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RESEARCH

A new species of *Neorthopleura* (coleoptera: cleridae: korynetinae) from Northern Peru

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Abstract
Neorthopleura pomahuacensis Hernández-May, Chuquibala-Checan and Leavengood, sp. nov. (Coleoptera: Cleridae: Korynetinae) from Pomahuaca, Peru, is described. This beetle species is named after the locality where it was collected. Similar species are discussed and the lectotype of *N. suturalis* (Chevrolat, 1874) is illustrated for comparison.

Keywords Insects · Neotropical region · Checkered beetles · Predators · Cocoa

Introduction

The first review of the genus *Neorthopleura* by Barr included 17 species (Barr 1976). Subsequently, Opitz (2009, 2010, 2013a), based on morphological characters of adults and larvae, established the subfamily Neorthopleurinae to include *Neorthopleura* and related genera, arguing that they constituted an independent lineage within Cleridae. This subfamily was later revised by the same author (Opitz 2013b; 27 species), who subsequently described five new species (Opitz 2019), bringing the total to 32 species. However, subsequent molecular phylogenetic analyses did not support the validity of Neorthopleurinae as proposed by Opitz and showed a close relationship with Korynetinae (Gunter et al. 2013; Gimmel et al. 2019). As a result, current classifications place *Neorthopleura* within Korynetinae, treating Neorthopleurinae as a synonym not supported by the available phylogenetic evidence (Gunter et al. 2013; Yuan et al. 2022).

In Peru, *Neorthopleura* can be morphologically distinguished from *Leodelia* (Lucas), a similar genus, by its elongated, subcylindrical body shape; by its yellow or reddish elytral markings (bands or spots); by its modified distal funicular segments; by a pronotum narrower than the elytra and a triangular-subtriangular scutellum; and by an elongated, conical abdomen that generally extends beyond the apex of the elytra (Opitz 2009, 2013a, 2013b).

The *Neorthopleura* pose taxonomic challenges. Beyond the color pattern, which is fairly homogenous among its species and forms the basis of most dichotomous keys, reliable identifications without resorting to the genitalia depend on subtle characters, such as the morphology of the funicular and capitular antennomeres, the latter being sexually dimorphic and somewhat variable within species, as well as the width of the frons, pubescence, cuticular coloration, and the pygidium (Opitz 2009, 2013a, 2013b). Many of these characters are continuous or difficult to observe without high

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magnification, which increases the difficulty of taxonomic identification without examining the male genitalia.

This situation is exacerbated by the scarcity of specimens available for study, since even after two taxonomic revisions, two of the three species with the most striking coloration and that are most easily recognizable (*N. loba* Opitz, 2013, *N. galbina* Opitz, 2013 and *N. tricolor* Barr 1976) are still known only from their holotypes. Similarly, *N. suturalis* (Chevrolat 1874), although exhibiting less showy but distinctive coloration, is also known exclusively from its type specimen. This limited representation in collections limits the assessment of intraspecific variation and the precise delineation of the species of the genus.

The distribution of these beetles is restricted to the New World and ranges from eastern to southwestern North America to southern Brazil (Opitz 2009; Chapman et al. 2025). In Peru, the fauna of checkered beetles has been cataloged, but it is growing significantly with each new contribution. Burke and Chaboo (2015; 92 species) published the first list of Peruvian Cleridae, which was later updated by Juárez-Noé and González-Coronado (2024; 161 species). Subsequently, Leavengood et al. (2025) added eight additional species recorded in Peru based on a single expedition to a single site. It appears that each study on the Cleridae fauna of Peru and its generic composition yields new discoveries. To date, the only known species of *Neorthopleura* in Peru are *Neorthopleura tricolor* Barr 1976 and *guayasensis* Opitz, 2013, (Juárez-Noé and González-Coronado 2024).

Herein we present a new species, with very vivid and distinctive colors, described based on a single type specimen from Peru. Additionally, the lectotype of the most similar species (*N. suturalis*) is illustrated, and a key to the known species of *Neorthopleura* of Peru is presented.

