



## Phylogenetic systematics of the genera *Plochionocerus* Dejean and *Agrodes* Nordmann (Coleoptera: Staphylinidae: Xantholinini)

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## Abstract

A systematic revision of *Plochionocerus* Dejean, 1833 and *Agrodes* Nordmann, 1837 (Staphylinidae: Xantholinini) is conducted. Based on a phylogenetic analysis, the genus *Agrodes*, which includes *A. conicicollis* and *A. elegans*, and appears as the sister taxon to *Plochionocerus*, is revalidated. The genus *Renda* was found to be the sister taxon of *Agrodes* plus *Plochionocerus*. *Plochionocerus leprieuri* is transferred to *Renda* (comb. nov.). *Plochionocerus (sensu stricto)* is a monophyletic genus supported by six synapomorphies, but relationships of its species are not resolved because of the high proportion of homoplastic characters. Keys to the genera *Renda*, *Plochionocerus* and *Agrodes*, and to the species of the two latter genera are provided. *Plochionocerus* and *Agrodes stat. rev.* are redescribed, and diagnoses for their species are given. Eight new species of *Plochionocerus* are described: *P. ashei*, *P. gracilis*, *P. hermani*, *P. modestus*, *P. newtonorum*, *P. pronotalis*, *P. reticularis* and *P. transversalis*. Based on the study of type specimens, 17 new synonymies are proposed for species of *Plochionocerus* and *Agrodes*: *Plochionocerus fulgens* (Fabricius, 1793) = *P. violaceus* (Olivier, 1795) syn. n., = *P. amazonicus* (Sharp, 1876) syn. n., = *P. carinatus* (Bernhauer, 1916) syn. n., = *P. auripennis* (Bernhauer, 1927) syn. n.; *P. janthinus* (Erichson, 1847) = *P. peruvianus* (Bernhauer, 1907) syn. n.; *P. simplicicollis* (Waterhouse, 1879) = *P. basalis* (Sharp, 1885) syn. n., = *P. mandibularis* (Sharp, 1885) syn. n., = *P. pollens* (Sharp, 1885) syn. n., = *P. nordmanni* (Fauvel, 1901) syn. n.; *P. discedens* (Sharp, 1885) = *P. nevermanni* (Bernhauer, 1942) syn. n.; *P. humeralis* (Sharp, 1885) = *P. kayseri* (Bernhauer, 1927) syn. n.; *P. puncticeps* (Sharp, 1885) = *P. lautus* (Casey, 1906) syn. n.; *P. impressipennis* (Sharp, 1891) = *P. punctipennis* (Bernhauer, 1916) syn. n.; *P. igneus* (Fauvel, 1901) = *P. magnificus* (Bernhauer, 1911) syn. n.; *Agrodes elegans* Nordmann, 1837 = *P. longicornis* (Sharp, 1885) syn. n., = *P. melancholicus* (Schubert, 1911) syn. n.; *A. conicicollis* Sharp, 1876 = *P. longiceps* (Sharp, 1876) syn. n. Lectotypes are designated for *P. humeralis*, *P. impressipennis* and *P. simplicicollis*. Biological and distributional information is given, and 24 first country records are reported.

**Key words:** revision, Staphylinidae, Xantholinini, *Plochionocerus*, *Agrodes*, cladistics, phylogenetic analysis, Mesoamerica, Neotropics

