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Monograph

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A contribution to the taxonomy of the genus *Pelecium* Kirby (Coleoptera: Carabidae: Peleciini)

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Abstract. *Pelecium* Kirby, 1817 is a neotropical genus of flightless carabid beetles comprising 34 species, distributed from Panama to middle Argentina. Most species of *Pelecium* are known from short series and few localities, in some cases only from the holotype. Male and female abdominal terminalia are not described for the majority of the species, a situation that makes it difficult to describe new species or to study intraspecific variation. Here, we describe nine new species based on individuals from Brazil: *Pelecium buckupi* sp. nov., *P. fistulosus* sp. nov. and *P. zaguryi* sp. nov. from the Centre-West region, *P. belloi* sp. nov., *P. chrissquirei* sp. nov., *P. straneoi* sp. nov. and *P. zophos* sp. nov. from the Southeast region, and *P. balli* sp. nov. and *P. grossii* sp. nov. from the South region. We also provide new distributional records and descriptions of abdominal terminalia for twelve species: *Pelecium atroviolaceum* Straneo & Ball, 1989, *P. bolivianum* Straneo & Ball, 1989, *P. cyanipes* Kirby, 1817, *P. helenae* Straneo & Ball, 1989, *P. laeve* Chaudoir, 1854, *P. negrei* Straneo, 1962, *P. drakei* Quedenfeldt, 1890, *P. punctatostriatum* Straneo, 1970, *P. purpureum* Straneo, 1955, *P. rotundipenne* Schaum, 1860, *P. striatum* Straneo, 1955 and *P. violaceum* Brullé, 1838.

Key words. Entomology, ground beetles, Harpalinae, Neotropical, South America.

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Introduction

Peleciini Chaudoir, 1880 is one of the 50 tribes of Harpalinae (Bouchard *et al*. 2011), and includes 91 species in eight genera grouped into two subtribes: Peleciina Straneo & Ball, 1989 and Agonicina Straneo & Ball, 1989. Peleciina gathers the great part of the tribe, with 74 species in six genera. Three of these genera comprise more than half of the species of Peleciina and they are found on the American continent (number of species in parentheses): *Eripus* Dejean, 1829 in Amazonian Peru, Guatemala and

Mexico (9); *Pelecium* Kirby, 1817 from Panama to middle Argentina (34); and *Stricteripus* Straneo & Ball, 1989 in Bolivia, Peru and Venezuela (3). The other Peleciina occur in southern and eastern Africa (*Disphaericus* Waterhouse, 1842, 17 species; *Dyschiridium* Chaudoir, 1861, 6 species), and on the Indian subcontinent (*Ardistomopsis* Straneo & Ball, 1989, 5 species) (Straneo & Ball 1989; Fedorenko 2014; Orsetti & Lopes-Andrade 2016). The other subtribe, Agonicina, includes only two genera: *Agonica* Sloane, 1920 (4 species) and *Pseudagonica* Moore, 1960 (13), both confined to Tasmania and southeastern Australia (Straneo & Ball 1989; Baehr 2012).

Pelecium is the most diverse genus of Peleciini, with 34 species organized into two subgenera: *Pelecidium* Straneo & Ball 1989 with three species, and *Pelecium* with the remaining 31 species (Straneo & Ball 1989; Orsetti & Lopes-Andrade 2016). The genus *Pelecium* was extensively studied by the Italian entomologist Stefano Ludovico Straneo (1902–1997), a prolific specialist on Carabidae beetles who described 64 genera and more than 1200 species in the family (Bousquet 2012). He published a series of taxonomic papers on *Pelecium* (Straneo 1953, 1955, 1962, 1970) that culminated in a generic revision (Straneo & Ball 1989), and was a unique researcher who worked consistently on the genus throughout the 20th century. Before him, there was a gap of more than six decades after the description of *Pelecium drakei* by Quedenfeldt (1890) in the 19th century. After Straneo, the genus was completely neglected until we described a new species from the Atlantic Forest biome (Orsetti & Lopes-Andrade 2016) and started to gather material for more studies.

Little is known about the way of life of peleciine beetles. Most of our knowledge comes from a few observations of larvae as parasitoids of beetle pupae and young millipedes (Salt 1928), and of adults as predators of millipedes (Erwin 1979). All species of *Pelecium* are flightless and are thus presumed to have a low dispersal ability, so that habitat destruction and loss may be a serious threat to them. The most efficient way to collect these beetles is using pitfall traps or actively searching during the night. Brazil is the hotspot for the genus, with 29 described species, of which 23 are endemic.

Most species of *Pelecium* occur in the Brazilian Atlantic Forest and the Brazilian Savanna (Cerrado) biomes, mainly in the states of Minas Gerais, Mato Grosso, São Paulo, Paraná and Santa Catarina (Straneo & Ball 1989; Orsetti & Lopes-Andrade 2016). Species of *Pelecium* are hard to collect and most are known from a few specimens in scientific collections. Some species were described based on only one individual, such as *P. striatipenne* Chaudoir, 1866, *P. parallelum* Straneo & Ball, 1989 and recently *P. igneus* Orsetti & Lopes-Andrade, 2016, of which only the male holotype is known in each case; and *P. tenellum* Schaum, 1860, *P. punctatum* Straneo, 1953, *P. renti* Straneo, 1953, *P. paulae* Straneo & Ball, 1989 and *P. obscurum* Straneo, 1955, each of which is known only for the female holotype. Consequently, intraspecific and gender variations within species of *Pelecium* are barely understood. The revision by Straneo & Ball (1989) provided an identification key and drawings of all species known up to that moment. Aside from the lack of photographs of habitus and abdominal terminalia, the morphological information provided by them is reasonable to identify most described species of *Pelecium*.

A recent examination of scientific collections revealed specimens that do not fit in the morphological limits of the described species of *Pelecium* or are new distributional records. Based on these specimens, our aim in the present study is to describe nine new species of *Pelecium* from Brazil, all belonging to the subgenus *Pelecium* due to their sexsetose labrum combined with quadrisetose pronotum. We also provide new distributional records and descriptions of abdominal terminalia for another 12 species of *Pelecium*.

Material and methods

We examined fifty adult specimens (Figs 1–12) and thirty images of type material (Figs 13–23) from the following scientific collections:

BMNH = Natural History Museum (formerly British Museum, Natural History) (London, England)

CAMB = Coleção Entomológica Ayr de Moura Bello (Rio de Janeiro, Rio de Janeiro, Brazil)
CELC = Coleção Entomológica do Laboratório de Sistemática e Biologia de Coleoptera da Universidade Federal de Viçosa (Viçosa, Minas Gerais, Brazil)
CEMT = Coleção Entomológica da Universidade Federal de Mato Grosso (Cuiabá, Mato Grosso, Brazil)
CERPE = Coleção Entomológica da Universidade Federal Rural de Pernambuco (Recife, Pernambuco, Brazil)
FZBRS = Fundação Zoobotânica do Rio Grande do Sul (Porto Alegre, Rio Grande do Sul, Brazil)
MCSN = Museo civico di Storia Naturale (Milan, Italy)
MNHN = Muséum national d'histoire naturelle (Paris, France)
MUB = Museum für Naturkunde (Berlin, Germany)
MZSP = Coleção Entomológica do Museu de Zoologia da Universidade de São Paulo (São Paulo, São Paulo, Brazil)

The specimens were measured under a Zeiss Stemi 2000-C stereo microscope and photographed under a Zeiss Discovery V20 stereo microscope equipped with a Zeiss AxioCam 506 colour digital camera. All images were taken by the senior author unless otherwise specified. Final images of the body were stacked using the extended focus module of Helicon Focus software. For dissection, each specimen was placed in a container with warm water for a day for relaxing tissues, then the parts of interest were placed in KOH for a few hours to remove the soft tissues and then placed in solution of 10% acetic acid for a few minutes to neutralize the KOH. Maps were generated using the on-line SimpleMappr tool (Shorthouse 2010). The biogeographical regionalisation of the Neotropical region follows Morrone (2014).

Measurements (in mm) and ratios are as follows:
AL1 = length of antennomere 1 (scape)
AL2 = length of antennomere 2 (pedicel)
EL = elytral length measured from base of scutellar shield to elytral apex
EW = greatest elytral width
HL = head length measured from labrum base to frons
HW = greatest head width including eyes
lp2L = length of the second labial palpomere
lp3L = length of the third labial palpomere
lp3W = greatest width of the third labial palpomere
mp3L = length of the third maxillary palpomere
mp4L = length of the fourth maxillary palpomere
mp4W = greatest width of the fourth maxillary palpomere
PL = pronotal length along midline
PW = greatest pronotal width
TL = total body length measured from apex of labrum to apex of elytra; the ratio TL/EW indicates degree of body elongation

Results

Taxonomy

Class Insecta Linnaeus, 1758
Order Coleoptera Linnaeus, 1758
Family Carabidae Latreille, 1802
Subfamily Harpalinae, Bonelli, 1810
Tribe Peleciini Chaudoir, 1880

Pelecium Kirby, 1817
Figs 1–24

Diagnosis

Dorsal surface bright. Head usually with a pair of frontal foveae (Fig. 24A) and one pair of supraorbital setae. Labium and maxilla well developed; fourth maxillary palpomere twice as long as the third; terminal maxillary and labial palpomeres usually triangular to securiform (Fig. 1A, C), but in some cases ovate (Fig. 1B, D); mandible groove large and glabrous; glossa bisetose (Fig. 1C). Labrum with three pairs of setae dorsally (Fig. 1F). Mentum with median tooth (Fig. 1E). Antennae (Fig. 1H) pubescent, filiform; scape two to three times larger than pedicel. Pronotum shape variable, usually with median line and pair of posterior impressions (Fig. 24A). Scutellar shield triangular. Legs with short trochanter, one-fourth to one-ftfth as long as metafemur. Tibiae with yellow setae throughout inner margin; inner spur present; long spur inserted on anterior border of antennal cleaner. Protarsomeres (Fig. 1I) 1–4 enlarged and ventrally covered by adhesive setae, protarsomeres 4 bilobed; mesotarsomeres (Fig. 1K) and metatarsomeres (Fig. 1L) 1–4 ventrally covered with yellow setae. Metendosternite (Fig. 1G) stalk twice as long as wide; laminae well developed; lateral arms moderately long; ventrolateral processes absent; anterior processes absent. Elytra ovate, usually with deeply impressed striae. Hind wings not developed. Males with one pair of setae on abdominal ventrite VII. Male terminalia asymmetrical; aedeagus cylindrical (Fig. 24C–D); parameres drastically asymmetrical. Female terminalia with gonocoxite (Fig. 24B) bearing ensiform setae on each side at basal lobe.

Below is a list of species of the genus *Pelecium* and synonyms (asterisks indicate species occurring in Brazil), species groups are sensu Straneo & Ball (1989):

Subgenus *Pelecidium* Straneo & Ball, 1989
- *Pelecium laevigatum* Guérin-Méneville, 1843
- *Pelecium sulcipenne* Chaudoir, 1861
- *Pelecium sulcatum* Guérin-Méneville, 1843

Subgenus *Pelecium* Kirby, 1817
- *Pelecium cyanipes* species group
  - **Pelecium cyanipes* Kirby, 1817
    - *Pelecium carinatum* Chaudoir, 1846
    - *Pelecium ovipenne* Chaudoir, 1861
    - *Pelecium humeratum* Chaudoir, 1866
- *Pelecium faldermanni* species group
  - **Pelecium besckii* (Chaudoir, 1850)
    - *Augasmosomus besckii* Chaudoir, 1850
    - *Pelecium bisulcatum reichardti* Straneo, 1970
  - *Pelecium bisulcatum* Straneo, 1970
  - **Pelecium faldermanni* (Chaudoir, 1846)
    - *Augasmosomus faldermanni* Chaudoir, 1846
    - *Augasmosomus iridescens* Chaudoir, 1850
    - *Pelecium brevisulcis* Straneo, 1953
  - **Pelecium foveicolle* Chaudoir, 1866
  - **Pelecium obtusum* Straneo, 1953
- *Pelecium laeve* species group
  - **Pelecium belloi* sp. nov.
  - **Pelecium laeve* Chaudoir, 1854
    - *Pelecium politum* Schaum, 1860
  - **Pelecium nicki* Straneo, 1955
  - **Pelecium obscurum* Straneo, 1955

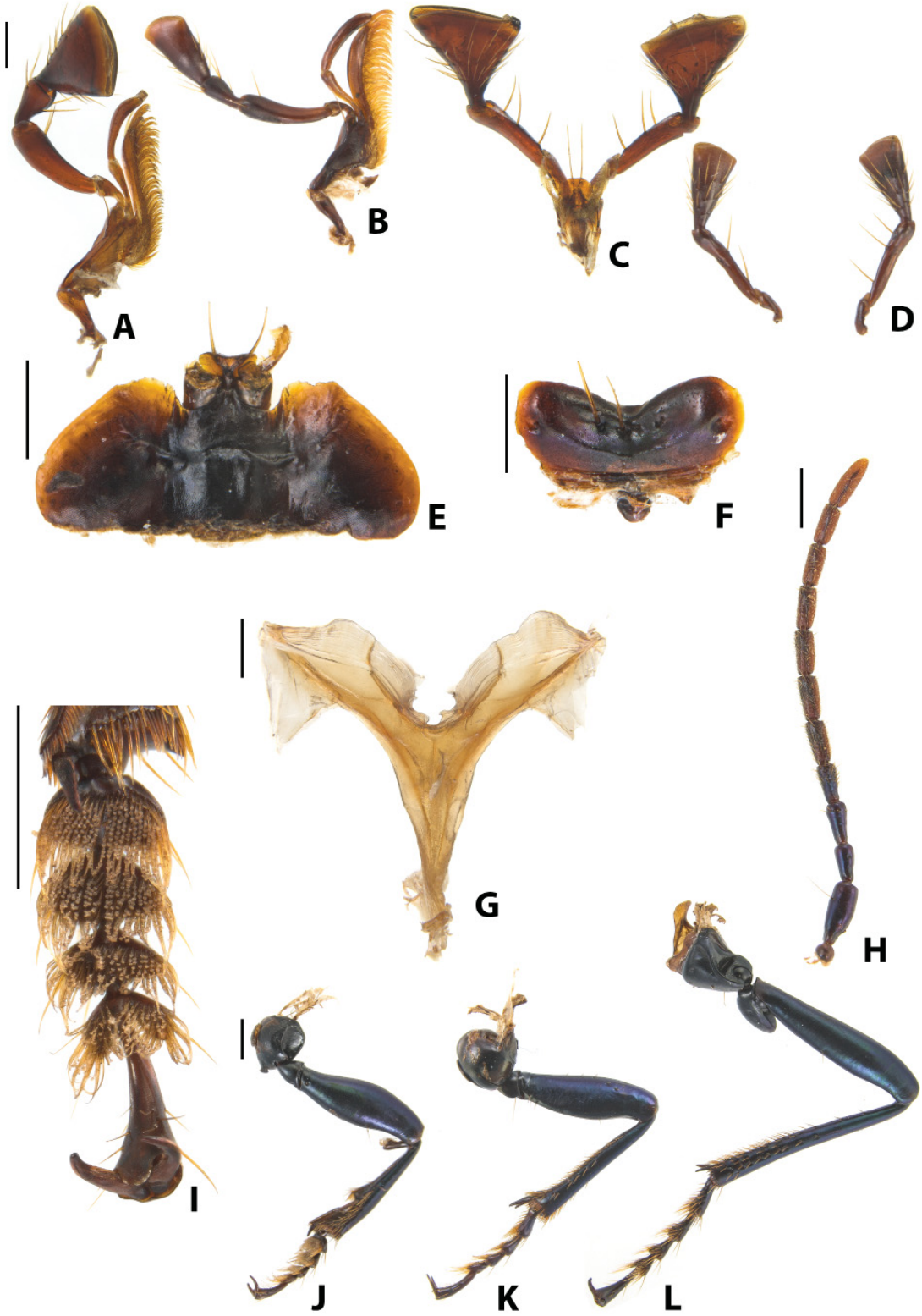

Fig. 1. Dissected parts of *Pelecium violaceum* Brullé, 1838, male from Indiavaí, Mato Grosso, Centre-West Brazil (A, C, G) and female from Pontes e Lacerda, Mato Grosso, Centre-West Brazil (B, D–F, H–L). **A–B**. Maxilla. **C**. Labial palpomeres and glossa. **D**. Labial palpomeres. **E**. Mentum. **F**. Labrum. **G**. Metendosternite. **H**. Antenna. **I**. Protarsomeres. **J**. Anterior leg. **K**. Median leg. **L**. Posterior leg. Scale bars: A–G = 1 mm; H–L = 0.5 mm.

Pelecium punctatostriatum species group
**Pelecium atroviolaceum* Straneo & Ball, 1989
**Pelecium bolivianum* Straneo & Ball, 1989
**Pelecium buckupi* sp. nov.
**Pelecium fistulosus* sp. nov.
**Pelecium punctatostriatum* Straneo, 1970
**Pelecium semistriatum* Straneo & Ball, 1989
**Pelecium zaguryi* sp. nov.
Pelecium refulgens species group
**Pelecium fulgidum* Straneo, 1962
**Pelecium negrei* Straneo, 1962
**Pelecium refulgens* Guérin-Méneville, 1831
Pelecium renati species group
**Pelecium renati* Straneo, 1953
**Pelecium striatum* Straneo, 1955
Pelecium rotundipenne species group
**Pelecium balli* sp. nov.
**Pelecium chrissquirei* sp. nov.
**Pelecium helenae* Straneo & Ball, 1989
**Pelecium igneus* Orsetti & Lopes-Andrade, 2016
**Pelecium paulae* Straneo & Ball, 1989
**Pelecium purpureum* Straneo, 1955
**Pelecium rotundipenne* Schaum, 1860
**Pelecium straneoi* sp. nov.
Pelecium violaceum species group
**Pelecium brasiliense* Straneo, 1962
**Pelecium drakei* Quedenfeldt, 1890
**Pelecium grossii* sp. nov.
**Pelecium longicolle* Straneo, 1953
Pelecium longicolle impunctatum Straneo & Ball, 1989
Pelecium parallelum Straneo & Ball, 1989
**Pelecium punctatum* Straneo, 1953
**Pelecium striatipenne* Chaudoir, 1866
**Pelecium tenellum* Schaum, 1860
**Pelecium violaceum* Brullé, 1838
**Pelecium zophos* sp. nov.

Identification key for *Pelecium* Kirby, 1817

The key provided below is based mostly on that of Straneo & Ball (1989), but with *P. igneus* and the nine species described herein also included.

1. Labrum with four setae. Pronotum with one pair of lateral marginal setae; median longitudinal impression deep. Elytron without parascutellar seta. Subgenus *Pelecidium* 2
– Labrum with six setae. Pronotum with two or more pairs of marginal setae; median longitudinal impression various. Elytron parascutellar seta variable. Subgenus *Pelecium* 4

2. Elytron with only stria 1 deeply impressed, and only on medial part of disc..... ..... ***P. laevigatum*** Guérin-Méneville, 1843
– Elytron with at least striae 1–4 deeply impressed on disc 3

3. Dorsal surface of pronotum and elytra subopaque. Elytral striae 2–4 terminated closer to base, intervening smooth space rather narrow ..... ***P. sulcatum*** Guérin-Méneville, 1843
– Dorsal surface of pronotum and elytra shining, iridescent. Elytral striae 2–4 terminated far from base, intervening smooth space extensive ..... ***P. sulcipenne*** Chaudoir, 1861

4. Elytron with striation complete: eight clearly impressed striae, striae 7 or 6 and 7 joined to 8 at lateral margin, not extended to base 5
– Elytron with striation incomplete, or wholly smooth 18

5. Tarsomere 5 with row of few slender setae on each ventrolateral margin 6
– Tarsomere 5 without setae ventrolaterally 8

6. Dorsal surface of pronotum and elytra blue or black; microsculpture meshes isodiametric, surface dull ..... ***P. cyanipes*** Kirby, 1817 (Figs 7D–K, 14A–B)
– Dorsal surface of pronotum and elytra violaceous; microsculpture meshes transverse, on elytra transverse-grated, surface shining to iridescent 7

7. Pronotum with posterior edge not margined. Elytron with humerus projected anteriorly ..... ***P. renati*** Straneo, 1953 (Fig. 18C)
– Pronotum with posterior edge margined laterally. Elytron with humerus not projected anteriorly ..... ***P. striatum*** Straneo, 1955 (Figs 11I–P, 19D)

8. Elytron with striae impunctate 9
– Elytron with striae punctate at least on apical declivity 16

9. Dorsal surface dark, with greenish reflections. Head with frontal impressions sinuous, elongate ..... ***P. longicolle impunctatum*** Straneo & Ball, 1989
– Varied dorsal surface colour. Head with frontal impressions not sinuate, short or long 10

10. Size shorter, length of body less than 10 mm. Colour of dorsal surface dull. Head with short frontal impressions, punctiform, at most extended to level of anterior margin of compound eye 11
– Size of most specimens large (9–20 mm). Varied dorsal surface colour. Head with long frontal impressions, extended to mid-eye level, or more posteriorly 13

11. Body elongate and sub-parallel. Pronotum with lateral margins only slightly arcuate; posterolateral impressions very short. Elytra with apical declivity very steep ..... ***P. parallelum*** Straneo & Ball, 1989
– Varied body shape. Pronotum with lateral margins more arcuate; posterolateral impressions longer. Apical declivity of elytra more gradually sloped 12

12. Pronotum evenly arcuate, rounded ..... ***P. tenellum*** Schaum, 1860 (Fig. 20A)
– Pronotum arcuate, posterior fourth forming a sinuous line with posterior angles..... ***P. zophos*** sp. nov. (Fig. 6A–H)

13. Surface black with no bright colour. Eyes small. Elytra elongate 14
– Varied surface colour. Eyes large. Elytra widened; lateral margins markedly arcuate 15

14. Elytral margins markedly parallel..... ***P. striatipenne*** Chaudoir, 1866 (Fig. 19C)
– Elytral margins slightly arcuate ..... ***P. grossii*** sp. nov. (Fig. 4I–P)

15. Dorsal surface bright green. Pronotum with or without bluish reflections ..... ***P. drakei*** Quedenfeldt, 1890 (Figs 8A–H, 14C)
– Dorsal surface violaceous or bluish. Pronotum with bluish reflections ..... ***P. violaceum*** Brullé, 1838 (Fig. 12A–H)

16. Body stout. Pronotum short, wider than long ..... ***P. punctatum*** Straneo, 1953 (Fig. 18B)
– Body elongate. Pronotum elongate, longer than wide 17

17. Head with frontal impressions shorter, not sinuate laterally. Elytron with striae punctate throughout their lengths ..... ***P. brasiliense*** Straneo, 1962 (Fig. 13D)
– Head with frontal impressions elongate, markedly sinuate laterally. Elytral striae with punctures restricted to apical declivity ..... ***P. longicolle longicolle*** Straneo, 1953 (Fig. 16B)

18. Head with frontal impressions elongate, extended posteriorly to postocular transverse impression 19
– Head with frontal impressions shorter, punctiform or not, not extended beyond posterior margin of compound eyes 21

19. Pronotum and elytra black, with aeneous lustre. Elytron with striae 1–4 deeply impressed, 4 short, not extended to apical declivity posteriorly ..... ***P. negrei*** Straneo, 1962 (Figs 10A–H, 16C)
– Pronotum and elytra bright copper. Elytron with more than four impressed striae 20

20. Elytron with striae 1–5 deeply impressed, but stria 5 very short ..... ***P. fulgidum*** Straneo, 1962 (Figs 8I–J, 14D, 15A)
– Elytron with striae 1–6 deeply impressed, but stria 6 very short ..... ***P. refulgens*** Guérin-Méneville, 1831

21. Elytron with more than three discal striae deeply impressed in at least part of their lengths 22
– Elytron with three or fewer discal striae deeply impressed, or wholly smooth 36

22. Pronotum with lateral margins rounded, with three pairs of marginal setae 23
– Varied pronotal shape, with two pairs of marginal setae 24

23. Tarsomere 5 with row of few slender setae on each ventrolateral margin ..... ***P. zaguryi*** sp. nov. (Fig. 5I–J)
– Tarsomere 5 without setae ventrolaterally ..... ***P. rotundipenne*** Schaum, 1860 (Figs 18D, 19A)

24. Tarsomere 5 with row of few slender setae on each ventro-lateral margin 25
– Tarsomere 5 glabrous ventrally 30

25. Elytron with striae smooth, impunctate 26
– Elytral striae markedly punctate 27

26. Dorsal surface dark metallic green with purple reflections. Pronotal sides slightly arcuate, almost parallel. Elytra elongate, subparallel-sided ..... ***P. buckupi*** sp. nov. (Fig. 3A–G)
– Dorsal surface black with faint violaceous reflections. Pronotum convex anteriorly, with lateral margins arcuate and subsinuate before postero-lateral angles. Elytra ovate, with sides markedly convex ..... ***P. bolivianum*** Straneo & Ball, 1989 (Figs 7A–C, 13C)

27. Elytron with more than five discal striae deeply impressed. Pronotum wider than long 28
– Elytron with five or fewer discal striae deeply impressed. Pronotum at least as long as wide 29

28. Elytron with striae 1–7 deeply impressed. Dorsal surface bright black without reflections ..... ***P. fistulosus*** sp. nov. (Fig. 4A–H)
– Elytron with striae 1–6 deeply impressed. Dorsal surface black with violaceous reflections ..... ***P. atroviolaceum*** Straneo & Ball, 1989 (Figs 6I–P, 13A)

29. Dorsal surface coppery. Elytron with striae 1–5 impressed. Pronotum longer than wide..... ***P. punctatostriatum*** Straneo, 1970 (Fig. 18A)
– Varied colour; head black with or without greenish reflections; pronotum dark green; elytra black with bluish-violaceous reflections. Elytron with only striae 1–4 impressed. Pronotum as long as wide..... ***P. semistriatum*** Straneo & Ball, 1989 (Fig. 19B)

30. Elytron with only discal striae 1–4 deep, and only stria 1 extended to apical declivity, stria 4 remote from base and apex. Pronotum with posterolateral impressions indistinct, shallow..... ***P. purpureum*** Straneo, 1955 (Fig. 11A–H)
– Elytron with at least striae 1–5 moderately deeply impressed, and extended to rather gradually sloped apical declivity. Pronotum with postero-lateral impressions various 31

31. Pronotum with sides markedly rounded 32
– Pronotum with sides less rounded, subsinuate to sinuate posteriorly..... 34

32. Pronotum posterolateral impressions indistinct..... ***P. straneoi*** sp. nov. (Fig. 5A–H)
– Pronotum posterolateral impressions distinct..... 33

33. Pronotum posterior impression line-shaped toward the disc of pronotum..... ***P. balli*** sp. nov. (Fig. 2A–H)
– Pronotum posterior impression rounded..... ***P. paulae*** Straneo & Ball, 1989 (Fig. 17C)

34. Pronotum red, with green reflections laterally; shape subcordate to sinuate; lateral edges more arcuate near posterior margin. Elytra black, rounded shape ..... ***P. igneus*** Orsetti & Lopes-Andrade, 2016
– Dorsum unicolorous. Pronotum subsinuate or subquadrate. Elytra sub-elongate..... 35

35. Male maxillary palpomere 4 broadly ovate, with apex oblique truncated. Pronotum posterior impression shallow, elongate toward centre ..... ***P. chrissquirei*** sp. nov. (Fig. 3H–N)
– Male maxillary palpomere 4 triangular. Pronotum posterior impression shallow and short, indiscernible..... ***P. helenae*** Straneo & Ball, 1989 (Figs 9A–H, 15B–D)

36. Tarsomere 5 glabrous ventrally..... 37
– Tarsomere 5 with row of few slender setae on each ventrolateral margin..... 43

37. Elytron with at least portions of striae 1 and 2 deeply impressed 38
– Elytron with not more than stria 1 deeply impressed in part of length 39

38. Dorsum dark blue or bluish-violaceous. Pronotum with lateral margins broadly rounded to posterolateral angles ..... ***P. obtusum*** Straneo, 1953 (Fig. 17B)
– Dorsal surface black with faint violaceous reflections. Pronotum with lateral margins slightly sinuate posteriorly, posterolateral angles slightly projected ..... ***P. bisulcatum*** Straneo, 1970 (Fig. 13B)

39. Dorsal surface green. Head with frontal impressions slightly elongate, extended to or slightly posteriorly to anterior margin of compound eyes..... ***P. foveicolle*** Chaudoir, 1866
– Varied dorsal surface colour. Head with frontal impressions punctiform 40

40. Elytra with no discal striae deeply impressed..... 41
– Elytron with at least stria 1 deeply impressed, with or without shallow vestiges of some other striae..... 42

41. Pronotum slightly wider than long, with sides arcuate and shortly subsinuate posteriorly..... ..... ***P. belloi*** sp. nov. (Fig. 2I–K)
– Pronotum elongate and slender with sides equally arcuate for entire length .... ***P. laeve*** Chaudoir, 1854 (Figs 9I–P, 16A, 17D)

42. Stria 2 shallow, but quite distinct..... ***P. besckii*** Chaudoir, 1850
– Stria 2 evanescent ..... ***P. faldermanni*** (Chaudoir, 1846)

43. Dorsal surface blue. Anterior portion of pronotum narrower than posterior portion. Elytron with lateral border terminated in small deep fovea..... ***P. obscurum*** Straneo, 1955
– Dorsal surface copper. Anterior portion of pronotum not narrower than posterior portion..... ..... ***P. nicki*** Straneo, 1955 (Figs 10I–P, 16D, 17A)

Descriptions of new species

Pelecium balli sp. nov.
urn:lsid:zoobank.org:act:FC546130-65BD-48EC-9988-FFE154C52C74
Figs 2A–H, 25

Diagnosis

A medium-sized species (10 mm), distinguishable among other congeners by the combination of the following features. Body elongate. Head frontal fovea punctiform (Fig. 2B). Pronotum median line fine and shallow. Each elytron with striae 1–5 deeply impressed and 6 shallow. Adults of *P. balli* sp. nov. and *P. paulae* are quite similar, but in the former the pronotum posterior impression is shallow and line-shaped toward the disc, resembling a channel, while in the latter the posterior impression is also shallow, but rounded.