Materials and methods

The specimen was collected during the dry season from March 27 to April 11, 2025, using a traditional trap made from a polyethylene terephthalate (PET) bottle with windows. The trap was baited with 70% ethyl alcohol (Chuquibala-Checan et al. 2025), and it was placed in a *Theobroma cacao* agroecosystem in northern Peru (Fig. 1). The cocoa trees were cultivated organically in agroforestry systems (Atalaya-Marín et al. 2025).

This agroecosystem has a seasonally dry, humid tropical climate, with average annual temperatures between 24 and 26 °C and average annual rainfall between 800 and 1200 mm. December to April are characterized by intense rainfall; May to July, by light rainfall; and August to November, by the dry season with minimal rainfall (Chuquibala-Checan et al. 2025; SENAMHI 2024).

Morphological observations were made using an Olympus SZ61TR stereoscopic microscope mounted on an SZ2-ILST base. Macrophotographs were taken with a Leica Investa 3 stereoscopic microscope (model LED2500) with an integrated camera. All photographs were stacked using Zerene Stacker software and edited using GIMP version 3.0.4 (Chuquibala-Checan et al. 2025). The geographic location map of the collection site was created and geospatially represented using ArcGIS Pro v3.1.0 software. Information on provincial and district limits was obtained from the Geoportal of the National Geographic Institute of Peru (IGN), while the elevation layer was downloaded from the ASF Data Search Vertex website (search.asf.alaska.edu).

The specimen was deposited in the Insect Collection of the Biodiversity Museum at the Yanayacu Experimental Center of the National Institute of Agricultural Innovation (CIMBCEY-INIA), Peru. The lectotype of *Neorthopleura suturalis* (Chevrolat 1874) was photographed at the Natural History Museum (London, United Kingdom) by Dmitry Telnov and Marc Schlossman.

Taxonomy

Neorthopleura pomahuacensis Hernández-May, Chuquibala-Checan and Leavengood, sp. nov. (Figs. 2, 3 and 4).

http://zoobank.org/urn:lsid:zoobank.org:act:42954B76-6CAE-48F0-B546-6532FB6F6849.

Material examined (Holotype ♀): Perú, Cajamarca, Jaén, Pomahuaca: (CIMBCEY-INIA), 5°55'43.75"S, 79°13'25.95"O, 1156 m elevation, 27-III−11-IV, 2025, Artisanal PET trap with 70% ethyl alcohol attractant, Cocoa agroecosystem, B. Chuquibala-Checan, col. (CIMBCEY-INIA).

Diagnosis: This is the only species of *Neorthopleura* with the posterior half of the elytra entirely brightly colored with the anterior half contrastingly dark (excepting the suture). Most similar is *Neorthopleura suturalis* (Chevrolat 1874) (Fig. 5), which has castaneous coloration spanning the length of the elytra, broadest at the elytral base and the elytral apex; whereas our species has the entire basal half darkly colored (excepting the contrasting suture) and the entire posterior half bright orange-yellow. Moreover, *N. suturalis* is only known from the type locality (and only from the holotype) in Parada, Mexico (Opitz, 2013b), has lighter castaneous antennae (black in our species), and exhibits considerably darker coloration of the pronotum, head, and ventral thorax. *Neorthopleura tricolor* Barr, 1976 possesses an "opposite" color pattern, with the anterior half of the elytra brightly colored and the posterior half dark. *Neorthopleura guayasensis* Opitz, 2013 has the typical

