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RESEARCH PAPER

A new species of *Pelidnocoris* (Hemiptera: Heteroptera: Pentatomidae) from the Brazilian Atlantic Forest

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Abstract. In this work a new species, *Pelidnocoris paradisicola* sp. nov., of the genus *Pelidnocoris* Stål, 1868 (Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Discocephalinae) is described from the southeastern Brazilian state of Minas Gerais. An up-to-date diagnosis of the genus and its species is provided, comparing them with similar-looking Discocephalini genera. This is the first record of the genus for the Atlantic Forest, in southeastern South America, and increases the number of species in *Pelidnocoris* to four. The other species of *Pelidnocoris* are distributed from southern North America to northern South America, with records from Mexico, Colombia, Costa Rica, Panama, and northern Brazil. Photographs from the citizen science platform iNaturalist indicate the genus is also distributed in the state of São Paulo, Brazil, as well as in Belize, Ecuador and Peru, all representing new records. An identification key to the species of the genus is included, based on characters of general morphology and external male genitalia. Identification of the genus and its species from photographs in online repositories and databases is addressed.

Key words. Hemiptera, Heteroptera, Pentatomidae, Discocephalinae, iNaturalist, taxonomy, Amazon Forest, Atlantic Forest, Brazil, Neotropical Region

Zoobank: http://zoobank.org/urn:lsid:zoobank.org:pub:49B63810-2E76-4E55-8FC4-CFC664787A4F

Introduction

The stink bug subfamily Discocephalinae is distributed exclusively in the Western Hemisphere and mainly in the Neotropics, with a few species recorded in the southern Nearctic Region (Grazia et al. 2015, Rider & Swanson 2021). Its members are recognized by the labium inserted in, or posterior to, an imaginary transverse line crossing adjacent to the anterior limit of the eyes, and by the paired abdominal trichobothria external to the spiracles (Garbelotto et al. 2018, Rosso & Campos 2021, Grazia et al. 2024). Currently, up to 86 genera are recognized in the subfamily (Garbelotto et al. 2018, Rider et al. 2018, Rosso & Campos 2021, Sampaio & Campos 2023, Grazia et al. 2024), classified into two tribes: the Discocephalini, with ca. 46 genera, and the Ochlerini, with ca. 40 genera. A phylogenetic classification has never been proposed for the subfamily, although the tribe Ochlerini has been studied in a robust phylogenetic context in the last 20 years (Campos & Grazia 2006, Roell & Campos 2018). Within the Discocephalini, no published phylogenetic hypothesis is available, and only typological schemes have been proposed for the classification of the included genera (e.g. Rolston 1990, Grazia et al. 2015). Members of the Discocephalini are recognized by the body usually light to dark brown, mottled, labium arising posterior to the anterior margin of eyes, and the dorsal surface of the third metatarsal segment convex in both males and females (Rider et al. 2018).

The genus *Pelidnocoris* was described by Stål (1868) and placed among other genera currently included in Discocephalini. Nonetheless, Stål (1868) did not assign any species to his new genus. Haglund (1868) described *Pelidnocoris stalii* Haglund, 1868 from Mexico, which became the type species by subsequent monotypy. Snow (1905) listed one unidentified specimen of *Pelidnocoris* collected in Arizona, in the vicinity of Douglas County,

adjacent to the border with Mexico. The genus has never been found in the USA again, and subsequent authors overlooked this record (i.e., Kirkaldy 1909, Rider & Swanson 2021). The genus remained monotypic until the revision published by Ruckes (1966b), who described two new species: *Pelidnocoris haglundi* Ruckes, 1966, based on one male and two females from Brazil (Amazonas state), and *P. majusculus* Ruckes, 1966, based on one female from Panama. Ruckes (1966b) also redescribed the genus and its type species, providing an identification key to the species. The distribution of *P. stalii* was expanded south, including Colombia, Costa Rica, and Panama (Ruckes 1966b). More recently, Castro-Huertas et al. (2022) recorded *P. haglundi* in Colombia. The genus is currently known from Mexico to northern Brazil, with a doubtful record in southern USA (Snow 1905).

Pelidnocoris can be characterized by the head longer than wide between eyes, but shorter than or at most subequal to medial length of the pronotum; mandibular plates longer than clypeus and overlapping in front of it; acute preocular projections present, and postfrenal lobe of the scutellum not elevated laterally (Ruckes 1966b). The classification of *Pelidnocoris* in the Discocephalini is well established, and the genus has been compared and related to other genera included in the tribe (see Taxonomy and Discussion).

Here, we describe a new species of *Pelidnocoris* and for the first time present records of the genus in the Atlantic Rain Forest, in the southeastern Brazilian states of Minas Gerais and São Paulo. The new species is described from a male recently collected in a fragment of forest in Viçosa municipality, Minas Gerais. We also provide an updated diagnosis for *Pelidnocoris*, a comparative diagnostic table with similar genera, as well as an identification key for the included species. The distribution of the genus is briefly discussed, including new country and state records based on iNaturalist public records. Diagnostic identification of the species of *Pelidnocoris* through photos available in online repositories and databases is addressed.

Material and methods

We examined a single male recently collected and deposited at the Museu de Zoologia, University of São Paulo (MZSP), as well as photos of the holotypes of *P. haglundi* and *P. stalii*, deposited at the Naturhistoriska Riksmuseet (NHRS), and the holotype of *P. majusculus*, deposited at the American Museum of Natural History (AMNH). Label information of the material examined is presented with lines separated by a slash '/', and labels separated by a double slash '//'. Records uploaded to iNaturalist website (www.inaturalist.org) were compiled and checked. The photographs can be accessed using the links provided in the discussion section. Distributional data for each species are listed from north to south, for countries and states. New country records are highlighted as '**new record**'.

The male specimen of the new species was studied using a Leica S9E stereo microscope, and photographs were taken using a Nikon D7200 camera coupled to a Nikon SMZ18 stereo microscope. Photos were stacked and processed using the software Adobe Photoshop 2024. Measurements (in millimeters) were taken using an ocular micrometer.

Terminology follows Correia et al. (2021) and López et al. (2023) for general morphology, Kment & Vilímová (2010) for the thoracic scent efferent system, Genevcius & Schwertner (2017) for the male genitalia, and Zhou & Rédei (2020) for the female genitalia. Color description was based on the dry preserved specimens, with additions based on the observation of the live specimen.

Taxonomy

Pelidnocoris Stål, 1868

(Figs 1–27)

Pelidnocoris Stål, 1868: 501 (original description). Type species: *Pelidnocoris stalii* Haglund, 1868, by monotypy.

