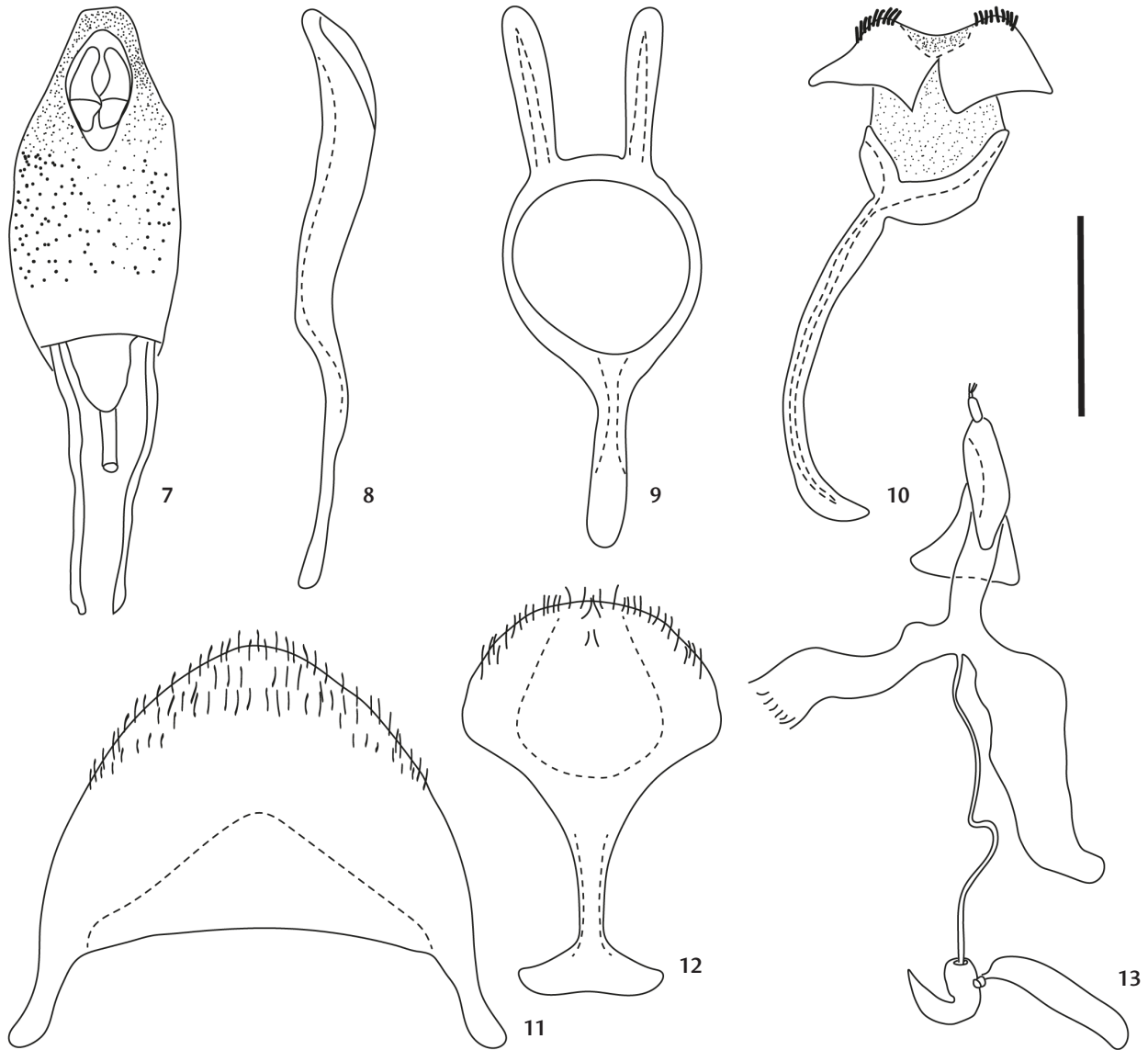
deeper, dense, moderately wrinkled. Femora unarmed. Male genitalia: median lobe wide, longer than basal apodemes, convex dorsally, curved in lateral view, sides round and converging toward the apex; apex truncate, narrower than base (Figs 7, 8). Tegmen with dorsal lobes subequal in length to manubrium (Fig. 9). Spiculum gastrale uniformly thick, curved at apex (Fig. 10). Female: abdominal tergite 8 trapezoidal, sides converging toward the apex; apical margin smooth, without median distal notch; dorsally with dense and short setae; punctation dense (Fig. 11). Abdominal sternite 8 with ventral spicule straight, apical lobes with sides round and parallel, shorter than ventral spicula; apex densely pubescent (Fig. 12). Coxites cylindrical, elongate, with sclerotization and surface uniform and without setae. Styles cylindrical, distinct, apex covered with short and dense setae. Bursa copulatrix membranous, without sclerites. Spermatheca curved; ramus subequal to collum. Spermathecal gland membranous, larger than spermatheca; spermathecal duct thin, as long as bursa copulatrix, introduced into the bursa copulatrix base (Fig. 13).

**Sexual dimorphism:** Foretibiae of males with premucro obsolete; mucro and premucro subequal in females.

**Dimensions.** Males/Females, respectively: BL: 6.17–8.67; RL: 0.92–1.33; RW: 0.92–1.33/0.92–1.25; PL: 1.5–2.17/1.33–2.0; PW: 2.58–3.75/2.42–4.0; EL: 4.67–6.67/4.67–7.0; EW: 3.42–5.25/3.42–5.33; IO: 0.33–0.5/0.25–0.42; WE: 0.17–0.42/0.25–0.33; LE: 0.5–0.83/0.5–0.92; LF: 0.67–0.92/0.56–1.58.

**Type-material examined.** *Chalcodermus subrufus*, Holotype ♂, from Rio de Janeiro, deposited in the IPKE, with the following labels: "HOLOTYPUS/Bangu, 14.05.1916, R. Fischer, Ctr. Brazil/*Chalcodermus subrufus* n. sp. Fiedler – Typus". Mendes (1962) described *Sternechus vulgaris* based on 35 specimens, without sex determination, from the different localities in the southeastern and southern regions of Brazil. In the original description, Mendes (1962) mentioned the collections where the type material had been deposited. However, he did not designate a holotype; 12 specimens, with a label "Cotypus", were examined by Rosado-Neto (2006), which are listed below under "material examined."

**Material examined.** BRAZIL, Minas Gerais: Monte Alegre de Minas (Fazenda Santa Maria), 1♂, 24–30.XI.1943, Zoppel & D'Amico leg.; 1♂, XII.1965, F.S. Pereira leg. (MZSP); Barbacena, 1♂, V.1955, F.M. Oliveira (MNRJ, ex. coll. CACS, Cotypus de *Sternechus vulgaris*). Rio de Janeiro: 1♀, IV.1937, C.A.C. Seabra leg. (MNRJ, ex. coll. CACS, Cotypus de *Sternechus vulgaris*), Corcovado, 2♂, I.1959, XI.1957, M. Alvarenga col. (MZSP); 2♂, 1♀, V.1958, Alvarenga & Seabra leg. (MZSP); Estrada Rio São Paulo, km 47, 1♀, D. Mendes leg. (MNRJ);



Figs 7–13. Genitalia of *Bondarius subrufus*: (7–10) male, (11–13) female; (7) eedeago, dorsal view, (8) eedeago, lateral view; (9) tegmen; (10) spiculum gastrale; (11) abdominal tergite 8; (12) abdominal sternite 8; (13) bursa copulatrix. Scale bar: 1 mm.

Represa Rio Grande, 1♀, F. M. Oliveira leg. (DZUP); Barra do Pirai, 1♀, XI.1934, Woronyzow col (MZSP). 1♀ (MZSP). São Paulo: Valinhos, 1♂, III.1953 (MZSP); Barueri, 1♂, 2♀, XII.1962, XII.1965, XII.1966, K. Lenko leg. (MZSP); Itu, 1♀, I.1959, U. Martins leg. (MZSP); Marília, 1♀ (NZAC); Sítio Bananal, 1♀, 1.XII.1935 (USNM); Jabaquara, 1♀, 5.III.1945 (NZAC); Nova Europa (Faz. Itaquerê), 2♀, 21.VI.1965, 24–31. VIII.1965, K. Lenko col. (MZSP); Cantareira, 1♀, XII.1951 (MZSP); Morumbi, 1♀, I.1944 (NZAC); São Paulo, 1♀, I.1946 (NZAC); Rio de Janeiro: Duque de Caxias, 1♂ (MNRJ), 1♂,

3.XI.1957, P.A. Telles leg. (DZUP), 3♀, 4♂, IV–VIII. 1953, XII. 1954, V. 1955, P.A. Teles col. (MNRJ, ex. coll. CACS, *Cotypus de Sternechus vulgaris*), 2♂, 19.I.1955, 24.IV.1955, F.M. Oliveira leg. (MNRJ, ex. col. CACS, *Cotypus de Sternechus vulgaris*); Paraná: Cachoeirinha, 1♀, XI.1938, A. Maller leg. (MNRJ, ex. col. CACS, *Cotypus de vulgaris*); Locality data missing: “S. American”, 1♂ (BMNH).

Geographic distribution. Brazil (Minas Gerais, São Paulo, Rio de Janeiro, Paraná).

Biology and host plants. Unknown.

*Bondarius tuberculatus* (Boheman, 1836)

Figs 14–29

*Sternechus tuberculatus* Boheman in Schoenherr, 1836: 474 (description); Dejean, 1837: 306 (catalog); Boheman in Schoenherr, 1843: 363 (citation); Gemminger & Harold, 1871: 2421 (catalog); Champion, 1902: 118 (distribution); Dalla Torre et al., 1932: 97 (catalog); Blackwelder, 1947: 824 (catalog); Mendes, 1956: 201 (identification correction); 1957: 254 (distribution); Silva et al., 1968: 514 (catalog); Rosado-Neto, 1977: 133 (redescription); O'Brien & Wibmer, 1982: 85 (catalog); Wibmer & O'Brien, 1986: 180 (catalog).

*Sternechus unciennis*; Bondar, 1928a: 219 (biology); 1928b: 116; 1930a: 36; 1930b: 36 (biology, reissuing, non Germar, 1824); Costa Lima, 1956: 102 (citation, non Germar, 1824); Silva et al., 1968: 514 (catalog, non Germar, 1824).

*Bondarius tuberculatus*; Rosado-Neto, 2006 (new combination, systematics).