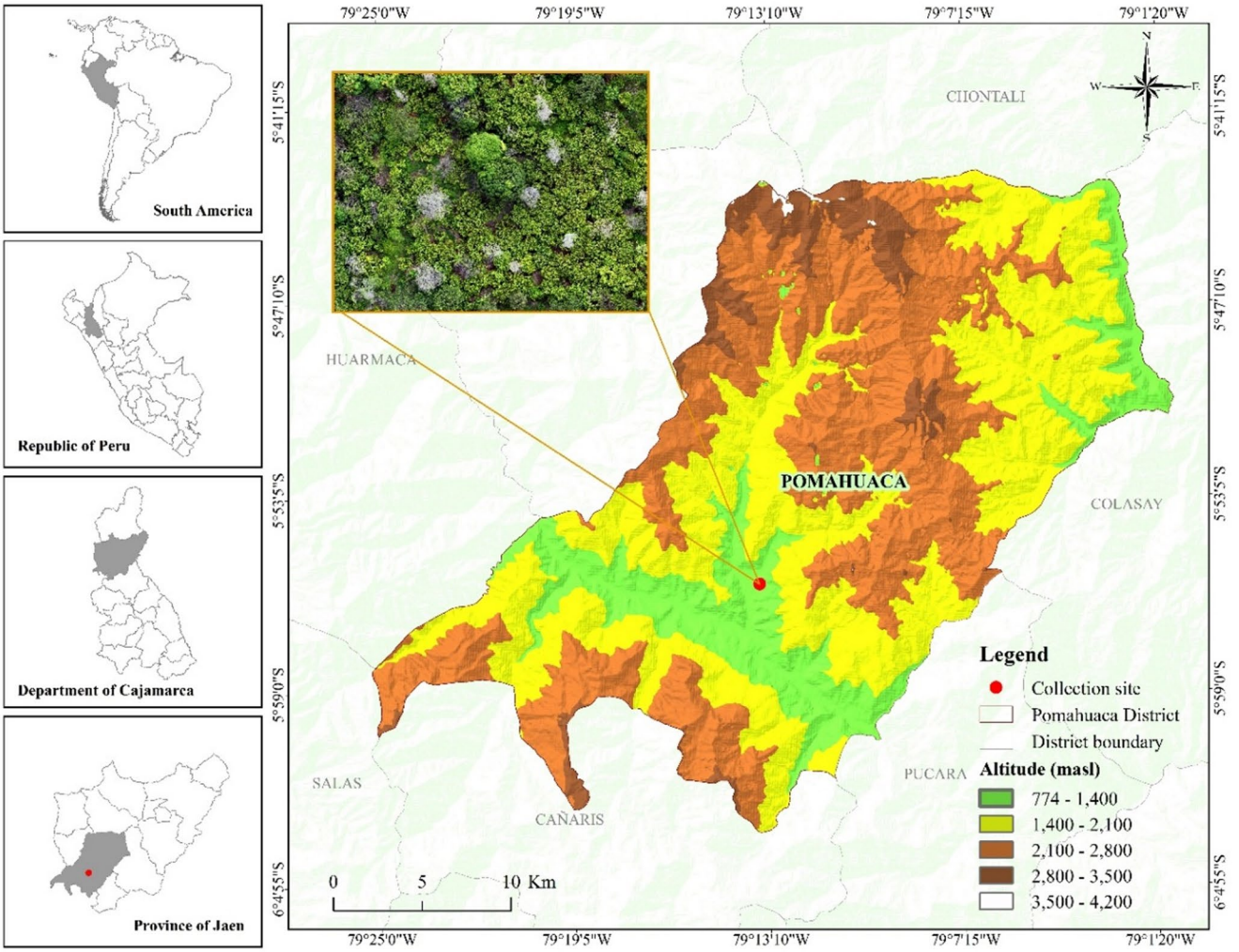

Fig. 1 Geographic location of the collection site of *Neorthopleura pomahuacensis*, sp. nov. in Peru

color color pattern of the genus, dark with a pale fascia. Moreover, in Peru, *N. pomahuacensis* sp. nov. is the only species with a bright red pronotum (dark brown-black in the other two species).

Description (female)

Size: length 6.00 mm (from the anterior margin of the pronotum to the apex of the elytra); width 1.79 mm (in the middle of the elytra).

Shape: Oblong rectangular, as in Figs. 2A, B.

Color: Mouthparts testaceous, except for the mandibles, which are black (Fig. 3A); clypeus, frons, and cranium reddish brown (Fig. 3B); antennal scape brown; pedicel, funicle, and capitulum dark (Figs. 3B and 4A); pronotum reddish brown; scutellum castaneous (Fig. 3C); elytra tricolored, castaneous over most of the surface, with black longitudinal markings on the elytral disc extending from the base along lateral margin to approximately the middle, sutural margin of the disc reddish brown, as in Figs. 2A, B, apical half of elytra castaneous (Fig. 2A, B); coxae, femora, tibiae, tarsi, and tarsal claws testaceous; abdomen, meso- and metaventrite castaneous (Fig. 2C).