Etymology

The specific epithet '*balli*' is an eponym in honor of the American entomologist George Eugene Ball (1926–2019), an expert in ground beetles (Carabidae).

Type material

Holotype
BRAZIL • ♀; Paraná, Balsa Nova, São Luiz do Purunã, Faz. Monjolo; 15 Dec. 2006–20 Jan. 2007; P. Löwenberg Neto leg.; pitfall; "*Pelecium balli* Orsetti & Lopes-Andrade HOLOTYPUS" [printed on red paper]; CERPE.

Paratypes
BRAZIL • 1 ♂, 1 ♀; same collection data as for holotype; "\\ *Pelecium balli* Orsetti & Lopes-Andrade PARATYPE" [printed on yellow paper]; CERPE.

Description

Female (holotype, fully pigmented adult)
Measurements (in mm). AL1 0.8, AL2 0.4, EL 6.0, EW 4.0, PL 3.3, PW 3.3, HL 1.5, HW 2.1, TL 10.8, TL/EW 2.7, lp2L 0.5, lp3L 0.6, lp3W 0.2, mp3L 0.3, mp4L 0.6, mp4W 0.3.

Body. Elongate, flat; disc of head, pronotum and elytra shiny black in dorsal view; glabrous (Fig. 2A). Ventral surface shiny black; sternite V with mesh of short yellowish setae in posterior portion.

Head. Microreticulate; frontal fovea punctiform (Fig. 2B). Antennae reddish brown, moderately long, almost reaching posterior margin of pronotum; antennomeres 1–3 with few long, sparse yellowish setae on apical portion; antennomeres 4–11 fully covered with small yellowish setae. Apical labial and maxillary palpomeres with long, sparse yellowish setae; broadly ovate, with apex obliquely truncated; reddish brown, with apicalmost portion lighter.

Pronotum. Sides rounded, each with a pair of long setae; posterior fourth oblique; median line narrow, shallow; posterior impressions shallow, line-shaped toward disc.

Elytra. Ovate; humeral projections evident; five striae deeply impressed; fifth stria short, sixth and seventh shallowly impressed, in between striae shiny and impunctate.

Legs. Dark reddish brown; protarsomere 1–4 expanded, ventrally with vestiture of adhesive setae; protibiae expanded at apex, with few long yellowish setae ventrally and around antennal cleaner; mesotibiae slender, with few long yellowish setae throughout inner margin; metatibiae slender, with few long yellowish setae ventrally on apical half.

Gonocoxite 1 (Fig. 2H). With outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 2H). Subtriangular; basal lobe bearing ensiform setae on each side; ensiform setae long, with half to one third the length of gonocoxite 2; slender setae at apex.

Male

Measurements. AL1 0.6, AL2 damaged, EL 5.6, EW 3.7, PL 3.3, PW 3.1, HL 1.5, HW 2.0, TL 10.4, TL/EW 2.8, lp2L 0.6, lp3L 0.6, lp3W 0.3, mp3L 0.3, mp4L 0.6, mp4W 0.3. Similar to females but devoid of mesh of short yellowish setae on sternite V. Apical labial and maxillary palpomeres triangular.

Abdominal tergite IX (Fig. 2E). Oval, asymmetrical; anterior portion angulating toward left; inner anterior angle rounded; posterior portion rounded, with small projections on each side in apical portion.

Aedeagus (Fig. 2C–D, F–G). With **median lobe** (Fig. 2C–D) cylindrical, slender, asymmetrical; ostium reaching middle area of median lobe; apical lamella not evenly narrowed, bending a bit to the right; apical edges narrow; basal bulb thin; **parameres** (Fig. 2F–G) asymmetrical, left paramere (Fig. 2F) longer and thinner than right paramere (Fig. 2G).

Variation

Among all specimens examined, the one in the best condition was chosen as the holotype.

Measurements (in mm). Females (n = 2): AL1 0.7–0.8 (0.75 ± 0.07), AL2 0.3–0.4 (0.35 ± 0.07), EL 5.1–6.0 (5.55 ± 0.64), EW 3.3–4.0 (3.65 ± 049), PL 2.8–3.3 (3.05 ± 0.42), PW 2.8–3.3 (3.0 ± 0.42), HL 1.4–1.5 (2.9 ± 0.07), HW 1.8–2.1 (1.95 ± 0.21), TL 9.3–10.8 (10.05 ± 1.06), TL/EW 2.7–2.8 (2.76 ± 0.08), lp2L 0.5–0.5 (0.50 ± 0.0), lp3L 0.5–0.6 (0.55 ± 0.07), lp3W 0.2–0.2 (0.2 ± 0.0), mp3L 0.2–0.3 (0.25 ± 0.07), mp4L 0.5–0.6 (0.55 ± 0.07), mp4W 0.2–0.3 (0.25 ± 0.07)**.**

Remarks

We include *P. balli* sp. nov. in the *P. rotundipenne* species group due to the following features: head frontal impressions punctiform, at least five elytral striae deeply impressed and fifth tarsomere without ventro-lateral setae.

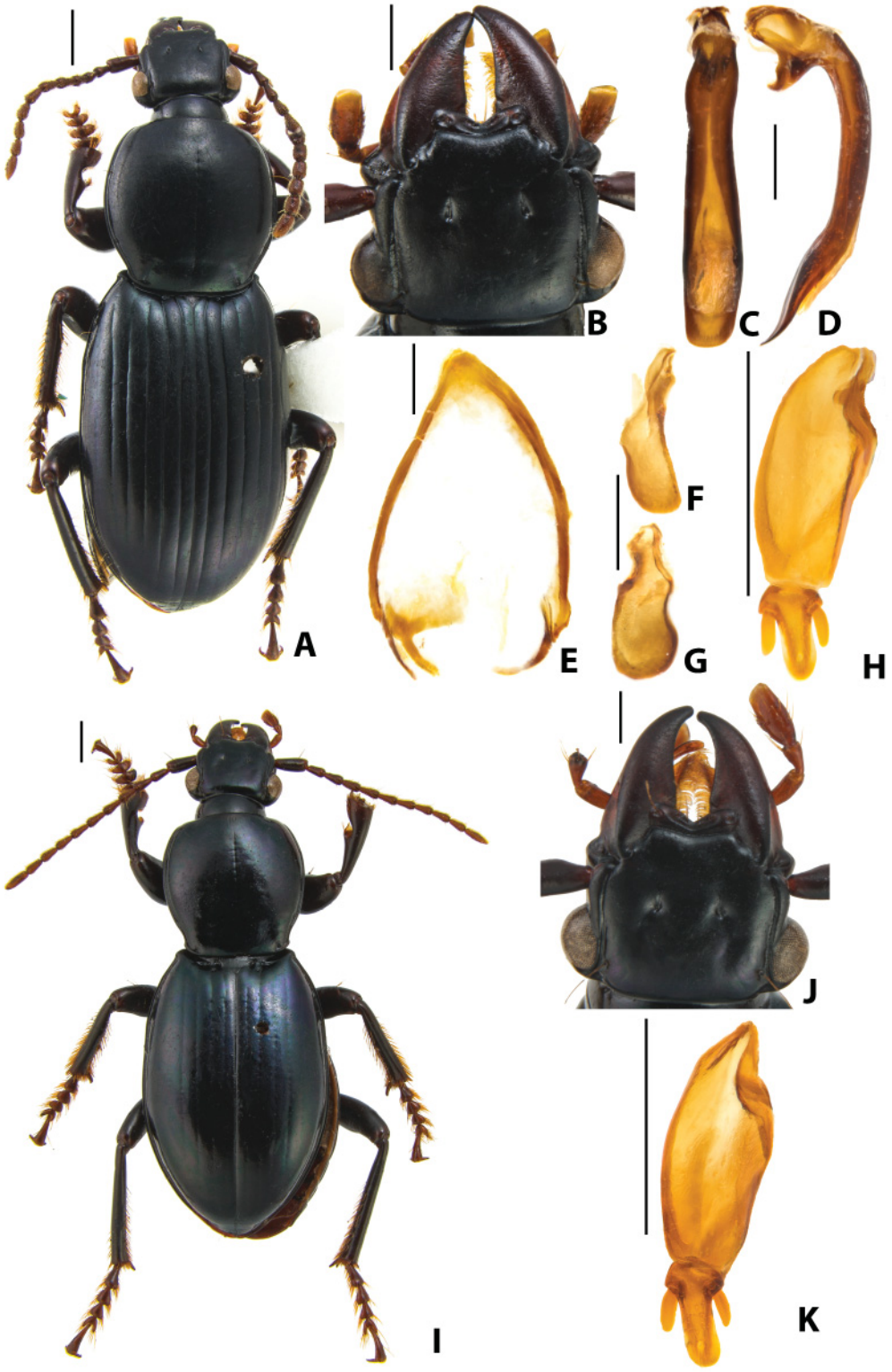

Fig. 2. Habitus and dissected parts of some new species of *Pelecium* Kirby, 1817. **A–H**. *Pelecium balli* sp. nov., female holotype from São Luiz do Purunã, Paraná, Brazil (A–B, H) (CERPE) and male paratype from Balsa Nova, Paraná, Brazil (C–G) (CERPE). **A**. Dorsal view. **B**. Detail of head. **C–D**. Median lobe. **E**. Tergite IX. **F**. Left paramere. **G**. Right paramere. **H**. Female genitalia. – **I–K**. *Pelecium belloi* sp. nov., female holotype from São Luiz do Paraitinga, São Paulo, Brazil (CAMB). **I**. Dorsal view. **J**. Detail of head. **K**. Dissected genitalia. Scale bars: A–B, I–J = 1 mm; C–H, K = 0.5 mm.

Pelecium belloi sp. nov**.**
urn:lsid:zoobank.org:act:7959B9EA-F55F-4ED2-98F1-DC4CC6383E2A
Figs 2I–K, 25

Diagnosis

A medium-sized species (10 mm) distinguishable among other congeners by the combination of the following features. Head frontal fovea punctiform (Fig. 2J). Pronotum median line fine and shallow; posterior impressions shallow, inconspicuous. Elytra ovate, without any deeply impressed striae (Fig. 2I). Adults of *P. belloi* sp. nov. and *P. laeve* are quite similar, as both have no deeply impressed elytral striae, but in the former species the pronotum is slightly wider than long, with sides arcuate and shortly subsinuate posteriorly, while in the latter the pronotum is elongate and slender, with sides equally arcuate throughout their lengths.

Etymology

The specific epithet '*belloi*' is an eponym in honor of the Brazilian coleopterist Ayr de Moura Bello, who lent us Carabidae beetles important for the present work and other taxonomic and morphological studies in progress.

Type material

Holotype
BRAZIL • ♀; São Paulo, São Luis do Paraitinga, Parque Estadual Serra do Mar Núcleo Sta. Virgínia; Nov. 2004; M. Uehara leg.; "\\ Coleção A.M.BELLO \\ *Pelecium belloi* Orsetti & Lopes-Andrade HOLOTYPUS" [printed on red paper]; CAMB.

Paratypes
BRAZIL • 3 ♀♀; same collection data as for holotype; 1 Jan. 2005; "\\ Coleção A.M.BELLO \\ *Pelecium belloi* Orsetti & Lopes-Andrade PARATYPUS" [printed on yellow paper]; CAMB.

Description

Female (holotype, fully pigmented adult)
Measurements (in mm). AL1 0.6, AL2 0.3, EL 4.7, EW 3.5, PL 2.6, PW 2.6, HL 1.3, HW 1.9, TL 8.6, TL/EW 2.5, lp2L 0.5, lp3L 0.5, lp3W 0.2, mp3L 0.2, mp4L 0.5, mp4W 0.2.

Body. Ovate, flat; disc of head, pronotum and elytra shiny black, with purple and green reflections on sides in dorsal view; glabrous (Fig. 2I). Ventral surface shiny black.

Head. Microreticulate; frontal foveae shallow, punctiform (Fig. 2J). Antennae reddish brown, long, reaching anterior portion of elytra; antennomeres 1–3 with few long, sparse yellowish setae on apical portion; antennomeres 4–11 fully covered by short yellowish setae. Apical labial and maxillary palpomeres with long, sparse yellowish setae; ovate with apex obliquely truncated; reddish brown, apicalmost portion lighter.

Pronotum. Slightly wider than long; sides arcuate, shortly subsinuate posteriorly, each with pair of long setae; median line narrow, shallow; posterior impressions shallow, inconspicuous.

Elytra. Ovate, without any deeply impressed striae; three striae faintly impressed; in between striae shiny and impunctate.

Legs. Dark reddish brown; protarsomeres 1–4 expanded, ventrally with vestiture of adhesive setae; protibiae expanded at apex, with few long yellowish setae ventrally and around antennal cleaner;

mesotibiae slender, with few long yellowish setae laterally throughout their lengths; metatibiae slender, with few long yellowish setae ventrally on apical half.

Gonocoxite 1 (Fig. 2K). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 2K). Subtriangular; apex rounded; basal lobe with ensiform setae on each side; ensiform setae long, with half to one-third the length of gonocoxite 2; apex with slender setae.

Male

Unknown.

Variation

All specimens examined are females and, among all, the one in the best condition was chosen as the holotype.

Measurements (in mm) (n = 4). AL1 0.6–0.9 (0.75 ± 0.13), AL2 0.3–0.4 (0.33 ± 0.05), EL 4.7–7.0 (5.6 ± 0.99), EW 3.5–4.6 (3.83 ± 0.53), PL 2.6–3.6 (2.95 ± 0.44), PW 2.6–3.6 (2.95 ± 0.44), HL 1.3–1.6 (1.38 ± 0.15), HW 1.9–2.0 (1.93 ± 0.05), TL 8.6–12.2 (9.93 ± 1.57), TL/EW 2.5–2.7 (2.59 ± 0.09), lp2L 0.5–0.5 (0.5 ± 0.0), lp3L 0.5–0.6 (0.53 ± 0.05), lp3W 0.2–0.2 (0.2 ± 0.0), mp3L 0.2–0.3 (0.28 ± 0.05), mp4L 0.5–0.7 (0.6 ± 0.08), mp4W 0.2–0.3 (0.25 ± 0.06).

Remarks

We include *P. belloi* sp. nov. in the *P. laeve* species group due to the punctiform frontal impressions and the lack of elytral striation.

Pelecium buckupi sp. nov.

urn:lsid:zoobank.org:act:8D044F54-985E-451D-AC66-FCFFDD0349F4

Figs 3A–G, 25

Diagnosis

A medium-sized species (12 mm) distinguishable among other congeners by the combination of the following features. Body elongate (Fig. 3A). Head with frontal fovea (Fig. 3B) short and shallow. Pronotum longer than wide; median line fine and shallow, deeper in the disc; posterior impressions punctiform (Fig. 3A), surrounded by a shallow excavation. Adults of *P. buckupi* sp. nov. and *P. bolivianum* are quite similar, but in the former the elytra are elongate, subparallel-sided, and the pronotal sides are slightly arcuate, almost parallel, while in the latter the elytra are ovate, with sides markedly convex, and the pronotum is anteriorly very convex, with lateral margins arcuate and subsinuate anterior to postero-lateral angles.

Etymology

The specific epithet '*buckupi*' is an eponym in honor of the Brazilian researcher Ludwig Buckup (1932–2021), one of the founders of Fundação Zoobotânica do Rio Grande do Sul (FZBRS).

Type material

Holotype

BRAZIL • ♂; Goiás, Minaçu, Serra da Mesa; 9–20 Dec. 1996; "\\ Col. MCN 159949 \\ *Pelecium buckupi* Orsetti & Lopes-Andrade HOLOTYPUS" [printed on red paper]; FZBRS.

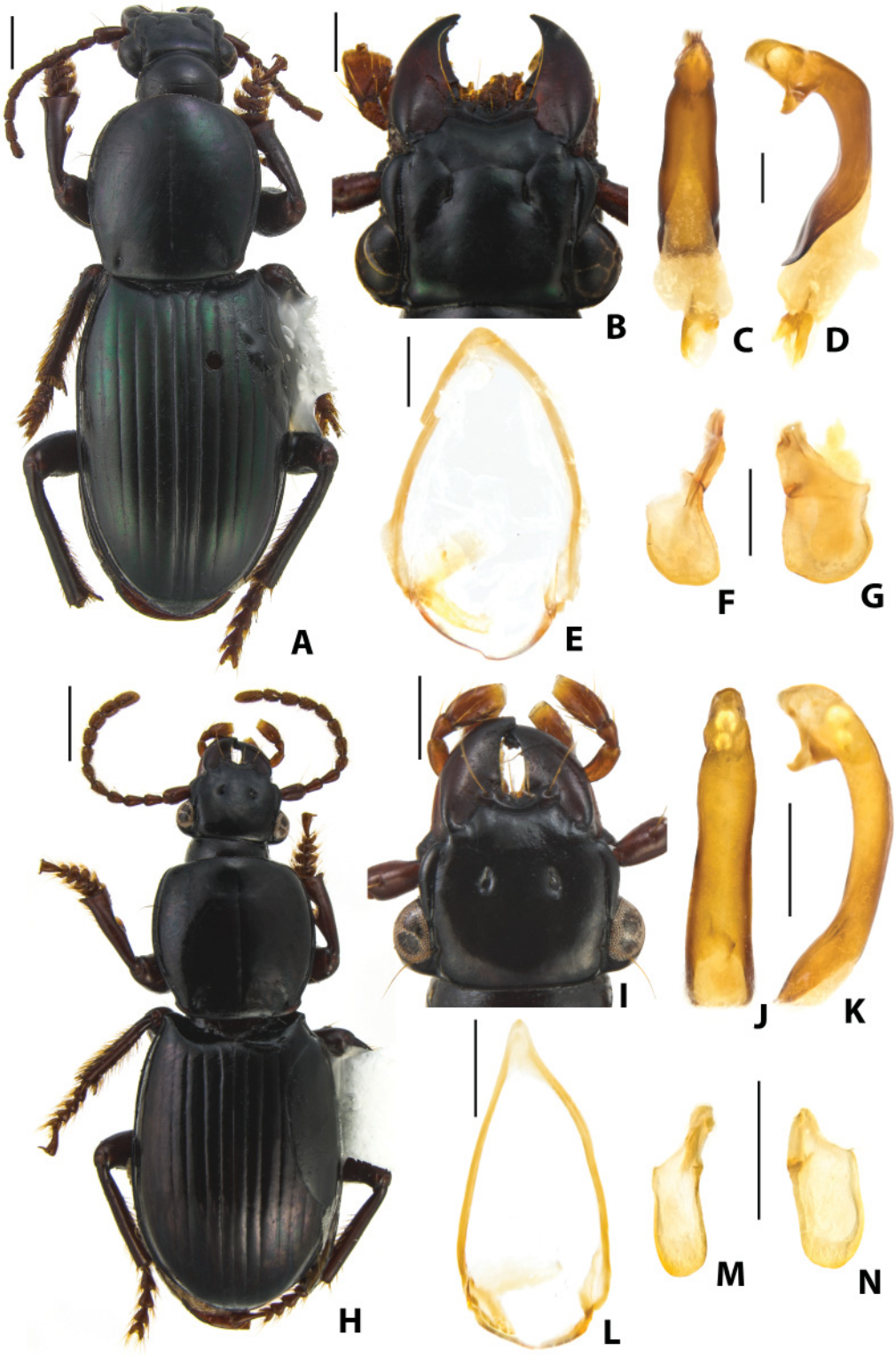

Fig. 3. Habitus and dissected parts of some new species of *Pelecium* Kirby, 1817. **A–G**. *Pelecium buckupi* sp. nov., male holotype from Serra da Mesa, Goias, Brazil (FZBRS). **A**. Dorsal view. **B**. Detail of head. **C–D**. Median lobe. **E**. Tergite IX. **F**. Left paramere. **G**. Right paramere. – **H–N**. *Pelecium chrissquirei* sp. nov., male holotype from Alto Caparaó, Minas Gerais, Brazil (CELC). **H**. Dorsal view. **I**. Detail of head. **J–K**. Median lobe. **L**. Tergite IX. **M**. Left paramere. **N**. Right paramere. Scale bars: A–B, H–I = 1 mm; C–G, J–N = 0.5 mm.

Description

Male (holotype, fully pigmented adult)

Measurements (in mm). AL1 0.8, AL2 0.4, EL 6.2, EW 0.4, PL 3.7, PW 3.3, HL 1.6, HW 2.3, TL 11.5, TL/EW 2.9, lp2L 0.7, lp3L 0.7, lp3W 0.5, mp3L 0.2, mp4L 0.7, mp4W 0.4.

Body. Elongate, flat; discs of head, pronotum and elytra metallic dark green, with purple reflections alongside in dorsal view; glabrous (Fig. 3A). Ventral surface shiny black.

Head. Microreticulate, with a pair of frontal foveae, each formed by shallow excavation reaching anterior plane of eyes (Fig. 3B). Antennae reddish brown, short, reaching middle of pronotum; antennomeres 1–3 with few long, sparse yellowish setae at apical portion; antennomere 4 with apical half covered with both short and long yellowish setae; antennomeres 5–11 fully covered with both short and long yellowish setae. Apical labial and maxillary palpomeres with long, sparse yellowish setae; triangular, reddish brown, apicalmost portion lighter.

Pronotum. Longer than wide; sides arcuate, each with pair of long setae; posterior fourth subparallel; posterolateral angles obtuse; median line narrow, shallow, deeper on disc; posterior impressions punctiform; anterior extension shallow toward pronotal disc (Fig. 3A).

Elytra. Elongate, sides subparallel; fifth stria deeply impressed; striae 3–5 short, not reaching elytral apex; stria 6 shallow; in between striae shiny, impunctate.

Legs. Dark reddish brown; protarsomeres 1–4 expanded, ventrally with vestiture of adhesive setae; protibiae expanded at apex, with few long yellowish setae ventrally and around antennal cleaner; mesotibiae slender, with few long yellowish setae laterally throughout their lengths; metatibiae slender, with few long yellowish setae ventrally on apical half.

Abdominal tergite IX (Fig. 3E). Oval, asymmetrical; anterior portion angulate; inner anterior angle rounded; posterior portion rounded, with inconspicuous sinuous line at apex.

Aedeagus (Fig. 3C–D, F–G). With **median lobe** (Fig. 3C–D) short, cylindrical, sinuous at apical third, asymmetrical, bent over toward base, slightly broadening apically in apical lamella; ostium short; apical lamella edges narrow, evenly narrowed; basal bulb thin; **parameres** (Fig. 3F–G) asymmetrical, left paramere (Fig. 3F) securiform, narrow; right paramere square with round angles (Fig. 3G).

Female

Unknown.

Remarks

We include *P. buckupi* sp. nov. in the *P. punctatostriatum* species group based on the following features: long frontal cephalic impression, each elytron with five elytral striae deeply impressed and fifth tarsomere with row of setae on each ventrolateral margin (Straneo & Ball 1989). It is necessary to expand the group limits to include species with green reflections on the dorsal surface in order to include *P. buckupi* in the *P. punctatostriatum* group.

Pelecium chrissquirei sp. nov.
urn:lsid:zoobank.org:act:01D54246-34A9-4789-9AF0-A47C57560EFD
Figs 4A–G, 25

Diagnosis

A small-sized species (7 mm) distinguishable among other congeners by the combination of the following features. Head with frontal fovea punctiform, surrounded by short excavations (Fig. 4B). Pronotum median line shallow; posterior impression shallow, curving toward centre. Elytral striae 1–5 deeply impressed and stria 6 shallow. Adults of *P. chrissquirei* sp. nov. and *P. helenae* are quite similar, but in the former the pronotal posterior impression is shallow, elongate toward centre and the male maxillary palpomere 4 is broadly ovate with the apex obliquely truncated, while in the latter the pronotal posterior impression is short, shallow, almost indiscernible, and the maxillary palpomere 4 is triangular.

Etymology

The specific epithet '*chrissquirei*' is an eponym in honor of the British musician Christopher Russell Edward Squire (1948–2015), known as Chris Squire, who was one of the founding members and bass player of the progressive rock band "Yes".

Type material

Holotype

BRAZIL • ♂; Minas Gerais, Alto Caparaó, PARNA Caparaó; 14 Nov. 2016; A. Orsetti and S. Aloquio leg.; pitfall; "\\ *Pelecium chrissquirei* Orsetti & Lopes-Andrade HOLOTYPUS" [printed on red paper]; CELC.

Description

Male (holotype, fully pigmented adult)

Measurements (in mm). AL1 0.5, AL2 0.3, EL 4.0, EW 2.9, PL 2.2, PW 2.3, HL 1.1, HW 1.6, TL 7.3, TL/EW 2.5, lp2L 0.3, lp3L 0.4, lp3W 0.2, mp3L 0.2, mp4L 0.4, mp4W 0.2.

Body. Ovate, flat; disc of head, pronotum and elytra black, with light metallic green reflections alongside in dorsal view; glabrous (Fig. 4A). Ventral surface shiny black.