**Redescription.** Integument reddish-brown to reddish-black; covered with short, deeper, moderately sparse to dense setae (Figs 14–16). Rostrum short and wide, 1.4 times its basal width, apex depressed; punctation shallow and sparse dorsally, lateral punctation moderately deep and sparse, with anastomosing punctures forming longitudinal wrinkles. Scrobes ventrally separated by an obsolete longitudinal carina. Antennae with a scape shorter than funicle; inserted medially in females, and near the apex of rostrum in males. Mouthparts: mandibles bi-toothed, teeth round and contiguous (Fig. 17). Palpifer and 1<sup>st</sup> article of maxillary palp as long as wide, 2<sup>nd</sup> article transverse; with 2–3 setae, stipes glabrous; lacinia with eight teeth (Fig. 19); prementum transverse, sides straight, parallel, anterior margin round; a pair of posterior setae near basal margin; labial palps elongate, symmetrical, laterally with two pairs of basal setae (Fig. 18). Interocular space 1.4 times the apical width of scape. Prothorax conical, wider posteriorly, sides converging toward anterior margin; punctation deeper and dense, with wrinkles on the lateral margins; disk with a smooth, median longitudinal line; laterally with 2–3 developed tubercles (Fig. 20). Elytra 1.2 times longer than their humeral width; scutellar shield cordiform (Fig. 16); striae with deeper punctures, granules on anterior margin; interstriae 1, 2 and 4 near the base convex, forming longitudinal tubercles; remaining interstriae transversely convex, apical callus round, developed (Fig. 16). Legs: punctation deep, dense, moderately wrinkled. Femora unarmed. Foretibiae slightly crenulated; median ventral tooth short to developed, acute to truncate. Male genitalia: median lobe as long as basal apodemes; convex dorsally, curved in lateral view; apex round (Figs 23, 24). Tegmen with dorsal lobes subequal in length to manubrium (Fig. 25). Spiculum gastrale long and narrow curved at apex (Fig. 26). Female:

abdominal tergite 8 transverse, trapezoidal, sides parallel basally, converging on apical 2/3; apical margin crenulated with median distal notch; with a moderate number of setae; dorsally with thin punctation covered with moderately long setae (Fig. 27). Abdominal sternite 8 with ventral spicule wide, straight, elongate, longer than apical arms, the latter parallel and converging toward the apex; apex with long and dense setae (Fig. 28). Coxites cylindrical, elongate, without setae. Styles cylindrical, distinct, apex covered with short and dense setae. Bursa copulatrix membranous, without sclerites. Spermatheca curved; ramus subequal to collum. Spermathecal gland membranous, larger than spermatheca; spermathecal duct as long as bursa copulatrix, introduced into the bursa copulatrix base (Fig. 29).

**Sexual dimorphism.** Foretibiae of males with premucro obsolete; mucro and premucro subequal in females.

**Dimensions.** Males/Females, respectively: BL: 8.50–15.00/8.33–15.87; LR: 1.33–2.17/1.33–2.50; RW: 1.00–1.83/1.17–2.17; PL: 2.00–3.67/1.83–3.67; PW: 3.83–6.33/3.67–7.00; EL: 6.50–11.33/6.33–12.17; EW: 5.50–9.67/5.17–10.67; IO: 0.50–0.83/0.50–0.83; WE: 0.33–0.50; LE: 0.83–1.5/0.67–1.5; LF: 0.92–1.92/0.83–1.75.

**Type material:** Holotype examined, and sex not determined, deposited in the NHRS, with the following labels: “*Brachysoma tuberculata* Dej. Cayen: DuPont// Typus”, sex undetermined.

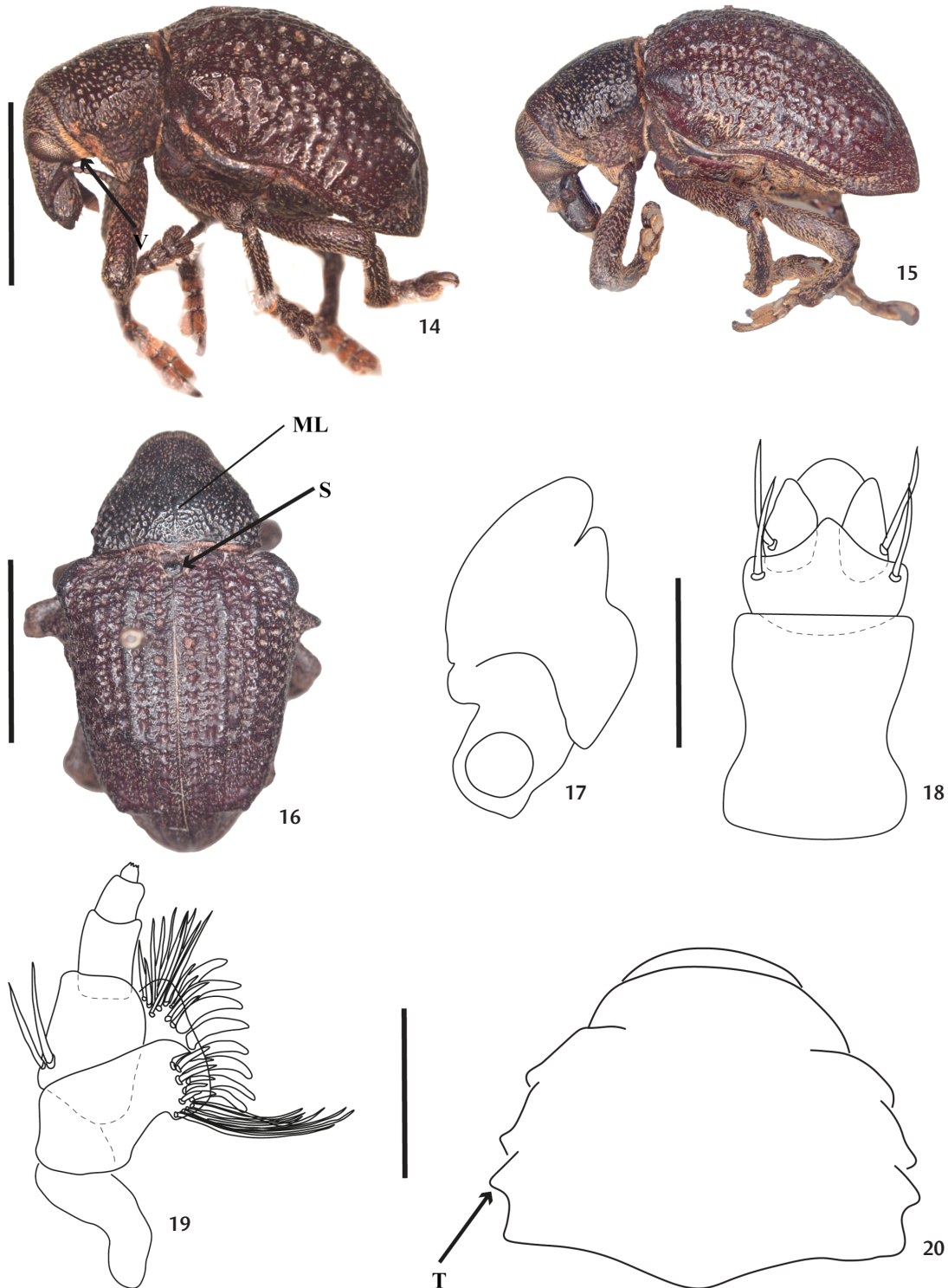
**Material examined.** FRENCH GUIANA, Roches de Kourou, 1♂, A. Hustache, leg. (MNHN). BRAZIL, Amazonas: Maués, 1♀ (MNRJ); Pará: Santarém, 1♂, H. C. Brey leg. (MNRJ). Mato Grosso: Cáceres, 1♀, 1♂, C. Elias leg. (DZUP); Rosário Oeste, 1♂ C. Elias leg. (DZUP); Bahia, locality data missing, “Estado da Bahia”, G. Bondar. 1♀ (MNRJ); 3♀, 5♂ (AMNH); “Bahia” 1♀, VI.1943; 2♂ III.1943 (DZUP); “2174, Bahia Bondar, 1♂, A. Hustache, leg. (MNHN); Maranhão: Imperatriz 2♀, 22.XII.1972, 18.VII.1974 (DZUP); Serra do Penitente, Balsas, 480 m, 2–4.IV.2006, C. Mielke, leg. (DZUP); Igarapé Gurupi-Una, Aldeia Araçu, 50 km E. de Canindé, 1♀, II.1966, Malkin, leg. (MZSP). Pernambuco: Peri-Peri (atual Quipapá), 2♀, Gounelle, 5.6.1892 (MNHN). Minas Gerais: Paraopeba, 1♀, 10.1955, E.P. Heringer, leg. (MNRJ).

Locality data missing: 1♀, 3♂ (MNHN); 3♀, n° 5421, 2♂, numbers, 5422, 5423 (DZUP) (material probably from Bahia); 1♀, 1♂, G. Bondar leg. (MNRJ), 2♂ (MNRJ).

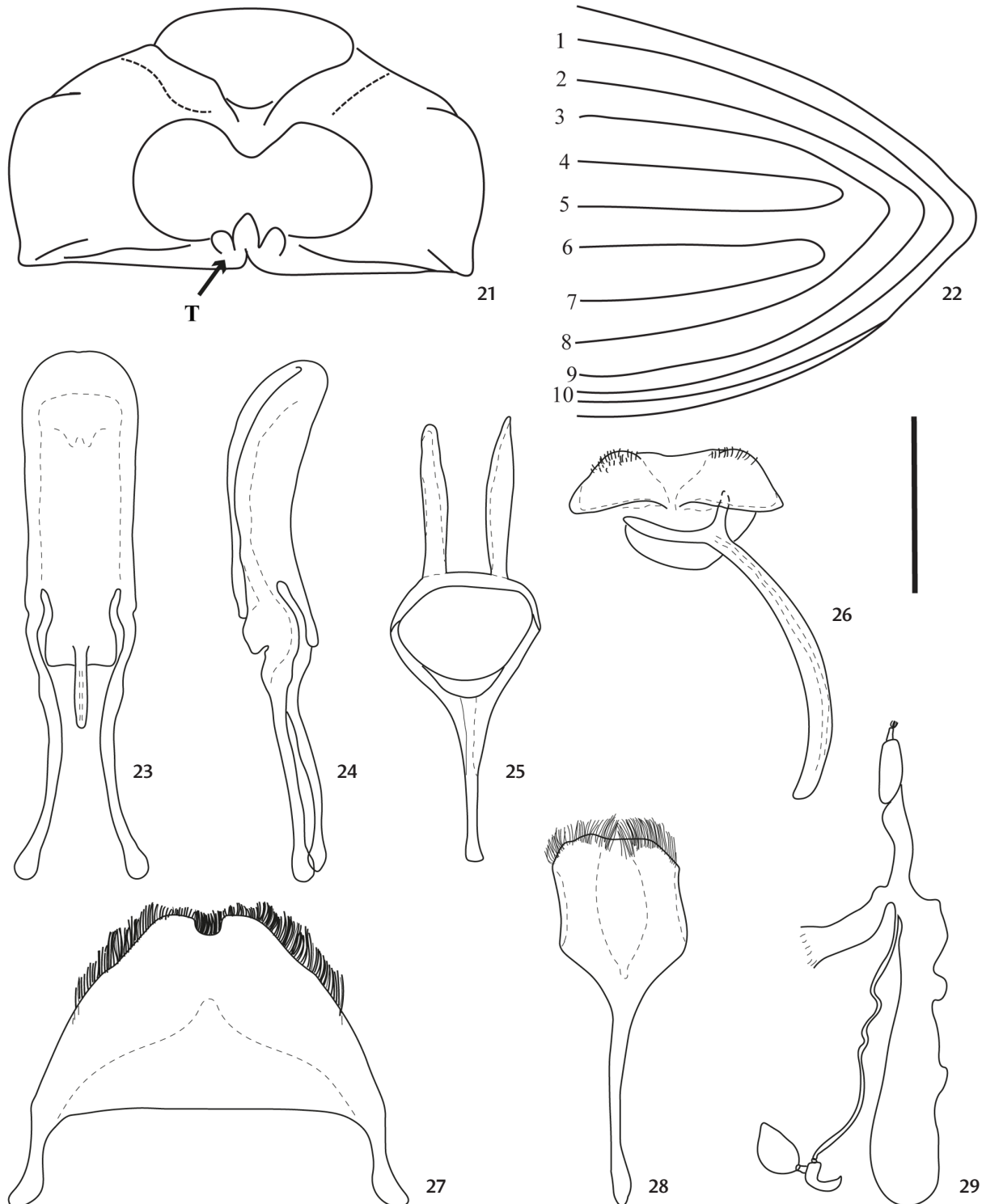
**Geographic distribution.** French Guiana, Brazil (Amazonas, Pará, Bahia, Maranhão Pernambuco, Mato Grosso, Minas Gerais).