Head: Antennae densely setose, moderately long (1.95 mm), composed of 11 antennomeres, capitate, scape 0.17 mm and pedicel 0.11 mm long, funicular antennomeres: III (0.10 mm) shorter than the pedicel, IV-VIII approximately the same length, VII and VIII progressively broader, combined length of funicular antennomeres approximately 0.45 mm and capitulum length 1.22 mm, capitular antennomeres IX and X elongate-triangular, antennomere XI oblong (as in Figs. 2C, 3A, B and 4A). Eyes large and strongly faceted, ocular notch deep; front with flavotestaceous setiferous punctures; cranium moderately wide with flavotestaceous setiferous punctures (Fig. 3A, B). **Pronotum**: Transverse (slightly wider than long [width 1.40 mm; length 1.19 mm]), with the base wider (1.35 mm) than the apex (1.20 mm), with scattered, shallow punctures, mostly covered by flavotestaceous setae (Fig. 3C); lateral pronotal carinae entire and distinct, continuing across posterior

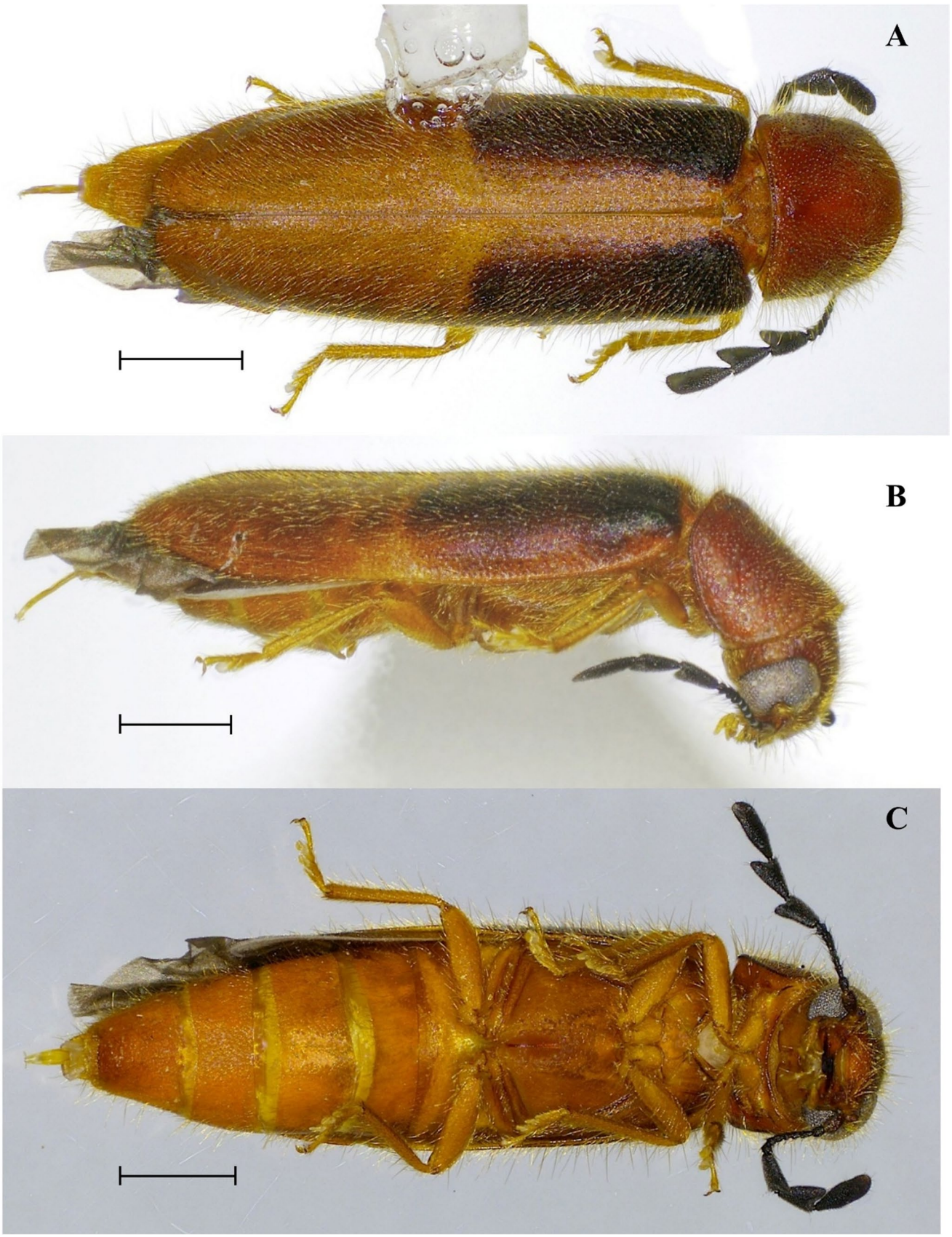

Fig. 2 Habitus of *Neorthopleura pomahuacensis* sp. nov. (**A**) Dorsal view, (**B**) Lateral view, (**C**) Ventral view. Scale bar = 1 mm