Head. Microreticulate, frontal foveae punctiform, with short excavation around foveae (Fig. 4B). Antennae reddish brown, moderately long, almost reaching posterior portion of pronotum; antennomeres 1–3 with few long, sparse yellowish setae at apical portion; antennomere 4 with apical half covered with both short and long yellowish setae; antennomeres 5–11 fully covered with both short and long yellowish setae. Apical labial and maxillary palpomeres with long, sparse yellowish setae; broadly ovate with apex obliquely truncated; reddish brown; apicalmost portion lighter.

Pronotum. Wider than long, sub-quadrate; sides arcuate, each with pair of long setae; posterolateral angles obtuse; median line narrow, shallow, deeper on disc; posterior impressions shallow, curving toward centre.

Elytra. Ovate; striae 1–5 deeply impressed; stria 6 shallowly impressed; in between striae shiny, impunctate.

Legs. Reddish brown; protarsomeres 1–4 expanded, ventrally with vestiture of adhesive setae; protibiae expanded at apex, with few long yellowish setae ventrally and around antennal cleaner; mesotibiae slender, with few long yellowish setae laterally throughout their lengths; metatibiae slender, with few long yellowish setae ventrally on apical half.

Abdominal tergite IX (Fig. 4E). Oval, elongate, asymmetrical; anterior portion tapered in an acute projection; right side more arcuate than left side; inner anterior angle rounded; posterior portion rounded; apical sides subsinuous.

Aedeagus (Fig. 4C–D, F–G). With **median lobe** (Fig. 4C–D) cylindrical, elongate, asymmetrical, bent over smoothly, broadening apically; ostium very short, confined to apical fourth; apical lamella very short, indiscernible, apical edges steep; basal bulb thin; **parameres** (Fig. 4F–G) asymmetrical, left paramere (Fig. 4F) longer and thinner than right paramere (Fig. 4G).

Female

Unknown.

Remarks

We include *P. chrissquirei* sp. nov. in the *P. rotundipenne* species group due to the following features: head frontal impressions punctiform, each elytron with at least five deeply impressed striae and fifth tarsomere without ventro-lateral setae.

Pelecium fistulosus sp. nov.

urn:lsid:zoobank.org:act:130FE372-E6E1-45E0-A5EB-DC065904253D

Figs 4A–H, 25

Diagnosis

A large-sized species (16 mm) distinguishable among other congeners by the combination of the following features. Head frontal fovea short, deeply impressed (Fig. 4A). Pronotum median line long and deep; posterior impressions deep. Elytra elongate, ovate, each with 7 striae deeply impressed and punctate (Fig. 4A). Adults of *P. fistulosus* sp. nov. and *P. punctatostriatum* are quite similar, as both have punctate elytral striae, but in the former the pronotum is wider than long and each elytron has 7 deeply impressed striae, while in the latter the pronotum is longer than wide and each elytron has 5 deeply impressed striae.

Etymology

The specific epithet is from the Latin "*fistulosus*", which means "full of holes", in reference to the punctate elytral striae.

Type material

Holotype

BRAZIL • ♂; Mato Grosso, Novo Mundo, PE Cristalino; Nov. 2012; V. Magalhães leg.; "Pitfall \\ *Pelecium fistulosus* Orsetti & Lopes-Andrade HOLOTYPUS" [printed on red paper]; CEMT.

Paratypes

BRAZIL • 4 ♀♀; same collection data as for holotype; 2 ♀♀; May 2013; "// *Pelecium fistulosus* Orsetti & Lopes-Andrade PARATYPUS" [printed on yellow paper]; CEMT.

Description

Male (holotype, fully pigmented adult)

Measurements (in mm). AL1 1.3, AL2 0.6, EL 9.0, EW 6.4, PL 4.0, PW 5.0, HL 2.2, HW 3.3, TL 16.0, TL/EW 2.5, lp2L 0.8, lp3L 0.9, lp3W 0.6, mp3L 0.4, mp4L 0.9, mp4W 0.6.

Body. Elongate, flat; head, pronotum and elytra shiny black; glabrous. Ventral surface shiny black (Fig. 4A).

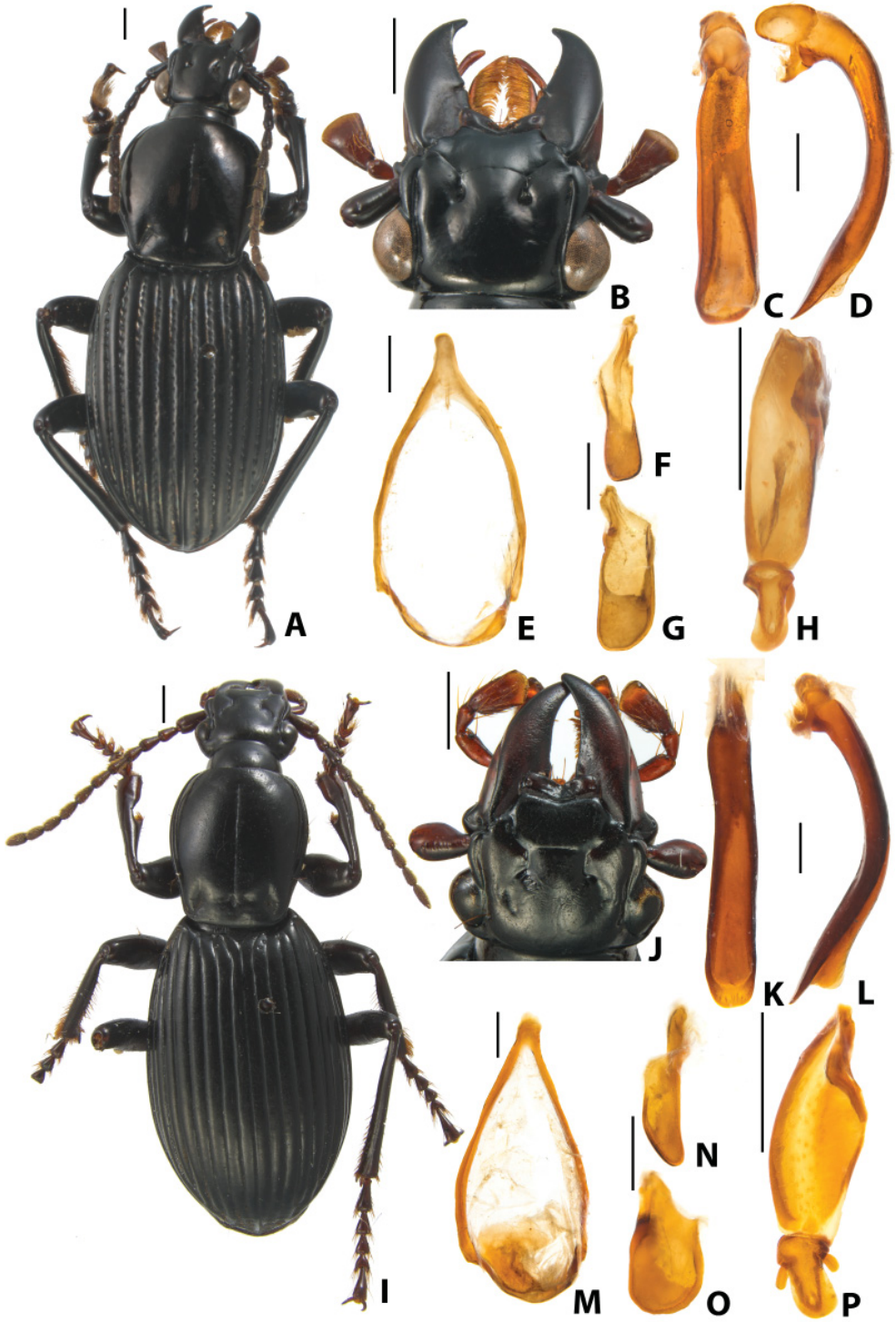

Fig. 4. Habitus and dissected parts of some new species of *Pelecium* Kirby, 1817. **A–H**. *Pelecium fistulosus* sp. nov., male holotype from Novo Mundo, Mato Grosso, Brazil (A–G) (CEMT) and female paratype from Novo Mundo, Mato Grosso, Brazil (H) (CEMT). **A**. Dorsal view. **B**. Detail of head. **C–D**. Median lobe. **E**. Tergite IX. **F**. Left paramere. **G**. Right paramere. **H**. Genitalia. – **I–P**. *Pelecium grossii* sp. nov., male holotype from Florianópolis, Santa Catarina, Brazil (I–O) (FZBRS) and female paratype from Florianópolis, Santa Catarina, Brazil (P) (FZBRS). **I**. Dorsal view. **J**. Detail of head. **K–L**. Median lobe. **M**. Tergite IX. **N**. Left paramere. **O**. Right paramere. **P**. Genitalia. Scale bars: A–B, I–J = 1 mm; C–H, K–P = 0.5 mm.

Head. Microreticulate, frontal foveae deeply impressed, short (Fig. 4B). Antennae reddish brown, long, reaching anterior portion of elytra; antennomeres 1–3 with few long, sparse yellowish setae at apical portion; antennomere 4 half covered with short yellowish setae; antennomeres 5–11 fully covered with short yellowish setae. Apical labial and maxillary palpomeres with long, sparse yellowish setae; triangular, reddish brown, apicalmost portion lighter.

Pronotum. Slightly wider than long, sides arcuate, each with pair of long setae; median line long, deeply impressed, with anterior edge limited by elongated punctation; posterior impressions deep toward pronotal disc.

Elytra. Elongate, ovate; each with 7 deeply impressed striae, markedly punctate; in between striae shiny, impunctate.

Legs. Black; protarsomere 1–4 expanded, ventrally with vestiture of adhesive setae; protibiae expanded at apex, with few long yellowish setae ventrally and surrounding antennal cleaner; mesotibiae slender, slightly expanded at apex, with few long yellowish setae throughout inner margins; metatibiae slender, with few long yellowish setae ventrally on apical half.

Abdominal tergite IX (Fig. 4E). Oval, slightly asymmetrical, sides converging in long projection at base; anterior inner angle rounded; apex rounded.

Aedeagus (Fig. 4C–D, F–G). With **median lobe** (Fig. 4C–D) cylindrical, dorsoventrally flattened in medial half, elongate, asymmetrical, slightly broadening apically; ostium long, reaching central area of median lobe; apical lamella short, not evenly narrowed; basal bulb thin; **parameres** (Fig. 4F–G) asymmetrical; left paramere (Fig. 4F) longer and thinner than right paramere (Fig. 4G).

Female

Similar to males but with mesh of long yellow setae on basal region of tergite V.

Gonocoxite 1 (Fig. 4H). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 4H). Elongate, basal lobe bearing ensiform setae on each side; ensiform setae long, with half length of gonocoxite 2; slender setae at apex.

Variation

Among all specimens examined, the one in the best condition was chosen as the holotype.

Measurements (in mm). Females (n = 4): AL1 1.2–1.0 (1.13 ± 0.1), AL2 0.4–0.5 (0.5 ± 0.08), EL 8.9–9.5 (9.15 ± 0.3), EW 6.0–6.7 (6.35 ± 0.31), PL 4.5–5.2 (4.88 ± 0.3), PW 4.6–5.4 (5.05 ± 0.34), HL 2.0–2.2 (2.13 ± 0.1), HW 3.0–3.5 (3.28 ± 0.22), TL 15.4–16.9 (16.15 ± 0.65), TL/EW 2.5–2.6 (2.54 ± 0.02), lp2L 0.8–0.9 (0.83 ± 0.05), lp3L 0.8–1.0 (0.9 ± 0.08), lp3W 0.3–0.4 (0.35 ± 0.06), mp3L 0.4–0.5 (0.45 ± 0.06), mp4L 0.8–0.9 (0.83 ± 0.05), mp4W 0.4–0.4 (0.4 ± 0.0).

Remarks

We include *P. fistulosus* sp. nov. in the *P. punctatostriatum* species group due to the punctiform frontal impressions of the head, the deep and elongate posterior impression of the pronotum and tarsomere 5 having a row of setae on the ventrolateral margin.

Pelecium grossii sp. nov.
urn:lsid:zoobank.org:act:30469A6E-D796-4291-8D99-42B9D75EF2B0
Figs 4I–P, 25

Diagnosis

A medium-sized species (15 mm) distinguishable among other congeners by the combination of the following features. Head frontal fovea extended, reaching plane of eyes (Fig. 4J). Pronotum median line long and deep; posterior impressions deep. Elytra elongate, ovate, each with 8 deeply impressed striae (Fig. 4I). Adults of *P. grossii* sp. nov. and *P. violaceum* are quite similar, as both have 8 deeply impressed striae in each elytron, but in the former the eyes are small and the dorsal surface has no bright colour, while in the latter the eyes are large and the dorsal surface is violaceus bright at least on the sides.

Etymology

The specific epithet '*grossii*' is an eponym in honor of the Brazilian coleopterist Paschoal Coelho Grossi, who lent us Carabidae beetles important for the present work and other taxonomic and morphological studies in progress.

Type material

Holotype

BRAZIL • ♂; Paraná, Cap. Leonidas Marques; 25 Mar. 1993; A.B. Bonaldo leg.; "// *Pelecium grossii* Orsetti & Lopes-Andrade HOLOTYPUS" [printed on red paper]; FZBRS.

Paratypes

BRAZIL • 1 ♀; same collection data as for holotype; "// *Pelecium grossii* Orsetti & Lopes-Andrade PARATYPUS" [printed on yellow paper]; FZBRS • 1 ♂; Santa Catarina, Florianópolis, UCAD; 3–10 Nov. 2003; C. Espirito Santo leg.; pitfall; "// *Pelecium grossii* Orsetti & Lopes-Andrade PARATYPUS" [printed on yellow paper]; CERPE • 1 ♀, Santa Catarina, Urubici, R.I.P.N. Leão da Montanha; 6 Nov. 2015; P.G. da Silva leg.; "\\ Coleção A. M. BELLO \\ *Pelecium grossii* Orsetti & Lopes-Andrade PARATYPUS" [printed on yellow paper]; CAMB • 1 ♀; Santa Catarina, Florianópolis, UCAD; 26 Jun.–5 Jul. 2004; C. Espirito Santo leg.; pitfall; "// *Pelecium grossii* Orsetti & Lopes-Andrade PARATYPUS" [printed on yellow paper]; CERPE.

Description

Male (holotype, fully pigmented adult)

Measurements (in mm). AL1 1.0, AL2 0.5, EL 7.9, EW 5.2, PL 4.3, PW 3.9, HL 2.1, HW 2.4, TL 14.3, TL/EW 2.8, lp2L 0.9, lp3L 1.0, lp3W 0.8, mp3L 0.4, mp4L 0.9, mp4W 0.6.

Body. Elongate, flat; head, pronotum and elytra shiny black; glabrous. Ventral surface shiny black (Fig. 4I).

Head. Microreticulate; frontal foveae deeply impressed, with a shallow excavation reaching anterior plane of eyes (Fig. 4J). Antennae reddish brown, long, reaching anterior portion of elytra; antennomeres 1–3 with few long, sparse yellowish setae at apical portion; antennomeres 4–11 fully covered with short yellowish setae. Apical labial and maxillary palpomeres with long, sparse yellowish setae; triangular, reddish brown, with apicalmost portion lighter.

Pronotum. Slightly longer than wide, sides arcuate, each with a pair of long setae; median line long and deeply impressed, with anterior edge limited by elongated punctation; posterior impressions deep, toward pronotal disc.

Elytra. Elongate, ovate, each with 8 deeply impressed striae; in between striae shiny, impunctate.

Legs. Dark reddish brown; protarsomeres 1–4 expanded, ventrally with vestiture of adhesive setae; protibiae expanded at apex, with few long yellowish setae ventrally and surrounding antennal cleaner; mesotibiae slender, with few long yellowish setae throughout inner margin, slightly expanded at apex; metatibiae slender, with few long yellowish setae ventrally on apical half.

Abdominal tergite IX (Fig. 4M). Elongate, triangular, asymmetrical, with round basal projection; inner anterior angle sharp; apex rounded.

Aedeagus (Fig. 4K–L, N–O). With **median lobe** (Fig. 4K–L) cylindrical, slender, asymmetrical, sinuous; ostium elongate, reaching middle area of median lobe; apical lamella short, apical edges sharp; basal bulb thin; **parameres** (Fig. 4N–O) asymmetrical; left paramere (Fig. N) elongate, posterior angle rounded; right paramere (Fig. O) larger than left paramere, with posterior angle rounded.

Female

Similar to males but with mesh of long yellow setae in basal region of tergite V.

Gonocoxite 1 (Fig. 4P). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 4P). Elongate, basal lobe bearing ensiform setae on each side; ensiform setae short, with fourth to fifth the length of gonocoxite 2; slender setae at apex.

Variation

Among all specimens examined, the one in the best condition was chosen as the holotype.

Measurements (in mm). Males (n = 2): AL1 1.0–1.1 (1.05 ± 0.14), AL2 0.5–0.7 (0.6 ± 0.14), EL 7.9–8.7 (8.3 ± 0.57), EW 5.3–5.9 (5.55 ± 0.49), PL 4.3–4.9 (4.6 ± 0.42), PW 3.9–4.6 (4.25 ± 0.49), HL 2.1–2.2 (2.15 ± 0.07), HW 2.4–3.1 (2.75 ± 0.49), TL 14.3–15.8 (15.05 ± 1.06), TL/EW 2.8–2.7 (2.71 ± 0.05), lp2L 0.9–1.0 (0.95 ± 0.07), lp3L 1.0–1.1 (1.05 ± 0.07), lp3W 0.8–0.9 (0.85 ± 0.07), mp3L 0.4–0.4 (0.4 ± 0.0), mp4L 0.9–1.1 (1.0 ± 0.14), mp4W 0.6–0.8 (0.7 ± 0.14). Females (n = 3): AL1 1.0–1.6 (1.2 ± 0.35), AL2 0.6–0.8 (0.67 ± 0.12), EL 8.13–11.0 (9.23 ± 1.53), EW 5.3–7.0 (6.0 ± 0.89), PL 4.0–5.8 (4.7 ± 0.96), PW 3.8–5.3 (4.3 ± 0.87), HL 1.9–2.8 (2.27 ± 0.47), HW 2.5–3.7 (3.0 ± 0.62), TL 14.2–19.6 (16.2 ± 2.96), TL/EW 2.7–2.8 (2.69 ± 0.1), lp2L 0.8–0.9 (0.83 ± 0.06), lp3L 0.9–1.1 (1.0 ± 0.1), lp3W 0.5–0.6 (0.57 ± 0.06), mp3L 0.4–0.4 (0.4 ± 0.0), mp4L 0.8–1.2 (0.93 ± 0.23), mp4W 0.4–0.6 (0.5 ± 0.1).

Remarks

We include *P. grossii* sp. nov. in the *P. violaceum* species group due to the elongate and narrow frontal impressions of the head, pronotal impressions deep and each elytron with eight deeply impressed striae.

Pelecium straneoi sp. nov.

urn:lsid:zoobank.org:act:EF1F8585-1612-429A-8267-D24419480913

Figs 5A–H, 25

Diagnosis

A medium-sized species (10 mm) distinguishable among other congeners by the combination of the following features. Head frontal fovea punctiform (Fig. 5B). Pronotum lateral margins rounded, sinuous right before posterolateral angles; median line fine and shallow; posterior impressions inconspicuous. Each elytron with striae 1–6 deeply impressed. Adults of *P. straneoi* sp. nov. and *P. paulae* are quite similar, but the former has the posterior impressions of the pronotum less distinct.

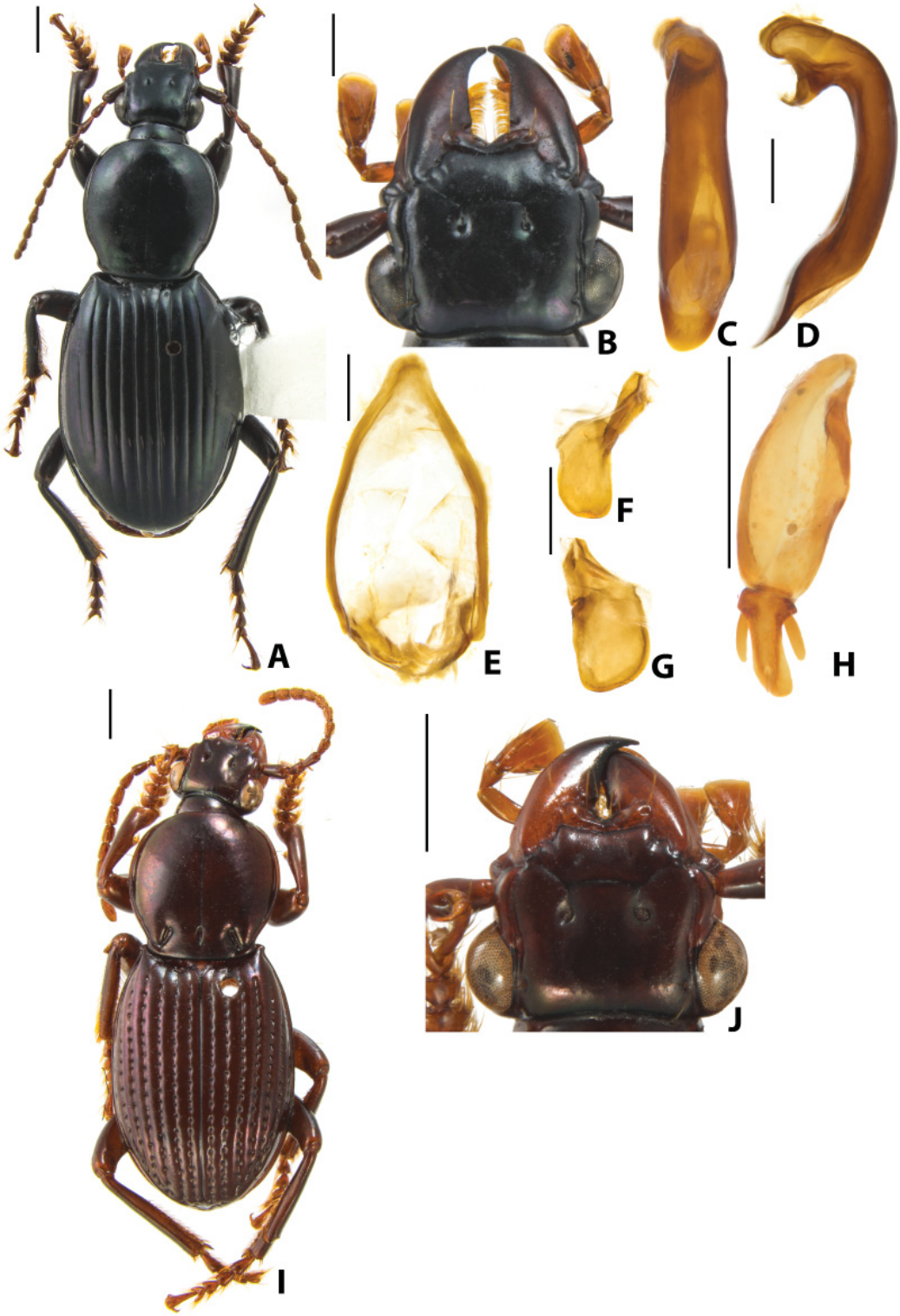

Fig. 5. Habitus and dissected parts of some new species of *Pelecium* Kirby, 1817. **A–H**. *Pelecium straneoi* sp. nov., male holotype from São Luís do Piratinga, São Paulo, Brazil (A–G) (CAMB) and female paratype from São Luís do Piratinga, São Paulo, Brazil (H) (CAMB). **A**. Dorsal view. **B**. Detail of head. **C–D**. Median lobe. **E**. Tergite IX. **F**. Left paramere. **G**. Right paramere. **H**. Genitalia. – **I–J**. *Pelecium zaguryi* sp. nov., male holotype from Cotriguaçu, Mato Grosso, Brazil (CEMT). **I**. Dorsal view. **J**. Detail of head. Scale bars: A–B, I–J = 1 mm; C–H = 0.5 mm.

Etymology

The specific epithet '*straneoi*' is an eponym in honor of the Italian coleopterist Stefano Ludovico Straneo (1902–1997), who was an expert in ground beetles (Carabidae) and made great contributions to the taxonomy of the genus *Pelecium*.

Type material

Holotype

BRAZIL • ♂; São Paulo, São Luís do Paraitinga, Pq. Est. Serra do Mar, Núcleo Sta. Virgínia; Jan. 2005; M. Uehara leg.; "\\ Coleção A.M.BELLO \\ *Pelecium straneoi* Orsetti & Lopes-Andrade HOLOTYPUS" [printed on red paper]; CAMB.

Paratypes

BRAZIL • 1 ♂, 2 ♀♀; same collection data as for holotype; 1 May 2005; "\\ Coleção A.M.BELLO \\ *Pelecium straneoi* Orsetti & Lopes-Andrade PARATYPUS" [printed on yellow paper]; CAMB • 1 ♀; São Paulo, Campos do Jordão, Horto; Feb. 1990; A. Bello leg.; "\\ Coleção A.M.BELLO \\ *Pelecium straneoi* Orsetti & Lopes-Andrade PARATYPUS" [printed on yellow paper]; CAMB.

Description

Male (holotype, fully pigmented adult)

Measurements (in mm). AL1 0.7, AL2 0.4, EL 5.9, EW 4.0, PL 3.1, PW 3.0, HL 1.4, HW 2.0, TL 10.4, TL/EW 2.6, lp2L 0.5, lp3L 0.6, lp3W 0.3, mp3L 0.3, mp4L 0.6, mp4W 0.3.

Body. Ovate, flat; disc of head, pronotum and elytra shiny black in dorsal view; glabrous (Fig. 5A). Ventral surface shiny black.

Head. Microreticulate, longer than wide; frontal foveae punctiform, with no excavations (Fig. 5B). Antennae reddish brown, long, reaching anterior portion of elytra; antennomeres 1–3 with few long, sparse yellowish setae at apical portion; antennomeres 4–11 fully covered with both short and long yellowish setae. Apical labial and maxillary palpomeres with long, sparse yellowish setae; ovate with apex obliquely truncated, reddish brown, with apicalmost portion lighter.

Pronotum. With pair of long setae on each side; lateral margins rounded, sinuous right before posterolateral angles; anterolateral angles rounded; posterior angles nearly sinuate; median line narrow, shallow, deeper on disc; posterior impressions inconspicuous.

Elytra. Ovate; each with six deeply impressed striae; in between striae shiny, impunctate.

Legs. Dark reddish brown; protibiae expanded at apex, with few long yellowish setae ventrally and surrounding antennal cleaner; protarsomeres 1–4 expanded, ventrally with vestiture of adhesive setae; mesotibiae slender, with few long yellowish setae throughout inner margin; metatibiae slender, with few long yellowish setae ventrally on apical half.

Abdominal tergite IX (Fig. 5E). Subelongate, asymmetrical; sides subparallel, right side more curved than left side, posterior third rounded; anterior portion converging in rounded projection; inner anterior angle rounded.

Aedeagus (Fig. 5C–D, F–G). With **median lobe** (Fig. 5C–D) cylindrical, short, asymmetrical, apical portion expanded; ostium short, confined to apical third; apical lamella elongate, not evenly narrowed, apical edges sharp; basal bulb thin; **parameres** (Fig. 5F–G) asymmetrical, left paramere (Fig. 5F) securiform, longer and thinner than right paramere (Fig. 5G).

Female

Similar to males but with mesh of long yellow setae on basal region of tergite V.

