

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Faculty Publications: Department of
Entomology

Entomology, Department of

2022

Three new species of *Cyclocephala* (Coleoptera: Scarabaeidae: Dynastinae) from Amazonian Peru and a checklist of *Cyclocephala* species in Peru

FERNANDO PAZ

Brett C. Ratcliffe

LUIS FIGUEROA

Follow this and additional works at: <https://digitalcommons.unl.edu/entomologyfacpub>



Part of the [Entomology Commons](#)

This Article is brought to you for free and open access by the Entomology, Department of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Faculty Publications: Department of Entomology by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.



Three new species of *Cyclocephala* (Coleoptera: Scarabaeidae: Dynastinae) from Amazonian Peru and a checklist of *Cyclocephala* species in Peru

FERNANDO PAZ¹, BRETT C. RATCLIFFE² & LUIS FIGUEROA³

¹Departamento de Entomología, Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Apartado Postal 14-0434, Lima, Peru. [✉ fernandopaz683@gmail.com](mailto:fernandopaz683@gmail.com); [🌐 https://orcid.org/0000-0002-6331-4416](https://orcid.org/0000-0002-6331-4416)

²Systematics Research Collections, University of Nebraska State Museum, University of Nebraska, Lincoln, Nebraska, 68588-0338, United States of America. [✉ bratcliffe1@unl.edu](mailto:bratcliffe1@unl.edu); [🌐 http://orcid.org/0000-0002-0589-8791](http://orcid.org/0000-0002-0589-8791)

³Departamento de Entomología, Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Lima, Peru. [✉ luis_thecell@hotmail.com](mailto:luis_thecell@hotmail.com); [🌐 https://orcid.org/0000-0002-1404-6195](https://orcid.org/0000-0002-1404-6195)

Abstract

The following new species of *Cyclocephala* Dejean, 1821 (Coleoptera: Scarabaeidae: Dynastinae: Cyclocephalini) are described from Peru: *C. mateoi* Paz & Ratcliffe, *C. ukuku* Paz & Ratcliffe, and *C. hylaea* Ratcliffe & Paz. A description, diagnosis, geographic distribution, notes on natural history, and illustrations are provided for each new species. Six *Cyclocephala* species are reported for the first time from Peru: *C. emarginata* Endrödi, 1964, *C. guianae* Endrödi, 1969, *C. kuntzeniana* Höhne, 1923, *C. malyi* Dupuis, 2014, *C. ovulum* Bates, 1888, and *C. sylviae* Dechambre, 1995. An updated, annotated list of the 81 Peruvian species of *Cyclocephala* is provided.

Key words: Amazonia, distribution, Cyclocephalini, new records, South America, taxonomy

Introduction

Cyclocephala Dejean, 1821 (Coleoptera: Scarabaeidae: Dynastinae: Cyclocephalini) is a large genus that currently contains about 340 species, although new species are being described continuously (Ratcliffe *et al.* 2020). *Cyclocephala* species occur from southeastern Canada south to Argentina and in the West Indies. Most species occur in the Neotropical realm. Endrödi (1985) provided the most recent overall synopsis of the genus, although more than 90 species have been described since his work. Consequently, the keys in his manual should be used with caution inasmuch as there now exists 45% more species than are in his keys (Ratcliffe *et al.* 2020).

Species in the genus may be recognized by a clypeus with sides slightly to distinctly converging to a rounded, parabolic, subtruncate, or emarginate apex; antenna with 8–10 antennomeres and the club longer in the males of a few species; maxilla armed with distinct teeth; and the male protarsus distinctly enlarged with the median (or inner) claw much larger than the outer claw (claws in females are simple). Distinguishing the genus *Cyclocephala* from other genera of Cyclocephalini may occasionally be difficult. Species of *Aspidolea* Bates, 1888 most closely resemble *Cyclocephala* species, but in *Aspidolea* species the sides of the clypeus are always divergent (sometimes only weakly) from the base or subparallel before becoming rounded at the apex, whereas in *Cyclocephala* species the sides of the clypeus converge (even if slightly) to a rounded, truncate, or emarginate apex. A more reliable character is the presence of distinct teeth on the maxilla in *Cyclocephala* species, whereas they are absent in *Aspidolea* species, except for the large and distinctive *A. fuliginea* (Burmeister, 1847). *Cyclocephala* species do not have the elongate mandible seen in most *Ancognatha* Erichson, 1847 species, and they also have a more-or-less complete frontoclypeal suture, which is obsolete medially in *Ancognatha* species. Moreover, the clypeal apex of *Ancognatha* species is distinctly acuminate.

Adult *Cyclocephala* species are nocturnal, and they are attracted to lights at night. Several species are important, accidental pollinators of palms and aroids as they feed on floral parts (Moore & Jameson 2013; Gasca-Álvarez 2013). Only a few larvae have been described (mostly temperate species), and those feed on the roots of grasses.

Ratcliffe *et al.* (2015) reported 64 species of *Cyclocephala* from Peru. Moore *et al.* (2018a) registered 75 species, 10 of which are endemic to Peru. We here record an additional six *Cyclocephala* species from Peru for the first time: *Cyclocephala emarginata* Endrödi, 1964; *C. guianae* Endrödi, 1969; *C. kuntzeniana* Höhne, 1923; *C. malyi* Dupuis, 2014; *C. ovulum* Bates, 1888, and *C. sylviae* Dechambre, 1995, for a total of 81 species (Table 1).

The genus *Cyclocephala* has its greatest diversity in Peru in the departments of Cusco (42 species), Madre de Dios (31 species), and Pasco (27 species), whereas Ucayali (7 species) and San Martín (2 species) have the least (likely reflecting the lack of collecting) (Paz 2021). The humid and very humid forests of the Yungas predominate in the departments of San Martín, Cusco, and Pasco (Young & León 2000; Morrone 2001; Tovar *et al.* 2010).

Material and methods

Body length was measured in millimeters from the apex of the clypeus to the apex of the pygidium; width was measured across the elytral humeri. Digital images taken at the Universidad Nacional Mayor de San Marcos were captured with a Canon EOS T3 camera with an EF-S 60 mm macro lens mounted on a Leica stereomicroscope using a STACKSHOT model electronic micrometer rail (Cognysis Inc.); image files were focus-stacked using the Zerene Stacker program (Zerene Systems LLC). Digital images taken at the University of Nebraska were captured with a Canon EOS T5i 18MP camera mounted on a Leica stereomicroscope. The image files were subsequently focus-stacked using Quickphoto (PROMICRA, Prague, Czech Republic) and edited on a desktop computer. Adobe Photoshop was used to process and clean all images.

We adhere to the phylogenetic species concept as outlined by Wheeler & Platnick (2000). This concept defines species as the smallest aggregation of populations diagnosable by a unique combination of character states. Not all species are equally diagnosable; some are easily recognized by examining one or a few individuals with a unique set of characters (*e.g.*, the new species described herein). Specimen label data are quoted verbatim. A forward slash (/) is used to separate lines on a label, and a double slash (//) indicates different labels.