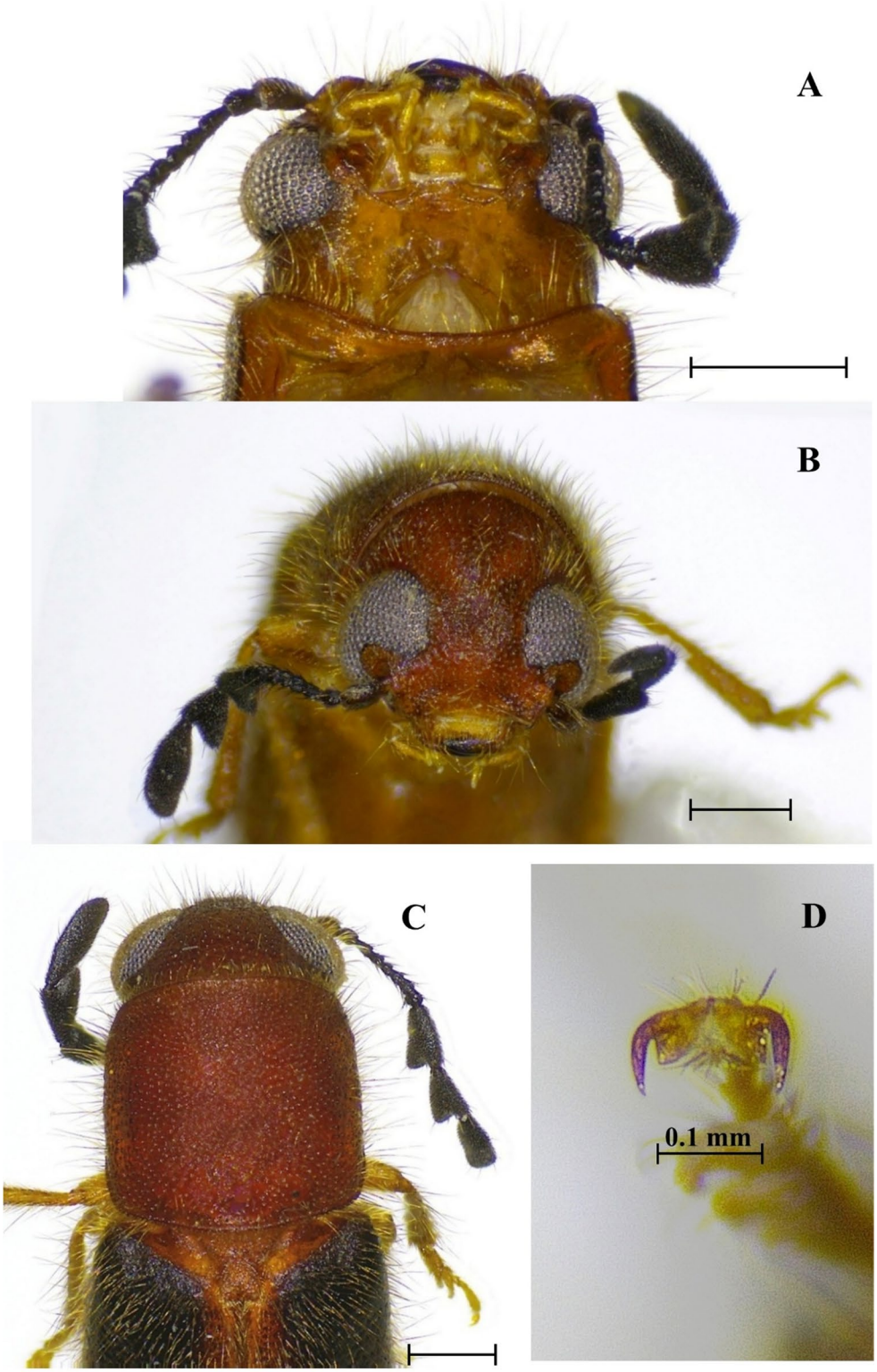

Fig. 3 Habitus of *Neorthopleura pomahuacensis* sp. nov. (**A**) Ventral view of the head, (**B**). Frontal view of the head, (**C**). Head, pronotum, and scutellum, (**D**). Tarsal claws. Scale bar = 0.5 mm

margin of pronotum. **Scutellum**: subtriangular, 0.24 mm wide by 0.20 mm long, reddish-brown, finely punctate, and covered with dense flavotestaceous setae (Fig. 3C). **Ventral thorax** with punctures and small flavotestaceous setae; metaventrite posteriorly divided by longitudinal suture spanning half its length. **Elytra**: Elongate (4.71 mm long by 1.79 mm wide) and mostly covered with short flavotestaceous setae (approximately 0.17–0.21 mm), with small non-serial flavotestaceous setiferous elytral punctures that extend across the entire elytra, elytral maculae covered with