**Biology and host plants.** Bondar (1928a, 1928b, 1930a, 1930b), in a study of the biology of *Sternechus tuberculatus*





Figures 14–20. *Bondarius tuberculatus*: (14, 17–20) male (16) female; (14–15) habitus, lateral view, (16) habitus, dorsal view; (17) mandible left; (18) labium; (19) maxillae; (20) prothorax pronotum, dorsal view. (ML) Median longitudinal midline, (S) scutellar shield, (T) tubercle, (V) postocular vibrissae. Scale bars: 14–16 = 2 mm, 15–20 = 1 mm.



Figures 21–29. *Bondarius tuberculatus* 21–29: (21–26) male, (27–29) female; (21) prosternum; (22) elytra; (23) edeago in dorsal view; (24) edeago in lateral view; (25) tegmen; (26) Spiculum gastrale; (27) abdominal tergite 8; (28) abdominal sternite 8; (29) bursa copulatrix. (T) tubercle. Scale bar: 1 mm.

(misidentified as *S. uncipectennis*), reported that the adults have nocturnal habits, spending the day attached to the leaves of *Canavalia* sp. and feeding on the green pods during the night. Bleiler et al. (1988) and Rosenthal (1986) identified the species as *Canavalia brasiliensis*. This species leaves round wounds on the dorsal margin of the pods when feeding. The pods are also used as a substrate for oviposition.

### *Bondarius nitidus* (Champion, 1902)

Figs 30–42

*Sternechus nitidus* Champion, 1902: 118 (description); Dalla Torre et al., 1932: 96 (catalog); Blackwelder, 1947: 824 (catalog). O'Brien & Wibmer, 1982: 5 (catalog).

*Bondarius nitidus* Rosado-Neto, 2006 (new combination, systematics).

**Redescription.** Integument reddish-black to dark brown covered with fine, elongate and sparse setae (Figs 30–32). Rostrum long, cylindrical, 1.6 times longer than its basal width; punctation small and dense on dorsum, deep, irregular and wrinkled laterally (Figs 30, 31). Scrobes ventrally separated by an obsolete carina. Antennae submedian, scape shorter than or as long as funicle. Mouthparts: Mandibles bi-toothed, with teeth round (Fig. 33). Palpifer and basal articles of maxillary palp as long as wide; lacinia with five teeth, apical teeth more elongate and narrower than basal teeth (Fig. 35); prementum rectangular, sides round, converging toward the anterior margin; one pair of lateral setae; anterior margin round; labial palps elongate, slightly asymmetrical, glabrous; ligula with apex round (Fig. 34). Eyes acuminate ventrally, posterior margin rounded; interocular space 1.2 times the apical width of scape. Prothorax wider on central and posterior portions, sides parallel on basal ½, converging toward anterior margin; punctation deep, dense, slightly wrinkled on lateral margins; lateral tubercles weakly developed (Fig. 32). Elytra 1.2 times longer than their humeral width; striae with deeper punctation at base, smaller punctures progressively toward the apex; interstriae convex. Legs: punctation shallow, dense or sparse. Femora unarmed. Tibiae with weakly developed, short, median ventral tooth. Male genitalia: median lobe wide, as long as basal apodemes, curved in lateral view, sides parallel, apex as wide as base, truncated, slightly curved down (Figs 36, 37). Tegmen with dorsal lobes well separated, subequal to manubrium (Fig. 38). Spiculum gastrale moderately thick, apex widened and curved (Fig. 39). Female: abdominal tergite 8 trapezoidal, sides converging toward apex; apical margin crenulated, without median notch; with short, inclined setae on apex and dorsum; dorsal punctation shallow and sparse (Fig. 40).

Abdominal sternite 8 strongly transverse; ventral spicula longer than apical lobes; apical arms round, apex densely pubescent (Fig. 41). Coxites cylindrical, broad without setae. Styles cylindrical, distinct, apex covered with short and dense setae. Bursa copulatrix membranous, without sclerites. Spermatheca curved; ramus subequal to collum. Spermathecal gland membranous, larger than spermatheca; spermathecal duct as long as bursa copulatrix, introduced into the bursa copulatrix base (Fig. 42).

**Sexual dimorphism.** Females with rostrum longer, with shallow and sparse punctation. Males with rostrum shorter, straight, punctation thicker and denser.

**Dimensions.** Males/Females, respectively: BL: 6.17–8.33/5.17–8.17; LR: 1.42–1.83/1.00–1.75; WR: 0.75–1.00/0.67–1.08; PL: 1.50–2.00/1.17–2.00; PW: 2.67–3.58/2.25–3.92; EL: 4.67–6.33/4.00–6.17; EW: 3.67–5.00/3.00–5.42; IO: 0.17–0.25; WE: 0.17–1.25; LE: 0.75–1.0; LF: 0.83–1.17/0.83–1.08.

**Type material examined.** Holotype ♀, deposited in the BMNH, with the following labels: “TYPE/Bugaba Panama Champion/B.C.A. Col. IV-4 *Sternechus nitidus* Champ”.

**Material examined.** PANAMA, Chiriqui, 1♀, 2 km N Prov. Sta Clara, 1300 m, 24-25.V.1977, H. & A. Howden leg. (CMNC). French Guiana, Rio Maroni, 1♂ (NZAC), 1♂, 1♀ (USMN); Roches de Korou, 1♂ (MNHN); Caiena, 1♀ (MNHN); St. Laurent du Maroni, 1♀, A. Hustache leg. (MNHN). PERU, San Martin, 1♂, Tarapoto, 1886, M. de Mathan, leg. (MNHN). BRAZIL, Amazonas: Teffé, 1♂, 1♀, 1879 (MNHN). Pará: Cametá, 1♂ (NZAC); Santarém, 1♀, Faz. Taperinha, 1–11.II.1968 (MZSP); Jacareacanga, 2♂, XII.1986, M. Alvarenga (DZUP); Tucuru: 1♀, I.1979, M. Alvarenga leg. (ASUCOB). Mato Grosso: Barra do Rio Tapirapé, 1♀, 2-16.I.1966, B. Malkin leg. (MZSP). Bolivia, Santa Cruz: Santa Cruz, 1♂, 10 mi. W. Portachuelo, 27.III.1978, at night Gb, Marshall (ASUCOB).

**Geographic distribution.** Panama, French Guiana, Peru, Brazil (Amazonas, Pará, Mato Grosso), Bolivia.

**Biology and host plants:** Unknown.

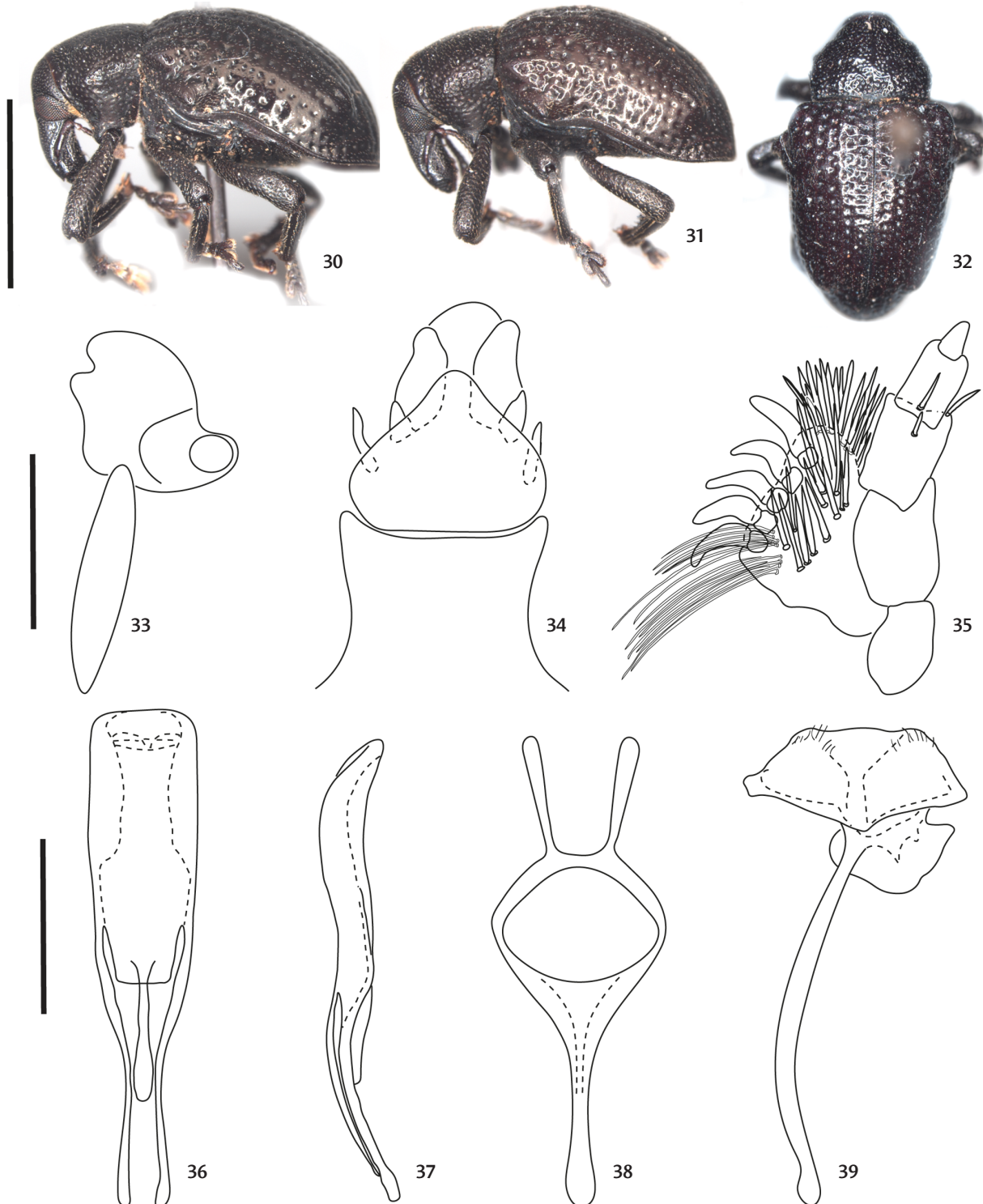
### *Bondarius breyeri* (Brèthes, 1910)

Figs 43–52

*Sternechus breyeri* Brèthes, 1910: 212 (description); Dalla Torre et al., 1932: 96 (catalog); Blackwelder, 1947: 823 (catalog); Wibmer & O'Brien, 1986: 180 (catalog).

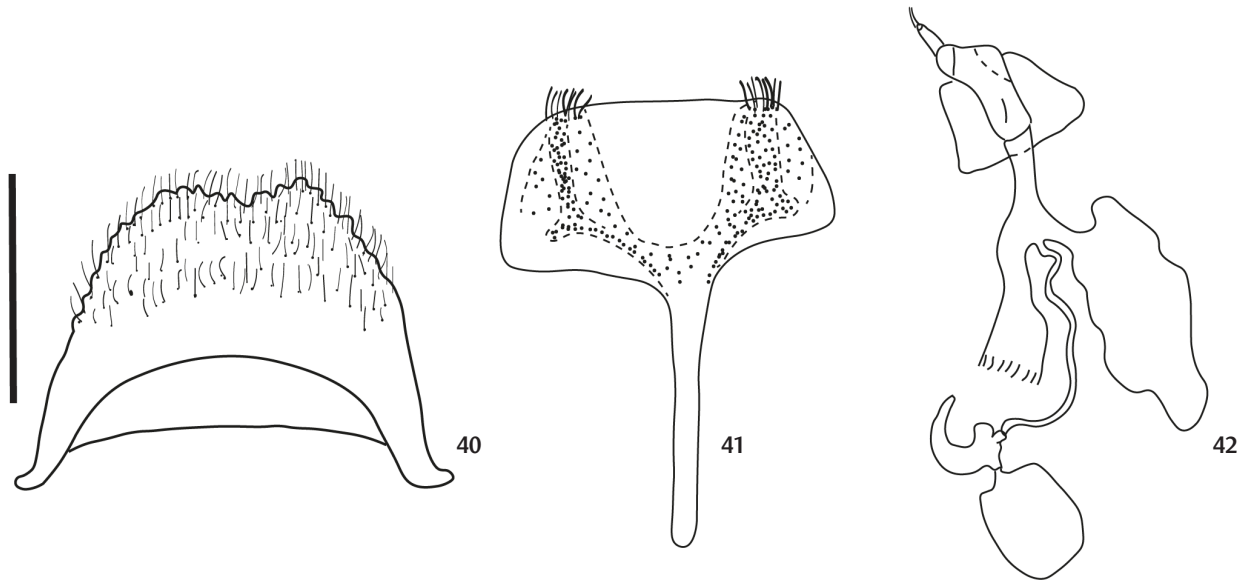
*Bondarius breyeri*; Rosado-Neto, 2006 (new combination, systematics).