Gonocoxite 1 (Fig. 5H). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 5H). Subtriangular, basal lobe bearing ensiform setae on each side; ensiform setae long, with half length of gonocoxite 2; slender setae at apex.

Variation

Among all specimens examined, the one in the best condition was chosen as the holotype.

Measurements (in mm). Males (n = 2): AL1 0.7–0.7 (0.7±0.0), AL2 0.4–0.3 (0.35±0.07), EL 5.0–5.9 (5.45±0.64), EW 3.5–4.0 (3.75±0.35), PL 2.8–3.1 (2.95±0.21), PW 2.6–3.0 (2.8±0.28), HL 1.3–1.4 (1.35±0.07), HW 1.8–2.0 (1.9±0.14), TL 9.1–10.4 (9.75±0.92), TL/EW 2.6–2.6 (2.6±0.0), lp2L 0.5–0.5 (0.5±0.0), lp3L 0.6–0.6 (0.6±0.0), lp3W 0.2–0.3 (0.25±0.07), mp3L 0.2–0.3 (0.25±0.07), mp4L 0.5–0.6 (0.55±0.07), mp4W 0.3–0.3 (0.3±0.0). Females (n = 3): AL1 0.7–0.9 (0.8±0.10), AL2 0.2–0.4 (0.33±0.12), EL 5.5–7.0 (6.23±0.75), EW 3.7–4.7 (4.23±0.5), PL 3.0–3.6 (3.33±0.31), PW 3.0–3.5 (3.27±0.25), HL 1.4–1.7 (1.6±0.17), HW 2.0–2.4 (2.23±0.21), TL 9.9–12.3 (11.17±1.21), TL/EW 2.6–2.7 (2.64±0.03), lp2L 0.5–0.6 (0.57±0.06), lp3L 0.6–0.7 (0.63±0.06), lp3W 0.2–0.2 (0.2±0.0), mp3L 0.3–0.3 (0.3±0.0), mp4L 0.5–0.7 (0.6±0.1), mp4W 0.2–0.3 (0.2±0.3).

Remarks

We include *P. straneoi* sp. nov. in the *P. rotundipenne* species group due to the following features: head frontal impressions punctiform; each elytron with at least five deeply impressed striae and the fifth tarsomeres without ventrolateral setae.

Pelecium zaguryi sp. nov.
urn:lsid:zoobank.org:act:0FAA8D93-5A52-49BE-A94D-09DAB358E3A9
Figs 5I–J, 25

Diagnosis

A medium-sized species (10 mm) distinguishable among other congeners by the combination of the following features. Head frontal fovea short and deep (Fig. 5J). Pronotum short, with three pairs of marginal setae; median line shallow; posterior impressions deep. Elytra elongate, ovate, with punctate striae (Fig. 5I). Adults of *P. zaguryi* sp. nov. and *P. rotundipenne* are quite similar, as both have a short pronotum with three pairs of marginal setae, but in the former the tarsomeres 5 bear a row of a few slender setae on each ventral margin, while in the latter the tarsomeres 5 are glabrous ventrally.

Etymology

The specific epithet '*zaguryi*' is an eponym in honor of the Brazilian coleopterist Fernando Zagury Vaz de Mello, who lent us Carabidae beetles important for the present work and other taxonomic and morphological studies in progress.

Type material

Holotype

BRAZIL • ♂; Mato Grosso, Cotriguaçu, Fazenda São Nicolau, Matinha fundos da mata; 13 Dec. 2009; Vaz-de-Mello leg.; pitfall; *"// Pelecium zaguryi* Orsetti & Lopes-Andrade HOLOTYPUS" [printed on red paper]; CEMT.

Description

Male (holotype, fully pigmented adult)
Measurements (in mm). AL1 0.8, AL2 0.3, EL 5.0, EW 3.8, PL 3.0, PW 3.1, HL 1.5, HW 2.2, TL 9.5, TL/EW 2.5, lp2L 0.6, lp3L 0.6, lp3W 0.4, mp3L 0.3, mp4L 0.4, mp4W 0.4.

Body. Elongate, flat; head, pronotum and elytra dark reddish brown; glabrous (Fig. 5I). Ventral surface dark reddish brown.

Head. Microreticulate; frontal foveae deeply impressed, short, not extended (Fig. 5J). Antennae reddish brown, long, reaching anterior portion of elytra; antennomeres 1–3 with few long, sparse yellowish setae at apical portion; antennomeres 4–11 fully covered with short yellowish setae. Apical labial and maxillary palpomeres with long, sparse yellowish setae; triangular, reddish brown, with apicalmost portion lighter.

Pronotum. Slightly wider than long; sides arcuate, each with three long setae; median line long, shallowly impressed, with anterior edge limited by elongated punctation; posterior impressions deep toward the pronotal disc.

Elytra. Elongate, ovate, each with 7 deeply impressed striae, markedly punctate; in between striae shiny and impunctate.

Legs. Dark reddish brown; protarsomeres 1–4 expanded, ventrally with vestiture of adhesive setae; protibiae expanded at apex, with few long yellowish setae ventrally and surrounding antennal cleaner; mesotibiae slender, with few long yellowish setae throughout inner margin, slightly expanded at apex; metatibiae slender, with few long yellowish setae ventrally on apical half.

Female
Unknown.

Remarks

We include *P. zaguryi* sp. nov. in the *P. punctatostriatum* species group due to the punctiform frontal impressions of the head, deep posterior impression of the pronotum and tarsomeres 5 having rows of setae on the ventrolateral margin.

Pelecium zophos sp. nov.
urn:lsid:zoobank.org:act:A2F75B1D-47B4-4591-8EC3-5C4F720BF52F
Figs 6A–H, 25

Diagnosis

A medium-sized species (13 mm) distinguishable from its congeners by the combination of the following features. Head frontal fovea short and deep (Fig. 6B). Pronotum elongated; median line shallow; posterior impressions deep. Elytra elongate, ovate, each with eight deeply impressed striae (Fig. 6A). Adults of *P. zophos* sp. nov. and *P. cyanipes* are quite similar, but in the former the tarsomeres 5 are glabrous ventrally, while in the latter the tarsomeres 5 bear a row of few slender setae on ventral margin.

Etymology

The specific epithet is from the Greek "*zophos*", which means "darkness", in reference to the dark dorsal colour.

Type material

Holotype
BRAZIL • ♂; Rio de Janeiro, Teresópolis; Dec. 1992; A .Bello leg.; "\\ Coleção A. M. BELLO \\ *Pelecium zophos* Orsetti & Lopes-Andrade HOLOTYPUS" [printed on red paper]; CAMB.

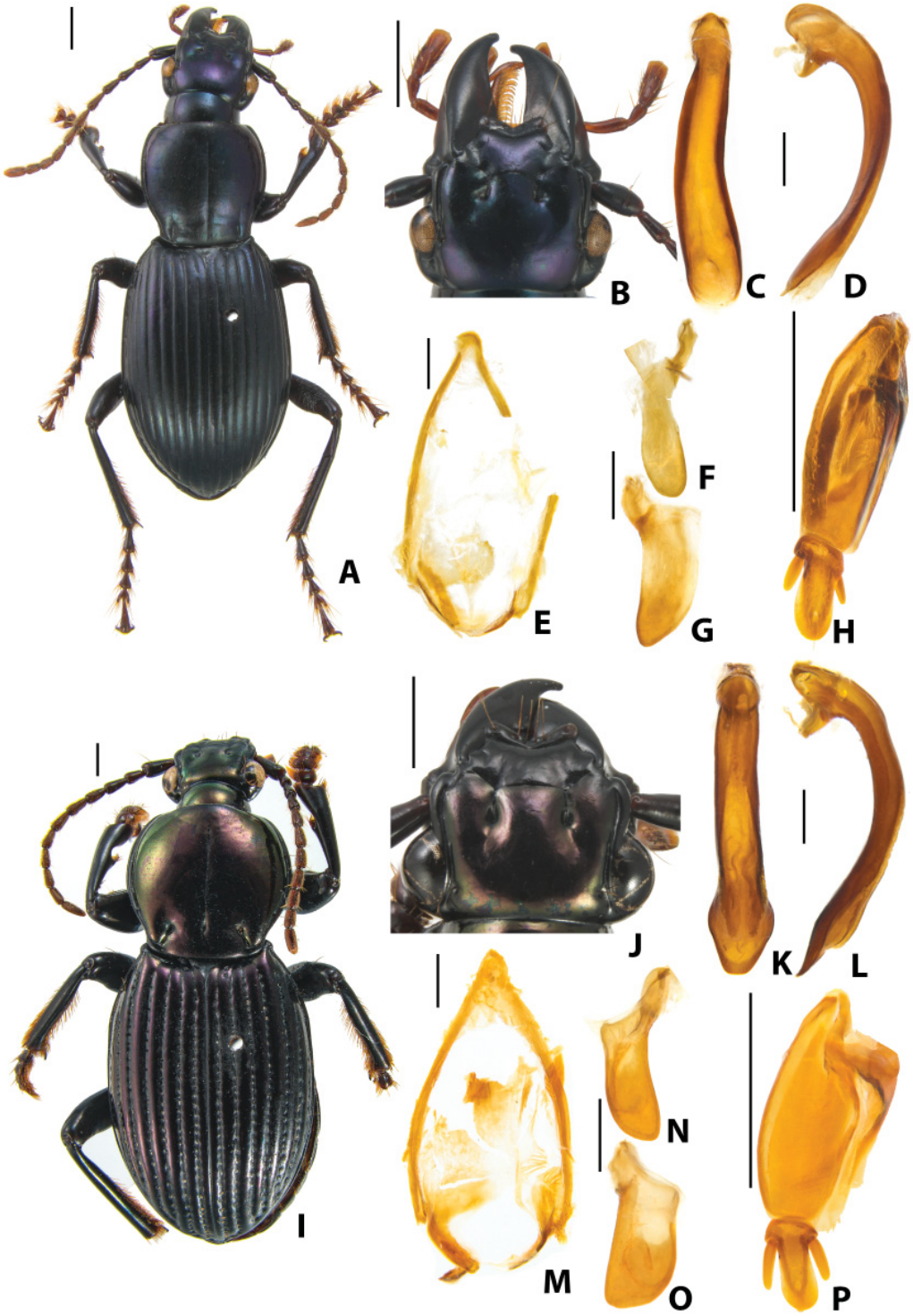

Fig. 6. Habitus and dissected parts of some species of *Pelecium* Kirby, 1817. **A–H**. *Pelecium zophos* sp. nov., male holotype from Teresópolis, Rio de Janeiro, Brazil (A–G) (CAMB) and female paratype from Itatiaia, Rio de Janeiro, Brazil (H) (CAMB). **A**. Dorsal view. **B**. Detail of head. **C–D**. Median lobe. **E**. Tergite IX. **F**. Left paramere. **G**. Right paramere. **H**. Genitalia. – **I–P**. *Pelecium atroviolaceum* Straneo & Ball, 1989, male from Cotriguaçu, Mato Grosso, Brazil (I–O) (CEMT) and female from Cotriguaçu, Mato Grosso, Brazil (P) (CEMT). **I**. Dorsal view. **J**. Detail of head. **K–L**. Median lobe. **M**. Tergite IX. **N**. Left paramere. **O**. Right paramere. **P**. Genitalia. Scale bars: A–B, I–J = 1 mm; C–H, K–P = 0.5 mm.

Paratype

BRAZIL • 1 ♀; Rio de Janeiro, Itatiaia, P.N. Itatiaia; Jan. 2014; R. Monteiro leg.; "\\ Coleção A. M. BELLO \\ *Pelecium zophos* Orsetti & Lopes-Andrade PARATYPUS" [printed on yellow paper]; CAMB.

Description

Male (holotype, fully pigmented adult)

Measurements (in mm). AL1 1.0, AL2 0.5, EL 7.0, EW 5.3, PL 4.0, PW 3.7, HL 2.4, HW 3.1, TL 13.4, TL/EW 2.5, lp2L 0.8, lp3L 0.9, lp3W 0.5, mp3L 0.4, mp4L 0.9, mp4W 0.4.

Body. Ovate, flat; disc of head, pronotum and elytra shiny black in dorsal view; with light metallic violaceus reflections alongside in dorsal view; glabrous (Fig. 6A).

Head. Microreticulate, with pair of punctiform frontal foveae, with shallow excavation reaching anterior plane of eyes (Fig. 6B). Antennae reddish brown, long, reaching anterior portion of elytra; antennomeres 1–3 with few long, sparse yellowish setae at apical portion; antennomeres 4–11 fully covered with both short and long yellowish setae. Apical labial and maxillary palpomeres with long, sparse yellowish setae; ovate, with apex obliquely truncated, reddish brown, with apicalmost portion lighter.

Pronotum. Longer than wide; sides arcuate, each with pair of long setae; posterior fourth forming sinuous line with posterolateral angles; median line long, shallow; posterior impressions deep, almost parallel with median line (Fig. 6A).

Elytra. Oval; each with eight deeply impressed striae; in between striae shiny, impunctate.

Legs. Dark reddish brown; protarsomeres 1–4 expanded, ventrally with vestiture of adhesive setae; protibiae expanded at apex, with few long yellowish setae ventrally and surrounding antennal cleaner; mesotibiae slender, with few long yellowish setae laterally in full length; metatibiae slender, with few long yellowish setae ventrally on apical half.

Abdominal tergite IX (Fig. 6E). Oval, elongate, asymmetrical; sides subparallel, converging in anterior portion and forming rounded projection; inner anterior angle rounded; posterior portion rounded.

Aedeagus (Fig. 6C–D, F–G). With **median lobe** (Fig. 6C–D) cylindrical, sinuous, asymmetrical, flattened dorsoventrally in medial area, slightly broadening apically; ostium very short, confined to apical fourth; apical lamella very short, indiscernible, apical edges sharp; **parameres** (Fig. 6F–G) asymmetrical; left paramere elongate, posterior angle rounded; right paramere with parallel sides converging to rounded apex.

Female

Similar to males but with mesh of long yellow setae on basal region of tergite V.

Measurements (in mm). AL1 0.9, AL2 0.4, EL 6.1, EW 4.1, PL 3.0, PW 3.0, HL 2.0, HW 2.4, TL 11.1, TL/EW 2.7, lp2L 0.7, lp3L 0.7, lp3W 0.2, mp3L 0.3, mp4L 0.8, mp4W 0.2.

Gonocoxite 1 (Fig. 6H). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 6H). Elongate, basal lobe bearing ensiform setae on each side; ensiform setae moderately long, with one-third length of gonocoxite 2; slender setae at apex.

Remarks

We include *P. zophos* sp. nov. in the *P. violaceum* species group due to the head having a punctiform frontal impressions, a deep posterior impression of the pronotum and tarsomeres 5 having a row of setae on the ventrolateral margin.

New records and complementary descriptions

Below, we provide new distributional records and supplementary descriptions for some species studied by Straneo & Ball (1989), focused mainly on body measurements and the morphology of the abdominal terminalia of the following species: *P. atroviolaceum*, *P. bolivianum*, *P. cyanipes*, *P. drakei*, *P. fulgidum*, *P. helenae*, *P. laeve*, *P. negrei*, *P. nicki*, *P. purpureum*, *P. striatum* and *P. violaceum*. We had access only to female individuals of *P. bolivianum* and only to male individuals of *P. purpureum*.

Pelecium atroviolaceum Straneo & Ball, 1989
Figs 6I–P, 13A, 20B, 15

Specimens examined

BRAZIL • 1 ♂, 2 ♀♀; Mato Grosso, Cotriguaçu, Faz. São Nicolau; 20 Aug. 2018; R. Stofel leg.; CEMT • 1 ♀; Mato Grosso, Cotriguaçu, Margem do Juruena; May 2011; R.E. Vicente leg.; CEMT.

Notes

The only previously known specimen of *P. atroviolaceum* was the male holotype from Chapada dos Guimarães, state of Mato Grosso, in the South Brazilian dominion. The new record is from the same biogeographical dominion, but from a different province: the holotype is from the Rondônia province, while the new record is from the Madeira province.

Complementary description

Abdominal tergite IX (Fig. 6M); Oval, slightly asymmetrical, sides arcuate, converging to pointed projection at base; inner anterior angle rounded; posterior portion rounded.

Aedeagus (Fig. 6K–L, N–O). With **median lobe** (Fig. 6K–L) cylindrical, elongate, asymmetrical, broadening apically; ostium long, reaching middle of median lobe; apical lamella short, abruptly narrowed, apical edges narrow; basal bulb thin; **parameres** (Fig. 6N–O) asymmetrical; left paramere longer and thinner than right paramere.

Gonocoxite 1 (Fig. 6P). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 6P). Elongate; basal lobe bearing ensiform setae on each side; ensiform setae long, with half to one-third the length of gonocoxite 2; slender setae at apex.

Measurements (in mm). Male (n = 1): AL1 1.1, AL2 0.6, EL 7.5, EW 5.7, PL 4.4, PW 4.3, HL 2.0, HW 2.9, TL 13.9, TL/EW 2.4, lp2L 0.8, lp3L 0.9, lp3W 0.7, mp3L 0.3, mp4L 0.8, mp4W 0.6. Females (n = 3): AL1 0.9–1.3 (1.13 ± 0.21), AL2 0.5–0.6 (0.57 ± 0.06), EL 6.5–8.0 (7.8 ± 1.21), EW 5.0–6.4 (5.93 ± 0.81), PL 3.7–4.9 (4.40 ± 0.62), PW 3.9–5.0 (4.63 ± 0.64), HL 1.6–2.2 (1.93 ± 0.31), HW 2.6–3.3 (3.03 ± 0.38), TL 11.8–15.7 (14.13 ± 2.06), TL/EW 2.3–2.5 (2.38 ± 0.06), lp2L 0.7–0.8 (0.75 ± 0.07), lp3L 0.7–0.9 (0.8 ± 0.14), lp3W 0.4–0.4 (0.4 ± 0.0), mp3L 0.3–0.4 (0.37 ± 0.06), mp4L 0.7–0.9 (0.8 ± 0.1), mp4W 0.3–0.4 (0.37 ± 0.06).

Pelecium bolivianum Straneo & Ball, 1989
Figs 7A–C, 13C, 20D, 26

Specimen examined

BRAZIL • 1 ♀; Mato Grosso, Corumbá, Serra do Amolar; Mar.–Apr. 2011; C. Aloki leg.; "\\ Coleção A. M. BELLO"; CAMB.

Notes

The only previously known specimens of *P. bolivianum* were the holotype and one paratype, both females, from Sta. Cruz de la Sierra, Bolivia. The new record is from the same biogeographical province, the Rondônia province of the South Brazilian dominion.

Complementary description

Gonocoxite 1 (Fig. 7C). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 7C). Elongate, basal lobe bearing ensiform setae on each side; ensiform setae long, with half the length of gonocoxite 2; slender setae at apex.

Measurements (in mm). Female (n = 1): AL1 0.7, AL2 0.4, EL 6.9, EW 5.1, PL 4.0, PW 4.1, HL 1.8, HW 2.6, TL 12.7, TL/EW 2.5, lp2L 0.6, lp3L 0.8, lp3W 0.4, mp3L 0.3, mp4L 0.7, mp4W 0.4.

Pelecium cyanipes Kirby, 1817
Figs 7D–K, 14A–B, 20F, 21A, 26

Specimens examined

BRAZIL • 6 ♂♂, 3 ♀♀; Rio de Janeiro, Teresópolis, Pq. Nac. Serra dos Orgãos; Jan. 2014; R. Monteiro leg.; CAMB • 1 ♀; Rio de Janeiro; Nova Friburgo, Macaé de Cima; 5 Nov. 2009; E.E & P. Grossi leg.; CERPE • 2 ♂♂; Minas Gerais, Alto Caparaó, PARNA Caparaó; 5–6 Nov. 2016; A. Orsetti and S. Aloquio leg; Ativa/Noturna; CELC • 1 ♂; Minas Gerais, Alto Caparaó, PARNA Caparaó; 6–10 Nov. 2016; A. Orsetti and S. Aloquio leg.; pitfall; CELC.

Notes

The new record is from the same biogeographical dominion, the South Brazilian dominion, but from the Madeira province, while the holotype is from the Rondônia province. In Straneo & Ball (1989) the authors synonymized four species (*P. cyanipes*, *P. carinatum*, *P. ovipenne* and *P. humeratum*) and divided *P. cyanipes* into four "morphs" (*cyanipes* morph, *carinatum* morph, *ovipenne* morph and *humeratum* morph). All specimens of *P. cyanipes* examined by us fit in the *humeratum* "morph". Comparing the examined specimens with photographs of the holotype of *P. cyanipes* and the "morph" descriptions, we noted morphological differences that are sufficient to question the aforementioned synonymies, such as body shape and head frontal fovea. However, in order to review the species limits, it is necessary to examine the holotypes of *P. carinatum*, *P. ovipenne* and *P. humeratum.*

Complementary description

Abdominal tergite IX (Fig. 7H). Oval, asymmetrical, sides converging to anterior portion, forming long projection; left side more angulate them right side; inner anterior angle rounded, posterior portion rounded.

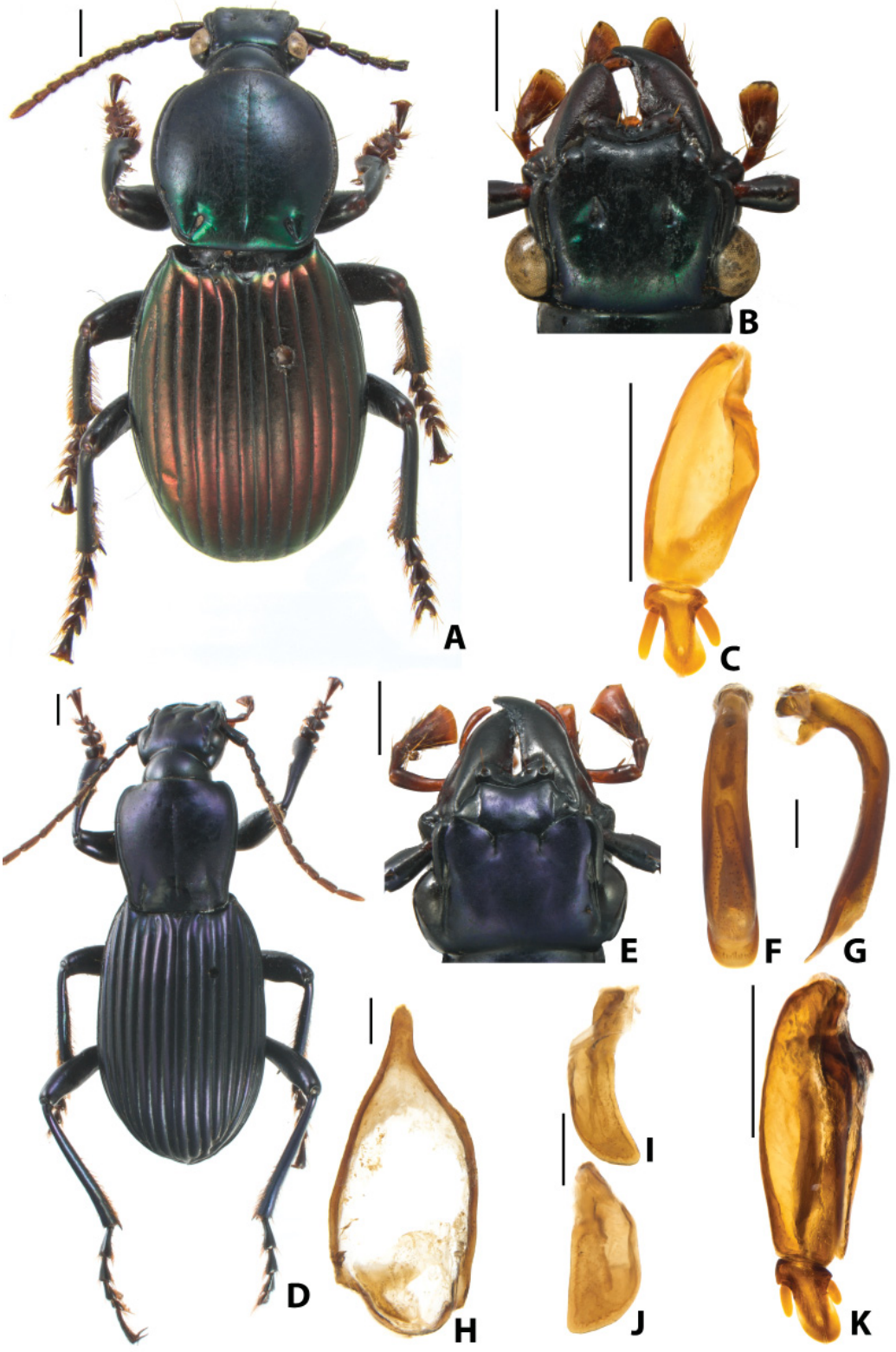

Fig. 7. A–C. *Pelecium bolivianum* Straneo & Ball, 1989, female from Serra do Amolar, Mato Grosso, Brazil (CAMB). **A**. Dorsal view. **B**. Detail of head. **C**. Terminalia. – **D–K**. *Pelecium cyanipes* Kirby, 1817, male from Teresópolis, Rio de Janeiro, Brazil (D–J) (CAMB) and female from Teresópolis, Rio de Janeiro, Brazil (K) (CAMB). **D**. Dorsal view. **E**. Detail of head. **F–G**. Median lobe. **H**. Tergite IX. **I**. Left paramere. **J**. Right paramere. **K**. Genitalia. Scale bars: A–B, D–E = 1 mm; C, F–K = 0.5 mm.

Aedeagus (Fig. 7F–G, I–J). With **median lobe** (Fig. 7F–G) cylindrical, asymmetrical, bent to left, slightly broadening apically; ostium short, confined to apical fourth; apical lamella long, apical edges narrow; basal bulb thin. **Parameres** (Fig. 7I–J) asymmetrical; left paramere elongate, posterior angle rounded; right paramere square, with protuberant rounded lateral angle.

Gonocoxite 1 (Fig. 7K). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 7K). Short; basal lobe bearing ensiform setae on each side; ensiform setae very short, with one-fifth to one-sixth the length of gonocoxite 2; slender setae at apex.

Measurements (in mm). Males (n = 9): AL1 1.0–1.3 (1.11 ± 0.11), AL2 0.5–0.7 (0.62 ± 0.07), EL 7.7–9.7 (8.15 ± 0.66), EW 5.2–7.2 (5.80 ± 0.61), PL 4.3–5.7 (4.8 ± 0.48), PW 4.1–5.5 (4.67 ± 0.48), HL 2.2–2.6 (2.33 ± 0.17), HW 3.0–3.6 (3.23 ± 0.28), TL 14.3–18.0 (15.31 ± 1.17), TL/EW 2.5–2.8 (2.65 ± 0.11), lp2L 0.9–1.3 (1.04 ± 0.12), lp3L 0.9–1.2 (1.04 ± 0.09), lp3W 0.5–0.9 (0.71 ± 0.12), mp3L 0.4–0.5 (0.44 ± 0.05), mp4L 0.8–1.1 (0.93 ± 0,1), mp4W 0.6–1.0 (0.73 ± 0.14). Females (n = 4): AL1 1.1–1.4 (1.18 ± 0.15), AL2 0.6–0.8 (0.65 ± 0.1), EL 9.4–12.1 (10.18 ± 1.29), EW 6.2–6.6 (6.4 ± 0.18), PL 4.9–6.7 (5.4 ± 0.87), PW 3.2–6.5 (4.8 ± 1.35), HL 2.5–3.0 (2.73 ± 0.25), HW 3.3–3.4 (3.37 ± 0.06), TL 16.9–21.8 (18.63 ± 2.75), TL/EW 2.7–3.3 (2.92 ± 0.33), lp2L 0.9–1.1 (1.05 ± 0.1), lp3L 0.7–1.0 (0.88 ± 0.15), lp3W 0.4–0.6 (0.5 ± 0.08), mp3L 0.5–1.0 (0.55 ± 0.1), mp4L 0.9–1.2 (0.98 ± 0.15), mp4W 0.5–0.7 (0.55 ± 0.1).