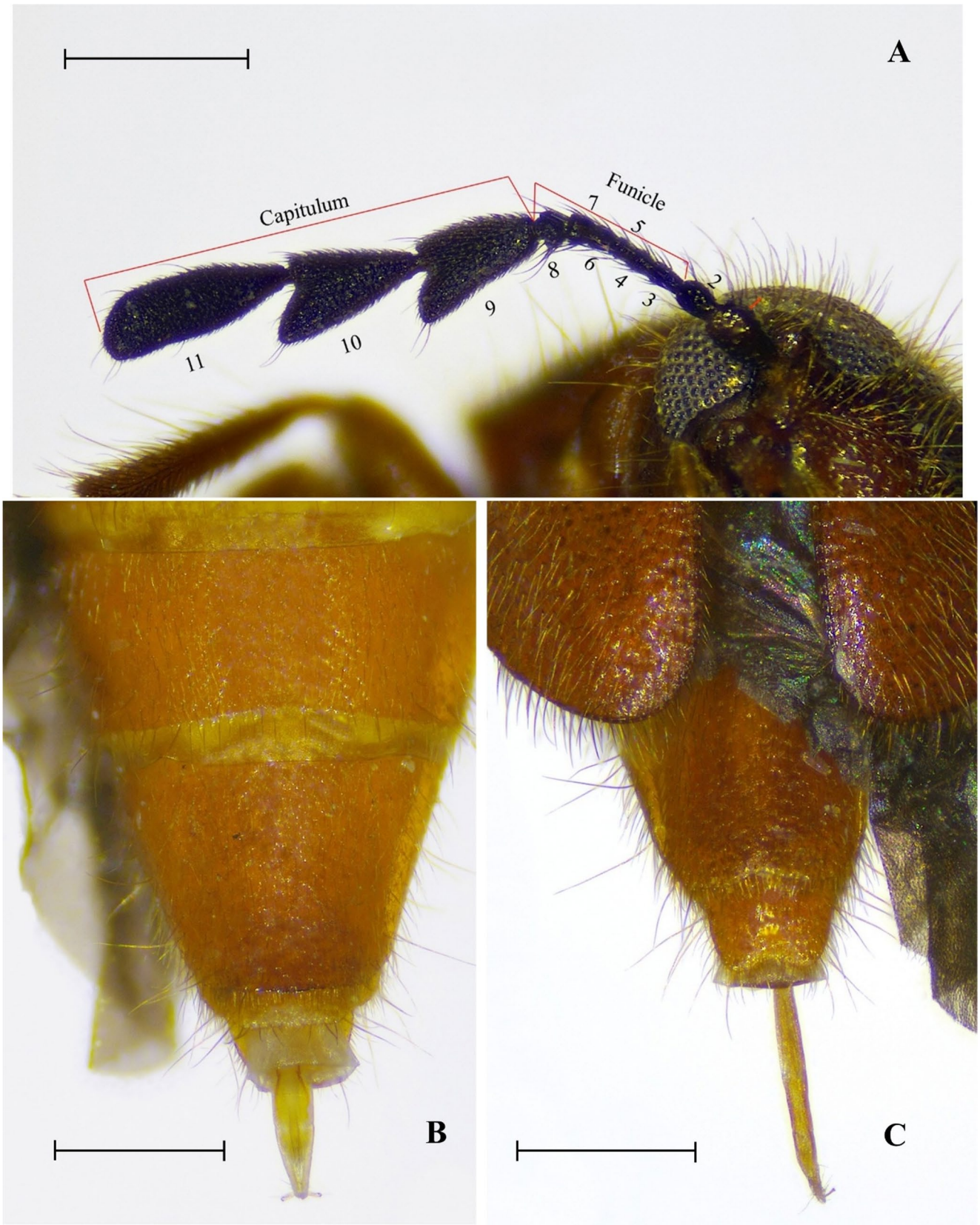

Fig. 4 Habitus of *Neorthopleura pomahuacensis* sp. nov. (**A**) Antennal segments, (**B**). Ventral view of the abdominal apex, (**C**). Dorsal view of the abdominal apex. Scale bar = 0.5 mm