## Resumen

Llevamos a cabo la revisión sistemática del género *Plochionocerus sensu lato* (Staphylinidae: Xantholinini). Los resultados del análisis filogenético permitieron resucitar el nombre genérico *Agrodes*, para las especies *A. conicicollis* y *A. elegans*, las cuales aparecen como el taxon hermano de *Plochionocerus*. El género *Renda* resultó más distantesmente relacionado de *Plochionocerus* de lo que se había sugerido en estudios previos. *Plochionocerus leprieuri* es transferido a *Renda* (comb. nov.). *Plochionocerus (sensu stricto)* es un género monofilético, soportado por seis sinapomorfías, pero las relaciones filogenéticas de sus especies no están resueltas debido a la alta proporción de caracteres homoplásticos. Se proporcionan claves para la identificación de *Renda*, *Plochionocerus* y *Agrodes*, y para la identificación de las especies de los dos últimos géneros. Se describe a *Plochionocerus* y *Agrodes stat. rev.*, y se proporcionan diagnósicos para sus especies. Se describen ocho especies nuevas de *Plochionocerus*: *P. ashei*, *P. gracilis*, *P. hermani*, *P. modestus*, *P. newtonorum*, *P. pronotalis*, *P. reticularis* y *P. transversalis*. Con base en el estudio de ejemplares tipo, se proponen 17 sinonimias nuevas para especies de *Plochionocerus* y *Agrodes*: *Plochionocerus fulgens* (Fabricius, 1793) = *P. violaceus* (Olivier, 1795) syn. n., = *P. amazonicus* (Sharp, 1876) syn. n., = *P. carinatus* (Bernhauer, 1916) syn. n., = *P. auripennis* (Bernhauer, 1927) syn. n.; *P. janthinus* (Erichson, 1847) = *P. peruvianus* (Bernhauer, 1907) syn. n.; *P. simplicicollis* (Waterhouse, 1879) = *P. basalis* (Sharp, 1885) syn. n., = *P. mandibularis* (Sharp, 1885) syn. n., = *P. pollens* (Sharp, 1885) syn. n., = *P. nordmanni* (Fauvel, 1901) syn. n.; *P. discedens* (Sharp, 1885) = *P. nevermanni* (Bernhauer, 1942) syn. n.; *P. humeralis* (Sharp, 1885) = *P. kayseri* (Bernhauer, 1927) syn. n.; *P. puncticeps* (Sharp, 1885) = *P. lautus* (Casey, 1906) syn. n.; *P. impressipennis* (Sharp, 1891) = *P. punctipennis* (Bernhauer, 1916) syn. n.; *P. igneus* (Fauvel, 1901) = *P. magnificus* (Bernhauer, 1911) syn. n.; *Agrodes elegans* Nordmann, 1837 = *P. longicornis* (Sharp, 1885) syn. n., = *P. melancholicus* (Schubert, 1911) syn. n.; *A. conicicollis* Sharp, 1876 = *P. longiceps* (Sharp, 1876) syn. n. Se designan lectotipos para *P. humeralis*, *P. impressipennis* y *P. simplicicollis*. Se proporciona información biológica y de distribución geográfica, con 24 primeros registros nacionales.

**Palabras clave:** Revisión, Staphylinidae, Xantholinini, *Plochionocerus*, *Agrodes*, cladística, análisis filogenético, Mesoamérica, Neotrópico

## Introduction

Species of *Plochionocerus* Dejean, 1833 (*sensu lato*, Figs. 1–3) are characterised by bright metallic colors, wasp-like appearance and relatively large body size, so they have attracted the attention of both collectors and taxonomists, who have described a large number of species. As for most staphylinids, there have been many taxonomic and nomenclatural changes as a result of incomplete original generic and specific descriptions, which were usually based on few specimens. The species were described by different authors, at different times, and without examination of the type specimens of previously described species. The characters that have been used to distinguish the genus are: 1) the upper and lower lines of the pronotal hypomeron are separated; the upper line is not directed ventrad and gradually becomes obsolete anteriorly (Navarrete-Heredia *et al.* 2002), and 2) the coloration of the body, including the abdomen, is metallic, blue, purple or green. *Plochionocerus* may be confused with the genus *Renda* Blackwelder, 1952 (Fig. 4). Species of *Renda* are darker, lack metallic coloration, and have the upper line of the pronotal hypomeron directed ventrad, joining the lower line, or becoming inconspicuous anteriorly. These characters, however, are difficult to interpret, and other characters are needed to distinguish these genera more easily.

Prior to our revision, *Plochionocerus* included 29 species (Herman 2001), distributed in the Neotropical region, from southern Mexico to Bolivia. Species of *Plochionocerus* have been assigned in the past to at least three genera: *Sterculia* Laporte, 1835, *Agrodes* Nordmann, 1837 and *Araeocnemus* Nordmann, 1837 (the two latter currently treated as subjective synonyms of *Plochionocerus* (Herman 2001)). The name *Sterculia* was formerly used for the black and small species, currently assigned to *Renda* (Fig. 4), and the metallic and small species, currently assigned to *Plochionocerus* (Figs. 1–3). The name *Agrodes* was used for the large and metallic species (Fig. 3). *Araeocnemus* included the remaining metallic and more robust species, that are difficult to distinguish from the metallic species assigned to *Sterculia*. *Renda* has been considered to be a distinct genus, and the probable sister group of *Plochionocerus* (Sharp 1876; Asiain 2005).