Pelecium drakei Quedenfeldt, 1890
Figs 8A–H, 14C, 21B, 26

Specimens examined

BRAZIL • 1 ♂, 2 ♀♀; Mato Grosso do Sul, Corumbá; Dec. 2007; C. Aoki leg.; "\\ Coleção A. M. BELLO"; CAMB.

Notes

The known specimens are from the state of Mato Grosso, Brazil, and from Colombia, all of them from the Chacoan province in the Chacoan subregion. The new records are from the state of Mato Grosso do Sul, Brazil, in the same biogeographical region as the other available records.

Complementary description

Abdominal tergite IX (Fig. 8E). Oval, asymmetrical, sides converging to round and large anterior portion; right side more angulate them left side; inner anterior angle rounded; posterior portion rounded.

Aedeagus (Fig. 8C–D, F–G). With **median lobe** (Fig. 8C–D) cylindrical, asymmetrical, bent to left, sides slightly subparallel; ostium short, confined to apical third; apical lamella long, apical edges narrow; basal bulb thin. **Parameres** (Fig. 8F–G) asymmetrical; left paramere (Fig. 8F) elongate, posterior angle rounded; right paramere (Fig. 8G) trapezoid, with protuberant rounded apical angle.

Gonocoxite 1 (Fig. 8H). Outer side with obtuse angle; inner side arcuate, forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 8H). Short; basal lobe bearing ensiform setae on each side; ensiform setae long, with half length of gonocoxite 2; slender setae at apex.

Measurements (in mm). Male (n = 1): AL1 1.3, AL2 0.7, EL 10.9, EW 7.6, PL 5.7, PW 5.5, HL 2.7, HW 3.4, TL 19.3, TL/EW 2.5, lp2L 1.1, lp3L 1.3, lp3W 1.2, mp3L 0.5, mp4L 0.9, mp4W 1.0. Females

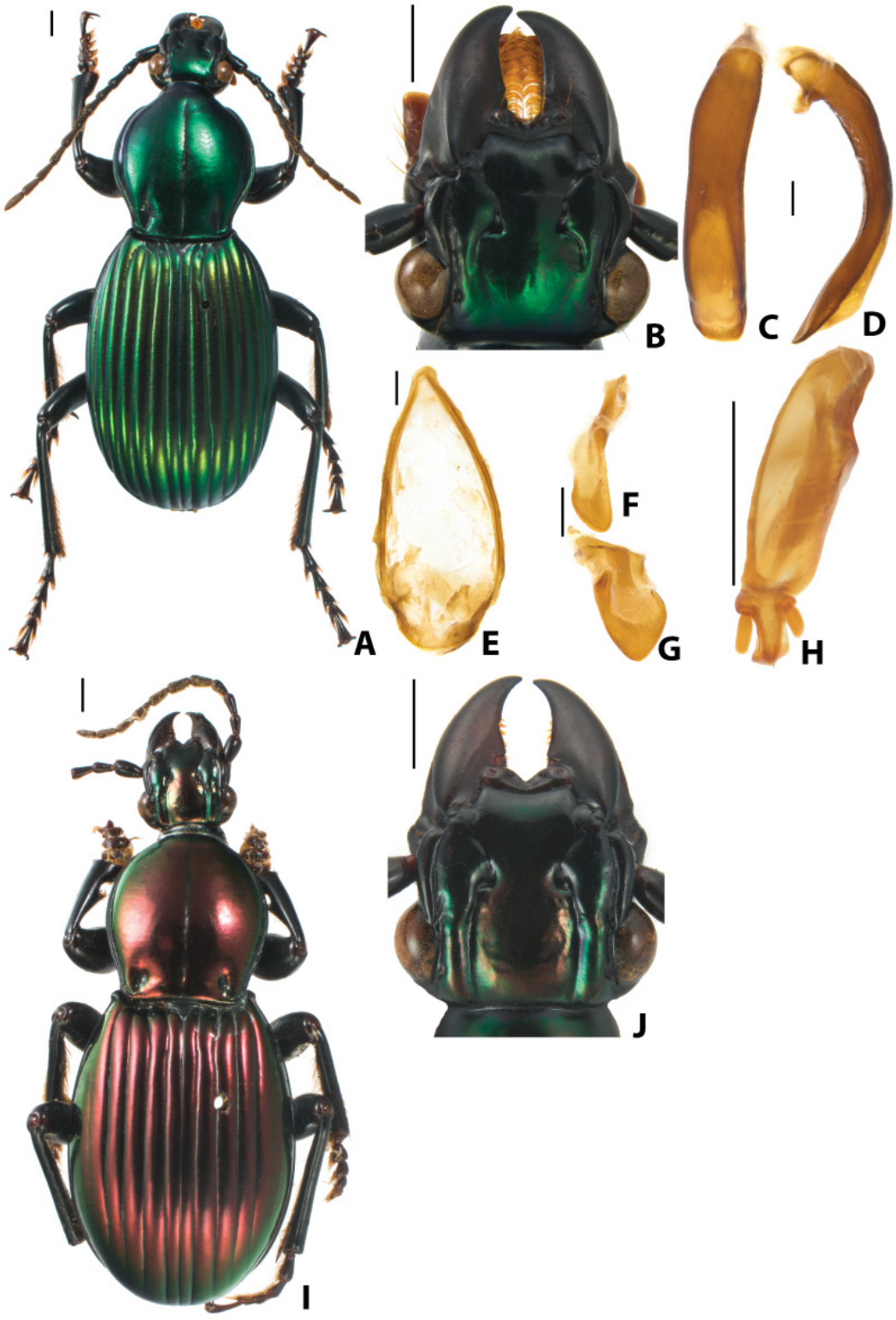

Fig. 8. A–H. *Pelecium drakei* Quedenfeldt, 1890, male from Corumbá, Mato Grosso do Sul, Brazil (A–G) (CAMB) and female from Corumbá, Mato Grosso do Sul, Brazil (H) (CAMB). **A**. Dorsal view. **B**. Detail of head. **C–D**. Median lobe. **E**. Tergite IX. **F**. Left paramere. **G**. Right paramere. **H**. Genitalia. – **I–J**. *Pelecium fulgidum* Straneo, 1962, male from Encruzilhada, Bahia, Brazil (CELC). **I**. Dorsal view. **J**. Detail of head. Scale bars: A–B, I–J = 1 mm; C–H = 0.5 mm.

(n = 2): AL1 1.2–1.3 (1.25 ± 0.07), AL2 0.6–0.8 (0.7 ± 0.17), EL 8.5–11.1 (9.80 ± 1.84), EW 6.7–7.9 (7.3 ± 0.85), PL 4.9–6.0 (5.45 ± 0.78), PW 4.7–5.2 (4.95 ± 0.35), HL 1.2–2.3 (1.75 ± 0.78), HW 1.6–3.4 (2.5 ± 1.27), TL 14.6–19.4 (17.0 ± 3.39), TL/EW 2.2–2.5 (2.32 ± 0.2), lp2L 0.8–0.9 (0.85 ± 0.07), lp3L 0.8–0.1 (0.95 ± 0.21), lp3W 0.6–0.8 (0.7 ± 0.14), mp3L 0.6–0.8 (0.7 ± 0.14), mp4L 0.7–0.8 (0.75 ± 0.07), mp4W 0.5–0.6 (0.55 ± 0.07).

Pelecium fulgidum Straneo, 1962
Figs 8I–J, 14D, 15A, 21C–D, 26

Specimen examined

BRAZIL • 1 ♀; Bahia, Encruzilhada; Dec. 2012; P.C. Grossi, J.A. Rafael, E.J. Grossi and G.A.R. Melo leg.; CELC.

Notes

The only previously known specimens of *P. fulgidum* were the type material (holotype, allotype and four paratypes), labelled only with state information (Bahia, Brazil). The new record is from the Caatinga biogeographical province.

Complementary description

Measurements (in mm). Male (n = 1): AL1 1.2, AL2 0.6, EL 8.6, EW 6.7, PL 5.0, PW 4.9, HL 2.5, HW 3.0, TL 16.1, TL/EW 2.4.

Pelecium helenae Straneo & Ball, 1989
Figs 9A–H, 15B–D, 21E–G, 26

Specimens examined

BRAZIL • 2 ♂♂; Paraná, Piraquara, Manancial da Serra; 19 Oct. 2011; P. Grossi and Santos leg.; CERPE • 1 ♂; Paraná, Castro, Estr. Castro-Tibagi km 15; 9 Apr. 2006; Grossi and Parizotto leg.; CERPE • 1 ♂; Paraná, Piraquara, Mananciais da Serra; 30 Nov. 2005; P. Grossi leg.; CERPE • 1 ♀; São Paulo, Mogi das Cruzes, Parque das Neblinas; 24–28 Feb. 2015; R.V. Nunes leg.; CEMT • 1 ♂; São Paulo, Est. Biologica Paranapiacaba; Jan. 2007; M. Huhara leg.; "\\ Coleção A. M. BELLO"; CAMB.

Notes

Most known specimens of *P. helenae* are from Southeast Brazil, including the holotype and the allotype (both from the state of São Paulo), and eight paratypes (states of Minas Gerais and São Paulo). Only one paratype was collected in the state of Pará, North Brazil. The new records are from the Araucaria Forest province, while the allotype is from the Atlantic province and the paratypes from the state of Minas Gerais are from the Paraná Forest province, but all the three provinces belong to the Paraná dominion. Paratypes from the state of Pará are from the Pará province of the Brazilian boreal dominion. The red label (Fig. 21E) of the holotype of *P. helenae* is wrongly labelled as *P. paulae*, but following the original description and comparing the locality label we can conclude that it is the holotype of *P. helenae*.

Complementary description

Abdominal tergite IX (Fig. 9E). Oval, asymmetrical, sides converging to anterior portion forming a rounded angle; left side more angulate them right side; inner anterior angle rounded; posterior portion rounded.

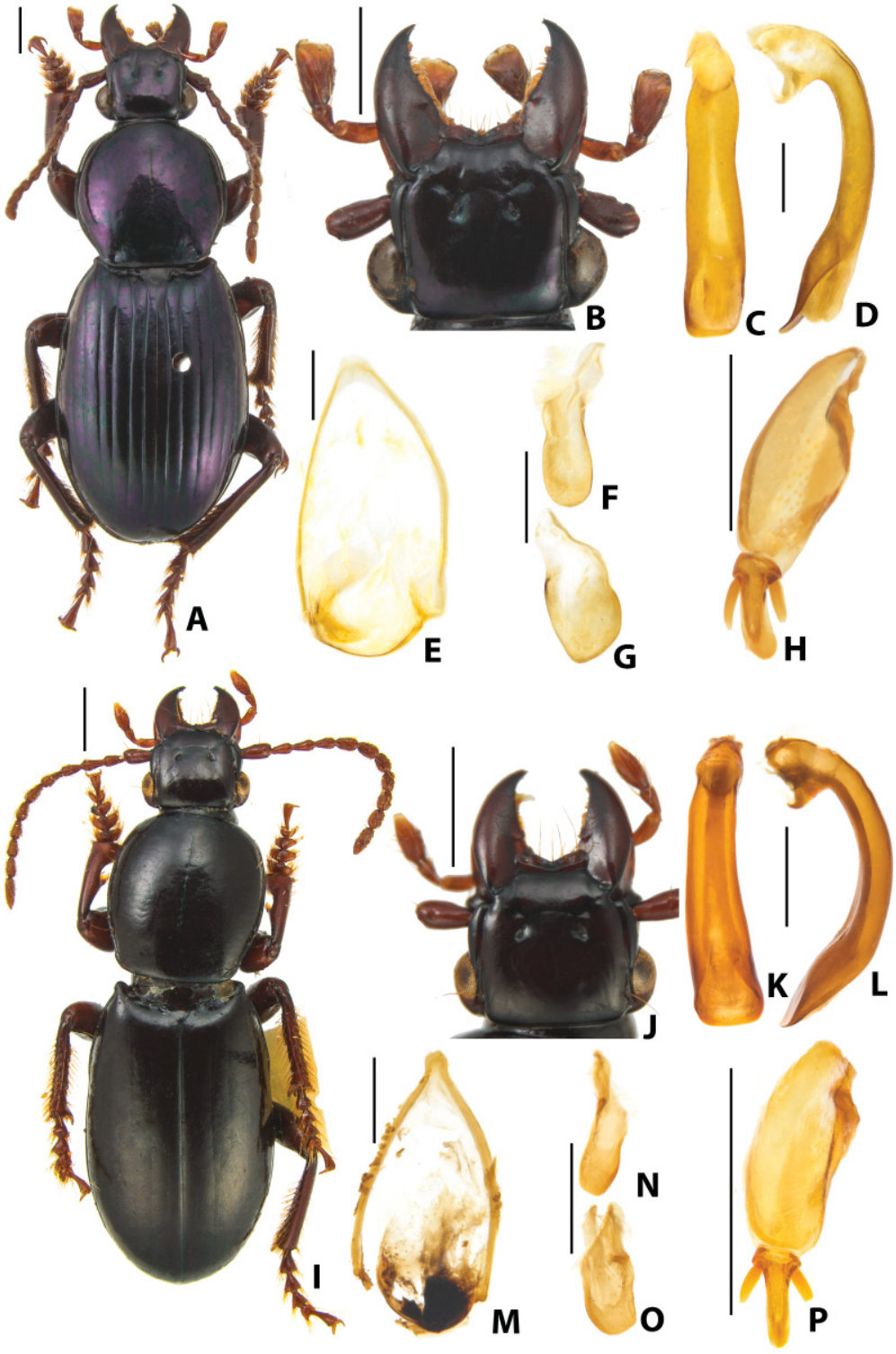

Fig. 9. A–H. *Pelecium helenae* Straneo & Ball, 1989, male from Piraquara, Paraná, Brazil (A–G) (CERPE) and female from Mogi das Cruzes, São Paulo, Brazil (H) (CEMT). **A**. Dorsal view. **B**. Detail of head. **C–D**. Median lobe. **E**. Tergite IX. **F**. Left paramere. **G**. Right paramere. **H**. Genitalia. – **I–P**. *Pelecium laeve* Chaudoir, 1854, male from Porto Alegre, Rio Grande do Sul, Brazil (I–O) (FZRBS) and female from Porto Alegre, Rio Grande do Sul, Brazil (P) (FZRBS). **I**. Dorsal view. **J**. Detail of head. **K–L**. Median lobe. **M**. Tergite IX. **N**. Left paramere. **O**. Right paramere. **P**. Genitalia. Scale bars: A–B, I–J = 1 mm; C–H, K–P = 0.5 mm.

Aedeagus (Fig. 9C–D, F–G). With **median lobe** (Fig. 9C–D) cylindrical, slightly asymmetrical, bent to left, slightly broadening apically; ostium short, confined to apical fourth; apical lamella long, not evenly narrowed, apical edges narrow; basal bulb thin. **Parameres** (Fig. 9F–G) asymmetrical; left paramere elongate with posterior angle rounded; right paramere square-shaped with protuberant, rounded lateral angle.

Gonocoxite 1 (Fig. 9H). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 9H). Elongate; basal lobe bearing ensiform setae on each side; ensiform setae long, with half length of gonocoxite 2; slender setae at apex.

Measurements (in mm). Males (n = 4): AL1 0.8–0.9 (0.83 ± 0.05), AL2 0.3–0.5 (0.43 ± 0.1), EL 4.7–6.7 (5.78 ± 0.85), EW 3.2–4.3 (3.98 ± 0.52), PL 2.7–3.6 (3.28 ± 0.39), PW 2.6–3.6 (2.25 ± 0.39), HL 1.3–1.6 (1.53 ± 0.15), HW 1.7–2.4 (2.15 ± 0.31), TL 8.7–11.9 (10.58 ± 1.36), TL/EW 2.5–2.8 (2.66 ± 0.11), lp2L 0.5–0.7 (0.6 ± 0.08), lp3L 0.6–0.7 (0.68 ± 0.1), lp3W 0.3–0.4 (0.35 ± 0.06), mp3L 0.2–03 (0.28 ± 0.05), mp4L 0.5–0.7 (0.63 ± 0.1), mp4W 0.3–0.4 (0.33 ± 0.05). Females (n = 2): AL1 1.1–1.2 (1.15 ± 0.07), AL2 0.6–0.6 (0.6 ± 0.0), EL 8.95–0.35 (8.95 ± 0.35), EW 5.7–5.9 (5.8 ± 0.14), PL 4.8–4.9 (4.85 ± 0.07), PW 4.3–4.7 (4.5 ± 0.28), HL 2.8–3.0 (2.1 ± 0.28), HW 2.8–3.0 (2.9 ± 0.14), TL 15.5–16.3 (15.9 ± 0.57), TL/EW 2.7–2.8 (2.74 ± 0.03), lp2L 0.8–0.9 (0.85 ± 0.07), lp3L 0.8–0.9 (0.85 ± 0.07), lp3W 0.3–0.3 (0.3 ± 0.0), mp3L 0.4–0.5 (0.45 ± 0.07), mp4L 0.8–0.8 (0.8 ± 0.0), mp4W 0.3–0.4 (0.35 ± 0.07).

Pelecium laeve Chaudoir, 1854
Figs 9I–P, 16A, 17D, 21H, 22E, 27

Specimens examined

BRAZIL • 1 ♂, 3 ♀♀; Rio Grande do Sul, Porto Alegre, LAMI Ponta do Cego; 7–27 Jul. 2006; R. Moraes leg.; FZBRS • 9 ♂♂, 2 ♀♀; Rio Grande do Sul, Porto Alegre, LAMI Ponta do Cego; 21 Oct.–9 Nov. 2005; R. Moraes leg.; FZBRS • 1 ♂; Rio Grande do Sul, Porto Alegre, LAMI Ponta do Cego; 5–16 Jan. 2006; R. Moraes leg.; FZBRS • 1 ♂, 1 ♀; Rio Grande do Sul, Montenegro; 7 Jul. 1977; H. Bischoff leg.; FZBRS • 1 ♂; Paraná, Cap. Leonidas Maeques; 25 Mar. 1993; A.B. Bonaldo leg.; FZBRS • 1 ♀; Rio de Janeiro, Nova Friburgo; Dec. 2001; E. Grossi leg.; CAMB.

Notes

In Straneo & Ball (1989) the geographical distribution of *P. laeve* is restricted to "Espiritu Santo" (probably a misspelling of the state of Espírito Santo), but the lectotype and the paralectotype are labelled "Novofriburgo", referring to "Nova Friburgo", a city in the state of Rio de Janeiro. Those specimens are from the Atlantic province, in the Paraná biogeographic dominion. The new records are from Pampean province in the Chacoan subregion and from the Paraná Forest dominion in the Paraná dominion.

Complementary description

Abdominal tergite IX (Fig. 9M). Oval, asymmetrical, sides converging to short-pointed projection expanded at base; inner anterior angle rounded; base rounded.

Aedeagus (Fig. 9K–L, N–O). With **median lobe** (Fig. 9K–L) cylindrical, elongate, asymmetrical, slightly broadening apically; ostium short, confined to apical third; apical lamella short, abruptly narrowed, apical edges narrow; basal bulb thin; **parameres** (Fig. 9N–O) asymmetrical; left paramere longer and thinner than right paramere.

Gonocoxite 1 (Fig. 9P). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 9P). Elongate; basal lobe bearing ensiform setae on each side; ensiform setae long, with one-third to half the length of gonocoxite 2; slender setae at apex.

Measurements (in mm). Males (n = 13): AL1 0.3–0.6 (0.26±0.05), AL2 0.2–0.3 (0.26±0.05), EL 3.4–5.1 (4.08±0.53), EW 2.4–3.4 (2.89±0.28), PL 1.8–2.8 (2.33±0.28), PW 1.7–2.7 (2.22±0.27), HL 1.0–1.4 (1.15±0.12), HW 1.3–2.0 (1.62±0.17), TL 6.2–9.3 (7.57±0.88), TL/EW 2.5–2.7 (2.61±0.06), lp2L 0.3–0.5 (0.36±0.07), lp3L 0.4–0.5 (0.46±0.05), lp3W 0.2–0.3 (0.22±0.04), mp3L 0.1–0.2 (0.18±0.04), mp4L 0.4–0.5 (0.44±0.05), mp4W 0.2–0.3 (0.22±0.04). Females (n = 7): AL1 0.4–0.6 (0.49±0.07), AL2 0.2–0.3 (0.23±0.05), EL 4.0–5.4 (4.39±0.53), EW 2.7–3.4 (3.01±0.27), PL 2.2–3.0 (2.49±0.31), PW 2.1–2.8 (2.36±0.25), HL 1.0–1.4 (1.2±0.14), HW 1.5–2.0 (1.73±0.21), TL 7.3–9.8 (8.07±0.95), TL/EW 2.5–2.9 (2.68±0.15), lp2L 0.3–0.4 (0.36±0.05), lp3L 0.4–0.5 (0.44±0.05), lp3W 0.1–0.2 (0.17±0.05), mp3L 0.2–0.2 (0.2±0.0), mp4L 0.4–0.5 (0.41±0.04), mp4W 0.2–0.3 (0.23±0.05).

Pelecium negrei Straneo, 1962
Figs 10A–H, 16C, 21J, 27

Specimens examined

BRAZIL • 1 ♀; Bahia, Boa Nova; 28 Feb. 2015; Cerqueira P. *et al*. leg.; CEMT • 1 ♂; Bahia, Itapetinga; C.M.P. Leite leg.; CEMT.

Notes

The previously known specimens are from Bahia, a state in the Northeast Region of Brazil, in the Caatinga province of the Chacoan dominion. The new records are from the same state in the same biogeographic province.

Complementary description

Abdominal tergite IX (Fig. 10E). Elongate, asymmetrical; sides subparallel at base and converging at middle to rounded projection on apex; inner anterior angle rounded; apex straight.

Aedeagus (Fig. 10C–D, F–G). With **median lobe** (Fig. 10C–D) cylindrical, slender, asymmetrical, slightly sinuous, apical portion expanded; ostium very short, confined to apical fourth; apical lamella short, abruptly narrowed; apical edge sharp; basal bulb thin. **Parameres** (Fig. 10F–G) asymmetrical, left paramere securiform, longer and thinner than right paramere.

Gonocoxite 1 (Fig. 10H). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 10H). Elongate; basal lobe bearing ensiform setae on each side; ensiform setae long, with half to one-third length of gonocoxite 2; inner ensiform setae visibly longer than inner setae; slender setae at apex.

Measurements (in mm). Male (n = 1): AL1 0.6, AL2 0.4, EL 4.3, EW 3.1, PL 2.6, PW 2.5, HL 1.3, HW 1.7, TL 8.2, TL/EW 2.6, lp2L 0.4, lp3L 0.5, lp3W 0.3, mp3L 0.2, mp4L 0.5, mp4W 0.2. Female (n = 1): AL1 0.8, AL2 0.5, EL 6.5, EW 4.7, PL 3.8, PW 3.7, HL 1.8, HW 2.3, TL 12.1, TL/EW 2.6, lp2L 0.7, lp3L 0.7, lp3W 0.3, mp3L 0.3, mp4L 0.6, mp4W 0.3.

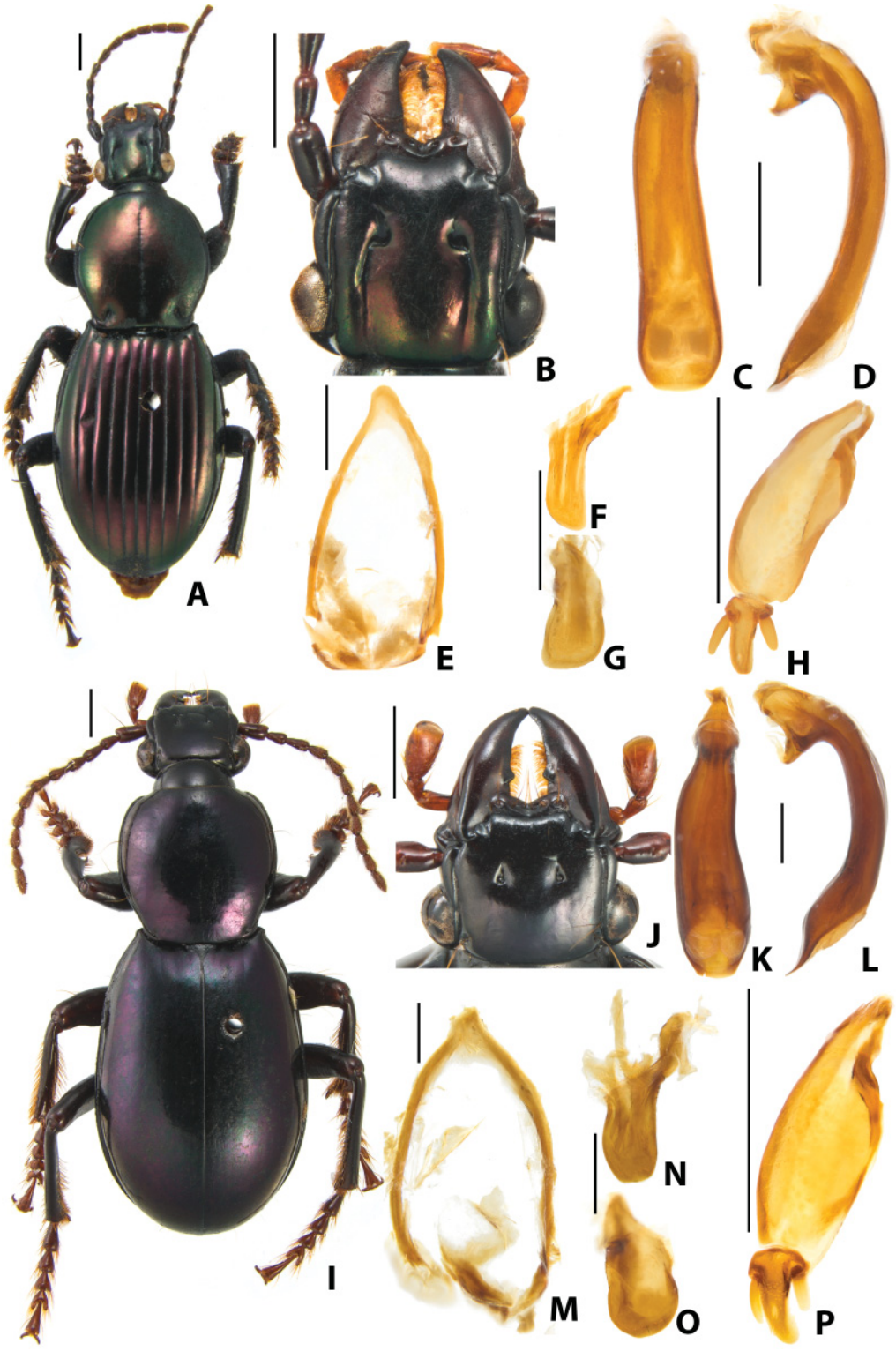

Fig. 10. A–H. *Pelecium negrei* Straneo, 1962, male from Itapetinga, Bahia, Brazil (A–G) (CEMT) and female from Boa Nova, Bahia, Brazil (H) (CEMT). **A**. Dorsal view. **B**. Detail of head. **C–D**. Median lobe. **E**. Tergite IX. **F**. Left paramere. **G**. Right paramere. **H**. Genitalia. – **I–P**. *Pelecium nicki* Straneo, 1955, male from Florianópolis, Santa Catarina, Brazil (I–O) (CERPE) and female from Florianópolis, Santa Catarina, Brazil (P) (CERPE). **I**. Dorsal view. **J**. Detail of head. **K–L**. Median lobe. **M**. Tergite IX. **N**. Left paramere. **O**. Right paramere. **P**. Genitalia. Scale bars: A–B, I–J = 1 mm; C–H, K–P = 0.5 mm.