Type specimens were deposited in the following collections:

BCRC—Brett C. Ratcliffe Collection, Lincoln, Nebraska, United States of America

BMNH—The Natural History Museum, London, United Kingdom

CMNC—Canadian Museum of Nature, Ottawa, Ontario, Canada

EPGC—Everardo and Paschoal Grossi Collection, Nova Friburgo, Rio de Janeiro, Brazil

JNNC—Jhon César Neita Collection, Bogotá, Colombia

JPSC—Jochen-P. Saltin Collection, Dornum, Middelburg, Germany

MEKRB—Museo de Entomología Klaus Raven Büller, Universidad Nacional Agraria La Molina, Lima, Peru

MNHN—Museum National d'Histoire Naturelle, Paris, France

MSPC—Matthias Seidel Collection, Hamburg, Germany

MUSM—Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Lima, Peru

RDCC—Ronald D. Cave Collection, Port St. Lucie, Florida, United States of America

SLTC—Stéphane Le Tirant Collection, Lachenaie, Quebec, Canada

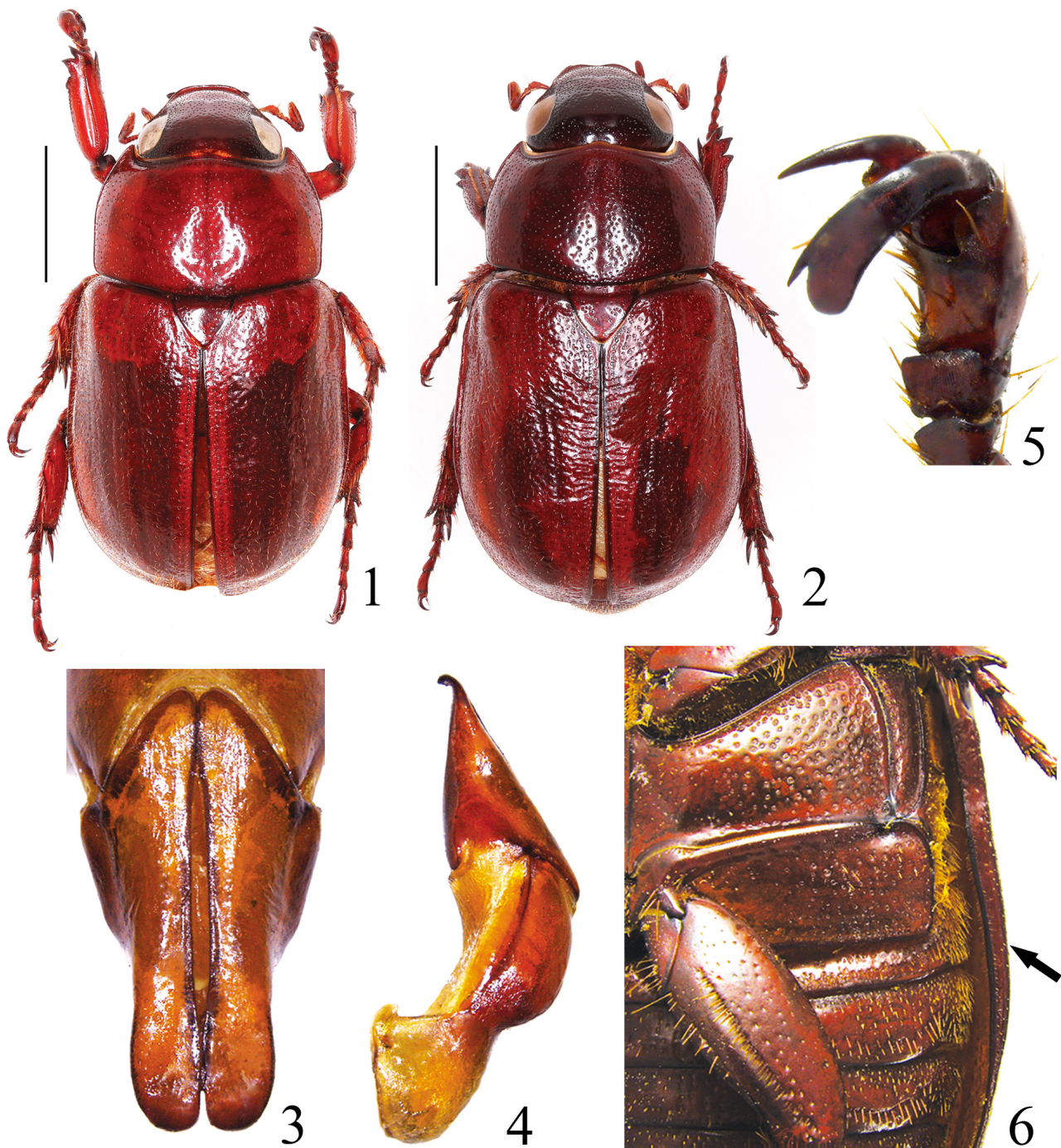
UNSM—University of Nebraska State Museum, Lincoln, Nebraska, United States of America

ZMHU—Museum für Naturkunde, Berlin, Germany

Cyclocephala ukuku Paz & Ratcliffe, new species

(Figs. 1–6, 20–21)

Type material: Holotype male labeled: “PERU, CU, RC / Machiguenga, Campto / Mapi, 35.5 Km O de Nuevo / Mundo, 741 m. 73° / 28'30,46" / 11°31'30,24", 13- / 18.i.2010 J. Grados” and with our red holotype label. Allotype female labeled: “PERU, CU. Zona de / amortiguamiento / Megantoni 12°34'18.6"S/ 73°5'13.18"W 1708 m. / 27.ix.2010 M. Alvarado y / J. Peralta” and with our red allotype label. Two paratype males with same data as allotype. Holotype, allotype, and 1 paratype deposited in MUSM, and 1 paratype in BCRC.



FIGURES 1–6. *Cyclocephala ukuku*. 1, Male holotype; 2, female allotype; 3–4, parameres of holotype; 5, protarsal claw of holotype; 6, epipleuron (ventral view) of allotype. Scale bar = 5 mm.

Description. Holotype, male. (Fig. 1). Length 18.5 mm; width 9.1 mm. Color dark reddish brown, shiny, except for black tarsomeres and black on posterior half of frons. **Head:** Frons and clypeus with punctures moderate in size and density, setigerous; setae minute, tawny. Clypeal apex broadly subtruncate, slightly reflexed. Interocular width equals 3.1 transverse eye diameters. Antenna with 10 antennomeres, club subequal in length to antennomeres 2–7. **Pronotum:** Surface similar to that of frons; setae short, tawny. Base lacking marginal bead. **Elytra:** Surface weakly punctate-striate, transversely wrinkled, punctures slightly larger and denser than those of pronotum, setigerous; setae short, tawny. **Pygidium:** Surface with large, dense, setigerous punctures; setae long, tawny. In lateral view, surface weakly convex. **Legs:** Protibia slender, tridentate, basal tooth reduced to a rounded prominence. Pro-tarsomere 5 enlarged, slightly bent, venter concave; medial claw large, strongly bent, apex split (Fig. 5). Metatarsus slightly shorter than metatibia. **Venter:** Prosternal process long, columnar, apex obliquely flattened into transversely

oval disc with transverse, elevated “button” on anterior half. **Parameres:** In caudal view, form elongate, subparallel, apices rounded (Fig. 3). In lateral view, basal piece subequal in length to parameres (Fig. 4).