Pelidnocoris: Haglund (1868): 150–151 (species description); Stål (1872): 10, 150 (catalog); Distant (1880): 48, pl. VII, fig. 2 (diagnosis discussion, illustration); Uhler (1886): 5, 31 (list, index); Lethierry & Severin (1893): 88, 283 (catalog); Champion (1901): 407 (index); Snow (1905): 177 (list); Kirkaldy (1909): XXXIII, 220, 390 (list, catalog); Ruckes (1966a): 3–5 (systematic relationships); Ruckes (1966b): 1–8, figs 1–10 (revision, new species description, key to species, illustrations); Ruckes & Becker (1970): 4 (systematic relationships); Becker (1977): 386 (systematic relationships); Rolston & Rider (1985): 1175 (list); Becker & Grazia (1986): 456 (systematic relationships); Becker & Grazia (1989): 51 (systematic relationships); Arnold (1996): 276 (checklist); Froeschner (1999): 160–161 (list); Thomas (2000): 352 (list); Arismendi & Thomas (2003): 225 (list); Fernandes et al. (2008): 50 (systematic relationships); Petrulevičius & Popov (2014): 29 (systematic relationships); Grazia et al. (2015): 713–715, 891 (checklist, systematic relationships); Cambra et al. (2018): 7, 16, fig. 18 (checklist, photo); Rider et al. (2018): 58, 104, 791 (list, systematic relationships); Silva et al. (2018): 413 (checklist); Castro-Huertas et al. (2022): 3, 5, 22–23, 75–76, fig. 30 (list, diagnosis, photo); Campos et al. (2023): 2–7 (morphology); López et al. (2023): 406, 408 (systematic relationships).

Diagnosis. Among the Discocephalini, *Pelidnocoris* can be characterized by the head longer than wide between eyes, shorter than or at most subequal to medial length of the pronotum; mandibular plates longer than clypeus and overlapping in front of it; acute preocular projections present (Fig. 2, pp); pronotum with acute anterior projections (ap), anterior (al) and posterior (pl) lobes; scutellum reaching or surpassing the posterior angle of the abdominal segment VI and mesially constricted; the postfrenal lobe of the scutellum not elevated laterally; metasternum broadly hexagonal and mesocoxae closer to metacoxae than to each other (Fig. 3); connexiva widely exposed and the abdominal sternites projected laterally, conferring a serrated aspect to the abdomen; valvifers IX and laterotergites IX of the females not visible externally (Fig. 26); segment X of the males expanded in a lozenge shape (Figs 7, 15, 20, X).

Distribution. Mexico (Haglund 1868); Belize (**new record**); Colombia (Ruckes 1966b, Castro-Huertas et al. 2022); Costa Rica (Ruckes 1966b); Panama (Ruckes 1966b); Brazil: Amazonas (Ruckes 1966b), Minas Gerais (**new record**), São Paulo (**new record**); Ecuador (**new record**); Peru (**new record**).

The works cited above, i.e., Haglund (1868), Ruc-

kes (1966b), Castro-Huertas et al. (2022), are the ones presenting new records. All others cited in the synonymic list did not present new records, but some of them (e.g. Grazia et al. 2015) summarized previous data.

Comments. Ruckes (1966a) considered *Pelidnocoris* to be part of a group of genera including *Abascantus* Stål, 1864, *Coriplatus* White, 1842, and *Eurystethus* Mayr, 1864, all of them sharing a broadly hexagonal metasternum and mesocoxae closer to metacoxae than to each other (Table 1). Ruckes & Becker (1970) separated *Pelidnocoris* from *Abascantus* and *Coriplatus* using characteristics of the head, pronotum, tarsomeres, scutellum, and the male segment X (Table 1). These genera also differ in body size, with *Coriplatus* being smaller than *Abascantus* and *Pelidnocoris* (Ruckes 1966b, Ruckes & Becker 1970, Becker 1977). Becker & Grazia (1986) allied *Abascantus*, *Coriplatus*, and *Pelidnocoris* with *Alcippus* Stål, 1868, *Eurystethus*, and the new genus *Paralcippus* Becker & Grazia, 1986. The external genitalia of the females, mainly valvifers IX and laterotergites IX, can be used to differ between these genera (Table 1). Fernandes et al. (2008) compared the genus *Psorus* Bergroth, 1914 with the six genera mentioned above, and considered it allied to *Abascantus*, *Coriplatus*, and *Pelidnocoris* based on color pattern and characteristics of the metasternum, legs and scutellum. The morphology of the rostrum, pronotum and the external genitalia of the females differ between these genera (Table 1). López et al. (2023) also called attention to the superficial morphological resemblance between *Glyphuchus* Stål, 1860 and *Pelidnocoris*, these genera differing in the morphology of the head, pronotum, scutellum, and in the genitalia of both sexes (Table 1).

Among all these genera, species of *Coriplatus*, *Eurystethus*, and *Paralcippus* are smaller (6.5–13.0 mm). On the other side, species of *Abascantus*, *Alcippus*, *Pelidnocoris*, and *Psorus* are usually larger (maximum lengths between 15.2–18.3 mm).

Identification key to the species of *Pelidnocoris*

1 Apical angle of posterior lobe of pronotum ca. 90–95° (Fig. 23); postfrenal lobe of scutellum with 1 + 1 prominent elevations (Fig. 25, arrow). .... ***P. majusculus*** Ruckes, 1966 (Figs 23–27)

– Apical angle of posterior lobe of pronotum ca. 50–75° (Figs 2, 12, 17); postfrenal lobe of scutellum without prominent elevations (Figs 4, 14, 19). 2

2 Preocular projections shorter than half width of eye, triangular or denticulate (Fig. 12, pp); pronotum with humeral notch (Fig. 12, hn). .... ***P. haglundi*** Ruckes, 1966 (Figs 12–16)

– Preocular projections longer than half width of eye, ligulate (Figs 2, 17, pp); pronotum without humeral notch (Figs 2, 17, arrows). 3

3 Posterolateral angles of pygophore acuminate (Fig. 20, pla); lateral angles of segment X not reaching lateral margins of pygophore (Fig. 20, lm). .... ***P. stalii*** Haglund, 1868 (Figs 17–22)

– Posterolateral angles of pygophore not acuminate (Fig. 7, pla); segment X slightly exceeding lateral margins of pygophore (Fig. 7, lm). .... ***P. paradisicola*** **sp. nov.** (Figs 1–11).