**Redescription.** Integument reddish-black; covered with thick, short, and dense setae (Figs 43–45). Rostrum long and cylindrical, 1.9 times longer than its basal width; punctures



Figures 30–39. *Bondarius nitidus*: (30, 32–39) male, (31) female; (30–31) habitus, lateral view; (32) habitus, dorsal view; (33) mandible left; (34) labium; (35) maxillae. (36) edeago, dorsal view; (37) edeago, lateral view; (38) tegmen; (39) spiculum gastrale. Scale bars: 30–32 = 2 mm, 33–39 = 1 mm.





Figures 40–42. Female genitalia of *Bondarius nitidus*: (40) abdominal tergite 8; (41) abdominal sternite 8; (42) bursa copulatrix. Scale bar: 1 mm.

deep and large, dense to sparse on dorsum, wrinkled and irregular on lateral margins (Figs 43, 44). Scrobes ventrally separated by a basal tubercle. Antennae inserted apically, with scape shorter than funicle. Mouthparts: Mandibles bi-toothed, teeth round. Maxillae with palpifer longer than wide; 1<sup>st</sup> article of maxillary palp as long as wide, 2<sup>nd</sup> article longer than wide; lacinia with five elongate and straight teeth; palpifer and stipes glabrous; prementum as long as wide, with a pair setae near basal margin; sides straight, parallel; anterior margin triangular; palps short and transverse, asymmetrical at apex, glabrous (Fig. 46). Eyes acuminate ventrally, anterior margin round, interocular space 1.2 times the apical width of scape. Prothorax wider in the middle and posterior margin, sides parallel on basal ½, converging toward anterior margin; punctuation shallow, dense, laterally wrinkled; lateral tubercles weakly developed (Fig. 45). Elytra 1.2 times longer than their humeral width; striae with deep, regular punctuation, progressively smaller toward the apex (Figs 43, 44); interstriae convex at base of elytron. Mesoventrite between the coxae, narrow with round apex. Mesoventral process prominent. Legs: punctuation shallow and dense. Femora unarmed. Male genitalia: median lobe longer than basal apodemes, curved in lateral view; apex slightly wider than base, truncated, directed ventrally (Figs 47, 48). Tegmen with dorsal lobes subequal in length to manubrium (Fig. 49). Spiculum gastrale wide and curved at apex (Fig. 50). Female: abdominal tergite 8 transverse,

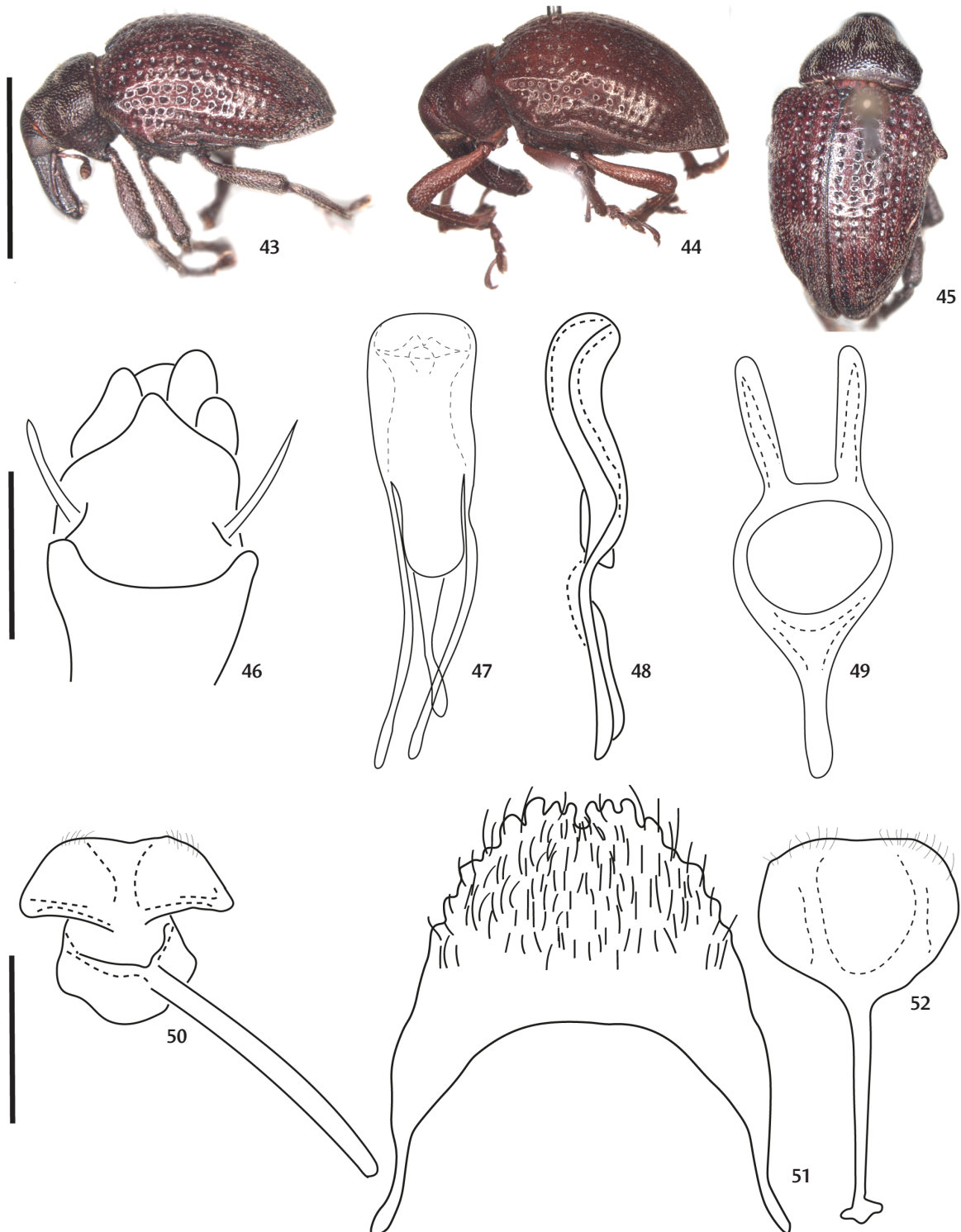
rectangular, sides converging toward the apex; apex with irregular crenulations and median distal notch; with a moderate number of apical and dorsal setae; dorsally with punctuation shallow and sparse (Fig. 51). Abdominal sternite 8 with ventral spicule longer than apical lobes, straight and narrow, slightly sclerotized, with distal portion wide and straight; apical arms subparallel, with lateral inner margin slightly sinuous; apex with sparse setae (Fig. 52).

Sexual dimorphism. Females with rostrum longer, punctuation shallow and sparse; foretibiae with premucro and mucro equally developed. Males with rostrum shorter, straight, punctuation deeper and larger; foretibiae with premucro obsolete.

Dimensions. Males/Females, respectively: BL: 4.83–9.34/5.34–7.17; RL: 1.17–1.75/1.17–1.33; RW: 0.50–0.92/0.67–0.75; PL: 1.00–2.17/1.17–1.67; PW: 2.17–4.92/2.33–3.17; EL: 3.83–7.17/2.33–3.17; EW: 3.00–5.67/3.17–4.5; IO: 0.08–0.25/0.17–0.25; WE: 0.17–0.25; LE: 0.92–1.25/0.75–0.92; LF: 0.92–1.33/0.75–0.92.

Type material examined. Holotype ♀, deposited in the MACN, with the following labels: “Bolivia/1052/*Sternechus breyeri* Brèthes/Repreparo M. Viana I.1960/TYPUS”.

Material examined. BRAZIL, Pará: Belém, 1♀, IX.1964, E. Dente leg. (MZSP); Mato Grosso, Barra do Rio Tapirapé, 1♂, XI.1964, R. Malkin leg. (MZSP); Mato Grosso do Sul, Campo Grande, 1♀, X.1952, M. Alvarenga leg. (MNRJ, ex Col. CACS); Minas Gerais, Unaí, 3♂, 1♀, Faz. Bolivia, 22–24.X.1964



Figures 43–52. *Bondarius breyeri*: (43, 45–50) male, (44, 51–52) female (43–44) habitus, lateral view; (45) habitus, dorsal view; (46) mandible left; (47) edeago, dorsal view; (48) edeago, lateral view; (49) tegmen; (50) spiculum gastrale; (51) abdominal tergite 8; (52) abdominal sternite 8. Scale bars: 43–45 = 2 mm, 46–52 = 1 mm.

(MZSP). Goiás, Jataí, 1♂ (NZAC); Rio Verde, 1♂, 1♀ (DZUP). São Paulo: Itu, 1♂, (Faz. Pau d'álho), 1-5.XI.1961, U.R. Martins leg. 1♀, XI.1957, P. Martins leg. (MZSP). BOLIVIA, Coroico (Yungas), 1♂, 1♀, 1800 m, 11.XII.1955, Pena leg. (NZAC); Santa Cruz: Buena Vista (Ichilo), 1♀, XI–XII-1948, L. Pena leg. (NZAC); Santa Cruz, 1♀, II.1955, Zischha leg. (NZAC); Santa Cruz de la Sierra, 1♀, 1834, (MNHN); La Paz: La Paz, 1♀, 5 mi. W. Chulumani. S. Yungas, 8.IV.1976, O'Brien & Marshall leg. (ASUCOB).

Geographic distribution. Brazil (Pará, Mato Grosso, Mato Grosso do Sul, Goiás, Minas Gerais, São Paulo), Bolivia. Biology and host plants. Unknown.

### *Bondarius sublaevicollis* (Hustache, 1939)

Figs 53–68

*Sternechus sublaevicollis* Hustache, 1939: 52 (description); Blackwelder, 1947: 824 (catalog); Mendes, 1957: 254 (citation); Wibmer & O'Brien, 1986: 180 (catalog).

*Bondarius sublaevicollis*; Rosado-Neto, 2006 (new combination, systematics).