Pelecium nicki Straneo, 1955
Figs 10I–P, 16D, 17A, 22A, 22B, 26

Specimens examined

BRAZIL • 2 ♂♂; Santa Catarina, Florianopolis, UCAD; 5–12 Jan. 2004; C. Espirito Santo leg.; CERPE • 3 ♂♂, 1 ♀; Santa Catarina, Florianopolis, UCAD; 3–10 Nov. 2003; C. Espirito Santo leg.; CERPE • 1 ♂; same collection data as for preceding; FZBR • 1 ♂, 1 ♀; Rio de Janeiro, Itatiaia, P.N. do Itatiaia; Jan. 1957; L.C. Alvarenga leg.; MZSP • 1 ♂; Rio de Janeiro, Itatiaia, P.N. Itatiaia; Jan. 1993; CERPE • 1 ♂; Santa Catarina, Urubici, Pq. Nac. São Joaquim; Jun.–Dec. 2015; P.G. da Silva leg.; CAMB • 1 ♀; Santa Catarina, Florianópolis; 9 Mar. 2013; P.G. Silva leg.; CERPE.

Notes

Known specimens of *P. nicki* are from the states of Paraná and Santa Catarina, South Region of Brazil, in the Pampean and the Paraná Forest provinces, respectively. The new record is from the Atlantic Forest province in the Paraná dominion.

Complementary description

Abdominal tergite IX (Fig. 10M). Oval, asymmetrical; sides subparallel at base and converging at middle in projection on apex; inner anterior angle rounded; apex straight with inner posterior angle rounded.

Aedeagus (Fig. 10K–L, N–O). With **median lobe** (Fig. 10K–L) cylindrical, slender, asymmetrical; slightly sinuous, apical portion expanded; ostium very short, confined to apical fourth; apical lamella moderately long, abruptly narrowed; apical edge sharp; basal bulb thin. **Parameres** (Fig. 10N–O) asymmetrical, left paramere (Fig. 10N) securiform, longer and thinner than right paramere (Fig. 10O).

Gonocoxite 1 (Fig. 10P). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 10P). Elongate; basal lobe bearing ensiform setae on each side; ensiform setae long, with half the length of gonocoxite 2, inner ensiform setae visibly longer than external setae; slender setae at apex.

Measurements (in mm). Males (n = 9): AL1 0.6–0.9 (0.77 ± 0.12), AL2 0.3–0.5 (0.39 ± 0.08), EL 5.3–6.7 (5.76 ± 0.45), EW 3.9–5.4 (4.46 ± 0.42), PL 3.0–4.0 (3.39 ± 0.31), PW 3.1–4.0 (3.48 ± 0.27), HL 1.4–2.0 (1.63 ± 0.18), HW 2.2–2.8 (2.44 ± 0.19), TL 9.7–12.7 (10.78 ± 0.93), TL/EW 2.3–2.6 (2.42 ± 0.09), lp2L 0.5–0.7 (0.57 ± 0.07), lp3L 0.6–0.8 (0.67 ± 0.07), lp3W 0.4–0.5 (0.42 ± 0.04), mp3L 0.3–0.4 (0.31 ± 0.03), mp4L 0.6–0.8 (0.68 ± 0.08), mp4W 0.4–0.6 (0.43 ± 0.07). Females (n = 3): AL1 0.7–0.8 (0.73 ± 0.06), AL2 0.3–0.4 (0.33 ± 0.06), EL 5.3–6.0 (5.63 ± 0.35), EW 4.2–4.4 (4.33 ± 0.12), PL 3.2–3.3 (3.23 ± 0.06), PW 3.4–3.3 (3.43 ± 0.06), HL 1.3–1.5 (1.43 ± 0.12), HW 2.2–2.4 (2.3 ± 0.1), TL 10.0–10.8 (10.3 ± 0.44), TL/EW 2.3–2.5 (2.38 ± 0.09), lp2L 0.5–0.6 (0.53 ± 0.06), lp3L 0.5–0.6 (0.57 ± 0.06), lp3W 0.2–0.3 (0.27 ± 0.06), mp3L 0.2–0.3 (0.27 ± 0.06), mp4L 0.6–0.6 (0.60 ± 0.0), mp4W 0.3–0.3 (0.3 ± 0.0).

Pelecium purpureum Straneo, 1955
Figs 11A–H, 27

Specimens examined

BRAZIL • 1 ♂; Minas Gerais, Alto Caparaó, PARNA Caparaó; 6–10 Nov. 2016; A. Orsetti and S. Aloquio leg.; CELC • 1 ♂, 1 ♀; Minas Gerais, Viçosa, Mata da Biologia; 2012; S. Aloquio and A. Puker leg.; CELC • 1 ♂; Espírito Santo, Venda Nova do Imigrante, Lavrinhas; 10–14 Jan. 2011; F.Z. Vaz-de-Mello leg.; CEMT.

Notes

The only two previously known specimens of *P. purpureum* were the male holotype and an additional specimen labelled only with state information ("Espirito Santo"). The new reports are from the Atlantic and the Paraná Forest provinces, both in the Paraná dominion.

Complementary description

Abdominal tergite IX (Fig. 11E). Oval, slightly asymmetrical; sides subparallel, converging to projection at base; inner anterior angle rounded; apex rounded.

Aedeagus (Fig. 11C–D, F–G). With **median lobe** (Fig. 11C–D) cylindrical, elongate, asymmetrical, sinuous, slightly broadening apically; ostium short, confined to apical fourth; apical lamella short, evenly narrowed; basal bulb thin; **parameres** (Fig. 11F–G) asymmetrical; left paramere elongate, longer and thinner than right paramere.

Gonocoxite 1 (Fig. 11H). Outer side straight and inner side arcuate, forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 11H). Elongate; basal lobe bearing ensiform setae on each side; ensiform setae long, with half length of gonocoxite 2; inner ensiform setae visibly longer than external setae; anterior margin dull, with a slender seta at apex.

Measurements (in mm). Males (n = 3): AL1 0.9–1.0 (0.97 ± 0.06), AL2 0.4–0.5 (0.47 ± 0.06), EL 5.7–6.6 (6.03 ± 0.49), EW 4.5–5.2 (4.73 ± 0.4), PL 3.2–3.8 (3.5 ± 0.3), PW 3.3–3.7 (3.53 ± 0.21), HL 1.7–1.8 (1.73 ± 0.06), HW 2.4–2.8 (2.57 ± 0.21), TL 10.7–12.2 (11.27 ± 0.81), TL/EW 2.3–2.4 (2.38 ± 0.04), lp2L 0.6–0.7 (0.63 ± 0.06), lp3L 0.6–0.7 (0.63 ± 0.06), lp3W 0.4–0.5 (0.43 ± 0.06), mp3L 0.3–0.3 (0.03 ± 0.0), mp4L 0.6–0.7 (0.67 ± 0.06), mp4W 0.4–0.4 (0.4 ± 0.0). Female (n = 1): AL1 1.0, AL2 0.5, EL 6.4, EW 4.5, PL 3.4, PW 3.5, HL 1.6, HW 2.4, TL 11.4, TL/EW 2.5, lp2L 0.6, lp3L 0.7, lp3W 0.3, mp3L 0.3, mp4L 0.7, mp4W 0.7.

Pelecium striatum Straneo, 1955
Figs 11I–P, 19D, 23B, 27

Specimens examined

BRAZIL • 1 ♂; Santa Catarina, R. Vermelho; MZSP • 1 ♀; Santa Catarina, Corupá; MZSP • 1 ♂; Santa Catarina, Corupá; Oct. 1937; A. Maller leg.; MZSP • 1 ♀; Santa Catarina, Corupá; Nov. 1937; A. Maller leg.; MZSP • 1 ♀; Santa Catarina, Corupá; Feb. 1954; A. Maller leg.; MZSP.

Notes

This species was known only from the state of Santa Catarina, South Region, Brazil. The new records are from the Araucaria Forest province, while the holotype is from the Atlantic province, both in the Chacoan dominion.

Complementary description

Abdominal tergite IX (Fig. 11M). Oval, subelongate, asymmetrical; sides arcuate; posterior third rounded; anterior portion converging to a flat projection.

Aedeagus (Fig. 11K–L, N–O). With **median lobe** (Fig. 11K–L) cylindrical, asymmetrical; sides in apical fourth sinuous; ostium short, confined to apical third; apical lamella moderately long, narrowed

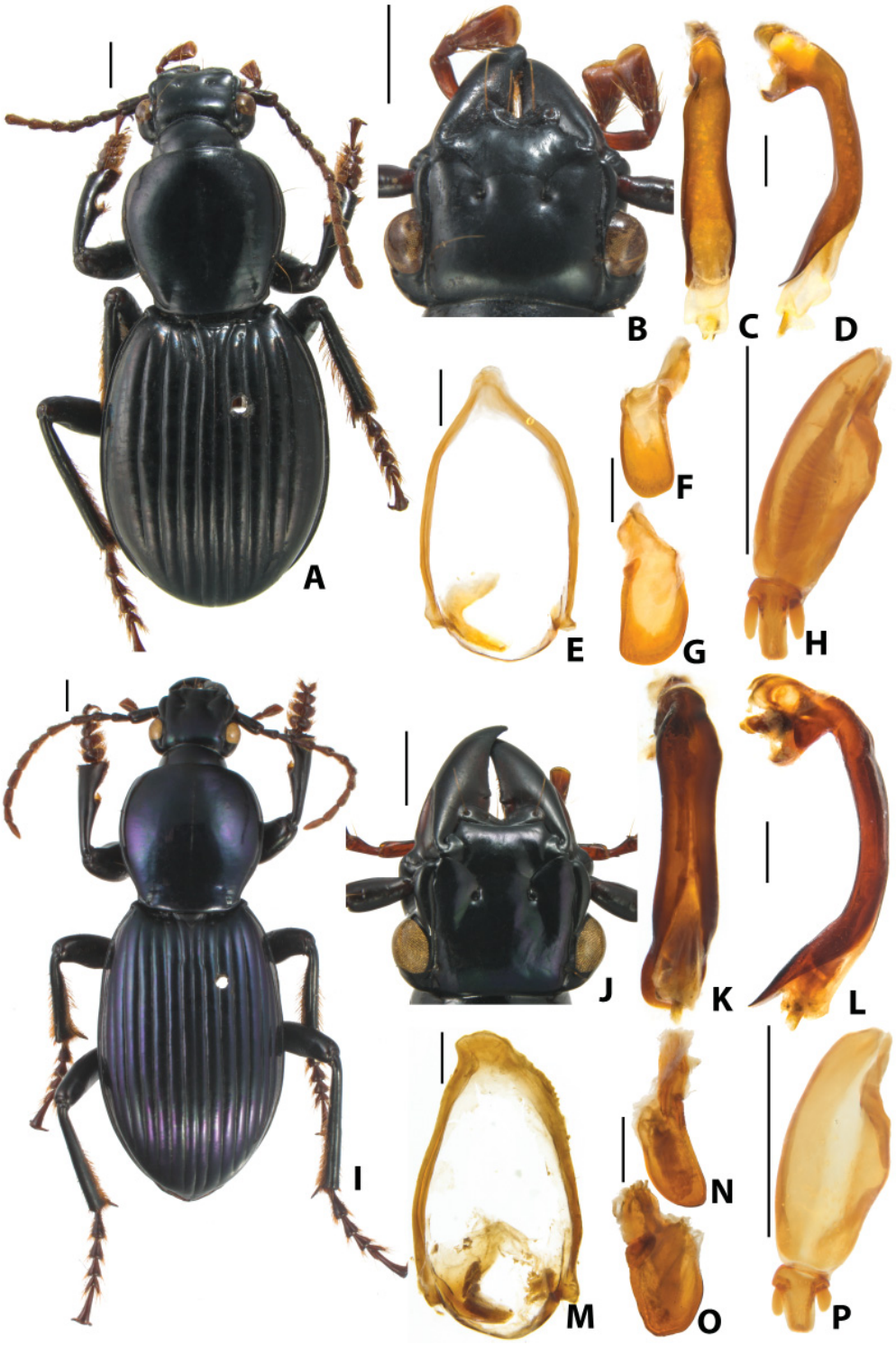

Fig. 11. A–H. *Pelecium purpureum* Straneo, 1955, male from Alto Caparaó, Minas Gerais, Brazil (A–G) (CELC) and female from Viçosa, Minas Gerais, Brazil (H) (CELC). **A**. Dorsal view. **B**. Detail of head. **C–D**. Median lobe. **E**. Tergite IX. **F**. Left paramere. **G**. Right paramere. **H**. Genitalia. – **I–P**. *Pelecium striatum* Straneo, 1955, male from Corupá, Santa Catarina, Brazil (I–O) (MZSP) and female from Corupá, Santa Catarina, Brazil (P) (MZSP). **I**. Dorsal view. **J**. Detail of head. **K–L**. Median lobe. **M**. Tergite IX. **N**. Left paramere. **O**. Right paramere. **P**. Genitalia. Scale bars: A–B, I–J = 1 mm; C–H, K–P = 0.5 mm.

to a square apex; apical edges sharp. **Parameres** (Fig. 11N–O) asymmetrical; left paramere longer and thinner than right paramere, square.

Gonocoxite 1 (Fig. 11P). Outer and inner sides arcuate, forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 11P). Elongate; basal lobe bearing ensiform setae on each side; ensiform setae long, with half the length of gonocoxite 2; slender setae at apex.

Measurements (in mm). Male (n = 2): AL1 1.0–1.1 (1.05 ± 0.07), AL2 0.6–0.6 (0.6 ± 0.0), EL 6.9–7.2 (7.05 ± 0.21), EW 5.0–5.2 (5.1 ± 0.14), PL 4.0–4.1 (3.8 ± 4.1), PW 3.8–4.1 (3.95 ± 0.21), HL 1.9–2.0 (1.95 ± 0.07), HW 2.6–2.9 (2.75 ± 0.21), TL 12.9–13.2 (13.05 ± 0.21), TL/EW 2.5–2.6 (2.56 ± 0.03), lp2L 0.8–0.8 (0.8 ± 0.0), lp3L 0.9–0.9 (0.9 ± 0.0), lp3W 0.6–0.6 (0.6 ± 0.0), mp3L 0.4–0.4 (0.4 ± 0.0), mp4L 0.8–0.9 (0.85 ± 0.07), mp4W 0.5–0.6 (0.55 ± 0.07). Females (n = 3): AL1 1.0–1.1 (1.03 ± 0.06), AL2 0.5–0.6 (0.53 ± 0.06), EL 6.8–7.1 (6.93 ± 0.15), EW 4.9–5.0 (4.97 ± 0.06), PL 3.5–3.9 (3.7 ± 0.2), PW 3.8–4.1 (3.93 ± 0.15), HL 1.8–2.0 (1.9 ± 0.1), HW 2.6–2.8 (2.67 ± 0.12), TL 12.2–12.7 (12.53 ± 0.29), TL/EW 2.4–2.6 (2.52 ± 0.08), lp2L 0.6–0.7 (0.65 ± 0.07), lp3L 0.8–0.8 (0.8 ± 0.0), lp3W 0.2–0.2 (0.2 ± 0.0), mp3L 0.3–0.3 (0.3 ± 0.0), mp4L 0.7–0.8 (0.73 ± 0.06), mp4W 0.3–0.3 (0.3 ± 0.0).

Pelecium violaceum Brullé, 1838
Figs 1, 12, 27

Specimens examined

BRAZIL • 1 ♂; Maranhão, Bom Jardim, REBIO Res. Biol. Gurupi; 5–15 Jun. 2010; J.C. Silva, J.A. Silva, A.A. Santos and T.T.A. Silva leg.; CERPE • 1 ♀; Rio Grande do Sul, Derrubadas, P.E. do Turvo; 22 Oct. 2004; L. Moura leg.; FZBRS • 1 ♂, 1 ♀; Mato Grosso, Pontes e Lacerda, Min. Yamana; 5–11 Nov. 2012; R.A.K. Ribeiro; CEMT • 2 ♂♂, 1 ♀; Mato Grosso, Indiavaí, Faz. Alto Jauru, Bacia Jauru; Feb. 2003; M. Santos-Filho leg.; CEMT • 1 ♂, 1 ♀; Mato Grosso, Araputanga, Faz. Bandeirantes, Bacia, Jauru; Dec. 2002; M. Santos-Filho leg.; CEMT • 2 ♀♀; Mato Grosso, Curvelândia, Faz. Aparecido, Bacia Cabaçal; Feb. 2004; M. Santos-Filho; CEMT • 1 ♀; Mato Grosso, P.N. Nascente do Rio Taquari; Apr. 2000; F. Rodrigues leg.; CERPE • 1 ♂, 1 ♀; Mato Grosso, Caceres, Faz. Baia de Pedra; Mar. 2009; D.D. Pinheiro leg.; CEMT • 1 ♀; Mato Grosso, Pontes e Lacerda, Mineração Yamana, P. Ernesto; 1–6 Mar. 2013; R.A.K. Ribeiro leg.; CEMT • 1 ♂; Mato Grosso, Poconé; Jul. 2012; G. Pessoa leg.; CEMT • 1 ♂; Mato Grosso, Curvêlandia, Faz. Calça Vermelha, Bacia Cabaçal; Feb. 2004; M. Santos-Filho leg.; CEMT.

Notes

Pelecium violaceum has one of the widest geographical distributions of the genus and it can be found in Bolivia, Paraguay, middle Argentina and in the Brazilian states of Rondônia, Mato Grosso, Goiás and São Paulo. *Pelecium violaceum* was reported from four South American dominions: South Brazilian, Chacoan, Paraná and the South America transition zone. The new records are from the Pampean province, in the Chacoan dominion, and Roraima province in the Boreal Brazilian dominion.

Complementary description

Abdominal tergite IX (Fig. 12E). Oval, asymmetrical, elongate, sides subparallel converging to anterior portion, forming a rounded inner angle and a short projection at base; posterior portion rounded.

Aedeagus (Fig. 12C–D, F–G). With **median lobe** (Fig. 12C–D) cylindrical, asymmetrical, sinuous, slightly broadening apically; ostium elongate, reaching middle area of median lobe; posterior margin

thin; apical lamella short; apical edges narrow; basal bulb thin; **parameres** (Fig. 12F–G) asymmetrical; left paramere elongate, with posterior angle rounded; right paramere wider, with posterior angle rounded.

Gonocoxite 1 (Fig. 12H). Outer and inner sides arcuate; inner side forming acute projection on posterior margin; anterior margin dull.

Gonocoxite 2 (Fig. 12H). Elongate; basal lobe bearing ensiform setae on each side; ensiform setae long, with half length of gonocoxite 2; slender setae at apex.

Measurements (in mm). Males (n = 8): AL1 1.1–1.6 (1.36 ± 0.16), AL2 0.7–1.0 (0.84 ± 0.09), EL 10.3–12.4 (11.3 ± 0.74), EW 7.3–9.0 (8.05 ± 0.56), PL 5.6–6.6 (6.14 ± 0.35), PW 5.1–6.3 (5.73 ± 0.35), HL 2.1–3.2 (2.79 ± 0.33), HW 3.2–3.6 (3.46 ± 0.14), TL 18.5–22.0 (20.23 ± 1.24), TL/EW 2.4–2.7 (2.51 ± 0.09), lp2L 0.8–1.2 (2.51 ± 0.09), lp3L 1.1–1.4 (1.21 ± 0.11), lp3W 0.9–1.3 (1.06 ± 0.16), mp3L 0.4–0.6 (0.5 ± 0.08), mp4L 0.9–1.2 (0.99 ± 0.16), mp4W 0.7–1.1 (0.99 ± 0.16). Females (n = 9): AL1 1.1–1.4 (1.26 ± 0.12), AL2 0.6–0.8 (0.71 ± 0.09), EL 8.3–12.3 (10.79 ± 1.47), EW 5.8–8.6 (7.59 ± 0.95), PL 4.7–6.5 (5.9 ± 0.73), PW 4.4–6.1 (5.47 ± 0.64), HL 2.1–2.9 (2.63 ± 0.32), HW 2.8–3.7 (3.32 ± 0.33), TL 15.1–21.7 (19.32 ± 2.47), TL/EW 2.4–2.7 (2.55 ± 0.08), lp2L 0.7–1.2 (1.02 ± 0.16), lp3L 0.8–1.3 (1.04 ± 0.18), lp3W 0.6–0.9 (0.74 ± 0.09), mp3L 0.4–0.6 (0.5 ± 0.09), mp4L 0.7–1.1 (0.94 ± 0.15), mp4W 0.8–0.4 (0.63 ± 0.12).

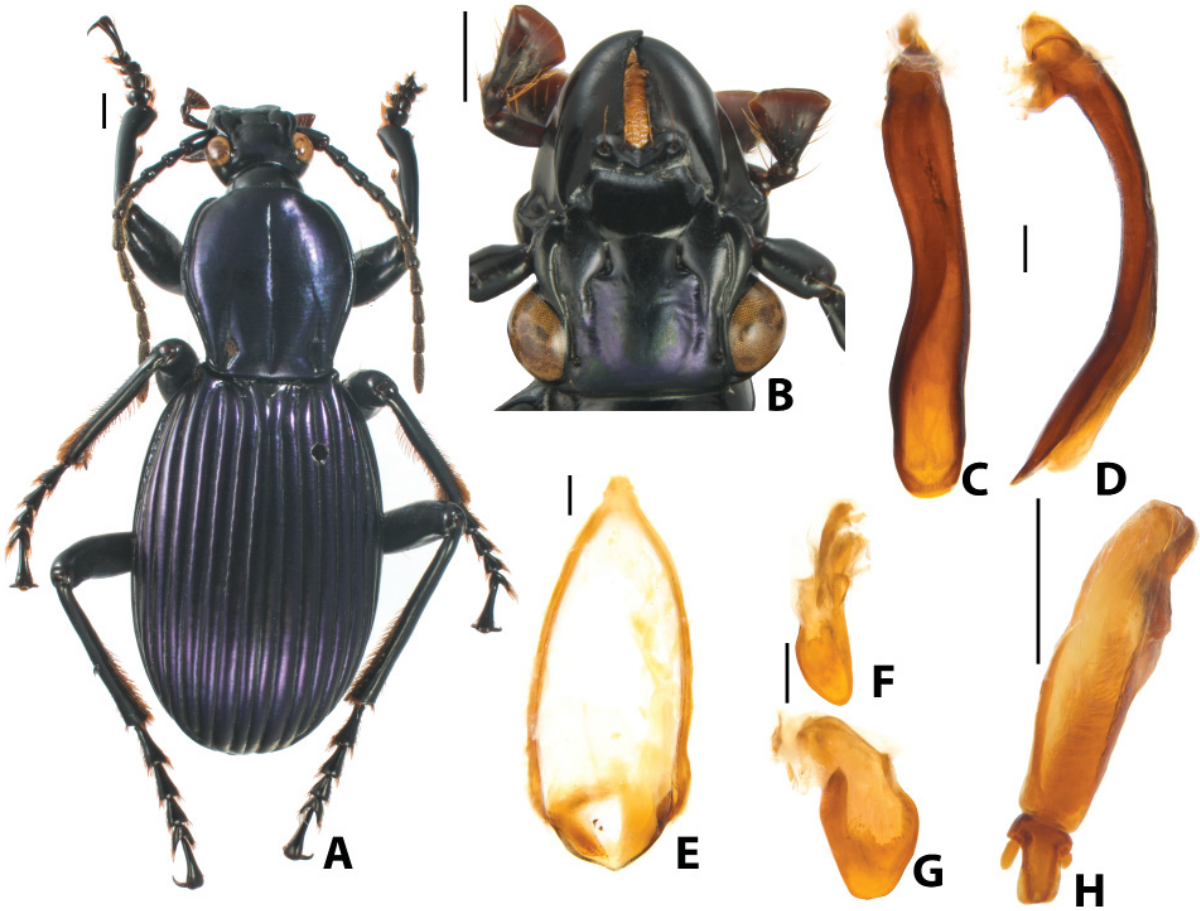

Fig. 12. *Pelecium violaceum* Brullé, 1838, male from Bom Jardim, Maranhão, Brazil (A–G) (CERPE) and female from Pontes e Lacerda, Mato Grosso, Brazil (H) (CEMT). **A**. Dorsal view. **B**. Detail of head. **C–D**. Median lobe. **E**. Tergite IX. **F**. Left paramere. **G**. Right paramere. **H**. Genitalia. Scale bars: A–B = 1 mm; C–H = 0.5 mm.

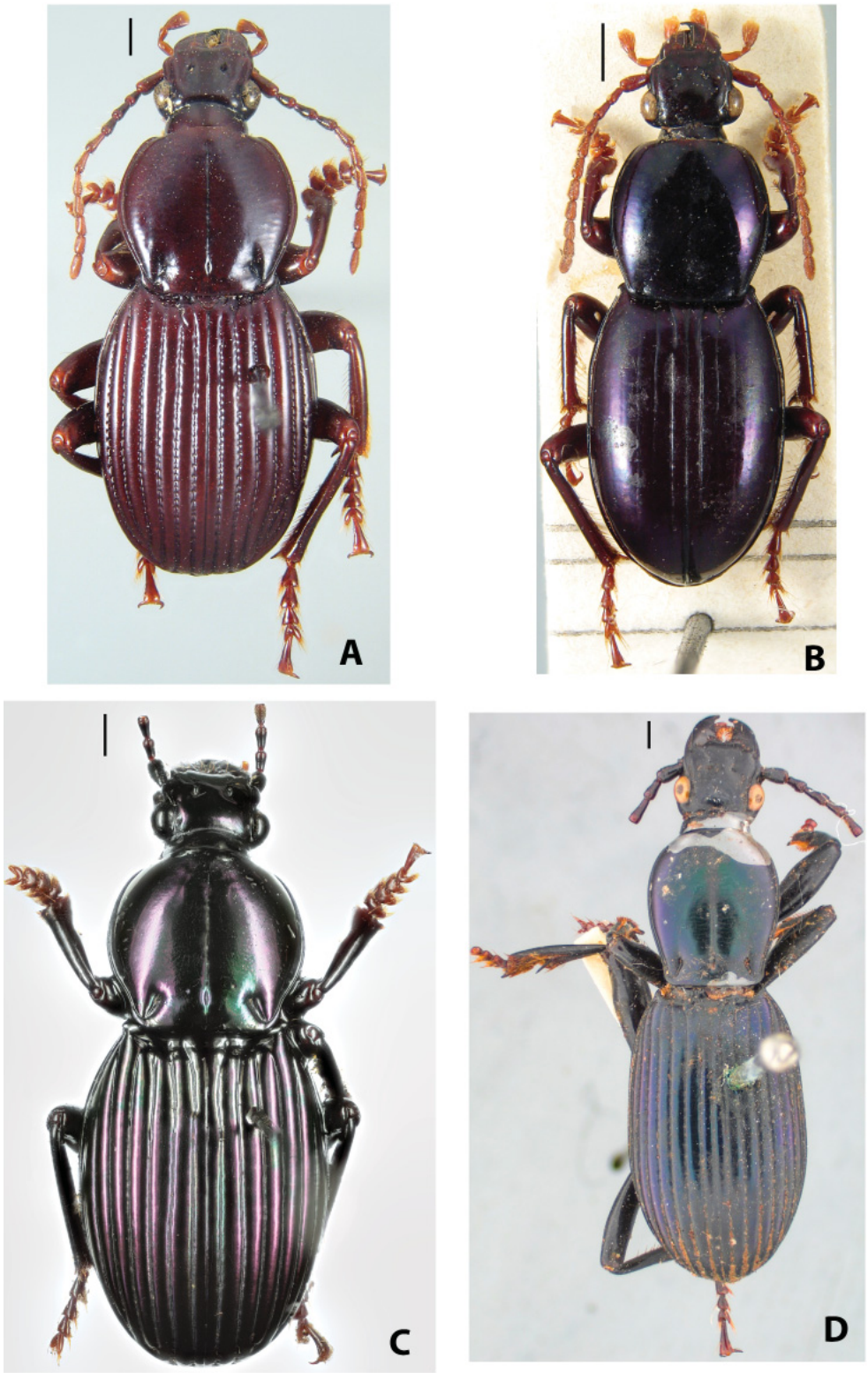

Fig. 13. Types of *Pelecium* Kirby, 1817, dorsal view. **A**. *Pelecium atroviolaceum* Straneo & Ball, 1989, allotype (MCSN), photograph by Michele Zilioli. **B**. *Pelecium bisulcatum* Straneo, 1970, holotype (MCSN), photograph by Michele Zilioli. **C**. *Pelecium bolivianum* Straneo & Ball, 1989, paratype (MUB), photograph by Bernd Jaeger. **D**. *Pelecium brasiliense* Straneo, 1962, holotype (MZSP), photograph by Guilherme Ide. Scale bars: 1 mm.