Pelidnocoris paradisicola **sp. nov.**

(Figs 1–11)

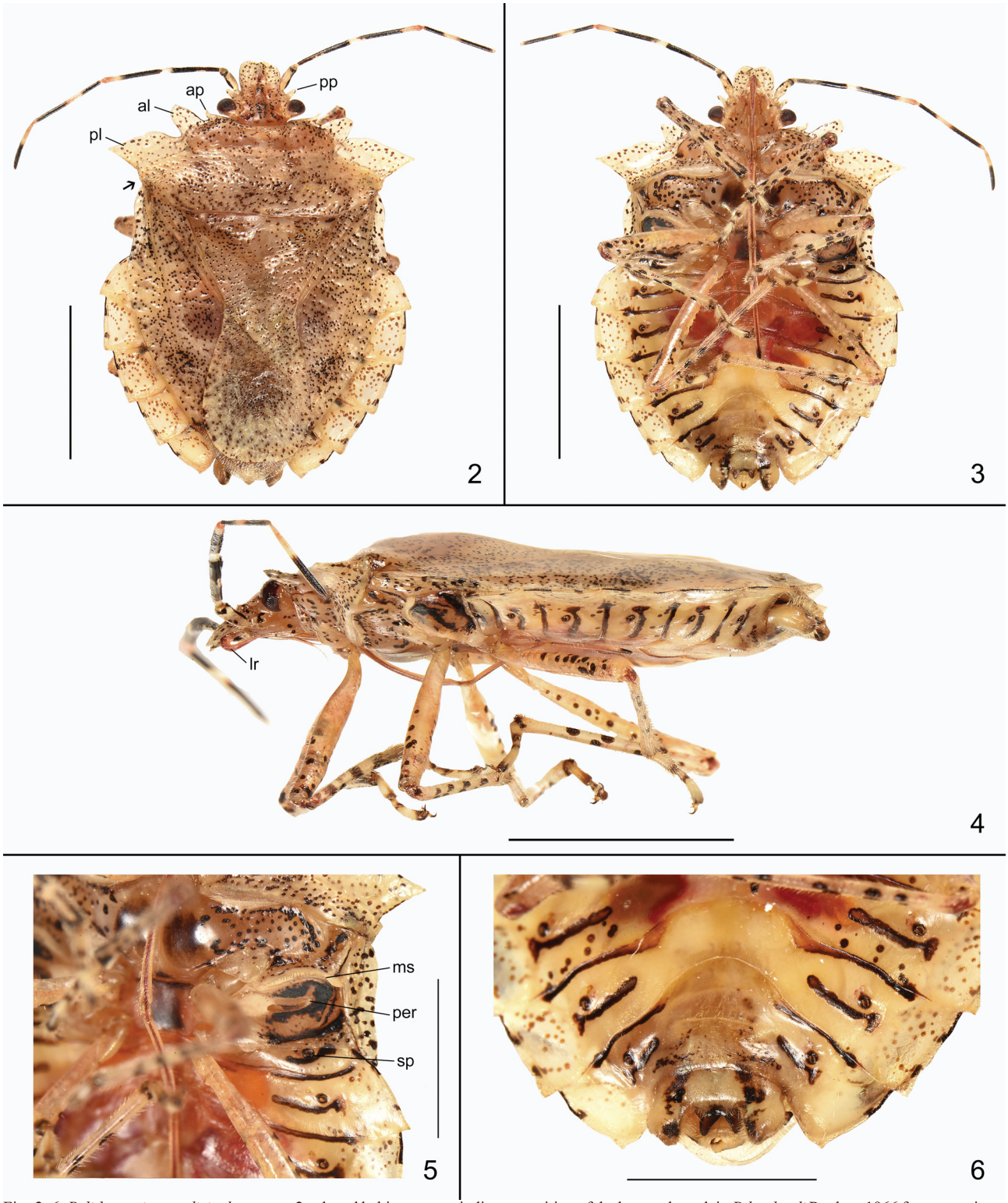
Type locality. Brazil, Minas Gerais, Viçosa, Mata do Paraíso, 20°48′00″S, 42°52′01.7″W.

Type material. Holotype: ♂ (MZSP), 'Brasil, MG, Viçosa / Mata do Paraíso / 20°48'00" S, 42°52'01.7" W / 08.xii.2022 / EB Crispino & VM Ghirotto cols. // *Pelidnocoris* / *paradisicola* López & / Schwertner, 2024 / Holotype'. Right antennal segment V and left mesotarsal segments II and III are broken, but preserved with the specimen. The pygophore was removed for description and illustration, and is also stored with the holotype.

Diagnosis. *Pelidnocoris paradisicola* sp. nov. differs from the other species of the genus in the combination of the following characters: ligular preocular projections (Fig. 2, pp), anterior pronotal ligular projections (ap), pronotum with anterior lobes rounded (al) and posterior lobes acutely projected (pl), absence of humeral notches (Fig. 2, arrow), absence of elevations in the postfrenal lobe of the scutellum (Fig. 4), posterolateral angles of the pygophore not acuminate (Fig. 7, pla), medial excavation of the ventral rim of the pygophore quadrangular and wide (Fig. 8, vr), and the male segment X (Fig. 7, X), wider and with lateral angles acute, exceeding the lateral margins of the pygophore (Fig. 7, lm).

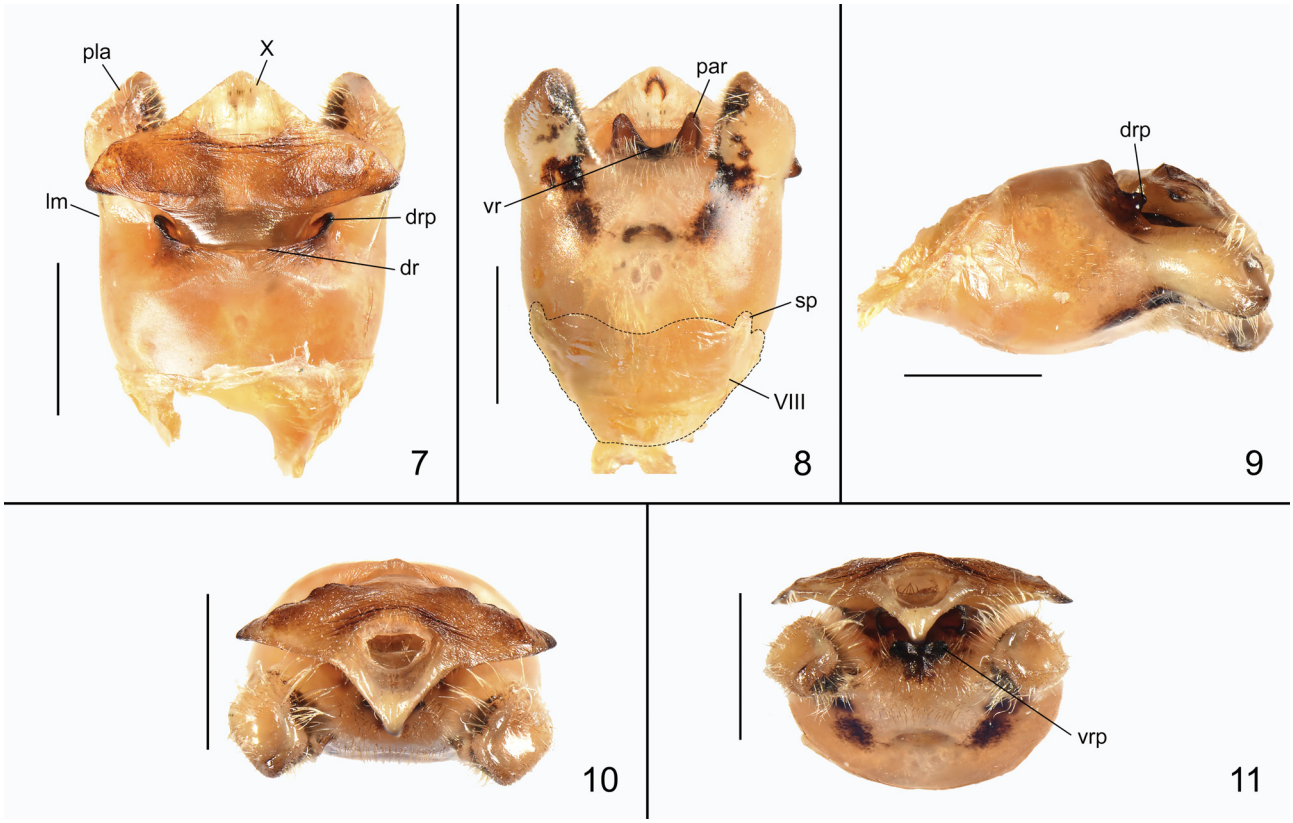
Description. ***Male.*** *General morphology and coloration.* Large size (13.5 mm). Body longer than wide, abdomen widely rounded with serrated aspect on lateral margins