Redescription. Integument yellowish-brown to reddish-black; with dark, ring-shaped maculae medially on elytra, and lighter, more elongate maculae on humeral region and apex; covered with fine, elongate and sparse setae (Figs 53–55). Rostrum long, cylindrical, 2.02 times longer than its basal width; punctation shallow, dense to sparse, slightly wrinkled on lateral margins (Figs 53, 54). Scrobes ventrally separated by a strong basal tubercle (Fig. 57). Antennae with scape as long as funicle. Mouthparts: Mandibles bi-toothed, with teeth acute and well-separated from each other (Fig. 58). Palpifer and basal articles of maxillary palp longer than wide; lacinia with six teeth, narrow and curved; palpifer and stipes with one or two setae; prementum subrectangular, sides converging toward the anterior margin; anterior margin triangular; one pair of latero-basal setae; labial palps elongate, asymmetrical, with one pair of basal setae; ligula with apex straight (Fig. 59). Eyes acuminate ventrally, anterior margin round, interocular space 1.2 times the apical width of scape. Prothorax wider on median portion and posterior margin, sides parallel on basal  $\frac{1}{2}$ , converging toward anterior margin; punctation shallow to deep, dense, not wrinkled laterally; 2–3 well-developed lateral tubercles. Elytra 1.2 times longer than their humeral width; striae with deep punctures, particularly on maculae, progressively shallower toward the apex; interstriae convex. Mesoventral process prominent (Fig. 56). Legs: punctation shallow, dense, slightly wrinkled. Forefemora with teeth short and acute (Fig. 60), hind femora with teeth truncated

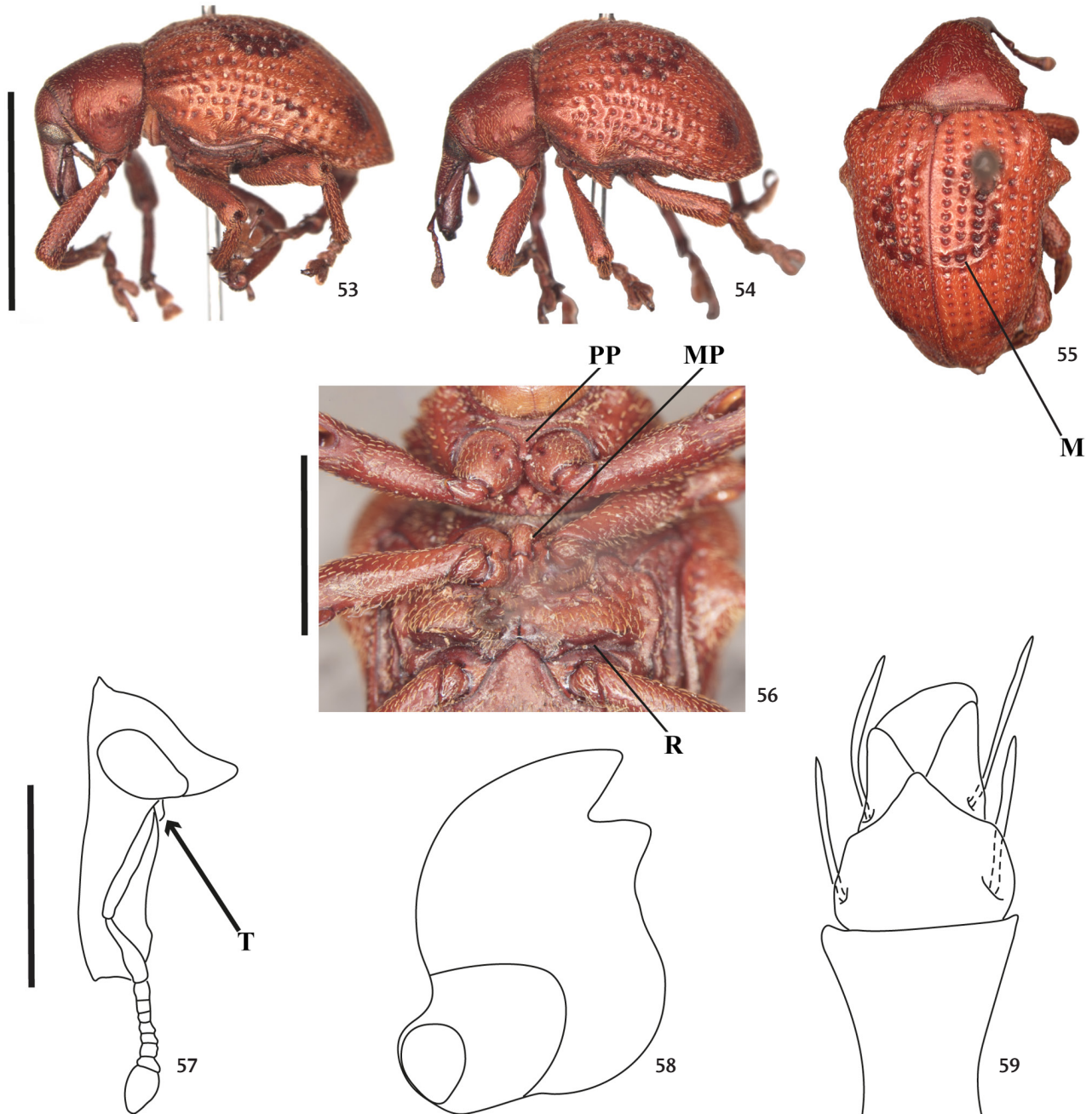
at apex, curved inward (Fig. 61). Male genitalia: median lobe longer than basal apodemes, sides parallel, apex truncated, curved ventrally, slightly wider than base (Figs 62, 63). Tegmen with dorsal lobes subequal in length to manubrium (Fig. 64). Spiculum gastrale wide and long, curved at base (Fig. 65). Female: abdominal tergite 8 subrectangular, transverse, sides converging toward the apex; apex slightly crenulated with median notch; with apical and dorsal setae, alternating short and long; punctation shallow and dense; transversal crenulations (Fig. 66). Abdominal sternite 8 transverse, with ventral spicule longer than apical arms; straight and narrow; apical arms parallel (Fig. 67). Coxites cylindrical, broad without setae. Styles cylindrical, distinct, apex glabrous. Bursa copulatrix membranous, without sclerites. Spermatheca curved; ramus subequal to collum. Spermathecal gland membranous, larger than spermatheca; spermathecal duct as long as bursa copulatrix, introduced into the bursa copulatrix base (Fig. 68).

Sexual dimorphism: Females with rostrum longer, punctation shallow and sparse; foretibiae with premucro and mucro equally developed. Males with rostrum shorter, straight, punctation deep and dense; foretibiae with premucro obsolete.

Dimensions. Males/Females, respectively: BL: 8.67–11.17/8.17–10.67; RL: 2.00–2.75/1.42–2.50; RW: 0.92–1.08/1.17; PL: 2.00–2.50/1.67–2.50; PW: 3.75–4.67/3.50–4.67; EL: 6.67–8.67/6.50–8.50; EW: 5.42–6.75/5.00–6.83; IO: 0.25–0.33; WE: 0.25/0.25–0.42; LE: 1.0–1.42/0.92–1.42; LF: 1.0–1.33/1.0–1.42.

Type material examined. Holotype ♀, deposited in the MNHN, with the following labels: "TYPE/Brazil-Mendes à 92 km de Rio de Janeiro/Museum Paris Collection Hustache/*Sternechus sublaevicollis*. A female paratype deposited in the IPKE collection, with the labels "SYNTYPUS/Brasilien/coll. Kraatz/Hustache det. 1938/Dstch. Entomol. Institut. Berlin/*Sternechus sublaevicollis* ♂". Contrary to the label information, the paratype is not a male, as mentioned by Hustache (1939), but a female.

Material examined. BRAZIL, Minas Gerais: Caraça, 1♂, Kuschel, leg. (NZAC). São Paulo: São Roque, 1♀, 2.I.1972, F. Lane, leg. (MZSP); Itu (Faz. Pau d'álho), 1♀, XI.1959, U.R. Martins, leg. (MZSP); Rincão, 1♂ (MZSP); Atibaia, 1♂, 7.XII.1970 (MZSP). Rio de Janeiro: km 47, Estrada Rio-São Paulo, 2♀, W. Zikan col., 15.XI.1950, 27.X.1951; 2♂, 5.X.1950, X.1955 (MNRJ); 3♂, D. Mendes, leg. 28.XII.1945, 12.X.1948, 15.X.1950 (MNRJ); 1♀, 1♂, P. Vygodinsky, leg. 9.XI.1943, 8.I.1943 (MNRJ); 1♂, Wyled, leg. 18.II.1943 (MNRJ); 1♀, O. Braga, leg. 8.II.1943 (MNRJ); 2♂, 26.IV.1955, F.M. Braga, col. (MNRJ); 1♂, W. Zikan leg. X.1950 (MZSP); Instituto de



Figures 53–59. *Bondarius sublaevicollis*: (53, 55–59) male, (54) female; (53–54) habitus in lateral view; (55) habitus, dorsal view; (56) metasternum; (57) head, lateral view; (58) mandible left; (59) labium. (T) Tubercle, (PP) prosternal process, (MP) mesoventral process, (R) rim following curvature midcoxae. Scale bars: 53–55 = 2 mm, 56 = 5 mm, 57–59 = 1 mm.

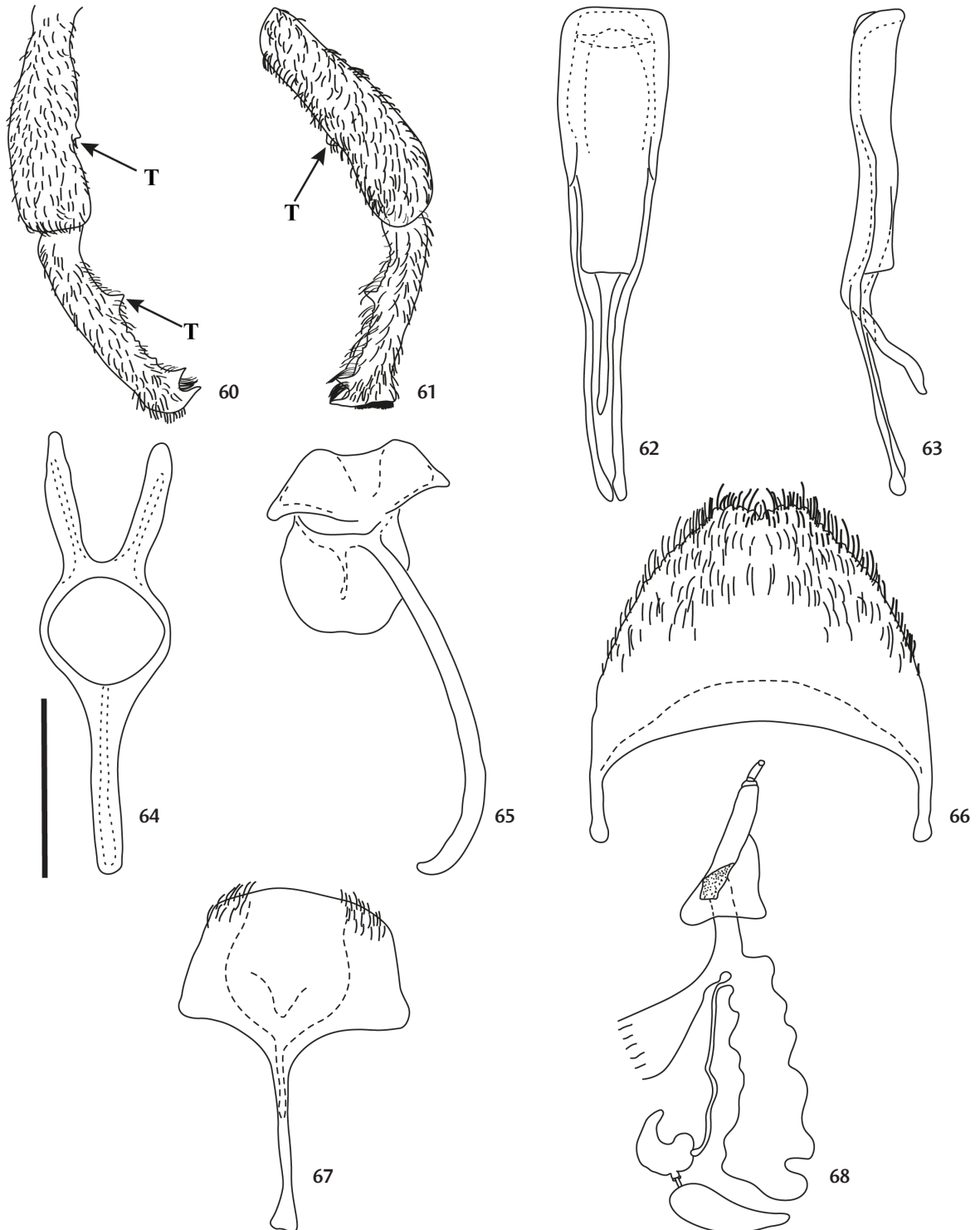
Entomologia Agrícola, 1♀ (MNRJ); Rio de Janeiro, Parque Nacional Itatiaia, 1♀, 800 m, 23.XI.1974, H.S. e M.A. Monné, col. (MNRJ); Guanabara, Represa Rio Grande, 1♂, I. 1961, F.M. Oliviera, leg. (DZUP). ARGENTINA, Misiones, locality

data missing, 1♀, Kuschel, col. (NZAC).