Allotype, female (Fig. 2). Length 19.3 mm; width across humeri 9.0 mm. As holotype except in the following respects: **Elytra:** Epipleuron (ventral view) gradually tapering beginning at level of abdominal sternite 2 (Fig. 6). In dorsal view, lateral margin simple, evenly rounded. **Pygidium:** In lateral view, surface weakly convex. **Legs:** Protibia distinctly tridentate. Protarsus simple, not enlarged.

Variation. Males (2 paratypes). Length 18.0–19.5 mm; width 8.5–9.0 mm. The paratypes do not differ from the holotype except in size.

Etymology. *Cyclocephala ukuku* is from Peruvian mythology and refers to a being from the mountains that is half bear and half human. The creature is known for being a dancer and guardian of the snowy mountains. This name should be treated as a noun in apposition.

Distribution. 4 specimens examined (Fig. 20). PERU (4): CUSCO (4): Reserva Comunal Machiguenga, Campamento Mapi, 35.5 km W Nuevo Mundo (1); Zona de Amortiguamiento Megantoni (3).

Temporal distribution. January (1), September (3).

Diagnosis. *Cyclocephala ukuku* is characterized by a distinctive, shiny, dark reddish-brown color (Figs. 1–2); presence of small, abundant setae on the head, pronotum, and elytra; broadly subtruncate clypeus with a weakly emarginate apex; basal bead of the pronotum lacking; tridentate protibia; male large protarsal claw split at its apex (Fig. 5); and uniquely shaped parameres (Figs. 3–4). The female epipleuron is simple and gradually tapering (Fig. 6).

Natural history. Specimens were collected at elevations of 741 m and 1708 m in pristine forest (Fig. 21), but nothing else is known of their life history.

Cyclocephala mateoi Paz & Ratcliffe, new species

(Figs. 7–12, 20)

Type material: Holotype male and allotype female labeled: “PERU, HU. Tingo Maria, / Campus UNAS / 9°18'44.7"S/ 75°59'42.9"W / 693 m.” and with our red holotype and allotype labels. Holotype and allotype deposited in MUSM.

Description. Holotype, male. (Fig. 7). Length 14.4 mm; width 6.6 mm. Color testaceous except for black frons and apices of tibial teeth. **Head:** Frons and clypeus with punctures moderate in size and density, glabrous. Clypeal apex subtruncate, slightly reflexed. Interocular width equals 3.0 transverse eye diameters. Antenna with 10 antennomeres, club subequal in length to antennomeres 2–7. **Pronotum:** Surface with small, sparse punctures. Base lacking marginal bead. **Elytra:** Surface weakly punctate-striate, punctures slightly larger than those of pronotum, glabrous. **Pygidium:** Disc with minute, sparse punctures; lateral angles with moderately large, dense punctures and partially rugose. In lateral view, surface convex. **Legs:** Protibia tridentate, basal tooth small, distant from middle tooth. Protarsomere 5 enlarged, slightly bent, venter concave; medial claw large, bent, apex split (Fig 11). Metatarsus slightly longer than metatibia. **Venter:** Prosternal process long, columnar, apex obliquely flattened into transversely oval disc with transverse, elevated “button” on anterior half. **Parameres:** In caudal view, form elongate, base subtriangular, shaft subparallel, lateral margins of each paramere slightly flared before rounded apex (Fig. 9). In lateral view, basal piece slightly longer than parameres (Fig. 10).

Allotype, female (Fig. 8). Length 16.3 mm; width across humeri 7.4 mm. As holotype except in the following respects: **Elytra:** Epipleuron (ventral view) expanded at level of abdominal sternites 1–2 and then abruptly constricted with a subacute tooth at level of abdominal sternite 3 (Fig. 12). In dorsal view, lateral margin slightly expanded above sternite 3. **Pygidium:** In lateral view, surface weakly convex. **Legs:** Protarsus simple, not enlarged.

Etymology. This new species is dedicated to Fernando Paz’s nephew, Mateo Causo Paz.

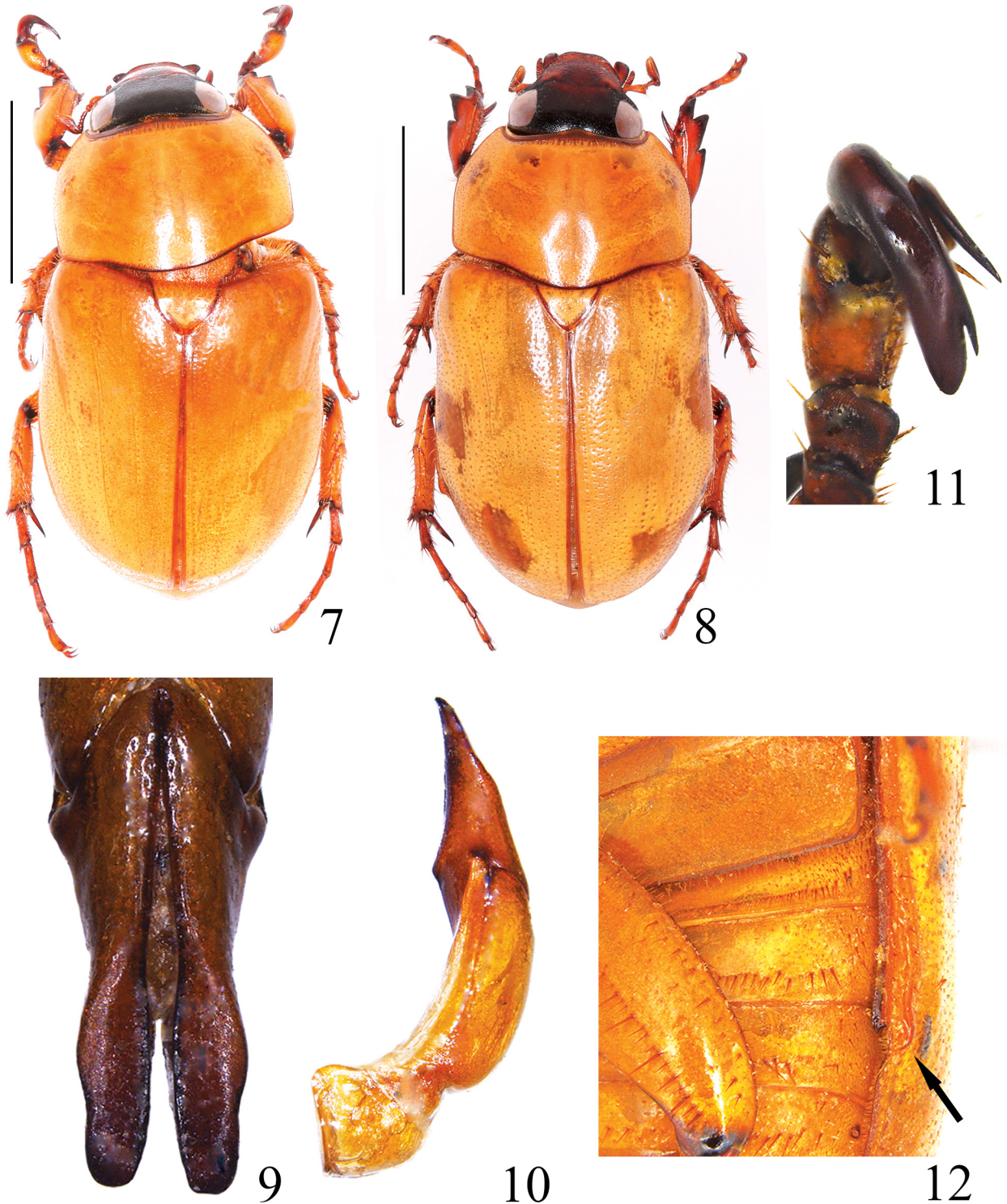
Distribution. 2 specimens examined (Fig. 20). PERU (2): HUÁNUCO (2): Campus of Universidad Nacional Agraria de la Selva, Tingo María.