Our objectives were to conduct a phylogenetic analysis of the species traditionally assigned to *Plochionocerus* in order to test the monophyly of the genus, to determine whether the slender and large species (*Agrodes*) constitute a monophyletic group, and if *Renda* is the sister genus of *Plochionocerus*. Additionally, we provide some nomenclatural changes, keys to the genera and species, redescriptions of the genera and previously known species, descriptions of new species, and distributional data.

## Taxonomic history

We provide herein some general information on the taxonomic history of *Plochionocerus*. Species marked with an asterisk are currently assigned to *Renda* (Herman 2001).

Dejean (1833) described *Plochionocerus* for *Staphylinus violaceus* Olivier, 1795 from Brazil and *P. monilicornis* (unavailable name). The former is the type species of the genus (by monotypy).

Laporte (1835) described *Sterculia*, including two new species (*S. leprieuri* and *S. formicaria*\*), and *Staphylinus violaceus* Olivier, 1795 which he designated as the type species.

In 1837, Nordmann described the genera *Agrodes* (including only *Ag. elegans* Nordmann, 1837) and *Araeocnemus* (with *Ar. fulgens* (Fabricius, 1793), *Ar. flagellicornis* Nordmann, 1837\* and *Ar. pubescens* Nordmann, 1837\*).

Erichson (1839) redescribed *Sterculia*, treating *Araeocnemus* (as *Araeocnemis*) and *Agrodes* as its synonyms; species assigned to it were *S. coelestina* Erichson, 1839, *S. elegans*, *S. formicaria*\*, *S. fulgens* and *S. leprieuri*.

Laporte (1840) redescribed *Sterculia* and assigned three species to it: *S. leprieuri*, *S. formicaria*\* and *S. violaceus*.

In 1847, Erichson considered the names *Araeocnemis* and *Sterculia* to be synonyms of *Agrodes*, and described *A. janthinus*.

Agassiz (1847) emended *Plochionocerus* to *Plociocerus* without justification (Herman 2001).

Chevrolat (1848) published the generic name *Callictenus*, but did not provide a description and did not assign any species to it.

Lacordaire (1854) treated *Sterculia* and *Araeocnemus* as synonyms of *Agrodes*. Species assigned to it were *A. coelestina*, *A. fulgens*, *A. elegans*, *A. leprieuri*, *A. formicaria*\*, *A. splendens* and *A. janthinus*.

Gemminger & Harold (1868) treated *Agrodes* and *Araeocnemis* as synonyms of *Sterculia*.

Sharp (1876) treated *Sterculia* and *Agrodes* as distinct genera, in contrast to the previous authors. He provided characters to distinguish both genera, and described seven new species of *Sterculia* and two of *Agrodes*. Sharp commented that *Sterculia* already included six South American species. Within *Sterculia*, Sharp (1876) recognized two species groups: one containing very similar species, large and with metallic coloration, to which he assigned three new species (*S. amazonica*, *S. pauloensis* and *S. discolor*); and the other containing small, black species, with mandibles smaller than those belonging to the first group, with the new species *S. funebris*\*, *S. fimetaria*\*, *S. clavicornis*\* and *S. minor*\*. Species of the former group are currently assigned to *Plochionocerus*, whereas those of the latter belong to *Renda*. Sharp (1876) also described two new species of *Agrodes*, *A. conicollis* and *A. longiceps*, which are currently included in *Plochionocerus*. Sharp treated *Agrodes* as a separate genus, based on the shape of the head and the development of the prosternum.

In his addition to Gemminger and Harold's catalogue (1868) Duvivier (1883) listed the species described by Sharp (1876), i. e. *Sterculia amazonica*, *S. clavicornis*\*, *S. conicollis*, *S. discolor*, *S. fimetaria*\*, *S. funebris*\*, *S. longiceps*, *S. minor*\* and *S. pauloensis*, and Waterhouse (1879), i. e. *S. simplicicollis*.

Sharp (1885) described new species of *Agrodes* (*A. longicornis*) and *Sterculia* (*S. mandibularis*, *S. basalis*, *S. humeralis*, *S. pollens*, *S. puncticeps* and *S. discedens*). Further, he described *Plochionocerus* as a new genus (Sharp 1885) and included three species (two new, *P. brachypterus*\* and *P. debilis*\*, and one previously known, *P. formicaria*\*, transferred from *Sterculia*). In Sharp's (1885) treatment, species and characters indicated for *Sterculia* and *Agrodes* correspond to *Plochionocerus* Dejean, and those mentioned for *Plochionocerus* Sharp correspond to what currently is *Renda*. For the separation of *Plochionocerus* Sharp [= *Renda*] from *Sterculia* [= *Plochionocerus* Dejean], Sharp (1885) used coloration, microsculpture, mandibular length, shape of the apical labial palpomere, and the condition and position of the upper line of the pronotal hypomeron (this latter character has been used recently in a key to separate both genera by Navarrete-Heredia *et al.* 2002).