Geographic distribution. Brazil (Minas Gerais, São Paulo, Rio de Janeiro), Argentina.

Biology and host plants. Unknown.





Figures 60–68. *Bondarius sublaevicollis*: (60–65) male, (66–68) female; (60) hind leg; (61) front leg; (62) edeago, dorsal view; (63) edeago, lateral view; (64) tegmen; (65) spiculum gastrale; (66) abdominal tergite 8; (67) abdominal sternite 8; (68) bursa copulatrix. (T) Tooth. Scale bar: 1 mm.

*Bondarius fuscoaeus* (Boheman, 1843)

Figs 69–82

*Sternechus fuscoaeus* Boheman in Schoenherr, 1843: 354 (description); Gemminger & Harold, 1871: 2421 (catalog); Dalla Torre et al., 1932: 96 (catalog); Blackwelder, 1947: 824 (catalog); Mendes, 1957: 252 (distribution); Wibmer & O'Brien, 1986: 180 (catalog).

*Chalcoedermus dentipennis* Fiedler, 1936: 284 (key); 1937: 37 (description); Bondar, 1939: 12; 1941: 438 (citation, host plants); Blackwelder, 1947: 857 (catalog); Costa Lima, 1956: 183 (citation); Kuschel, 1958: 778 (sin.); Papp, 1979: 99 and 104 (catalog).

*Sternechus dentipennis*; Kuschel, 1955: 299 (combination).

*Bondarius fuscoaeus*; Rosado-Neto, 2006 (new combination, systematics).

**Redescription.** Integument reddishblack to pale yellow; with dark maculae medially on elytra and prothorax; covered with thin, elongate and sparse setae (Figs 69–71). Rostrum long, cylindrical, slightly convex apically, 1.8 times longer than its basal width; punctation shallow, dense, slightly wrinkled on margins (Figs 69, 70). Scrobes ventrally separated by a basal tubercle. Antennae inserted submedially, scape as long than funicle (Fig. 75). Mouthparts: Mandibles bi-toothed, with teeth acute and separated from each other (Fig. 72). Palpifer and basal articles of maxillary palp longer than wide; palpifer with 1–2 setae; stipes glabrous; lacinia with 6 narrow, elongate teeth (Fig. 74); prementum transverse, sides straight, apical margin triangular; 1 pair of latero-basal setae; labial palps elongate, asymmetrical at apex, with one pair of basal setae (Fig. 73). Eyes acuminate ventrally, anterior margin round; interocular space 1.2 times the apical width of scape. Prothorax wider on central and posterior portions, sides parallel on basal ½, converging toward anterior margin; punctation shallow and sparse, not wrinkled laterally; lateral tubercles weak (Fig. 71). Elytra 1.2 times longer than their humeral width; striae with deep punctation, particularly at base of maculae, progressively shallower toward the apex; interstriae convex (Fig. 70). Legs: punctation shallow, dense, wrinkled. Hind and midfemora with truncated and short tooth, apex curved toward inner margin; forefemora with very reduced tooth. Foretibiae with developed, acute to truncate, ventral-median tooth. Male genitalia: median lobe wide, as long as basal apodemes, apex truncated, curved ventrally, slightly wider than base (Figs 76, 77). Tegmen with dorsal lobes as long as manubrium (Fig. 78). Spiculum gastrale moderately wide, curved at base (Fig. 79). Female: abdominal tergite 8 transverse, rectangular; apex crenulated with median notch; with a moderate number of thin and elongate setae; dorsally with dense punctation and transversal crenulations (Fig. 80). Ab-

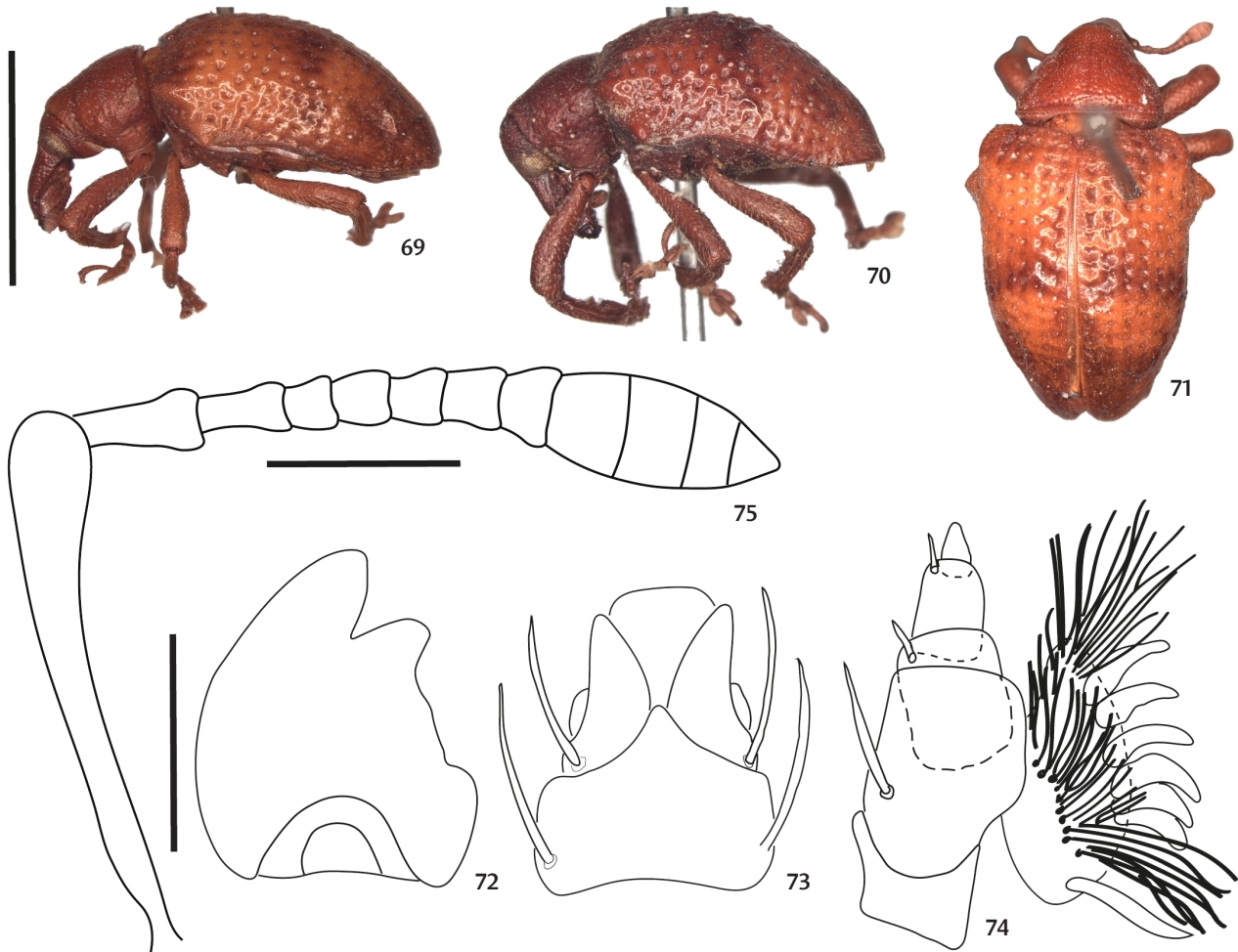
dominal sternite 8 transverse, apical arms round; with inner lateral margin slightly curved; apex with few setae; ventral spicula straight and narrow, subequal to apical lobes (Fig. 81). Coxites cylindrical, broad without setae. Styles rounded, distinct, apex with a long seta. Bursa copulatrix membranous, without sclerites. Spermatheca curved; ramus subequal to collum. Spermathecal gland membranous; spermathecal duct as long as bursa copulatrix, introduced into the bursa copulatrix base (Fig. 82).

**Sexual dimorphism.** Females with rostrum longer, punctation shallow and sparse; foretibiae with premucro and mucro equally developed. Males with rostrum shorter, straight, punctation deep and dense; foretibiae with premucro obsolete.

**Dimensions.** Males/Females, respectively: BL: 6.17–8.17/6.25–8.58; RL: 1.17–2.08/0.83–1.92; RW: 0.75–0.93/0.75–1.08; PL: 1.33–1.83/1.25–2.08; PW: 2.75–3.75/2.67–3.83; EL: 4.5–6.5/4.83–6.83; EW: 3.83–5.42/3.67–5.58; IO: 0.25–0.33; WE: 0.25/0.25–0.33; LE: 0.75–1.0; LF: 0.83–1.17/0.75–1.17.

**Type material examined.** *Sternechus fuscoaeus* Boheman, Holotype ♂, with the following labels: “TYPE/907 – Chev. Brazil/Coll. Chevrolat/Riksmuseum Stockholom”, deposited in the NHRS. *Chalcoedermus dentipennis* Fiedler, Holotype ♂, with the following labels: “TYPE/Corumbá-Matt. Grosso/♂/Museum Paris Col. A. Hustache/*Chalcoedermus dentipennis* sp. n. Fiedler, Type ♂”, deposited in the MNHN.

**Material examined.** BRAZIL, Espírito Santo: Santa Teresa, 1♀, 26.X.1964, Célia, leg. (DZUP); Parque Soretama, 1♀, 1♂, XI.1967, F.M. Oliveira, leg. (DZUP); Córrego Ita, 1♀, 1♂, X.1954, W. Zikan, leg. (MNRJ). Mato Grosso: Três Lagoas (Faz. Dr. José Mendes), 1♂, X.1964 (MZSP); Cáceres, 1♂, XII.1955, M. Alvarenga, leg. (MZSP). Goiás: Lagoa Santa, 1♀ (NZAC); Jataí, 2♀, A. Hustache, leg. (MNHN); 1♂ (NZAC); Pirenópolis (Piranitinga), 1♂, 20.VI.1942, F. Lane leg. (MZSP); Rio verde, 2♂ (DZUP); Cabeceira Lagoa Formosa, 24–27.X.1964 (MZSP). Bahia: locality data missing, 1♀, 1♂ 4142, Bondar (AMNH), 1♂ (NZAC); Água Preta (atual Uruçuca), 1♀. 18.IX.1931 (AMNH). Minas Gerais: Monte Alegre de Minas, (Fazenda Santa Maria), 1♀, 110 m, 24–30.XI.1942, F. Lane, leg. (MZSP); Caraça, 2♂, XII.1885, E. Gounelle leg. (MNHN); Unai (Fazenda Bolivia), 1♂, 22–24.X.1964 (MZSP). São Paulo: Castilho, 2♀, (left margin, rodovia Paraná-São Paulo), X.1964 (MZSP); Ubatuba, 1♀, 2.VI.1955, F. Lane, col. (MZSP); São Paulo (Santo Amaro), 1♀, 5.III.1959, J. Lane, leg. (MZSP); São Paulo (Jabaquara), 1♀, 17.III.1955, (USNM), 2♂, XI.1941. 6.I.1946 (NZAC); Rio Claro (Chácara Paraíso), 1♂, (DZUP); São Paulo (Rio Branco), 1♂, 3.V.1943, S. Moreira, col (MZSP); Barueri, 1♂, XI.1965, K. Lenko, leg.