Temporal distribution. No data.

Diagnosis: *Cyclocephala mateoi* is similar in *gestalt* to *C. verticalis* Burmeister, 1847. However, *C. mateoi* has a slightly more subtruncate clypeal apex while the clypeal apex of *C. verticalis* is more parabolic; the protibia has a small, basal tooth that is distant from the others in *C. mateoi*, but the protibial teeth in *C. verticalis* are all equally

spaced; and the parameres are subtriangular at the base, subparallel, and flared before the apices (Fig. 9) while in *C. verticalis* the parameres are elongate-oval with a tuft of setae on the inner margin of each apex. The female epipleuron of *C. mateoi* is expanded at the level of abdominal sternites 1–2 and then abruptly constricted with a subacute tooth at the level of abdominal sternite 3 (Fig. 12), while the epipleuron of *C. verticalis* is simple and gradually tapering.

Natural history. *Cyclocephala mateoi* specimens were collected at an elevation of 693 m.



FIGURES 7–12. *Cyclocephala mateoi*. 7, Male holotype; 8, female allotype; 9–10, parameres of holotype; 11, protarsal claw of holotype; 12, epipleuron (ventral view) of allotype. Scale bar = 5 mm.

Cyclocephala hylaea Ratcliffe & Paz, new species

(Figs. 13–20)

Type material. Holotype male and allotype female labeled: “PERU: Madre de Dios; / Rio Tambopata Res; 30 air / km. SW Pto. Maldonado, 290m. / 11–15 XI 1979 J. B. Heppner / subtropical moist forest” and with our red holotype and allotype labels. Paratypes with same data except dates of “2–5 XI 1979” (6 males, 10 females), “6–10 XI 1979” (16 males, 33 females), “11–15 XI 1979” (97 males, 101 females), “16–20 XI 1979” (24 males, 51 females), “21–25 XI 1979” (32 males, 43 females), and “26–30 XI 1979” (12 males, 16 females). Additional paratypes labeled “PERU: Cusco; / Pilcopata, 600meters / 8–10 XII 1979 / J. B. Heppner, premontane / moist forest” (1 male, 1 female) and same data except “11–14 XII 1979” (8 males, 21 females) and “MADRE DE DIOS / río Tambopata, 30 Km SO Pto. Maldonado / 290 m, 2-5.xi.1979” (3 males, 8 females). Paratypes (483) each with our yellow paratype label. Holotype, allotype, and 392 paratypes (170 males, 222 females) deposited in USNM. Additional paratypes deposited in BCRC (7 males, 6 females), BMNH (3 males, 3 females), CMNC (3 males, 3 females), EGPC (3 males, 3 females), JNNC (3 males, 3 females), JPSC (3 males, 3 females), MEKRB (5 males, 7 females), MNHN (3 males, 3 females), MSPC (2 males, 4 females), MUSM (8 males, 12 females), RDCC (6), SLTC (3 males, 3 females), UNSM (3 males, 3 females), and ZMHU (3 males, 3 females).

Description. **Holotype**, male. (Fig. 13). Length 12.7 mm; width 4.9 mm. Color testaceous except for black frons; 4 small, indistinct black marks on each side of pronotum; and 3 small black maculae on each elytron; pygidium, abdominal sternites, and tarsomeres reddish brown. **Head:** Frons and clypeus with punctures moderate in size and density, setigerous; setae short, tawny. Clypeal apex subtruncate, slightly reflexed. Interocular width equals 3.5 transverse eye diameters. Antenna with 10 antennomeres, club subequal in length to antennomeres 2–7. **Pronotum:** Surface with punctures similar to those of frons, setigerous in anterior angles and along lateral margins; setae short, tawny. Base with marginal bead. **Elytra:** Surface weakly punctate-striate, punctures slightly larger and denser than those of pronotum, setigerous; setae minute, tawny, in rows. **Pygidium:** Surface opaque with small, moderately dense, setigerous punctures; setae long, dense, tawny. In lateral view, surface convex. **Legs:** Protibia bidentate. Protarsomere 4 with large, ventral flange directed forward. Protarsomere 5 enlarged, slightly bent, venter concave; medial claw large, strongly bent, apex entire (Fig. 18). Metatarsus much longer than metatibia. **Venter:** Prosternal process small, conical, apex narrowly rounded. **Parameres:** In caudal view, form almost horseshoe-shaped, tapering, inner margin of each paramere with long, dense, tawny setae (Fig. 16). In lateral view, basal piece almost 3 times longer than parameres (Fig. 17).

Allotype, female (Fig. 14). Length 12.0 mm; width across humeri 5.2 mm. As holotype except in the following respects: Pronotum with 2 small spots and 1 short line on each side; elytral maculae slightly larger; pygidium testaceous. **Head:** Surface glabrous. **Elytra:** Epipleuron (ventral view) expanded at level of metacoxa and abruptly constricted with a subacute tooth at level of abdominal sternite 3 (Fig. 19). In dorsal view, lateral margin slightly expanded above sternite 3. **Pygidium:** Surface finely reticulated, glabrous except for short, sparse setae on basal half. In lateral view, surface nearly flat. **Legs:** Protibia tridentate. Protarsus simple, not enlarged. Metatarsus only slightly longer than metatibia.