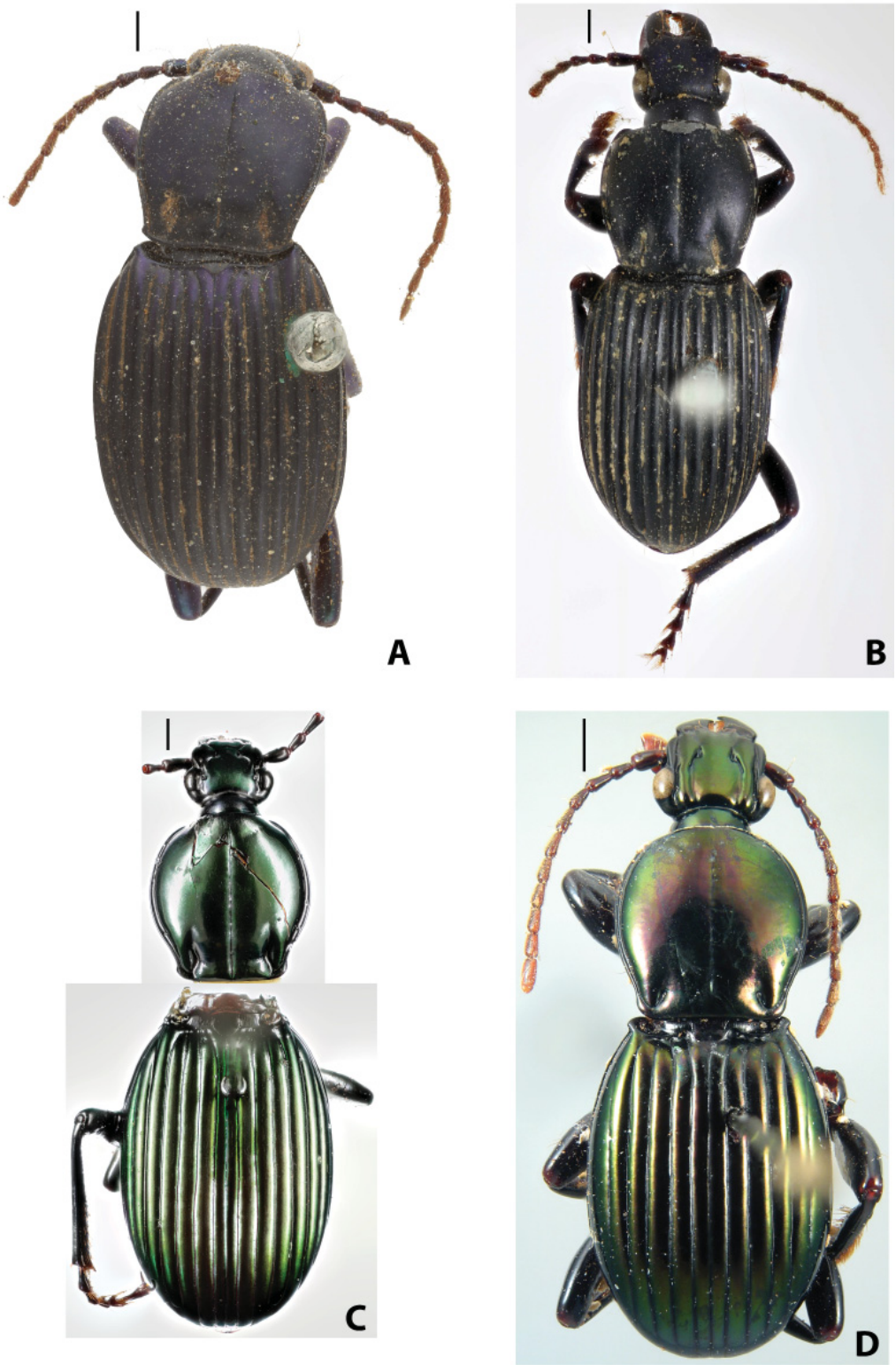

Fig. 14. Types of *Pelecium* Kirby, 1817, dorsal view. **A**. *Pelecium carinatum* Chaudoir, 1846, lectotype (MNHN), junior synonym of *Pelecium cyanipes* Kirby, 1817, photograph by Azadeh Taghavian. **B**. *Pelecium cyanipes*, holotype (BMNH), photograph by Keita Matsumoto. **C**. *Pelecium drakei* Quedenfeldt, 1890, lectotype (MUB), photograph by Bernd Jaeger. **D**. *Pelecium fulgidum* Straneo, 1962, holotype (MCSN), photograph by Michele Zilioli. Scale bars: 1 mm.

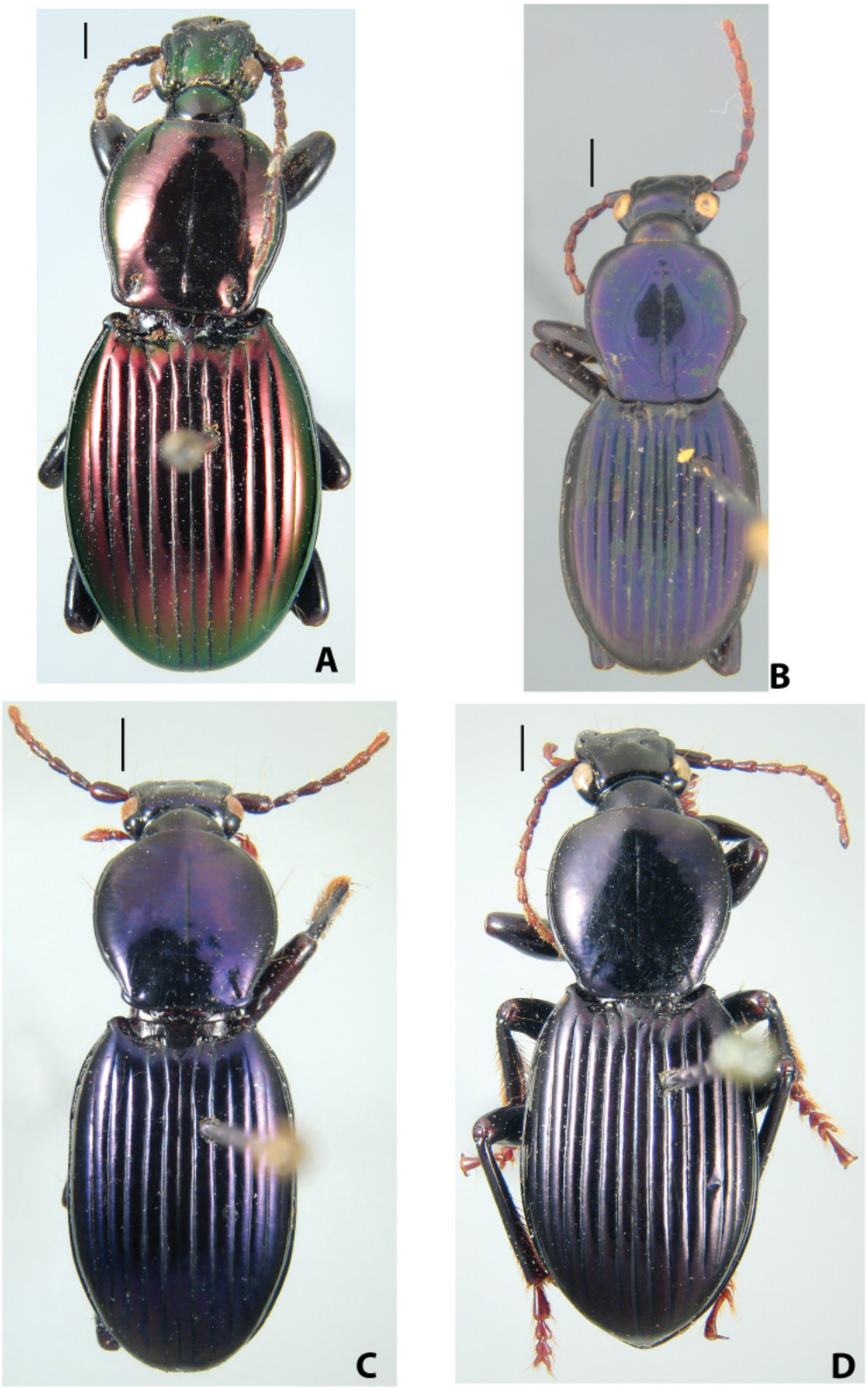

Fig. 15. Types of *Pelecium* Kirby, 1817, dorsal view. **A**. *Pelecium fulgidum* Straneo, 1962, allotype (MCSN), photograph by Michele Zilioli. **B**. *Pelecium helenae* Straneo & Ball, 1989, holotype (MZSP), photograph by Guilherme Ide. **C**. *Pelecium helenae*, paratype (MCSN), photograph by Michele Zilioli. **D**. *Pelecium helenae*, allotype (MCSN), photograph by Michele Zilioli. Scale bars: 1 mm.

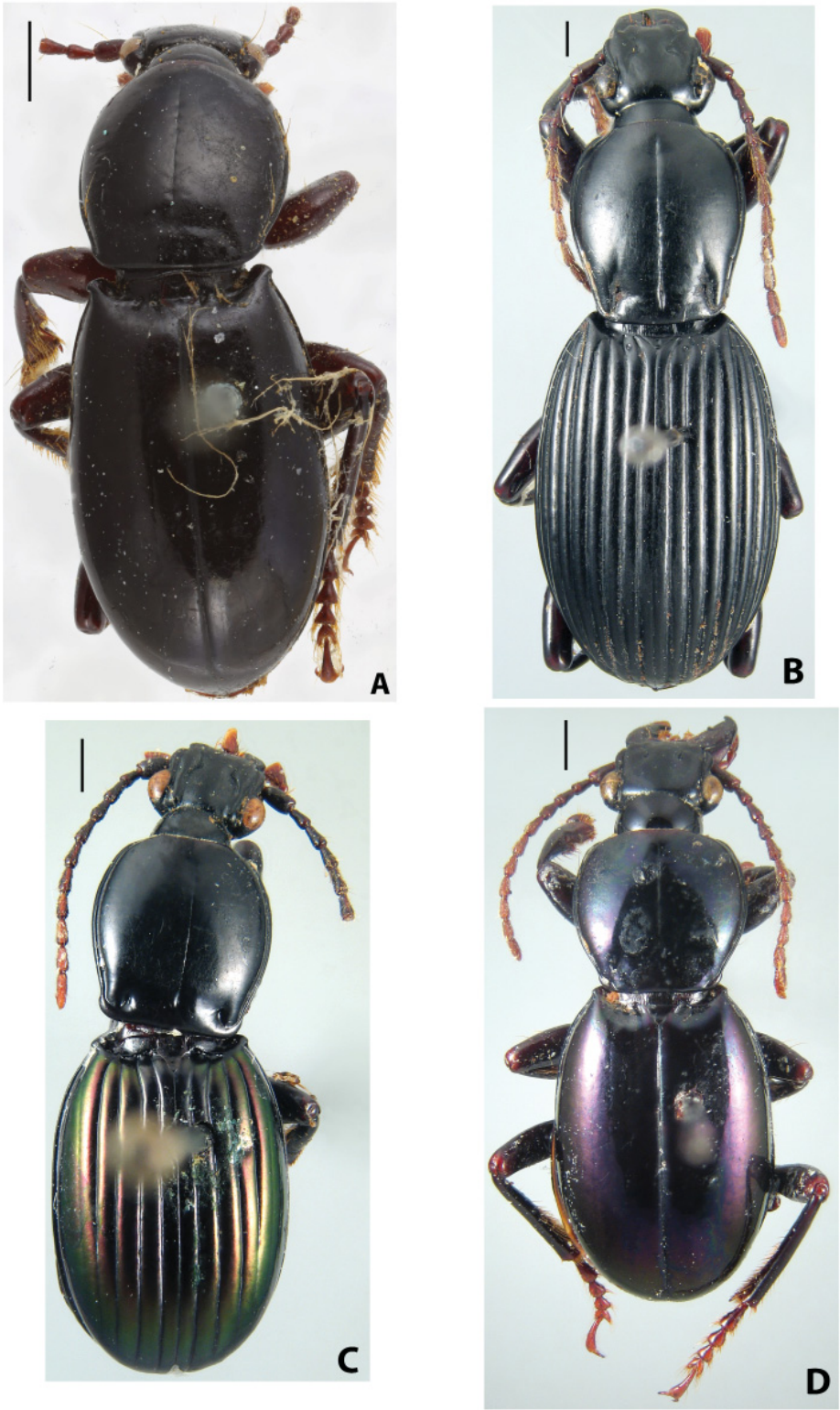

Fig. 16. Types of *Pelecium* Kirby, 1817, dorsal view. **A**. *Pelecium laeve* Chaudoir, 1854, holotype (MNHN), photograph by Azadeh Taghavian. **B**. *Pelecium longicolle* Straneo, 1953, allotype (MCSN), photograph by Michele Zilioli. **C**. *Pelecium negrei* Straneo, 1962, holotype (MCSN), photograph by Michele Zilioli. **D**. *Pelecium nicki* Straneo, 1955, holotype (MCSN), photograph by Michele Zilioli. Scale bars: 1 mm.

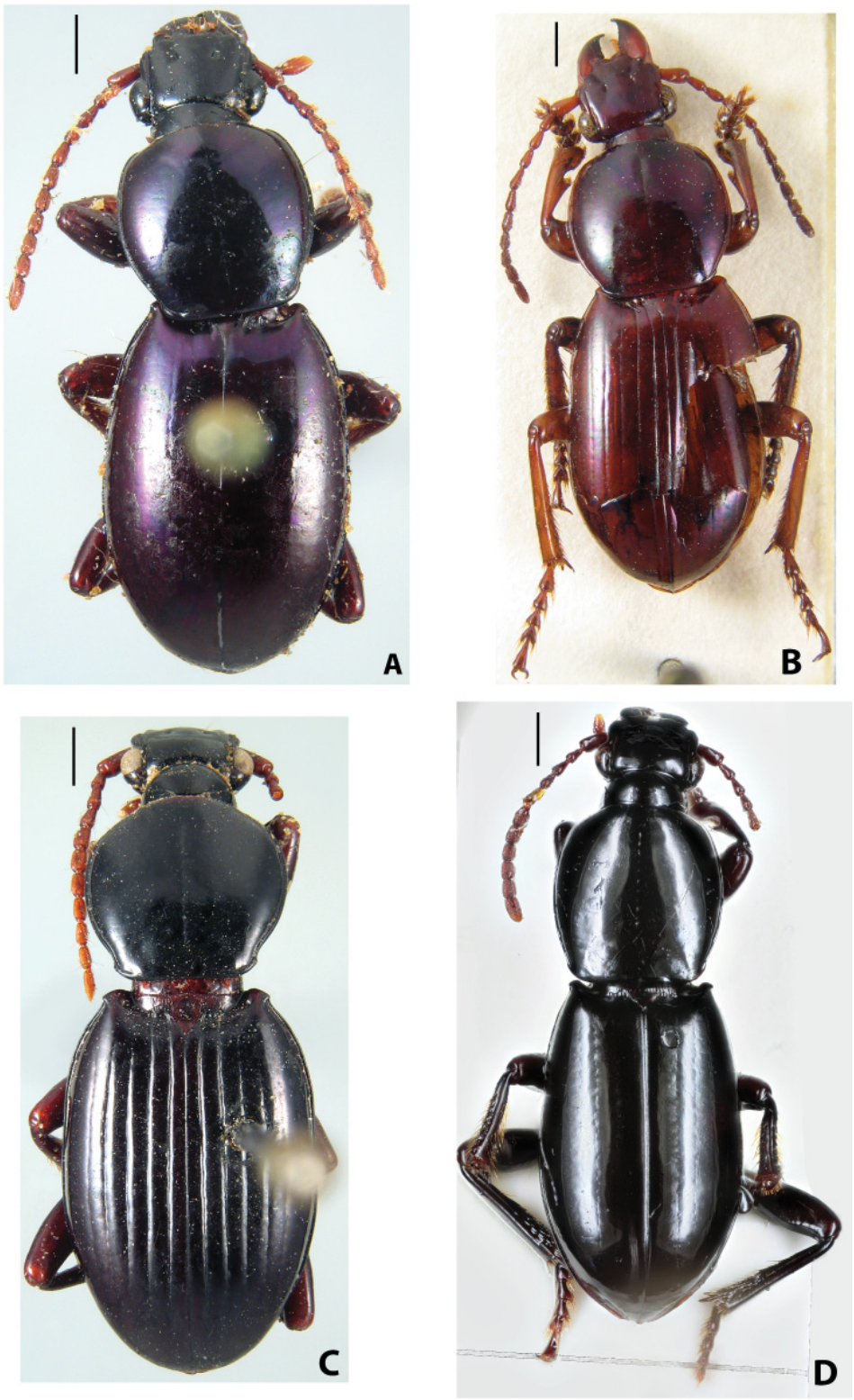

Fig. 17. Types of *Pelecium* Kirby, 1817, dorsal view. **A**. *Pelecium nicki* Straneo, 1955, paratype (MCSN), photograph by Michele Zilioli. **B**. *Pelecium obtusum* Straneo, 1953, holotype (MCSN), photograph by Michele Zilioli. **C**. *Pelecium paulae* Straneo & Ball, 1989, holotype (MCSN), photograph by Michele Zilioli. **D**. *Pelecium politum* Schaum, 1860, syntype (MUB), junior synonym of *Pelecium laeve* Chaudoir, 1854, photograph by Bernd Jaeger. Scale bars: 1 mm.

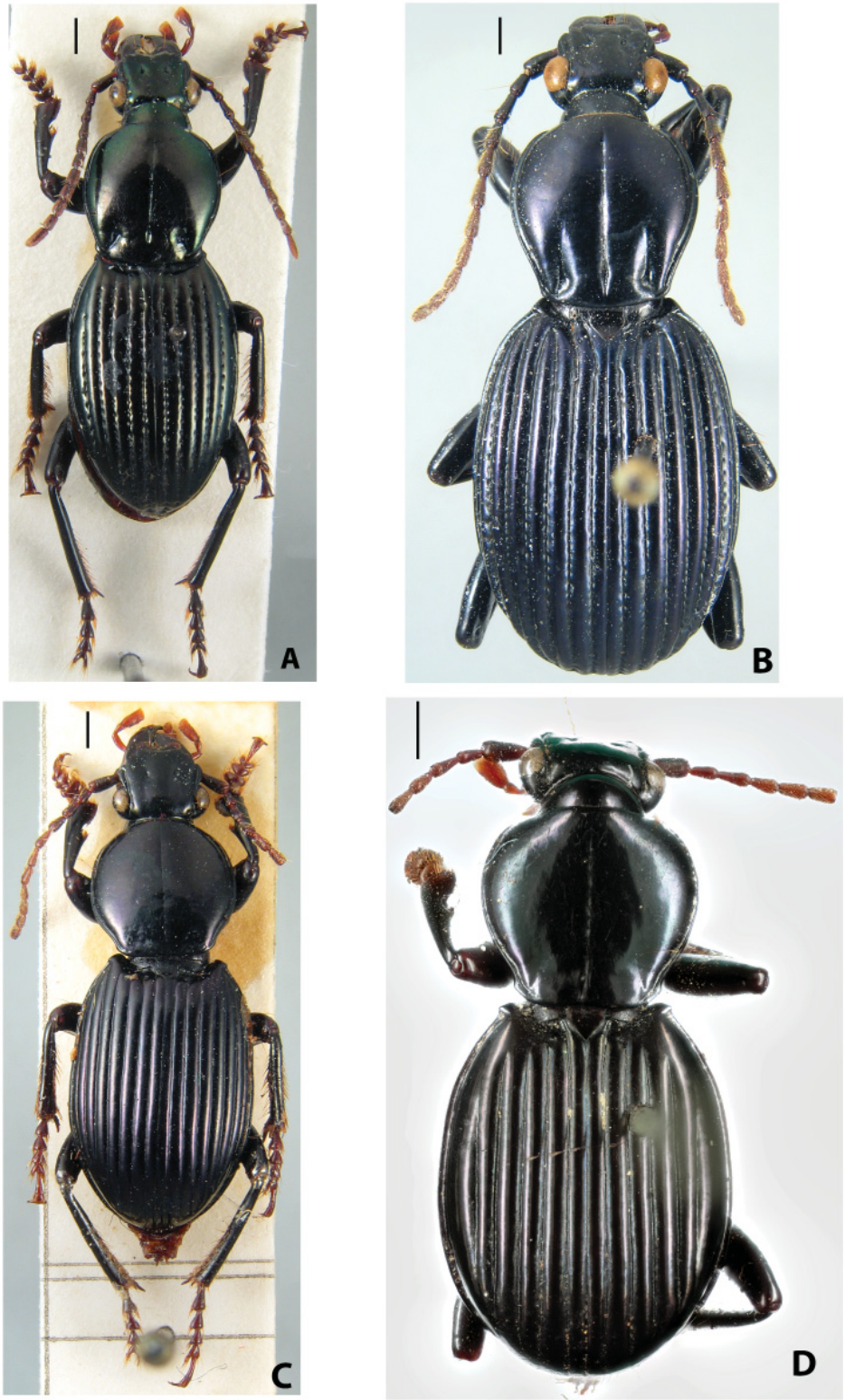

Fig. 18. Types of *Pelecium* Kirby, 1817, dorsal view. **A**. *Pelecium punctatostriatum* Straneo, 1970, paratype (MCSN), photograph by Michele Zilioli. **B**. *Pelecium punctatum* Straneo, 1953, holotype (MCSN), photograph by Michele Zilioli. **C**. *Pelecium renati* Straneo, 1953, holotype (MCSN), photograph by Michele Zilioli. **D**. *Pelecium rotundipenne* Schaum, 1860, lectotype (MUB), photograph by Bernd Jaeger. Scale bars: 1 mm.

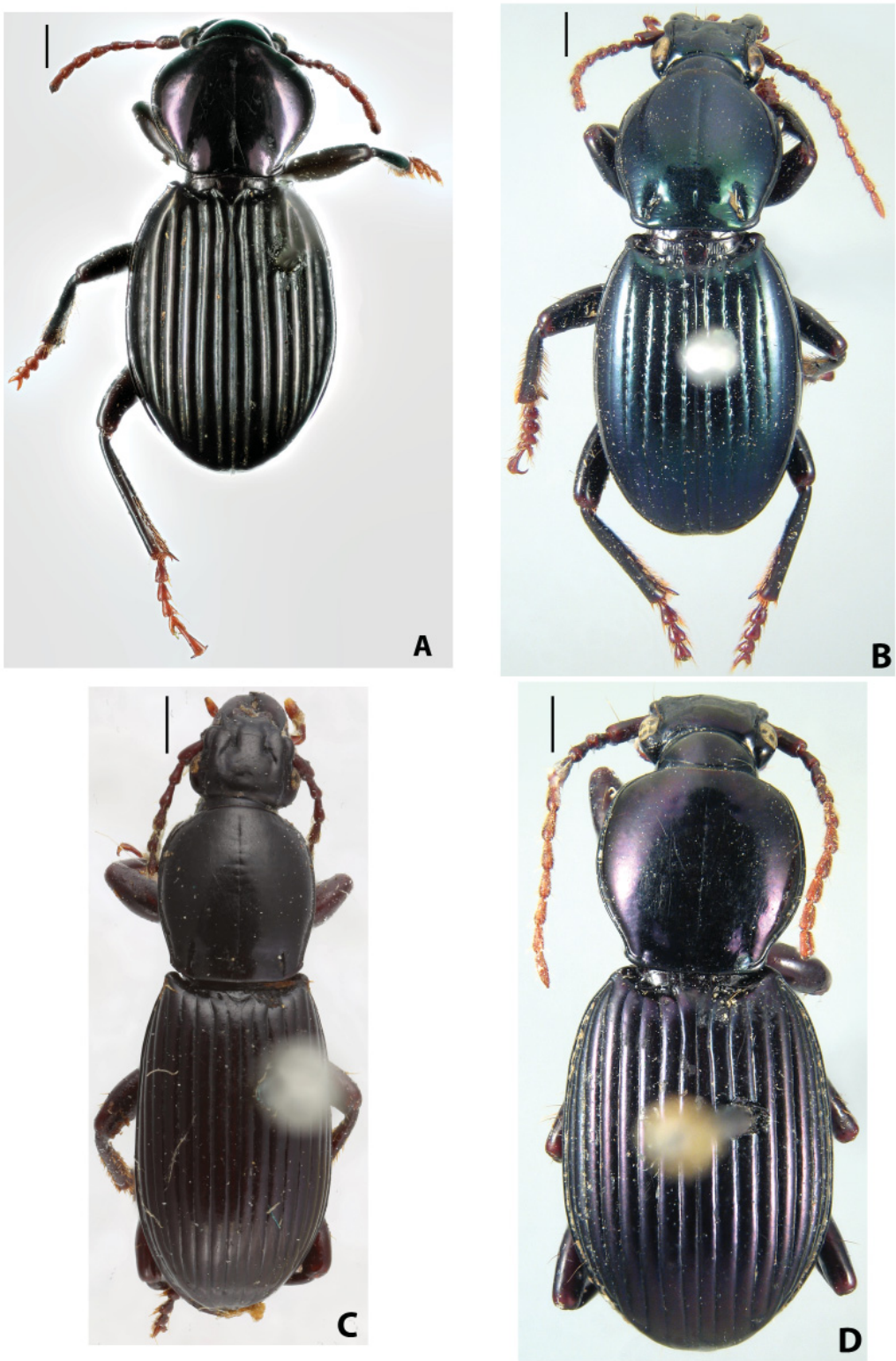

Fig. 19. Types of *Pelecium*, Kirby, 1817, dorsal view. **A**. *Pelecium rotundipenne* Schaum, 1860, paralectotype (MUB), photograph by Bernd Jaeger. **B**. *Pelecium semistriatum* Straneo & Ball, 1989, allotype (MCSN), photograph by Michele Zilioli. **C**. *Pelecium striatipenne* Chaudoir, 1866, holotype (MNHN), photograph by Azadeh Taghavian. **D**. *Pelecium striatum* Straneo, 1955, holotype (MCSN), photograph by Michele Zilioli. Scale bars: 1 mm.