Figures 69–75. *Bondarius fuscoaeenus*: (69, 71–75) male, (70) female; (69–70) habitus, lateral view; (71) habitus, dorsal view; (72) mandible left; (73) labium; (74) maxillae; (75) antenna. Scale bars: 69–71 = 2 mm, 72–74 = 1 mm, 75 = 5 mm.

(MZSP); Salesópolis (Estação Biológica Boracéia), 1♂, 850 m, III.1971. E. G. I. & E. A. Munroe, col. (CNCI). Rio de Janeiro: Rio de Janeiro (Represa Rio Grande), 1♂, 1♀ (NZAC); Rio de Janeiro, 1♂ (MNHN); Rio Bonito, 1♀, X.1965, A. Maller, leg. (DZUP). Paraná: Jussara, (Horto Florestal), 2♀, 1♂, 340 m, 12–15.X.1974 (DZUP); Maringá, 1♀, 10.IV.1975, Pelissari, leg. (DZUP); Ourizona, 1♂, 29.III.1975, M. Marostica, leg. (DZUP). Santa Catarina: Nova Teutônia, 1♂, 23.II.1948 (MZSP).

Locality data missing: 1♀, XI.1943, n° 5429, (DZUP); Brazil, 2♀, A. Hustache, col. (MNHN); 1♂, A. Hustache, col. (MNHN).

Geographic distribution: Brazil (Espírito Santo, Bahia, Mato Grosso, Goiás, Minas Gerais, São Paulo, Rio de Janeiro, Paraná, Santa Catarina).

Biology and host plants. Unknown.

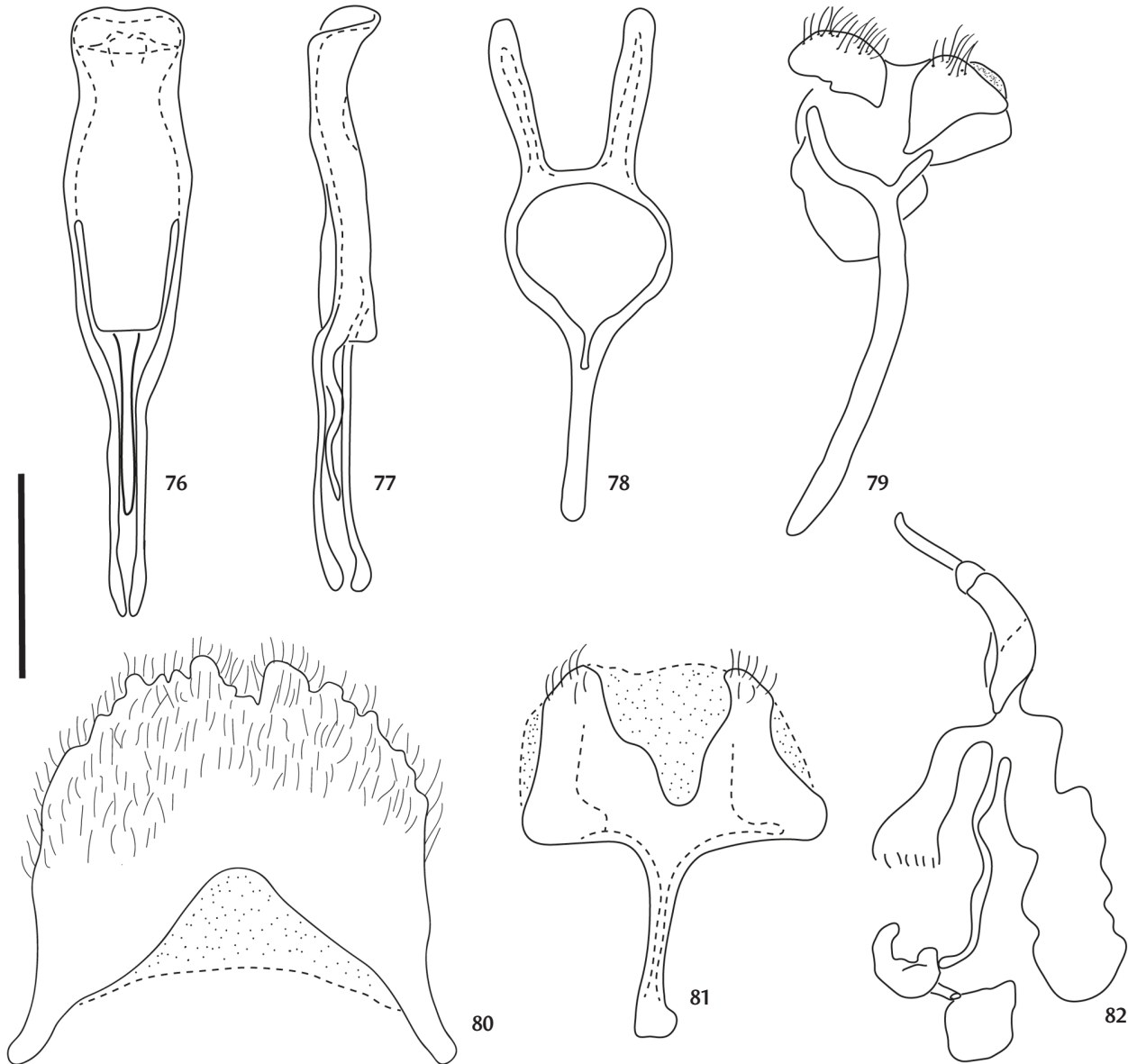
### *Bondarius spinipes* (Champion, 1902)

Figs 83–91

*Sternechus spinipes* Champion, 1902: 115 (description); Dalla Torre et al., 1932: 97 (catalog); Blackwelder, 1947: 824 (catalog); O'Brien & Wibmer, 1982: 85 (catalog).

*Bondarius spinipes*; Rosado-Neto, 2006 (new combination, systematics).

Redescription. Integument reddishblack to opaque, reddish-brown; covered with thin, elongate and sparse setae (Figs 83–85). Rostrum long, cylindrical, 2.0 times longer than its basal width; slightly convex apically; punctation shallow, dense to sparse on dorsum, deep, irregular and wrinkled laterally (Figs 83, 84). Scrobes ventrally separated by an obsolete longitudinal carina. Antennae with scape as long as funicle. Mouthparts: mandibles bi-toothed, with teeth

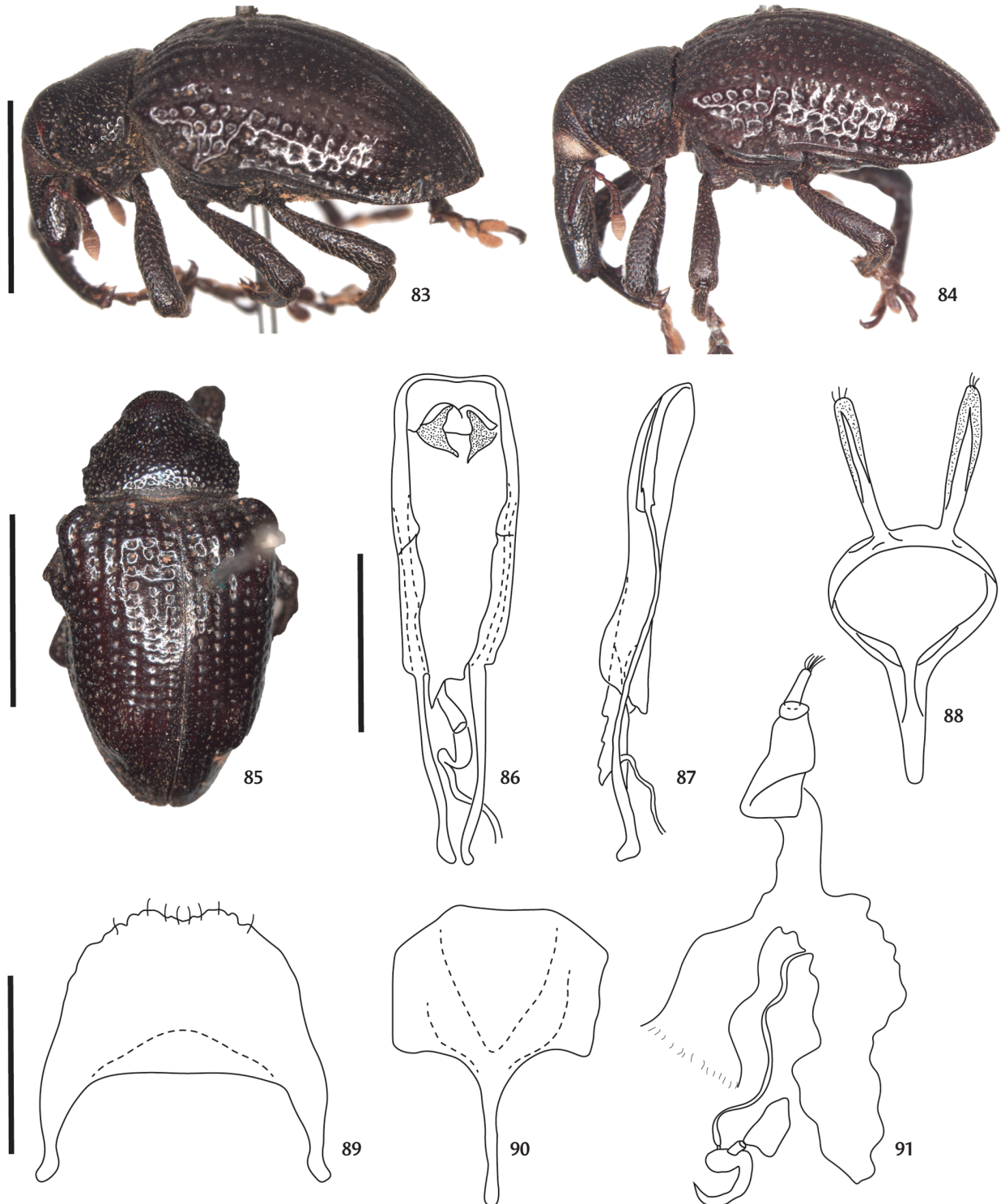


Figures 76–82. Genitalia of *Bondarius fuscoaeus*: (76–79) male, (80–82) female edeago, dorsal view, (77) edeago, lateral view; (78) tegmen; (79) spiculum gastrale; (80) abdominal tergite 8; (81) abdominal sternite 8; (82) bursa copulatrix. Scale bar: 1 mm.

acute and well separated from each other. Palpifer and basal articles of maxillary palp longer than wide; lacinia with five teeth; prementum transverse, sides approximately round; anterior margin triangular; one pair of latero-basal setae; labial palps elongate, asymmetrical, with a pair of latero-basal setae. Eyes acuminate ventrally, anterior margin round; interocular space 1.2 times the apical width of scape. Prothorax wider on central and posterior portions, sides parallel

on basal  $\frac{1}{2}$ , converging toward anterior margin; punctation shallow to deep, dense, slightly wrinkled on lateral margins; lateral tubercles weakly developed (Fig. 85). Elytra 1.2 times longer than their humeral width; striae with deep punctation, particularly at base, progressively shallower toward the apex; interstriae convex at base of elytron (Figs 83, 84). Legs: punctation shallow and dense. Femora with truncated and short teeth. Male genitalia: median lobe longer than basal





Figures 83–91. *Bondarius spinipes*: (83, 85–88) male, (84, 89–91) female; (83–84) habitus, lateral view; (85) habitus, dorsal view; (86) edeago, dorsal view; (87) edeago, lateral view; (88) tegmen; (89) abdominal tergite 8; (90) abdominal sternite 8; (91) bursa copulatrix. Scale bars: 83–85 = 2 mm, 86–91 = 1 mm.

apodemes, apex truncated, slightly wider than base (Figs 86, 87). Tegmen with dorsal lobes longer than manubrium (Fig. 88). Spiculum gastrale moderately wide, curved at apex. Female: abdominal tergite 8 trapezoidal, sides converging toward the apex; apical margin crenulated, without median notch; with a moderate number of short and erect setae on apex (Fig. 89). Sternite 8 transverse; ventral spicula subequal to apical lobes, narrow; apical lobes wide (Fig. 90). Coxites cylindrical, broad without setae. Styles cylindrical, distinct, apex covered with short and dense setae. Bursa copulatrix membranous, without sclerites. Spermatheca curved; ramus subequal to collum. Spermathecal duct as long as bursa copulatrix, introduced into the bursa copulatrix base (Fig. 91).