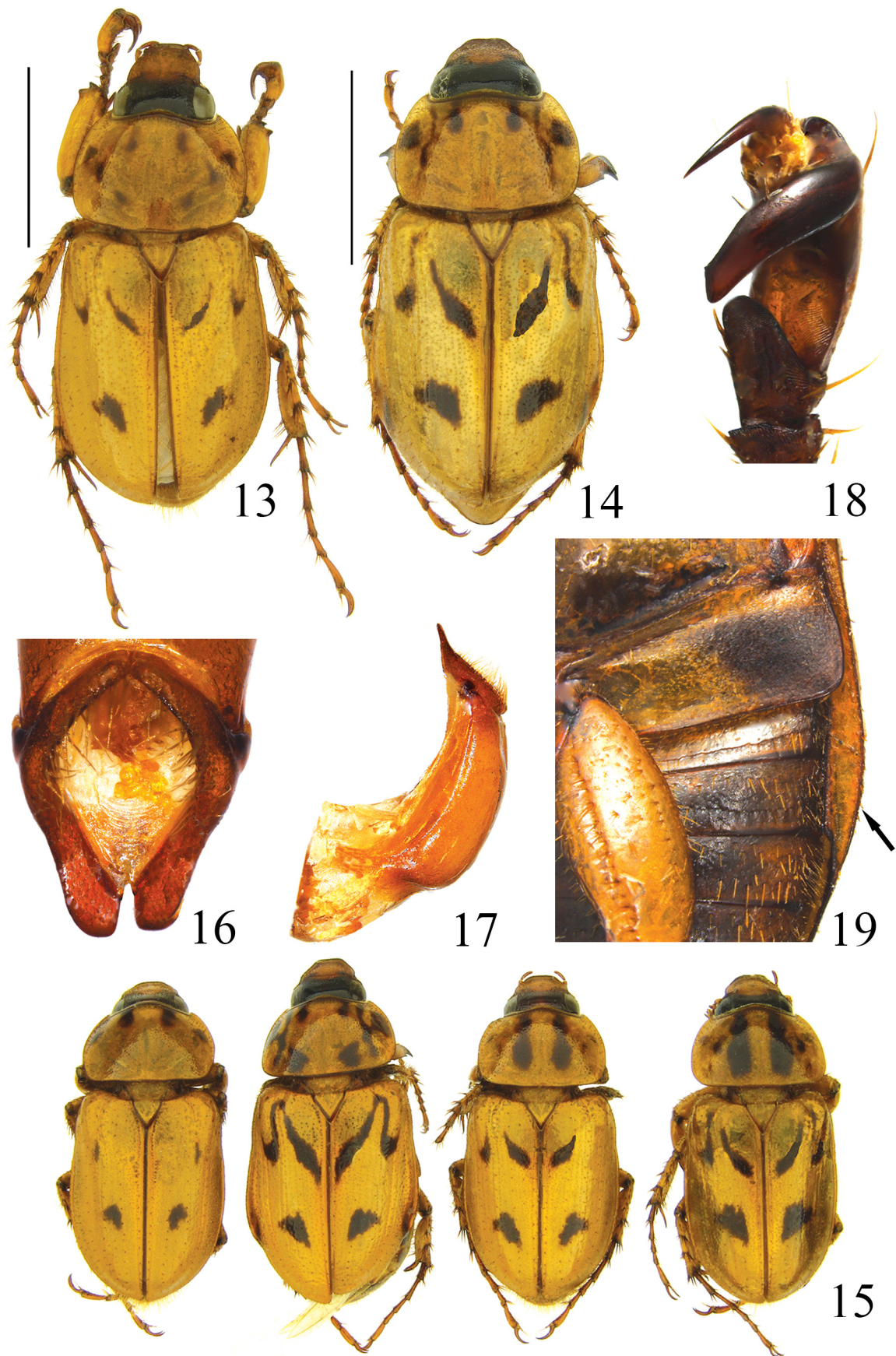
Variation. **Males (199 paratypes).** Length 10.5–13.0 mm; width across humeri 5.0–6.2 mm. **Female (284 paratypes).** Length 10.6–12.8 mm; width across humeri 4.8–5.8 mm. The paratypes of both sexes display slight variation in the size of the black marks on the pronotum and elytra (Fig. 15) as follows: **Pronotum:** Spots variably reduced or rarely coalesced into 2 longitudinal, black bands or more rarely coalesced into an almost *C. lunulata* Burmeister, 1847-like pattern. **Elytra:** Spots variably reduced or rarely expanded in size where the post-scutellar and post-humeral spots connected by a zigzag band.

Etymology. The species name *hylaea* is from the Latin meaning “of the forest”, indicating its habitat. This name should be treated as an adjective in the nominative singular.

Distribution. 485 specimens examined (Fig. 20). PERU (485): CUSCO (31): Pilcopata. MADRE DE DIOS (454): Reserva Nacional Rio Tambopata.

Temporal distribution. November (454), December (31).

Diagnosis. The most heavily patterned specimens display an almost “*C. lunulata*”-type pattern (Fig. 15), but these specimens are not common. *Cyclocephala hylaea* is most similar to the sympatric *C. discolor* Herbst, 1790 in *gestalt*, but males can be differentiated by the form of the clypeus (apex subtruncate and marginal bead slender to obsolete versus clypeal apex rounded, parabolic, and with a raised, thick marginal bead in *C. discolor*);



FIGURES 13–19. *Cyclocephala hylaea*. 13, Male holotype; 14, female allotype; 15, variation of pronotal and elytral markings, all specimens from same collecting event; 16–17, parameres of holotype; 18, protarsal claw of holotype; 19, epipleuron (ventral view) of allotype. Scale bar = 5 mm.