Fig. 1. Living adult male of *Pelidnocoris paradisicola* sp. nov. at the collection site in Mata do Paraíso, Viçosa, MG. Photographed by Edgar Blois Crispino.



Figs 2–6. *Pelidnocoris paradisicola* sp. nov. 2 – dorsal habitus; arrow indicates position of the humeral notch in *P. haglundi* Ruckes, 1966 for comparison. 3 – ventral habitus. 4 – lateral view. 5 – details of the thoracic scent efferent system and anterior portion of the abdomen in ventral view. 6 – position of the pygophore of the male at rest, ventral view. Lettering: al – anterior lobe of the pronotum, ap – anterior projection of the pronotum, lr – labrum, ms – methatoracic spiracle, per – peritreme, pl – posterior lobe of the pronotum, pp – preocular projection, sp – spiracle. Scale bars = 5 mm.

(Figs 2–3). General color when alive suffused greyish to pale green (Fig. 1), with many small, dark brown to black punctures on head, pronotum, propleura, mesopleura, scutellum, hemelytra and connexiva; general color faded to pale yellow on dry preserved specimen (Figs 2–4). Mandibular plates with reddish pigmentation suffused on dorsal and ventral surfaces; strong red lines present on basal half of labrum and on segments II–IV of rostrum (Fig. 3). Antennal segment I yellow, with dark brown markings on lateral margins; segment II black; segment III mainly black, with basal and subapical yellow rings and apex reddish; segment IV black with yellow, red



Figs 7–11. *Pelidnocoris paradisicola* sp. nov., pygophore. 7 – dorsal view. 8 – ventral view, abdominal segment VIII outlined. 9 – lateral view. 10 – posterior view. 11 – posteroventral view. Lettering: dr – dorsal rim, drp – dorsal rim projection, lm – lateral margin of the pygophore, par – paramere, pla – posterolateral angle, sp – spiracle, VIII – abdominal segment VIII, vr – ventral rim, vrp – ventral rim projection, X – segment X. Scale bars = 1 mm

suffused band on second fourth of its length; segment V with basal half yellow, red suffused, and apical half black. Legs concolorous with body, presenting many dark brown spots on femora and tibiae. Lateral margins of abdominal sternites bearing black markings on anterior third and near middle portion, in dorsal view. Abdominal venter mostly immaculate mesially; pseudosutures and lateral portions of abdominal sutures with thick, dark brown lining. Abdominal spiracles dark brown.

Head longer than wide between eyes, declivous (Fig. 4). Ligular preocular projections present (Fig. 2, pp), reaching approximately mid-width of eyes. Mandibular plates large, slightly convex and elevated laterally, rounded apically, overlapping in front of clypeus; small depression on head present before clypeus. Many small, dark brown to black punctures distributed all across dorsal surface of head, except for small, unpunctured patch in front of each ocellus. Eyes bearing interommatidial sensilla. Bucculae long, anterior margins evanescent and posterior margins very low, barely surrounding rostrum. Labrum recurved anteriorly (Fig. 4, lr), extending to procoxae. Labium arising in line across midlength of eyes and reaching anterior margin of abdominal sternite VI (arched on Fig. 4); proportion of labial segments: II > III > IV > I (measurements below). Antenniferous tubercles small, reaching midlength of preocular projections. Antennal segments cylindrical, segment I stouter than remaining segments, segment V acuminate at apex; proportion of antennal segments: IV > III > V > II > I; segment I not reaching apex of mandibular plates.

Thorax. Anterior pronotal margin concave behind head, almost straight behind eyes, ligular anterior projections present (Fig. 2, ap), as well as two pairs of lobes (al, pl). Pronotum declivate anteriorly (Fig. 4). Anterior lobes projecting anterolaterally, rounded apically, posterior lobes projecting laterally, sharply acuminated at apex. Posterior lobes approximately attaining maximum width of abdomen, humeral notches absent (Fig. 2, arrow). Posterior pronotal margin almost straight over scutellum. Mesosternum slightly sulcate mesially, inflated on both sides laterad of sulcus; metasternum flat, wide, hexagonal (Fig. 3). Metathoracic spiracle wide, curved (Fig. 5, ms); peritreme spout-like, longer than half width of evaporatorium (Fig. 5, per). Evaporatorium restricted to posterior margins of mesopleuron, bordering methatoracic spiracle, and occupying most of metapleuron (Fig. 5). Scutellum long, nearly attaining apex of abdomen, spatulate and mesially constricted. Two pairs of calli present at base of scutellum, one small pair almost at scutellar foveae, one large pair immediately mesad of smaller calli; one small pair of calli mesad of mesial constriction. Apex of scutellum slightly elevated on both sides.

Hemelytra long, posterior margin of membrane reaching transverse line adjacent to abdominal apex. Lateral margin of corium basally sinuate and elevated, then convex and flat until apex. Frena reaching median constriction of scutellum. Membrane almost completely covered by apex of scutellum.

Table 1. Diagnostic characters, distribution and taxonomic references for *Pelidnocoris* and similar Discocephalini genera.