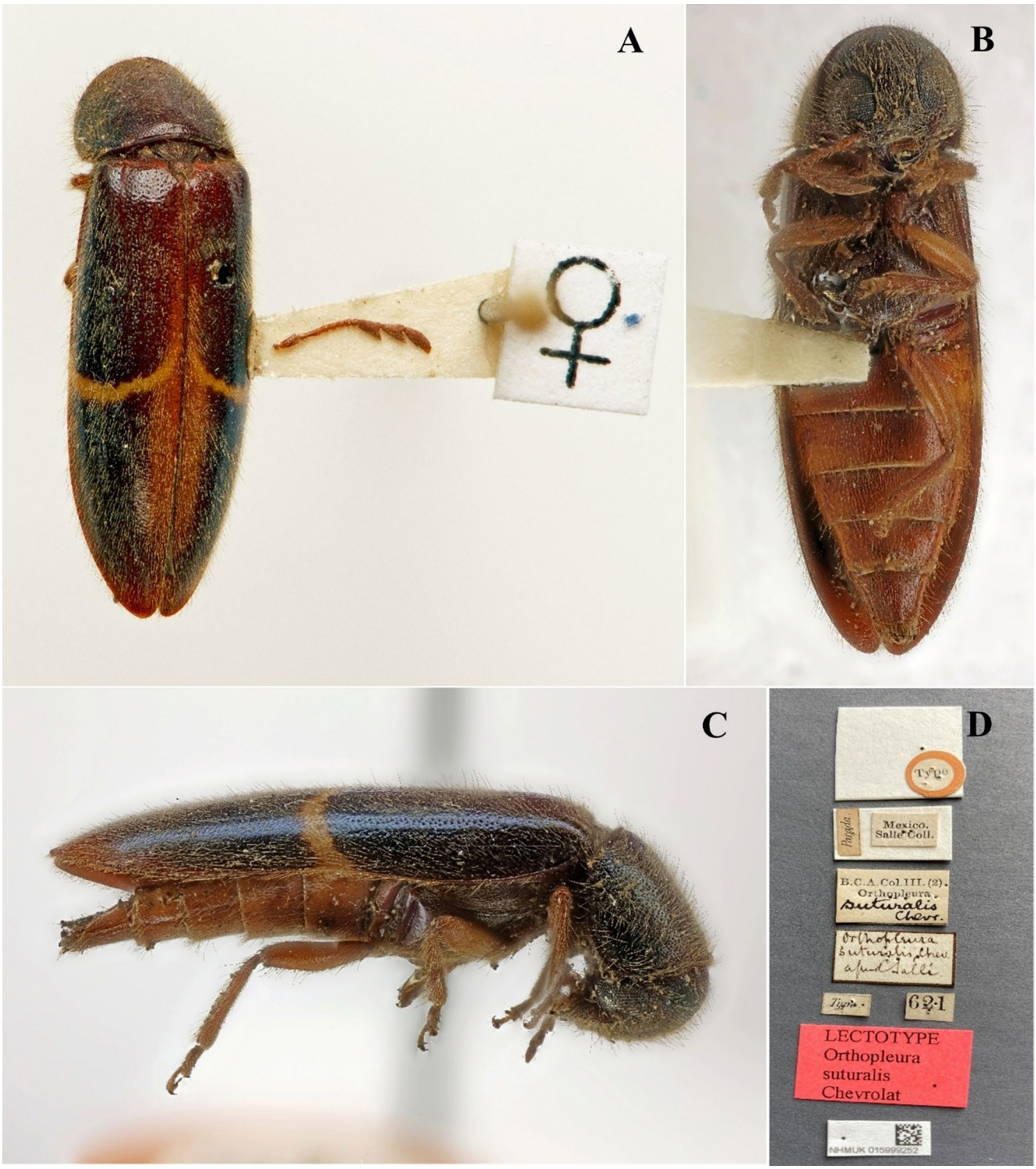

Fig. 5 Habitus of *Neorthopleura suturalis* (Lectotype). (**A**) Dorsal view, (**B**) Ventral view, (**C**). Lateral view, (**D**). Specimen labels

flavotestaceous setae (Fig. 2A, B). **Legs**: Femora, tibiae, and tarsi with mostly flavotestaceous setae (Fig. 2B, C). Tarsal claws with well-developed, bifid unguis, broadly truncate, triangular, and extending to half the length of the terminal claw (Fig. 3D). **Abdomen**: Very narrow and composed of six visible sternites with small punctures and flavotestaceous setae. The apical abdominal sternite is elongate (Fig. 4B). Pygidium subtriangular, slightly elongate, smoothly rounded, narrowing apically; covered in erect, medium-length, light-colored setae distributed sparsely,

but more abundantly towards the apical and lateral margins (Fig. 4C). Ovipositor as in Fig. 4B, C.

Male. Unknown

Etymology. The specific epithet derives from the type locality of the new species, near the district of Pomahuaca, department of Cajamarca, Peru.

Distribution. This species is only known from the type-locality in Peru.

Biology. The specimen was collected in a trap baited with 70% ethyl alcohol in a cocoa plantation. The trap was placed in the low vegetation stratum, during the rainy season in the agroecosystem at an altitude of 1156 m.a.s.l. The traps attracted many individuals of various wood-boring species, which were attracted by the release and dispersion of ethyl alcohol.

Key to the Peruvian species of *Neorthopleura*.

1. Elytra with anterior half brightly colored yellow-red, posterior half entirely dark; pronotum dark brown-black……*N. tricolor* Barr 1976.

1'. Elytra with anterior half partly (broadly from suture) to entirely dark colored; pronotum dark brown-black or brightly colored (Fig. 2A)……2.

2. Elytra and pronotum entirely dark except for median elytral fascia (possibly weakly expressed)……*N. guayasensis* Opitz 2013.

2'. Elytra with posterior half brightly colored, this yellow-orange coloration extending anteriorly broadly up the suture to the scutellum, pronotum bright red (Fig. 2A)……*N. pomahuacensis* sp. nov.

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Author contributions Beimer Chuquibala-Checan (collected, processed, and photographed the specimen). Manuel A. Hernández-May (developed the methodology, original description and identified the specimen). John M. Leavengood Jr. (corroborated the identification, prepared the diagnosis, assisted in description, and compared the types). Daniel Tineo (collected, and processed the specimen) and Malluri Goñas (collected, processed and photographed the specimen). All authors prepared and reviewed the manuscript.

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Data availability No datasets were generated or analysed during the current study.

Declarations

Competing interests The authors declare no competing interests.

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