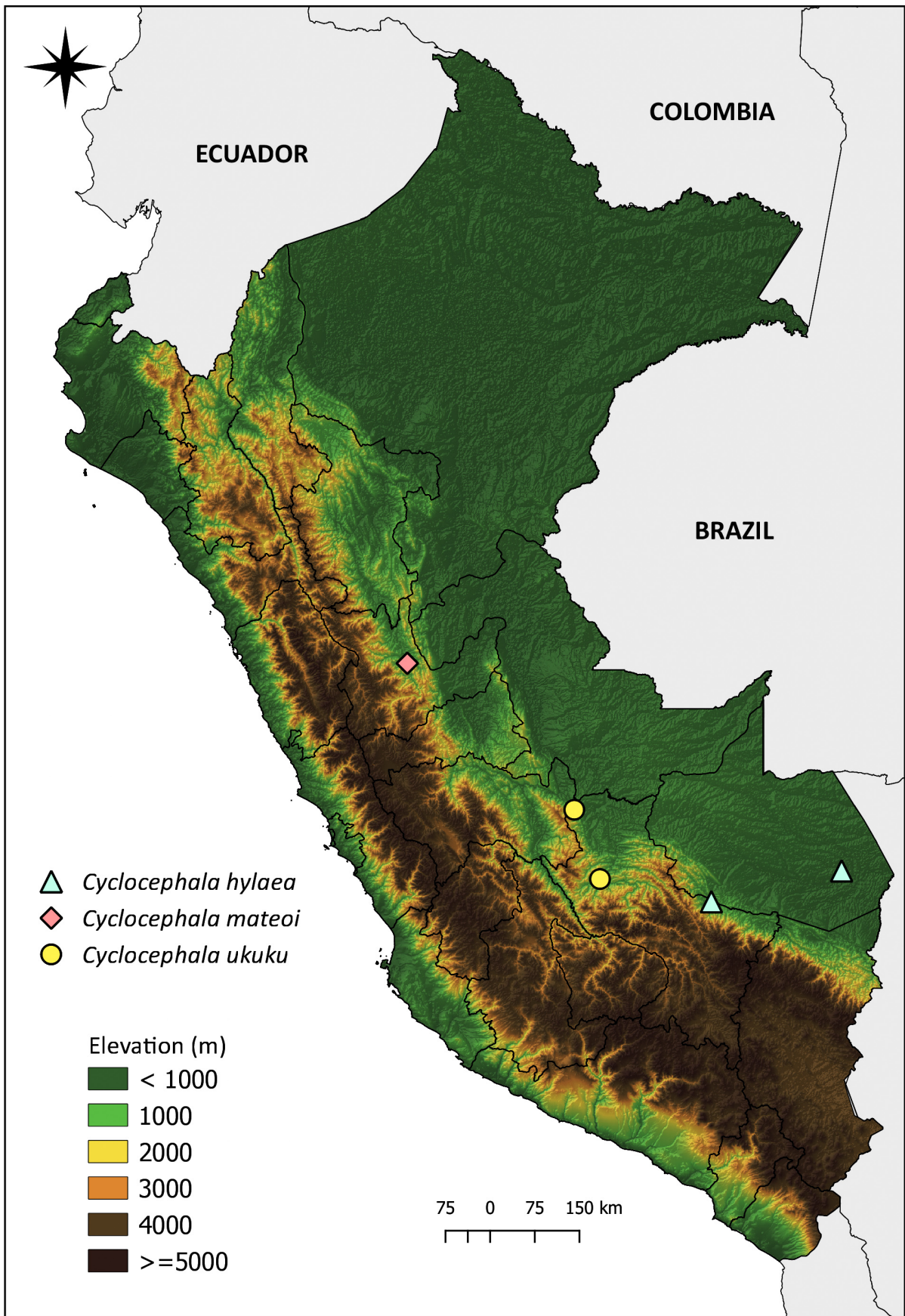


FIGURE 20. Distribution map of the new species of Peruvian *Cyclocephala*.

large protarsal claw entire versus finely split in *C. discolor*; and form of the parameres (inner margin of each paramere densely setose versus glabrous in *C. discolor*). Females are most easily distinguished by the form of the prosternal process: small and conical in *C. hylaea*, but long, columnar, and with apex obliquely flattened with anterior half to 3/4 elevated into round “button” in *C. discolor*.

The parameres resemble those of *C. amazona* (Linnaeus, 1767) (but are broader and not as narrowly elongate), and the male protarsomere 5 is simple, whereas in *C. amazona* there is a distinct tooth near the base on the medio-ventral margin of the tarsomere. Females are very different because the elytral lateral margin is only slightly expanded above sternite 3 in *C. hylaea*, but *C. amazona* has a large, deeply emarginate swelling on the elytral lateral margin behind the middle.

Natural history. *Cyclocephala hylaea* was abundantly collected at lights in lowland rainforest at Reserva Nacional Tambopata and at Pilcopata at elevations of 290–600 m.



FIGURE 21. Aerial view of the habitat of the holotype of *Cyclocephala ukuku* at Reserva Comunal Machiguenga, Cusco, Peru. Photograph by Juan Grados.

Discussion

The Amazon Region of Peru was analyzed by biogeographic subregions and revealed that the tropical lowland forest (0–800 m in elevation, 73% of forested surface) (Ministerio del Ambiente 2011, 2015) had a richness of 56 *Cyclocephala* species, of which 29 were found only in this region (including new species). The Yungas or high forest (800–3600 m in elevation, 21% of forested surface) (Tovar *et al.* 2010; Ministerio del Ambiente 2011, 2015) had a richness of 32 *Cyclocephala* species, of which five were found only in this region. The Amazon Region of Peru constitutes 94% of the forest cover in Peru and approximately 53% of the national area (Ministerio del Ambiente 2011, 2015).

TABLE 1. Checklist of *Cyclocephala* species in Peru.

Species	Department	References
<i>Cyclocephala affinis</i> Endrödi, 1966	Cusco, Madre de Dios, Puno	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala almitana</i> Dechambre, 1992	Tumbes	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b; Paz 2021
<i>Cyclocephala altamontana</i> Dechambre, 1999	Amazonas	Dechambre 1999; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala amazona</i> (Linnaeus, 1767)	Cusco, Huánuco, Junín, Lima, Loreto, Madre de Dios, Pasco, San Martín, Ucayali	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala amblyopsis</i> Bates, 1888	Cusco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala bicolor</i> Laporte, 1840	Huánuco	Joly 2009; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala boliviana</i> Dechambre, 1992	Cusco	Dupuis 2018; Moore <i>et al.</i> 2018b
<i>Cyclocephala brevis</i> Höhne, 1923	Cusco, Madre de Dios, Pasco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015
<i>Cyclocephala colasi</i> Endrödi, 1964	Loreto, Madre de Dios	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala confusa</i> Endrödi, 1966	Cusco, Madre de Dios, Puno, Ucayali	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala conspicua</i> Sharp, 1877	Ucayali?	Dechambre 1992; Moore <i>et al.</i> 2018b
<i>Cyclocephala contraria</i> Kirsch, 1874	Cusco, Huánuco, Madre de Dios, Pasco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015, 2020; Moore <i>et al.</i> 2018b
<i>Cyclocephala couturieri</i> Dechambre, 1999	San Martín	Dechambre 1999; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala dichroa</i> Dechambre, 1992	Amazonas, Cusco, Huánuco, Loreto, Madre de Dios, Tumbes	Joly 2009; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala dilatata</i> (Prell, 1934)	Huánuco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala diluta</i> Erichson, 1847	Amazonas, Ayacucho, Cusco, Junín, Madre de Dios, Pasco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala discicollis</i> Arrow, 1902	no specific locality known	Blackwelder 1944; Moore <i>et al.</i> 2018b
<i>Cyclocephala discolor</i> (Herbst, 1790)	Amazonas, Cusco, Huánuco, Junín, Loreto, Madre de Dios, Pasco, Puno, San Martín, Ucayali	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala dispar</i> (Herbst, 1790)	Loreto	Ratcliffe <i>et al.</i> 2015; Dupuis 2018; Moore <i>et al.</i> 2018b
<i>Cyclocephala emarginata</i> Endrödi, 1964	Madre de Dios	NEW COUNTRY RECORD
<i>Cyclocephala flavoscutellaris</i> Höhne, 1923	Cusco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala flora</i> Arrow, 1911	Loreto	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala freyi freyi</i> Endrödi, 1964	Cusco, Junín, Madre de Dios, Puno	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala fulgurata</i> Burmeister, 1847	Amazonas, Cajamarca, Junín, Madre de Dios, Pasco, Puno, Ucayali	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b

.....continued on the next page

TABLE 1. (Continued)