Character	***Abascantus***	***Alcippus***	***Coriplatus***
Body length	13.4–18.3 mm	15.0–18.1 mm	9.8–11.8 mm
Antennal segments	four or five	five	five
First antennal segment	not reaching apex of head	not reaching apex of head	reaching apex of head
Mandibular plates before clypeus	not overlapping	overlapping	overlapping
Preocular projection	absent	present; longer than eye width	present; longer than eye width
Rostrum length	reaching abdominal segment VII	reaching base of abdomen	reaching abdominal segment VII
Intercalar unit of the rostrum	absent	absent	absent
Anterolateral pronotal margins, shape	one posterior spine always present; one anterior lobe of variable size sometimes present	one acute anterior projection and two small lobes present	one acute anterior projection, one small anterior lobe and one posterior spine present
Scutellum, length	reaching abdominal segment VII	reaching posterior limit of abdominal segment V	reaching abdominal segment VII
Scutellum, mesial constriction	present	absent	present
Hemelytral membrane	covered by scutellum	not covered by scutellum	covered by scutellum
Connexivum, shape	serrated	not serrated	serrated
Valvifers IX, external visibility	not visible	not visible	not visible
Laterotergites IX, presence	absent	present	absent
Segment X (males)	no expansions/projections	expanded, with 1 + 1 anterior projections	no expansions/projections
Distribution	Brazil (Pará, Amazonas), Peru	Guyana, French Guiana, Brazil (Pará, Amazonas)	Cuba, Colombia, Venezuela, Guyana, French Guiana, Brazil (Pará, Santa Catarina)
Taxonomic references	Becker (1977)	Becker & Grazia (1989)	Ruckes & Becker (1970)

Legs. Procoxae much closer to each other than meso- and metacoxae. Metacoxae closer to mesocoxae than to each other, these widely separated. Profemora slightly expanded mesially (Fig. 4); all three pairs of femora longer than respective tibiae; tibiae dorsally sulcate. Tarsi 3-segmented, proportion of tarsal segments: III > I > II, all segments yellow with dark ring on apex.

Abdomen wide, laterally serrated; connexiva exposed dorsally. Abdominal sternites flattened mesially, very slightly depressed. Spiracle of segment II completely exposed (Fig. 5, sp); each spiracle anterior to pseudosuture of each abdominal segment. Trichobothria posterior to pseudosutures, laterad of line adjacent to outer margin of each spiracle.

Male genitalia. Pygophore (Figs 7–11) longer than wide, subrectangular, with many golden bristles on posterolateral angles (pla) and median excavation of ventral rim (vr). Dorsal rim (dr) slightly concave, with 1 + 1 posterolateral projections (drp) on each side of segment X (X). Ventral rim with large, quadrangular excavation, and pair of medial, dorsally directed projections (vrp). Posterolateral angles projected posteriorly, with rounded apex, and curved ventrally (Fig. 9). Lateral margins of pygophore almost rectilinear, except for sinuosity present on posterolateral angles. Segment X developed posteriorly into large lozenge expansion, acutely acuminated on all three apices; slightly exceeding lateral margins of pygophore (lm), posterior apex reaches same level as apex of posterolateral angles. Expansion of segment X curved ventrally (Figs 9–11).

Female. Unknown.

Measurements. Male (in mm, n = 1): total body length 13.50; width of abdomen 10.40; head length 2.65; head width across eyes 3.00; interocular distance 1.85; interocellar distance 0.85; length of antennal segments: I 0.90, II 2.05, III 2.55, IV 2.85, V 2.30; length of labial segments: I 1.50, II 3.00, III 1.90, IV 1.55; pronotum length along midline 3.00; pronotum width at humeral angles 10.20; scutellum length along midline 8.00; scutellum width at base 5.00.

Etymology. The epithet is the Latin noun *paradisicola*, meaning inhabitant of paradise. It refers to the Mata do Paraíso, where the holotype was collected; in Portuguese, 'Mata do Paraíso' means 'Paradise Forest'. The area represents an important preserved natural fragment of the Atlantic Forest in a region highly impacted by past and present anthropogenic disturbances, e.g. logging, mining, and unregulated livestock and agriculture occupancy. The area includes a visitor center and a research station, maintained by the Federal University of Viçosa (UFV).

Comments. Although we used the shape of the pronotal lobes as a diagnostic character for the species, we note that this characteristic could, in fact, be variable among individuals of the same species. In *P. paradisicola* sp. nov. there is an asymmetry in the pronotal lobes (Fig. 2): the anterior lobes are slightly different from each other (acuminated

Table 1. Continued. Diagnostic characters, distribution and taxonomic references for *Pelidnocoris* and similar Discocephalini genera.