Fig. 20. Types and labels of type specimens of species of *Pelecium* Kirby, 1817. **A**. *Pelecium tenellum* Schaum, 1860, holotype (MUB), photograph by Bernd Jaeger. **B**. *Pelecium atroviolaceum* Straneo & Ball, 1989, allotype (MCSN), dorsal view, photograph by Michele Zilioli. **C**. *Pelecium bisulcatum* Straneo, 1970, holotype (MCSN), photograph by Michele Zilioli. **D**. *Pelecium bolivianum* Straneo & Ball, 1989, paratype (MUB), photograph by Bernd Jaeger. **E**. *Pelecium brasiliense* Straneo, 1962, holotype (MZSP), photograph by Guilherme Ide. **F**. *Pelecium carinatum* Chaudoir, 1846, lectotype (MNHN), junior synonym of *Pelecium cyanipes* Kirby, 1817, photograph by Azadeh Taghavian. Scale bar: 1 mm.

Fig. 21. Labels of type specimens of some species of *Pelecium* Kirby, 1817. **A**. *Pelecium cyanipes* Kirby, 1817, holotype (BMNH), photograph by Keita Matsumoto. **B**. *Pelecium drakei* Quedenfeldt, 1890, lectotype (MUB), photograph by Bernd Jaeger. **C**. *Pelecium fulgidum* Straneo, 1962, holotype (MCSN), photograph by Michele Zilioli. **D**. *Pelecium fulgidum*, allotype (MCSN), photograph by Michele Zilioli. **E**. *Pelecium helenae* Straneo & Ball, 1989, holotype (MZSP), photograph by Guilherme Ide. **F**. *Pelecium helenae*, paratype (MCSN), photograph by Michele Zilioli. **G**. *Pelecium helenae*, allotype (MCSN), photograph by Michele Zilioli. **H**. *Pelecium laeve* Chaudoir, 1854, holotype (MNHN), photograph by Azadeh Taghavian. **I**. *Pelecium longicolle* Straneo, 1953, allotype (MCSN), photograph by Michele Zilioli. **J**. *Pelecium negrei* Straneo, 1962, holotype (MCSN), photograph by Michele Zilioli.

Fig. 22. Labels of type specimens of some species of *Pelecium* Kirby, 1817. **A**. *Pelecium nicki* Straneo, 1955, holotype (MCSN), photograph by Azadeh Taghavian. **B**. *Pelecium nicki*, paratype (MCSN), photograph by Azadeh Taghavian. **C**. *Pelecium obtusum* Straneo, 1953, holotype (MCSN), photograph by Azadeh Taghavian. **D**. *Pelecium paulae* Straneo & Ball, 1989, holotype (MCSN), photograph by Azadeh Taghavian. **E**. *Pelecium politum* Schaum, 1860, syntype (MUB), junior synonym of *Pelecium laeve* Chaudoir, 1854, photograph by Bernd Jaeger. **F**. *Pelecium punctatostriatum* Straneo, 1970, paratype (MCSN), photograph by Azadeh Taghavian. **G**. *Pelecium punctatum* Straneo, 1953, holotype (MCSN), photograph by Azadeh Taghavian. **H**. *Pelecium renati* Straneo, 1953, holotype (MCSN), photograph by Azadeh Taghavian. **I**. *Pelecium rotundipenne* Schaum, 1860, lectotype (MUB), photograph by Bernd Jaeger. **J**. *Pelecium rotundipenne*, paralectotype (MUB), photograph by Bernd Jaeger. **K**. *Pelecium semistriatum* Straneo & Ball, 1989, allotype (MCSN), photograph by Azadeh Taghavian.

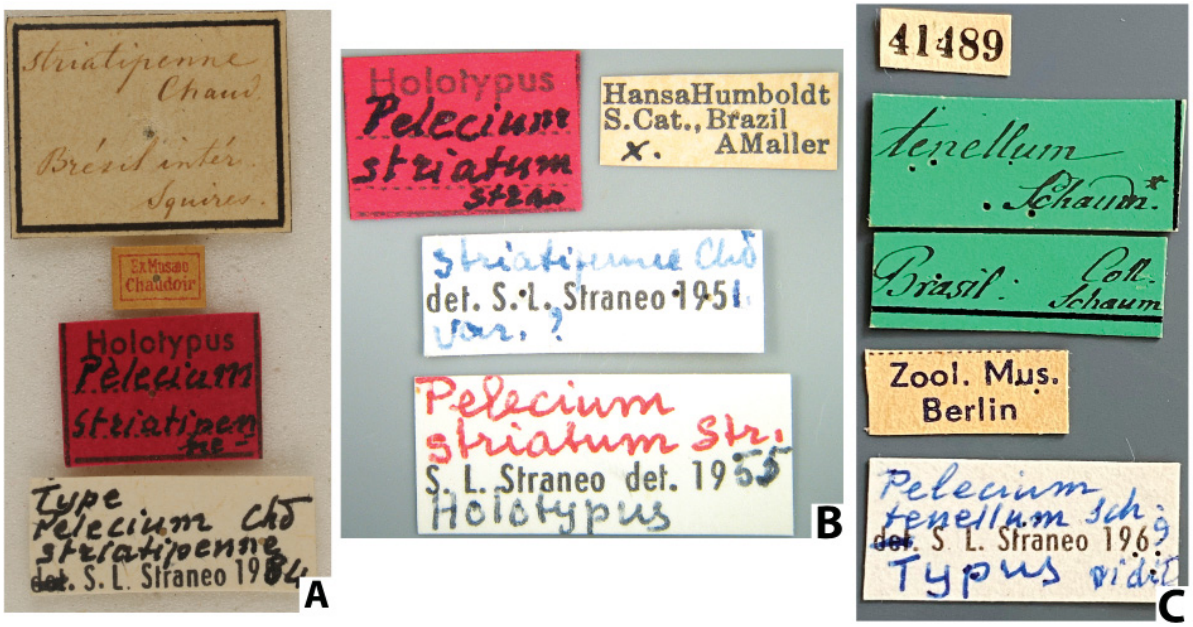

Fig. 23. Labels of type specimens of some species of *Pelecium* Kirby, 1817. **A**. *Pelecium striatipenne* Chaudoir, 1866, holotype (MNHN), photograph by Azadeh Taghavian. **B**. *Pelecium striatum* Straneo, 1955, holotype (MCSN), photograph by Azadeh Taghavian. **C**. *Pelecium tenellum* Schaum, 1860, holotype (MUB), photograph by Bernd Jaeger.

Discussion

The Brazilian *Pelecium* are known mostly from the Cerrado and the Atlantic Forest biomes, but they have representatives in all the six Brazilian biomes (Amazon, Caatinga, Cerrado, Atlantic Forest, Pampa and Pantanal). This can be explained by either an actual diversification and predominance in the Atlantic Forest and Cerrado, or it could be a result of collection bias due to a comparatively greater collection effort in the Atlantic Forest and Cerrado biomes. The species described here were collected in the Cerrado (*P. buckupi* sp. nov. and *P. fistulosus* sp. nov. of the *P. punctatostriatum* species group; and *P. zaguryi* sp. nov. from the *P. rotundipenne* species group) and the Atlantic Forest (*P. chrissquirei* sp. nov., *P. balli* sp. nov. and *P. straneoi* sp. nov. of the *P. rotundipenne* species group; *P. belloi* sp. nov. of the *P. laeve* species group; and *P. grossii* sp. nov. and *P. zophos* of the *P. violaceum* species group), and they all fit the known geographic distributions of their respective species groups. These new species have narrow geographic distributions, which may be a consequence of a low collection effort for *Pelecium* in Brazil, a low population density, and/or cryptic habits of the species. Just a few described species of *Pelecium* have wide geographical distributions, such as *P. violaceum*, *P. foveicolle*, *P. bisulcatum* and *P. besckii*. The others are mostly restricted to small areas, in some cases forest remnants or protected areas, suggesting that these species of *Pelecium* may be subject to a high extinction risk due to habit change or loss (Lande 1999). All new records of *P. bolivianum*, *P. helenae* and *P. striatum* are from biogeographical dominions in which these species were previously recorded. There is one record of *P. helenae* from North Brazil, clashing with other records in the Southeast. The northernmost record, in the Brazilian biogeographic subregion, is about 2400 km distant from the closest southeastern record, in the Chacoan subregion, making a natural dispersion unlikely due to the flightlessness of species of *Pelecium*, and the lack of evidence of phoretic behavior or other extreme dispersal strategies in species of the genus. A similar situation happens with *P. violaceum*, with one record in North Brazil clashing with records from northern Argentina, Paraguay, Bolivia and Central-West Brazil, but in this case the unexpected

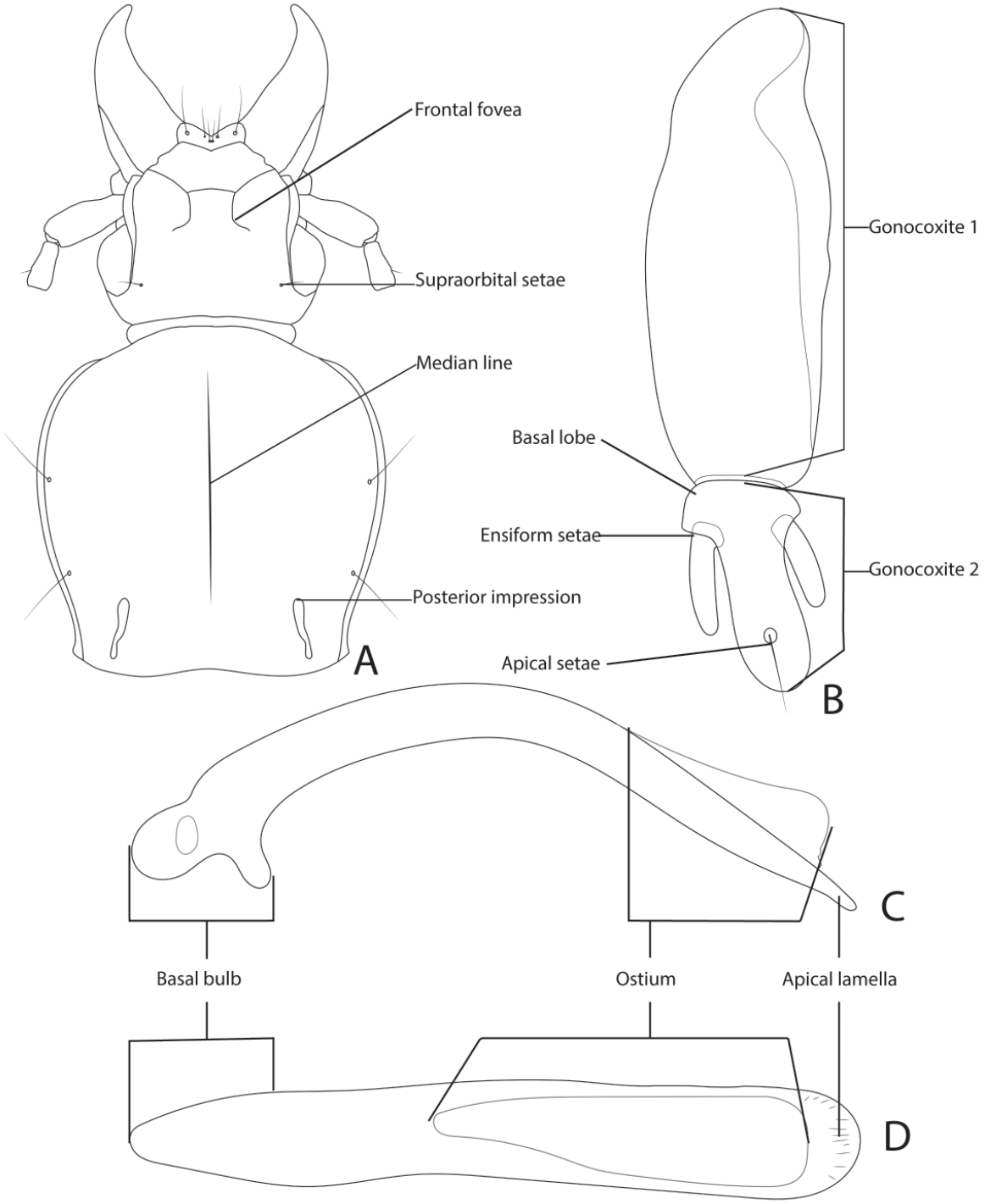

Fig. 24. Contour drawing of the general morphology of the genus *Pelecium* Kirby, 1817, indicating selected parts cited in the descriptions. **A**. Dorsal view of head and pronotum. **B**. Female gonocoxites. **C**. Male median lobe in ventral view. **D**. Male median lobe in left lateral view.

record is about 1500 km distant from the other records. Specimens of *P. violaceum* are comparatively larger (median overall length: *P. violaceum* 18 mm; *P. helenae* 14.5 mm), which would suggest a better dispersal ability of *P. violaceum* due to body length. Nevertheless, other large species with the same overall length as *P. violaceum* (*P. punctatum*, *P. longicolle* and *P. brasiliensis*) are restricted to small areas, and three species with wide geographical distributions (*P. foveicolle*, *P. bisulcatum* and *P. besckii*) have a shorter median overall length than *P. helenae*, which is 10 mm long. Thus, body length seems not to be correlated with dispersal ability in species of *Pelecium*. We observed a variation in the median lobe and tergite IX of male *P. violaceum*, suggesting it could be a species complex rather than a single species, and thus its wide distribution would actually be the sum of narrowly distributed species that are morphologically very similar. To ensure that, and identify which morphological variation corresponds to true *P. violaceum*, a careful examination of the holotype is necessary. Straneo & Ball (1989) did not

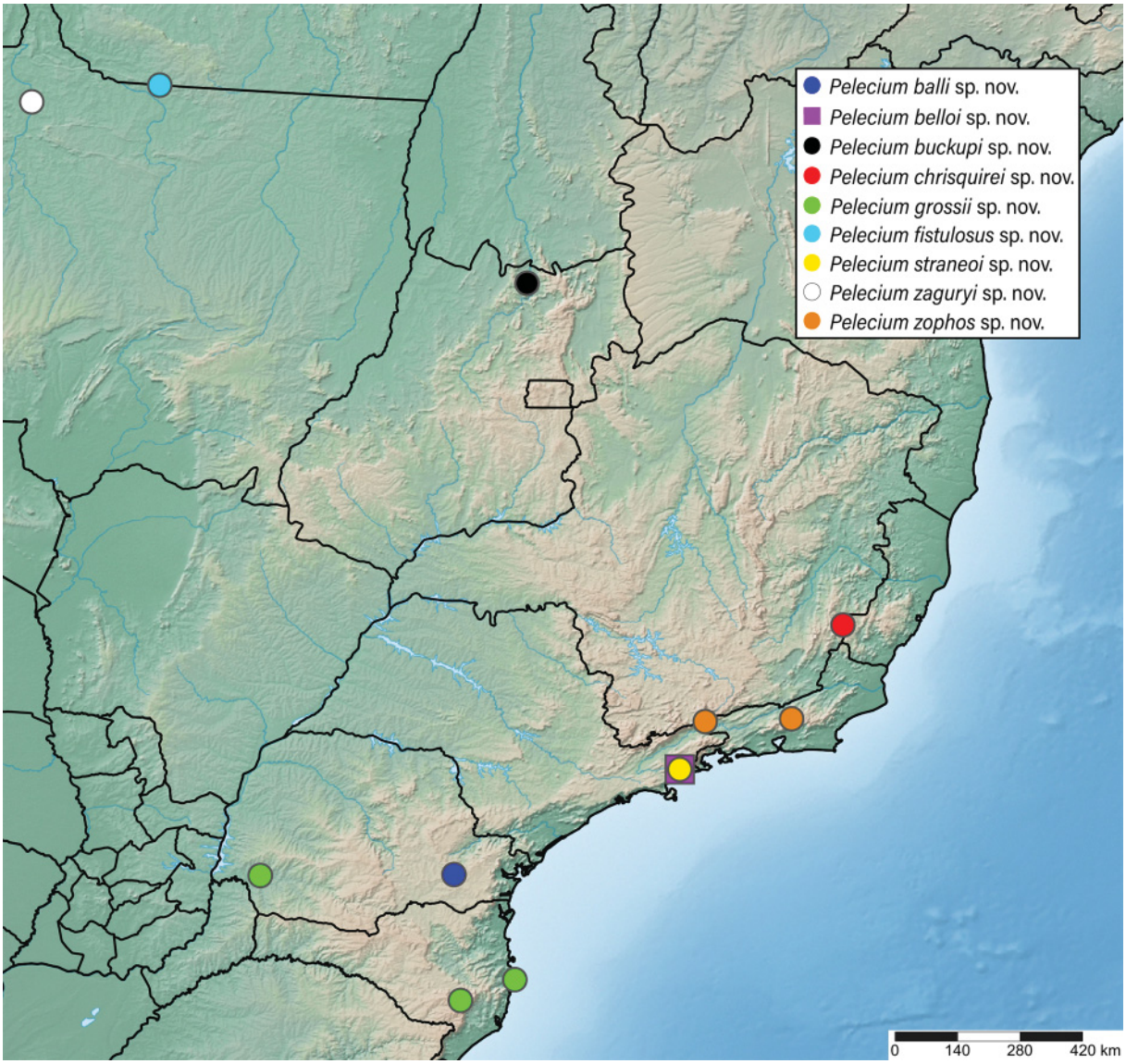

Fig. 25. Map of Brazil highlighting the Southeast and South Region and part of the Central-West Region, showing the type localities of *Pelecium balli* sp. nov., *P. belloi* sp. nov., *P. buckupi* sp. nov., *P. chrissquirei* sp. nov., *P. fistulosus* sp. nov., *P. grossii* sp. nov., *P. straneoi* sp. nov., *P. zaguryi* sp. nov. and *P. zophos* sp. nov.

examine the holotype and did not report where the type series is located. We were also unsuccessful in locating the type series.

Our observations and comparisons of structures of the male teminalia show some useful characteristics to differentiate species of *Pelecium*, such as: length of apical lamella and ostium, and latero-apical broadening of the median lobe; and shape of tergite IX and its apical projections. The parameres and the basal bulb of the median lobe are quite homogenous and we have not observed good diagnostic features. Female terminalia are more homogenous than those of the male, but there is some variation in the shape of gonocoxite 2 and in the length of the ensiform setae, which deserves more observations and comparisons.

Some large gaps in the taxonomy and natural history of *Pelecium* persist. The morphology of the male terminalia is unknown for 15 species, and that of the female terminalia for 13 species. It would be

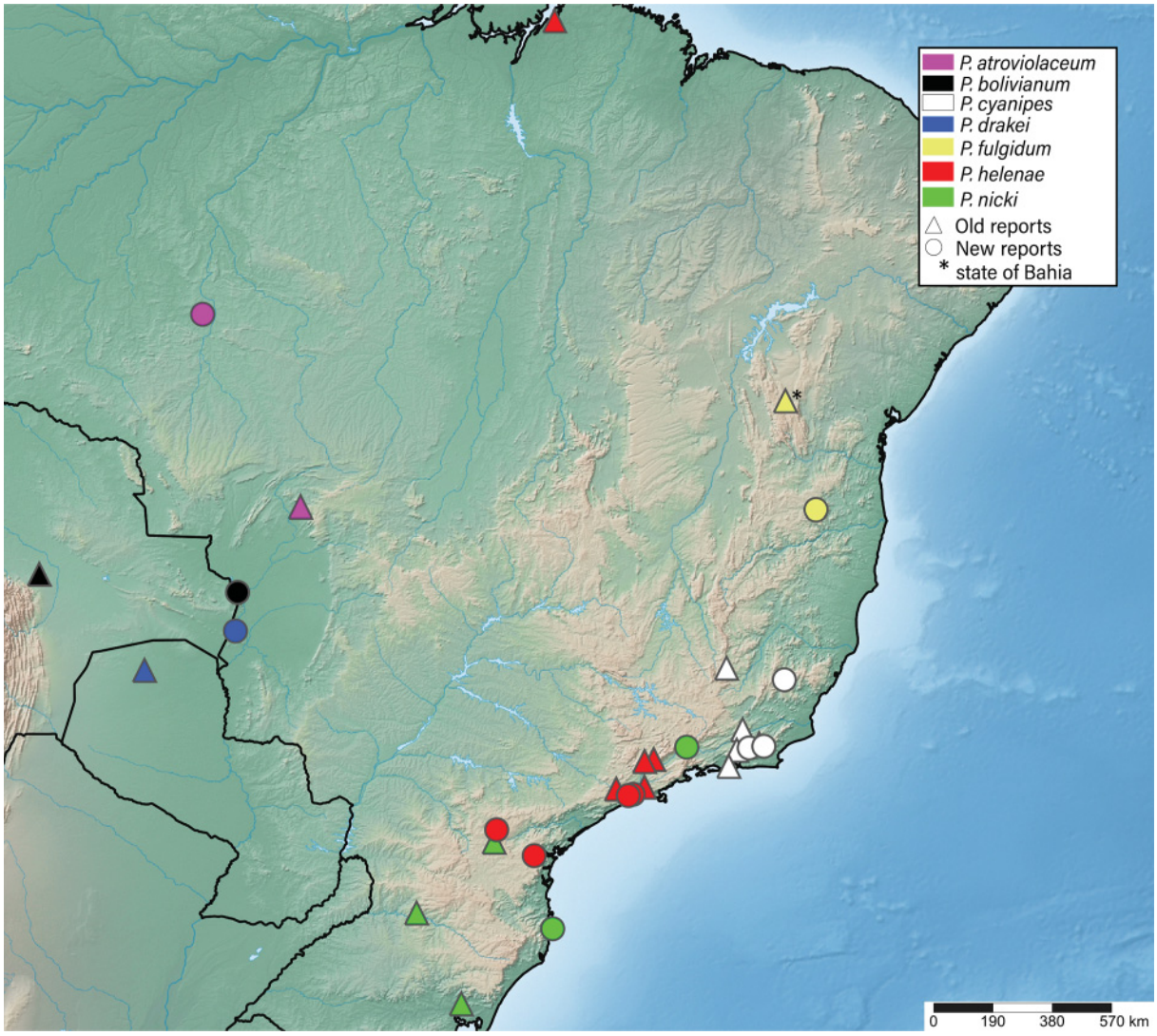

Fig. 26. Map highlighting part of South America with the known occurrences, including new records, of *Pelecium atroviolaceum* Straneo & Ball, 1989, *P. bolivianum* Straneo & Ball, 1989, *P. cyanipes* Kirby, 1817, *P. drakei* Quedenfeldt, 1890, *P. fulgidum* Straneo, 1962, *P. helenae* Straneo & Ball, 1989 and *P. nicki* Straneo, 1955.

important to more thoroughly study the morphology of male and female abdominal terminalia, especially considering their membranous parts, which may possess more characters of taxonomic and phylogenetic significance. Behavior and life history of species of *Pelecium* are virtually unknown. There are a few old observations and reports, making it difficult to implement specific strategies to sample these beetles in the field, and to breed them under laboratory conditions. The presumed limited dispersal ability caused by the flightlessness of species of *Pelecium*, together with the apparent low density of their populations, make these organisms of great interest for ecological and conservation studies.

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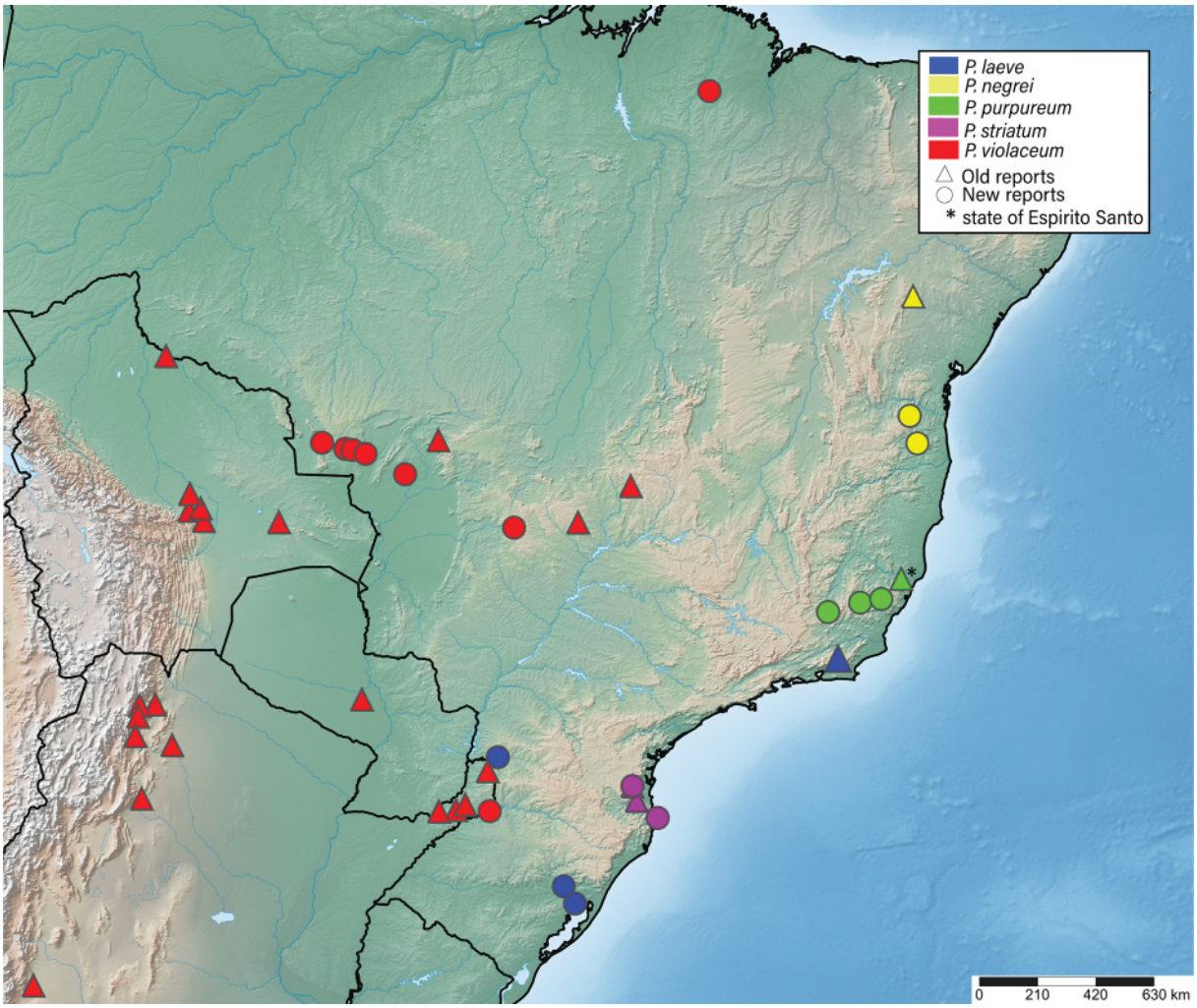

Fig. 27. Map highlighting part of South America with the known occurrences, including new records, of *Pelecium laeve* Chaudoir, 1854, *P. negrei* Straneo, 1962, *P. purpureum* Straneo, 1955, *P. striatum* Straneo, 1955 and *P. violaceum* Brullé, 1838.

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