Species	Department	References
<i>Cyclocephala fulvipennis</i> Burmeister, 1847	no specific locality known	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala genieri</i> Joly, 2010	Pasco, Ucayali	Joly 2010; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala goetzi</i> Endrödi, 1966	Madre de Dios	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala guianae</i> Endrödi, 1969	Cusco	NEW COUNTRY RECORD
<i>Cyclocephala guycolasi</i> Dechambre, 1992	Junín	Dechambre 1992; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala hirsuta</i> Höhne, 1923	Cusco, San Martín	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala inca</i> Endrödi, 1966	Cusco, Huánuco, Junín, Madre de Dios, Pasco, Puno	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala isabellina</i> Höhne, 1923	no specific locality known	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala kaszabi</i> Endrödi, 1964	no specific locality known	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala kuntzeniana</i> Höhne, 1923	Amazonas, Cusco, Madre de Dios, Puno	NEW COUNTRY RECORD
<i>Cyclocephala laminata</i> Burmeister, 1847	Cusco, Huánuco, Madre de Dios, Puno	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala ligyrina</i> Bates, 1888	Junín	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala lineigera</i> Höhne, 1923	Loreto	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala liomorpha</i> Arrow, 1911	Cusco	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b; Paz 2021
<i>Cyclocephala lunulata</i> Burmeister, 1847	Amazonas, Cusco, Junín, Lima, Loreto, Madre de Dios, Pasco, Tumbes, Ucayali	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala macrophylla</i> Erichson, 1847	Ayacucho, Lima, La Libertad, Madre de Dios, Pasco, Piura, Tumbes	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala malyi</i> Dupuis, 2014	Huánuco, Pasco	NEW COUNTRY RECORD
<i>Cyclocephala mannheimsi</i> Endrödi, 1964	Loreto, Madre de Dios	Gasca-Álvarez 2014; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b; Paz 2021
<i>Cyclocephala marginalis</i> Kirsch, 1870	Cusco, Loreto, Madre de Dios	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b; Paz 2021
<i>Cyclocephala mathani</i> Dechambre, 1982	no specific locality known	Moore <i>et al.</i> 2018b
<i>Cyclocephala mecynotarsis</i> Höhne, 1923	Ayacucho, Cusco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala melanocephala</i> (Fabricius, 1775)	Amazonas, Ayacucho, Cusco, Huánuco, Junín, Lima, La Libertad, Madre de Dios, Pasco, Puno	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b

.....continued on the next page

TABLE 1. (Continued)

Species	Department	References
<i>Cyclocephala molesta</i> Endrödi, 1969	Amazonas, Loreto	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b; Paz 2021
<i>Cyclocephala moreti</i> Dechambre, 1992	no specific locality known	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala morphoidina</i> Prell, 1937	Cusco, Junín, Loreto, Pasco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala munda</i> Kirsch, 1870	Loreto, Madre de Dios, Pasco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala nicolasi</i> Dupuis, 2018	Junín, Pasco	Dupuis 2018; Moore <i>et al.</i> 2018b
<i>Cyclocephala obscura</i> Endrödi, 1966	Madre de Dios	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala ocellata</i> Burmeister, 1847	Cusco, Ucayali	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala octopunctata</i> Burmeister, 1847	Cusco, Madre de Dios, Pasco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala ovulum</i> Bates, 1888	Cusco, Huánuco, Junín, Madre de Dios	NEW COUNTRY RECORD
<i>Cyclocephala panthera</i> Dechambre, 1979	Cusco, Madre de Dios	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b; Gasca-Álvarez & Bosia 2020
<i>Cyclocephala paraflora</i> Martínez, 1978	Cusco, Madre de Dios	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b; Paz 2021
<i>Cyclocephala paraguayensis paraguayensis</i> Arrow, 1903	Cusco	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala peruana</i> Endrödi, 1966	Loreto, Madre de Dios, Pasco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala pilosa</i> Dupuis, 2006	Huánuco	Dupuis 2006; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala pokornyi</i> Dupuis, 2014	Pasco	Moore <i>et al.</i> 2018b
<i>Cyclocephala prolongata</i> Arrow, 1902	no specific locality known	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala pseudomelanocephala</i> Dupuis, 1996	Ayacucho, Cusco, Huánuco, Junín, Madre de Dios, Pasco, Puno, Tumbes	Dupuis 1996; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala pugnax</i> Arrow, 1914	Huánuco, Junín, Loreto, Madre de Dios, Ucayali	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala quadripunctata</i> Höhne, 1923	Amazonas, Cusco, Huánuco, Junín, Madre de Dios, Pasco, Tumbes	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala rufovaria</i> Arrow, 1911	Pasco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b; Paz 2021
<i>Cyclocephala rustica</i> (Olivier, 1789)	no locality	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala saltini</i> Ratcliffe, 2008	Huánuco	Ratcliffe 2008; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala scarabaeina</i> (Gyllenhal, 1817)	Madre de Dios	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b

.....continued on the next page

TABLE 1. (Continued)

Species	Department	References
<i>Cyclocephala sexpunctata</i> Laporte, 1840	Madre de Dios, Puno	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala signatoides</i> Höhne, 1923	Amazonas, Cusco, Huánuco, Loreto, Madre de Dios, Pasco, Puno, Ucayali	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala simulatrix</i> Höhne, 1923	Cusco, Loreto, Madre de Dios, Pasco, Puno, San Martín	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala spilopyga</i> Erichson, 1847	Cajamarca, Cusco, Huánuco, Junín, Pasco	Blackwelder 1944; Endrödi 1966; Joly 2010; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala stictica</i> Burmeister, 1847	Amazonas, Cusco, Junín, Madre de Dios	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b; Paz 2021
<i>Cyclocephala sylviae</i> Dechambre, 1995	Cusco, Pasco	NEW COUNTRY RECORD
<i>Cyclocephala testacea</i> Burmeister, 1847	Loreto	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala tronchonii</i> Martínez, 1975	Cusco, Huánuco, Pasco	Martínez 1975; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala tylifera</i> Höhne, 1923	Cusco, Huánuco, Junín, Loreto, Madre de Dios, Pasco	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala verticalis</i> Burmeister, 1847	Huánuco, Loreto	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala viridis</i> Dechambre, 1982	no specific locality known	Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018b
<i>Cyclocephala weidneri</i> Endrödi, 1964	Cajamarca, Cusco, Junín	Endrödi 1966; Ratcliffe <i>et al.</i> 2015; Dupuis 2018; Moore <i>et al.</i> 2018b
<i>Cyclocephala zurstrasseni</i> Endrödi, 1964	Amazonas, Cusco, Huánuco, Madre de Dios, Pasco	Endrödi 1964, 1966; Ratcliffe <i>et al.</i> 2015; Moore <i>et al.</i> 2018

Acknowledgments

This work was supported by the Vicerrectorado de Investigación y Posgrado of the Universidad Nacional Mayor de San Marcos, Peru (R.R. 01686-R-20, B20100651).