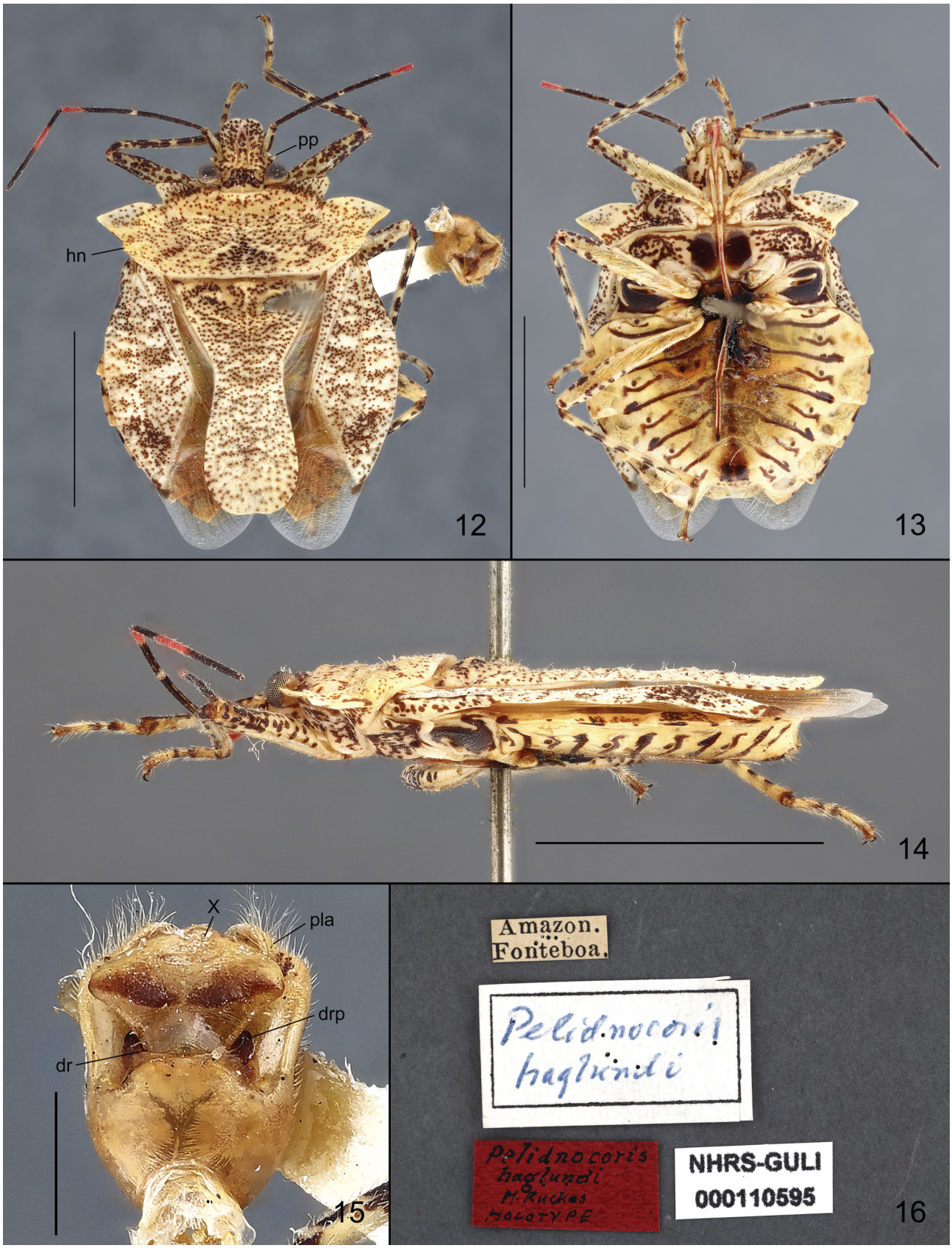
Character	*Eurystethus*	*Paralcippus*	*Pelidnocoris*	*Psorus*
Body length	6.5–13.0 mm	8.0–10.0 mm	12.0–17.0 mm	10.7–15.2 mm
Antennal segments	five	five	five	five
First antennal segment	not reaching apex of head	not reaching apex of head	not reaching apex of head	not reaching apex of head
Mandibular plates before clypeus	overlapping	not overlapping	overlapping	overlapping
Preocular projection	present; length variable	present; longer than eye width	present; length variable	present; longer than eye width
Rostrum length	length variable; always exceeds metacoxae	reaching abdominal segment IV	reaching abdominal segment VI	reaching metacoxae
Intercalar unit of the rostrum	present between segments I and II	absent	absent	absent
Anterolateral pronotal margins, shape	anterolateral angle slightly projected	one large, anterior lobe present	one acute anterior projection and two large lobes present	one ligular anterior projection present
Scutellum, length	reaching posterior limit of abdominal segment V	reaching middle of abdominal segment V	reaching abdominal segment VII	reaching abdominal segment VII
Scutellum, mesial constriction	absent	absent	present	absent
Hemelytral membrane	not covered by scutellum	not covered by scutellum	covered by scutellum	covered by scutellum
Connexivum, shape	not serrated	not serrated	serrated	not serrated
Valvifers IX, external visibility	not visible	visible	not visible	not visible
Laterotergites IX, presence	present	present	absent	present
Segment X (males)	no expansions/projections	no expansions/projections	expanded in a lozenge shape	no expansions/projections
Distribution	Colombia, Venezuela, Panama, Suriname, French Guiana, Brazil (Pará, Amazonas, Mato Grosso, Goiás, Minas Gerais, Distrito Federal, São Paulo, Rio de Janeiro), Ecuador, Peru, Bolivia	Colombia, Ecuador	Mexico, Belize, Colombia, Costa Rica, Panama, Brazil (Amazonas, Minas Gerais, São Paulo), Ecuador, Peru	Trinidad and Tobago, French Guiana, Brazil (Amapá, Pará, Amazonas), Peru
Taxonomic references	Ruckes (1966a); Becker (1966); Correia et al. (2021)	Ruckes (1959); Becker & Grazia (1986)	Ruckes (1966b); this work	Fernandes et al. (2008)

on the left side, not acuminated on the right side), and the anterior and posterior lobes are contiguous on the right side, but not contiguous on the left side of the specimen. Such variation posed difficulties to identify the species based only on the external morphology of the body. The shape of the pygophore leaves no doubt about the identity of the species, with *P. paradisicola* (Figs 7–11) being remarkably different from its congeners (Figs 15, 20–21).

Discussion

All genera considered allied to *Pelidnocoris* present unique characteristics that help to separate them with certainty (Table 1). For example, *Abascantus* differ from all others in the absence of the preocular projections; *Alcippus* males present 1 + 1 long anterior projections in the segment X; the first antennal segment reaches the apex of the head only in *Coriplatus*, while all *Eurystethus* species have an intercalar unit between the first and the second rostral segment; *Psorus* has a shorter rostrum, never surpassing the metacoxae; and so on. In Table 1, morphological characters are summarized to facilitate the differentiation of *Pelidnocoris* from the six genera with which it was allied in the past. Each genus also has a different distribution range in the Neotropical Region, with the majority of species found in northern South America (Table 1, see Discussion below).

Pelidnocoris and the genera discussed above are among several genera of Discocephalini presenting cryptic morphology. All these genera have a variegated dorsum and general body color varying from greyish to light brown or greenish when alive, matching with the background color, body more or less flattened, usually with lateral expansions on head and pronotum, and expanded and visible connexival segments. All these characteristics seem to be associated with the habitat the species live in, usually with many fungi, lichens and mosses (Fig. 1), allowing them to camouflage on tree barks. Most of these genera also do not seem to be attracted to light traps, a method widely used to collect other Pentatomidae in tropics, requiring active collection in these microhabitats to find them. On preserved specimens, part of the cryptic coloration is usually lost, and the colors tend to fade to yellow over time (see Figs



Figs 12–16. *Pelidnocoris haglundi* Ruckes, 1966. 12 – dorsal habitus. 13 – ventral habitus. 14 – lateral view. 15 – pygophore, dorsal view. 16 – original labels. Lettering: dr – dorsal rim, drp – dorsal rim projection, hn – humeral notch, pla – posterolateral angle, pp – preocular projection, X – segment X. Scale bars = 12–14 – 5 mm, 15 – 1 mm. Photographed by Gunvi Lindberg (© 2024 Naturhistoriska Riksmuseet). Original photos cropped, light levels and sharpness adjusted. Made available by the Swedish Museum of Natural History under license CC-BY 4.0.