Sexual dimorphism. Females with rostrum longer, punctation shallow and sparse. Males with rostrum shorter, straight, punctation deep and dense.

Dimensions. Males/Females, respectively: BL: 7.34–10.33/8.5–10.67; RL: 2.08–3.08/1.83–2.08; RW: 0.92–1.25/1.00–1.25; PL: 1.67–2.5; PW: 3.00–4.67/3.67–4.17; EL: 5.67–8.00/6.67–8.17; EW: 4.42–6.25/5.25–6.25; IO: 0.08–0.25; WE: 0.25; LE: 1.0–1.5/1.0–1.33; LF: 1.0–1.5/1.0–1.33.

Type material examined. Holotype ♀, deposited in the BMNH, with the following labels: “TYPE/Panima, Guatemala Champion/B.C.A. Col. IV-4 *Sternechus spinipes* Champ./sp. Figured”.

Material examined. FRENCH GUIANA, Rio Maroni, 1♂, 1♀ (NZAC), 2 ♀ (USNM); Caiena, 1♂ (NZAC), 2♂, 2♀ (MNHN); Locality data missing, “Guyane Franç”. 1 ♀ (MNHN); St. Jean, 1♀ (USNM). Peru, Loreto: Iquitos, 1♂, 28.I.1985, F. Génier leg. (CMNS). BRAZIL, Amazonas: Tefé, 1♂, M. Mathan (MNHN), 1♀, X.1963, R. Carvalho leg. (MNRJ, ex. col. CACS); Fonte Boa, 1♂ (MNHN). Pará: Mocajuba (Mangabeira), 2♂, IV.1953, O. Rego leg. (MNRJ, ex. col. CACS). Locality data missing: 1♀ (MNHN).

Geographic distribution. French Guiana, Peru, Brazil (Amazonas, Pará).

Biology and host plants. Unknown.

### *Bondarius pectoralis* (Suffrian, 1872)

Figs 92–101

*Sternechus pectoralis* Suffrian, 1872: 156 (description).

*Sternechus pectoralis* [sic]; Gundlach, 1891: 296 (redescription).

*Sternechus pectoralis*; Dalla Torre et al., 1932: 97 (catalog); Blackwelder, 1947: 824 (catalog); O'Brien & Wibmer, 1982: 85 (catalog).

*Bondarius pectoralis*; Rosado-Neto, 2006 (new combination, systematics).

Redescription. Integument reddishblack, covered with moderately short, thick, more or less dense setae (Figs 92–94).

Rostrum long, cylindrical, 3.5 times longer than its basal width; punctation shallow, dense to sparse, slightly wrinkled laterally (Figs 92, 93). Scrobes shallow, not visible dorsally, ventrally separated by an obsolete longitudinal carina. Eyes rounded ventrally, anterior margin oblique; interocular space 0.6 times the apical width of scape. Antennae with scape as long as funicle. Mouthparts: mandibles bi-toothed, with teeth rounded (Fig. 95). Prothorax wider on central and posterior portions, sides parallel on basal ½, converging toward anterior margin; punctation thin to thin and dense; lateral tubercles weakly developed (Fig. 94). Elytra 1.4 times longer than their humeral width; striae with moderately deep punctation, regular, progressively shallower toward the apex; interstriae convex (Figs 92, 93). Legs: punctation shallow and dense. Hind femora with truncated submedian teeth, covered with rust yellow scales, elongate and thick; forefemora unarmed. Foretibiae covered with dense whitish scales, elongate and thick; median tooth weakly developed. Male genitalia: median lobe longer than basal apodemes, curved in lateral view; dorsally convex; apex acuminate and directed posteriorly (Figs 96, 97). Tegmen with dorsal lobes as long as ventral lobe (Fig. 98). Spiculum gastrale moderately wide, curved at apex. Female: abdominal tergite 8 trapezoidal, apical margin smooth; with a moderate number of short setae, dorsally with setae and sparse punctation (Fig. 99). Abdominal sternite 8 elongate, with spicula longer than apical lobes; straight and sclerotized; apical lobes with inner margin slightly sinuous, apical setae sparse (Fig. 100). Coxites cylindrical, broad without setae. Styles cylindrical, distinct, apex covered with short and dense setae. Bursa copulatrix membranous, without sclerites. Spermatheca curved; ramus subequal to collum. Spermathecal duct as long as bursa copulatrix, introduced into the bursa copulatrix base (Fig. 101).

Sexual dimorphism. Females with rostrum 1.2 times longer than males; punctation shallow and sparse.

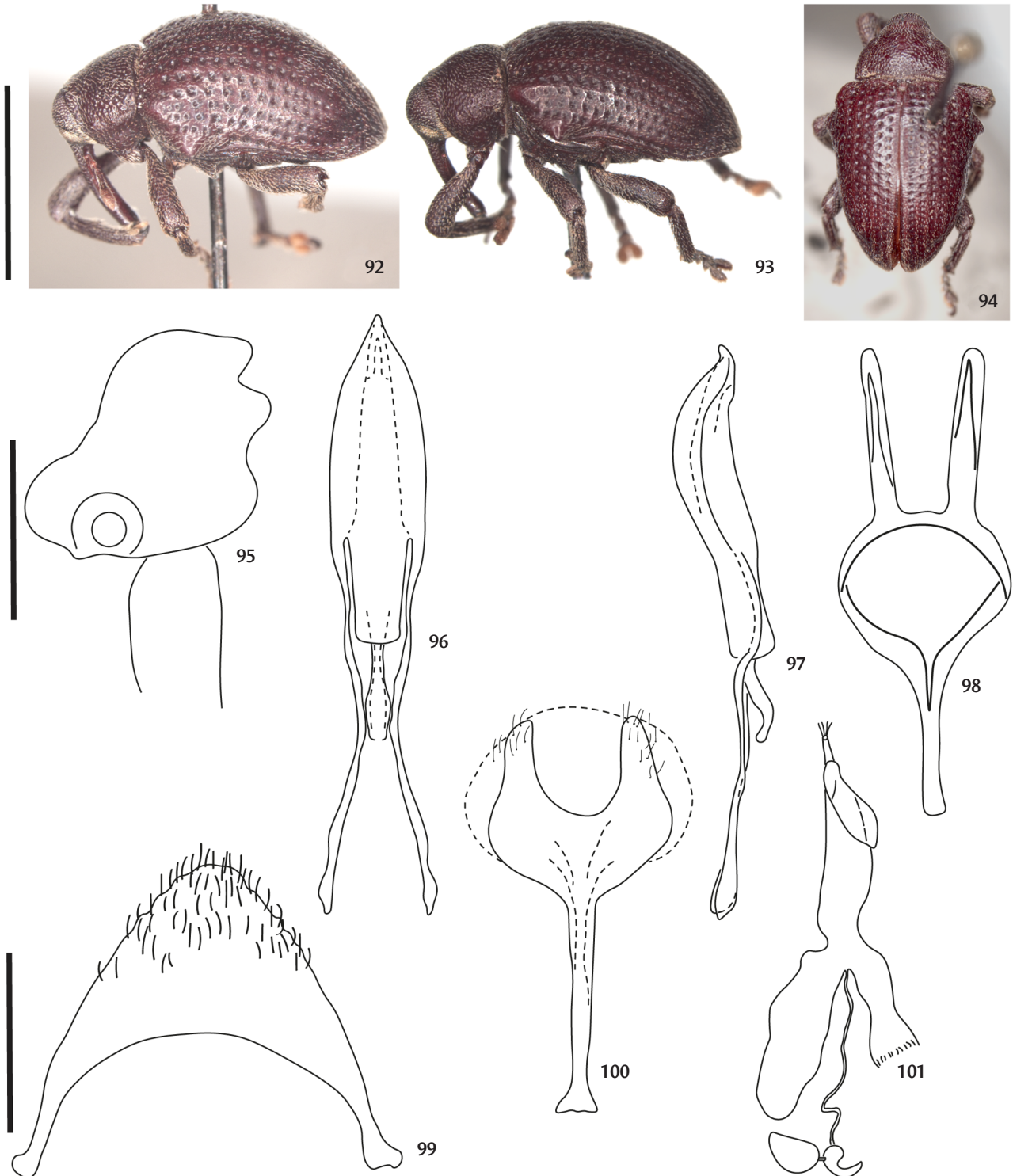
Dimensions. Males/Females, respectively: BL: 7.42/7.09; RL: 2.25/2.08; RW: 0.58/0.67; PL: 1.67; PW: 3.08; EL: 5.75/5.42; EW: 4.17; IO: 0.25; WE: 0.42; LE: 1.0; LF: 1.0.

Type material examined. Holotype ♂, deposited in the ACCZ, with the following labels: “TYPUS/n 1637/*Sternechus pectoralis* Suff. Cuba/Col. Gundlach”; examined by Medaldo Lobaina through photographs and sent to Rosado-Neto by the L.F. Armas of the Academia de Ciências de Cuba, Instituto de Zoologia.

Material examined. CUBA, Cayamas, 1♀, 1♂, E.A. Schwarz col. (USNM).

Geographic distribution. Cuba.

Biology and host plants. Unknown.



Figures 92–101. *Bondarius pectoralis*: (92, 94–98) male, (93, 99–101) female; (92–93) habitus, lateral view; (94) habitus, dorsal view; (95) mandible left; (96)edeago, dorsal view; (97)edeago, lateral view; (98) tegmen. (99) abdominal tergite 8; (100) abdominal sternite 8; (101) bursa copulatrix. Scale bars: 92–94 = 2 mm, 95–101 = 1 mm.

## ACKNOWLEDGMENTS

We thank Lúcia Massutti de Almeida (DZUP) for allowing us access to the *Bondarius* material deposited at the Coleção Entomológica Padre Jesus Santiago Moure, and the use of image capture equipment. We are also grateful to Karl-Schuchmann and Marinêz Isaac Marques for their English revision.

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Submitted: July 14, 2023

Accepted: March 19, 2024

Editorial responsibility: Ângelo Parise Pinto

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#### Author Contributions

GBS: Conceptualization, Formal Analysis, Microscopy work and drawings, Writing-original draft preparation, reviewing and editing. GHRN: Conceptualization, Data Curation, Writing-original draft preparation, reviewing and editing.

#### Competing Interests

The authors have declared that no competing interests exist.

#### How to cite this article

dos Santos GB, Rosado-Neto GH (2024) A taxonomic review of the Neotropical weevil genus *Bondarius* Rosado-Neto (Coleoptera: Curculionidae). *Zoologia* 41: e23039. <https://doi.org/10.1590/S1984-4689.v41.e23039>

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