References cited

- Blackwelder, R.E. (1944) Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America, part 2. *Bulletin of the United States National Museum*, 185, 189–341.
<https://doi.org/10.5479/si.03629236.185.2>
- Dechambre, R.-P. (1992) Nouveaux Cyclocephalini des genres *Cyclocephala* et *Aspidolea* (Col. Dynastidae). In: Lachaume, G., *Les Coleopteres du Monde 14: Dynastidae Américains*. Sciences Nat, Venette, pp. 57–76.
- Dechambre, R.-P. (1999) Vingt nouvelles espèces et une nouvelle sous-espèce de *Cyclocephala* Burmeister, 1847. *Les Coleopteres du Monde*, 14 (Supplement 1), 1–24.
- Dupuis, F. (1996) Description d'une nouvelle espèce de *Cyclocephala* Latreille, 1829, et mise au point sur les espèces du groupe *melanocephala* (Coleoptera, Dynastidae). *Bulletin de la Société Entomologique de France*, 101, 257–260.
<https://doi.org/10.3406/bsef.1996.17249>
- Dupuis, F. (2006) Deux nouvelles espèces de Cyclocephalini (Coleoptera, Dynastidae). *Coléoptères*, 12, 309–312.
- Dupuis, F. (2018) Espèces nouvelles ou méconnues de *Cyclocephala* Dejean, 1821 (Coleoptera, Dynastidae). *Coléoptères*, 24, 1–12.

- Endrödi, S. (1964) Eine Reihe von neuen *Cyclocephala*-Arten (Col., Melolonthidae, Dynastinae). *Folia Entomologica Hungarica*, 17, 433–470.
- Endrödi, S. (1966) Monographie der Dynastinae (Coleoptera, Lamellicornia). I. Teil. *Entomologische Abhandlungen*, 33, 1–460.
- Endrödi, S. (1985) *The Dynastinae of the World*. Dr. W. Junk Publisher, Dordrecht, 800 pp.
- Gasca-Álvarez, H.J. (2013) New records of *Cyclocephala* Dejean (Coleoptera: Scarabaeidae: Dynastinae) associated with *Caladium bicolor* (Aiton) Vent. (Araceae). *The Coleopterists Bulletin*, 67, 416–418.
<https://doi.org/10.21829/azm.2014.301137>
- Gasca-Álvarez, H.J. (2014) Sobre la taxonomía y biología de *Cyclocephala mannheimsi* Endrödi, 1964 (Coleoptera: Scarabaeidae: Dynastinae), nuevo registro para Colombia. *Acta Zoológica Mexicana*, 30, 174–187.
- Gasca-Álvarez, H.J. & Bosia, U. (2020) Scarab beetle *Cyclocephala panthera* (Coleoptera: Scarabaeidae: Dynastinae): redescription and the first record from Colombia. *Zoosystematica Rossica*, 29, 165–171.
<https://doi.org/10.31610/zsr/2020.29.2.165>
- Joly, L.J. (2009) Review of the species in the *Cyclocephala bicolor* Laporte species group (Coleoptera: Scarabaeidae: Dynastinae). *Zootaxa*, 2048 (1), 47–64.
<https://doi.org/10.11646/zootaxa.2048.1.3>
- Joly, L.J. (2010) Una nueva especie de *Cyclocephala* Dejean de Perú, con la redescrición de *C. spilopyga* Erichson, 1847 y *C. pygidiata* Dupuis, 1999 (Coleoptera, Scarabaeidae, Dynastinae, Cyclocephalini). *Entomotropica*, 25, 133–148.
- Martínez, A. (1975) *Cyclocephala* sudamericanas nuevas o poco conocidas (Col. Scarabaeidae Dynastinae). *Entomologische Arbeiten aus dem Museum G. Frey*, 26, 263–274.
- Ministerio del Ambiente (2011) *El Perú de los Bosques*. Ministerio del Ambiente, Lima, 73 pp.
- Ministerio del Ambiente (2015) *Mapa nacional de cobertura vegetal. Memoria descriptiva*. Ministerio del Ambiente, Dirección General de Evaluación, Valoración y Financiamiento del Patrimonio Natural, Lima, 108 pp.
- Moore, M.R. & Jameson, M.L. (2013) Floral associations of cyclocephaline scarab beetles. *Journal of Insect Science*, 13, article 100, 1–43.
<https://doi.org/10.1673/031.013.10001>
- Moore, M.R., Cave, R.D. & Branham, M.A. (2018a) Synopsis of the cyclocephaline scarab beetles (Coleoptera, Scarabaeidae, Dynastinae, Cyclocephalini). *ZooKeys*, 745, 1–99.
<https://doi.org/10.3897/zookeys.745.23683>
- Moore, M.R., Cave, R.D. & Branham, M.A. (2018b) Annotated catalog and bibliography of the cyclocephaline scarab beetles (Coleoptera, Scarabaeidae, Dynastinae, Cyclocephalini). *ZooKeys*, 745, 101–378.
<https://doi.org/10.3897/zookeys.745.23685>
- Morrone, J.J. (2001) *Biogeografía de América Latina y el Caribe*. Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo, Oficina Regional de Ciencia y Tecnología para América Latina y el Caribe, UNESCO, and the Sociedad Entomológica Aragonesa, Zaragoza, 148 pp.
- Paz, F. (2021) *El género Cyclocephala Dejean, 1821 (Coleoptera: Scarabaeidae: Dynastinae) en la Amazonia Peruana*. B.S. Thesis, Universidad Nacional Mayor de San Marcos, Lima, 220 pp.
- Ratcliffe, B.C. (2008) More new species of *Cyclocephala* from South America (Coleoptera: Scarabaeidae: Dynastinae). *The Coleopterists Bulletin*, 62, 221–241.
<https://doi.org/10.1649/1066.1>
- Ratcliffe, B.C., Jameson, M.L., Figueroa, L., Cave, R.D., Gimmel, M.L., Paulsen, M.J., Cano, E., Beza-Beza, C., Jimenez-Ferbans, L. & Reyes-Castillo, P. (2015) Beetles (Coleoptera) of Peru. a survey of the families. Scarabaeoidea. *Journal of the Kansas Entomological Society*, 88, 186–207.
<https://doi.org/10.2317/kent-88-02-186-207.1>
- Ratcliffe, B.C., Cave, R.D. & Paucar-Cabrera, A. (2020) The dynastine scarab beetles of Ecuador (Coleoptera: Scarabaeidae: Dynastinae). *Bulletin of the University of Nebraska State Museum*, 32, 1–586.
- Tovar Navárez, A., Tovar Ingar, C., Saito Díaz, J., Soto Hurtado, A., Regal Gastelumendi, F., Cruz Burga, Z., Véliz Rosas, C., Vásquez Ruesta, P. & Rivera Campos, G. (2010) *Yungas peruanas. Bosques montanos de la vertiente oriental de los Andes del Perú: una perspectiva ecorregional de conservación*. Centro de Datos para la Conservación, Universidad Nacional Agraria La Molina, Lima, 151 pp.
- Wheeler, Q.D. & Platnick, N.I. (2000) The phylogenetic species concept (*sensu* Wheeler and Platnick). In: Wheeler, Q.D. & Meier, R. (Eds.), *Species Concepts and Phylogenetic Theory: A Debate*. Columbia University Press, New York, New York, pp. 55–69.
- Young, K.R. & León, B. (2000) Biodiversity conservation in Peru's eastern montane forests. *Mountain Research and Development*, 20, 208–211.
[https://doi.org/10.1659/0276-4741\(2000\)020\[0208:BCIPSE\]2.0.CO;2](https://doi.org/10.1659/0276-4741(2000)020[0208:BCIPSE]2.0.CO;2)