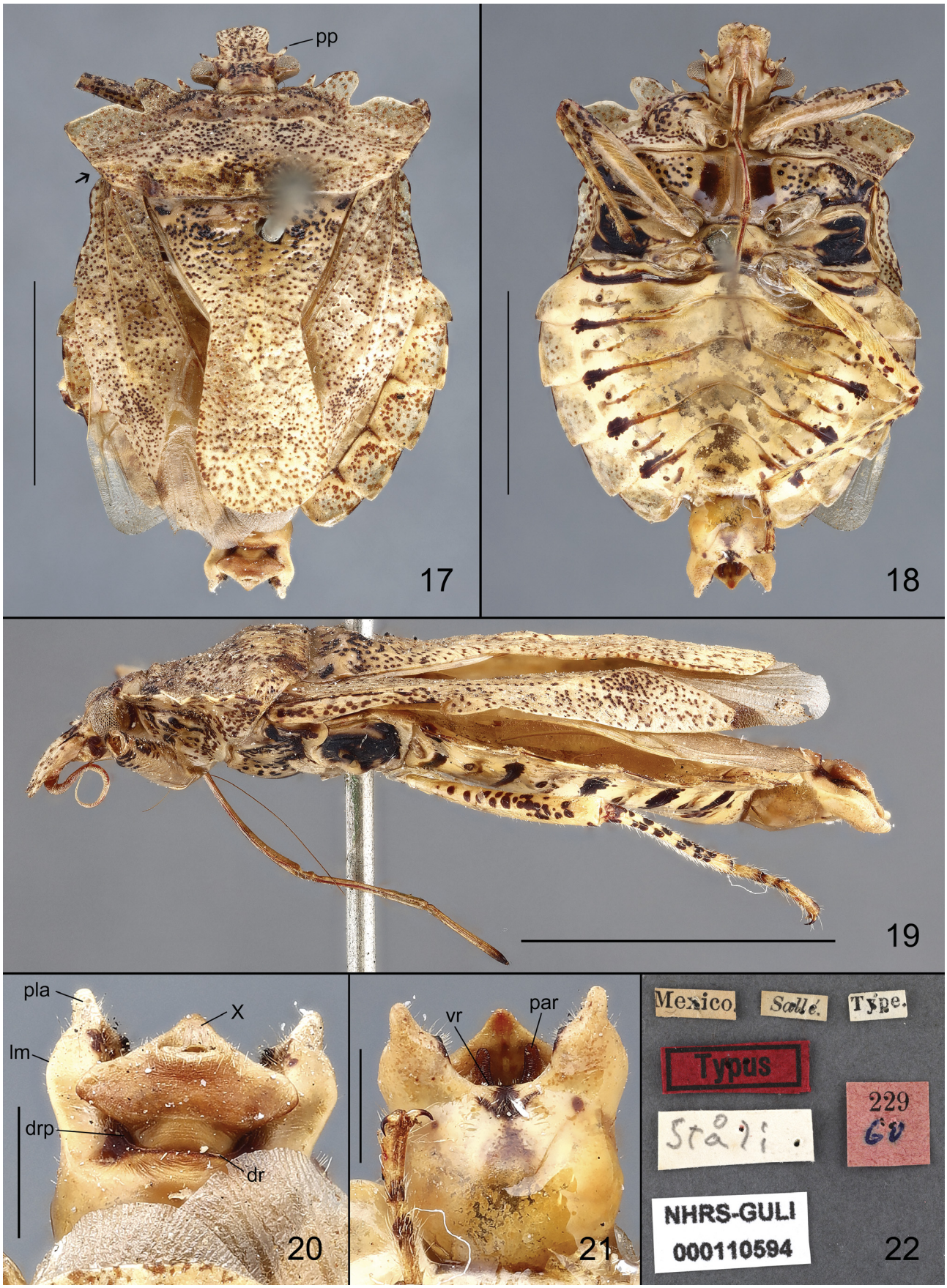
1–2). While the general variegated pattern is maintained, live specimens tend to have different coloration (Fig. 1). López et al. (2023) also illustrate this issue by presenting photos of the same specimen of *Glyphuchus* alive and later dry preserved: the live specimen is bright green, while after death it fades to a greenish yellow. The holotype of that species, collected more than 170 years before, is completely light brown to yellowish. These observations show how relevant fieldwork and documentation of live specimens can be to our comprehension of their morphology and correct identification. Such observations are also important to study the evolution of cryptic coloration and camouflaging in Pentatomidae, as these color patterns can be largely modified in preserved bugs.

Species of *Pelidnocoris* are seemingly rare, not being common in entomological collections, which is also the case for some of the other cryptic discocephalini genera as well (e.g. *Glyphuchus* – López et al. (2023), *Psorus* – Fernandes et al. (2008); general comments on Discocephalinae – Castro-Huertas et al. (2022)). Published species lists rarely reported species of this cryptic genus, and usually few specimens are available for study in collections. For instance, Ruckes (1966b) described *P. haglundi* from three specimens and *P. majusculus* from one; Castro-Huertas et al. (2022) listed only one examined specimen of *P. haglundi* in Colombia. In this work, we described *P. paradisicola* based on a single specimen, and as far as we know, a few specimens of *P. stalii* were available in other studies (Ruckes 1966b, Arnold 1996). Other references include checklists which repeated scattered published data (Arismendi & Thomas 2003, Froeschner 1999, Cambra et al. 2018). Nonetheless, the online citizen science platform iNaturalist (www.inaturalist.org) presents several interesting records of *Pelidnocoris*, including the specimen described here (https://www.inaturalist.org/observations/143979986). Another record in the Atlantic Rain Forest, in the state of São Paulo and to the south of the type locality of *P. paradisicola* (https://www.inaturalist.org/observations/65127151) is available. This record depicts at least three pairs of *Pelidnocoris* sp. in copula on the bark of a tree (see below for the species identification), showing that these bugs present some sort of gregarious behavior, common in many other pentatomid species, including discocephalines (e.g. Guerra et al. 2011, Lucini & Panizzi 2016, Moura & Carvalho 2021, Bryant et al. 2023). As discussed above, their cryptic morphology and behavior may represent a negative bias to their collection, and collection efforts aimed at different microhabitats may be fruitful and increase our knowledge on species of *Pelidnocoris* and other cryptic Discocephalini genera.

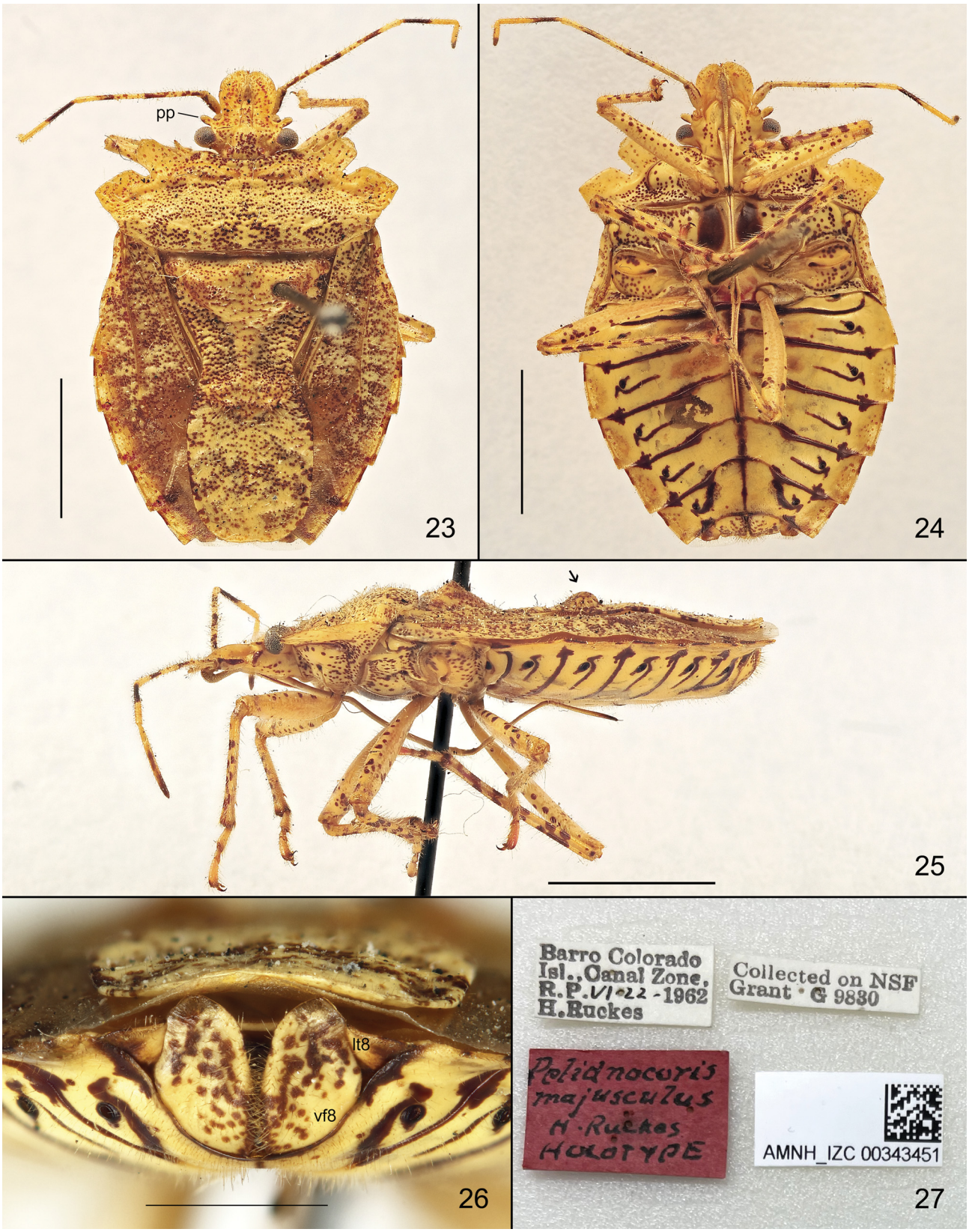
Pelidnocoris was previously recorded from Mexico, Colombia, Costa Rica, Panama, and Brazil. Nonetheless, online records on iNaturalist show species records, usually several specimens together, from Belize (https://www.inaturalist.org/observations/102174991), Ecuador (https://www.inaturalist.org/observations/221476870 and https://www.inaturalist.org/observations/34706262), and Peru (https://www.inaturalist.org/observations/129404070 and https://www.inaturalist.org/observations/94295160). All of these constitute new country records for *Pelidnocoris*, and it would not be surprising to find that the genus is widespread through the tropical forests of Central and northern South America. The presence of several individuals copulating could be an indication that the populations are well established in all these localities, probably representing well established native populations. The iNaturalist website also presents observations from Costa Rica (https://www.inaturalist.org/observations/180870184 and https://www.inaturalist.org/observations/9134216) and Colombia (https://www.inaturalist.org/observations/183095521), extending our knowledge on the distribution of this genus in these countries.

Despite being clearly identifiable through photos to genus level, we refrain from identifying the specimens to species level or to trust species identifications based on the photos uploaded to iNaturalist. As we discussed above, there is possible intraspecific variation in the shape of the pronotal lobes which we are unaware of because of the limited sample available in collections. Two species, *P. majusculus* and *P. paradisicola*, are known only from the female and male holotypes, respectively. Only a careful examination of more specimens, especially the external genitalia, would allow reliable identifications at species level. For *P. paradisicola*, the only possibly unambiguous character for diagnosis is the shape of the male genitalia, the most reliable character to identify pentatomid species even when there is great intraspecific morphological variation (e.g. *Mormidea* Amyot & Serville, 1843 – Rolston 1978). It is not uncommon in Pentatomidae to find genera with very similar species, in which correct identification relies on examination of sets of morphological characters (e.g. *Abascantus* – Becker 1977; *Chinavia* Orian, 1965 – Schwertner & Grazia 2007) and genitalia (e.g. *Antiteuchus* – Fernandes & Grazia 2006; *Banasa* Stål, 1860 – Thomas & Yonke 1990; *Halyomorpha* Mayr, 1864 – Kment et al. 2021a,b; *Macropygium* Spinola, 1837 – Silva & Campos 2021). This could also be the case for all species of *Pelidnocoris*. Even more so, more collection effort in the field is necessary to increase our knowledge on the genus, allowing detailed description of both sexes, genital morphology, and intraspecific variability.

Most genera of the Discocephalini are reported from the Amazon Rain Forest, with a few restricted to Central and southern North America (Grazia et al. 2015, Rider & Swanson 2021). Species of at least 15 genera are reported from both Amazon and Atlantic Forest; meanwhile, about half of the known genera are not recorded from the Atlantic Forest. This work presents the first record in the Brazilian Atlantic Rain Forest of a genus previously only known from southern North America and the tropical forests of Central and northern South America, extending its distribution thousands of kilometers into southeastern Brazil. The Atlantic Forest is one of the world's biodiversity hotspots with most of its area in Brazil, but also including parts of Paraguay, Argentina and Uruguay (Ramos et al. 2021). The region is considered one of the best studied in South America (Marques et al. 2021); nonetheless, our knowledge of Pentatomidae biodiversity and distribution in the region



Figs 17–22. *Pelidnocoris stalii* Haglund, 1888. 17 – dorsal habitus; arrow indicates position of the humeral notch in *P. haglundi* Ruckes, 1966 for comparison. 18 – ventral habitus. 19 – lateral view. 20 – pygophore, dorsal view. 21 – pygophore, ventral view. 22 – original labels. Lettering: dr – dorsal rim, drp – dorsal rim projection, lm – lateral margin of the pygophore, pa – paramere, pla – posterolateral angle, pp – preocular projection, vr – ventral rim, X – segment X. Scale bars = 17–19 – 5 mm, 20–21 – 1 mm. Photographed by Gunvi Lindberg (© 2024 Naturhistoriska Riksmuseet). Original photos cropped, light levels and sharpness adjusted. Made available by the Swedish Museum of Natural History under license CC-BY 4.0.



Figs 23–27. *Pelidnocoris majusculus* Ruckes, 1966. 23 – dorsal habitus. 24 – ventral habitus. 25 – lateral view, arrow indicates the elevations in the postfrenal lobe of the scutellum. 26 – genital plates, posterior view. 27 – original labels. Lettering: lt8 – laterotergite 8, pp – preocular projection, vf8 – valvifer 8. Scale bars = 23–25 – 5 mm, 26 – 2 mm. Photographed by Ruth Salas (© 2024 American Museum of Natural History). Original photos cropped, light levels and sharpness adjusted.

is far from satisfactory, constituting a Wallacean shortfall (Hortal et al. 2015, Poester-Carvalho et al. 2023).

Future works dealing with Discocephalini diversity will certainly bring new data on the distribution of the known lineages, expanding our knowledge of the distribution and biogeographic patterns of the pentatomids in the Neotropical Region. Citizen science has proven to be a useful tool for providing this sort of information, expanding the known distribution of several rare insect groups by thousands of kilometers for new countries and biomes/regions.

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