Casey (1906) described a species of *Araeocnemus* (misspelled as *Araeocnemis*), *A. lauta*. He used *Araeocnemus* in place of the older *Sterculia* because the latter name had been used for a much longer time for a plant genus.

In the *Coleopterorum Catalogus* Bernhauer and Schubert (1914) treated *Agrodes* as a subgenus of *Sterculia*, and assigned to it 24 species, adding the species described by Casey as *A. lauta*.

Bernhauer (1916, 1927) described two additional species in *Sterculia*: *S. carinata* Bernhauer, 1916 and *S. aureipennis* Bernhauer, 1927.

Blackwelder (1944) cited 28 species of *Sterculia*, omitting only *S. nevermanni* Bernhauer, 1942. Blackwelder (1952) treated *Sterculia*, *Agrodes*, *Araeocnemus*, *Plociocerus* and *Callictenus* as synonyms of *Plochionocerus* Dejean. Additionally, he replaced *Plochionocerus* Sharp, 1885 (*non Plochionocerus* Dejean, 1833) with *Renda*.

The proliferation of generic names, a result of incomplete original generic and specific descriptions, evidences a complex situation. A phylogenetic analysis might allow to elucidate whether any of these names correspond to a natural taxon.

## Natural history

The known biological information for species traditionally placed in *Plochionocerus*, obtained primarily from specimen labels, is scarce. More field work is necessary. Species usually inhabit cloud and tropical forests, between 100 to 2800 m. Of a total of 89 specimens with information of substrate on their labels, 44 of them (49.4 %) have been collected with aerial, interception and Malaise traps, 32 specimens (35.9 %) have been collected in leaf litter or on the ground, 7 specimens (7.8 %) have been collected on plants and 6 specimens (6.7 %) were collected under logs or on logs covered with fungus. The species are predaceous and apparently good fliers. We observed several specimens with an ant caught in their mandibles.

We think the species are diurnal because of their bright, metallic coloration and because they have not been caught during the night. It is possible that the metallic coloration, slender body, long and dark wings, and diurnal habits allow them to mimic wasps. Like wasps, they have even been collected during daytime (1:00–1:30 pm) on open roads, on the ground or while flying.

Nothing is known about their phenology, because of the lack of extensive samplings. Larvae are unknown. It is interesting to note that specimens are rare, even when flight intercept traps and Malaise traps were left for several days. The maximum number of specimens collected in one series has been six, commonly only one or two specimens with the same data are found, so it is possible that population densities are low.

## Material and methods

The 743 specimens analyzed were obtained in loans from the following collections (acronyms identify depository of specimens in the text):

AMNH	American Museum of Natural History, New York, USA (L. Herman)
BMNH	The Natural History Museum, London, UK (M. Brendell)
CC-UAEH	Colección de Coleoptera del Centro de Investigaciones Biológicas, UAEH, Pachuca, Hidalgo, México (J. Márquez)
CNIN	Colección Nacional de Insectos, Instituto de Biología, UNAM, México, D.F., México (S. Zaragoza)
CZUG	Centro de Estudios en Zoología, Universidad de Guadalajara, Zapopan, Jalisco, México (J. L. Navarrete-Heredia)
FMNH	Field Museum of Natural History, Chicago, USA (A. Newton)
IEXA	Instituto de Ecología, A.C., Xalapa, Veracruz, México (L. Delgado)
INBC	Instituto Nacional de Biodiversidad, Heredia, Costa Rica (A. Solís)
IRSNB	Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium (D. Drugmand)
JLN	Personal collection of José Luis Navarrete-Heredia, Zapopan, Jalisco, México
MNHDS	Museo Nacional de Historia Natural de El Salvador, El Salvador (E. Echeverría)
MZFC	Museo de Zoología “Alfonso L. Herrera”, Facultad de Ciencias, UNAM, México, D.F., México (J. J. Morrone)
QCAZ	Pontificia Universidad Católica del Ecuador, Quito, Ecuador (G. Onore)
QJSJ	Personal collection of Quiyari J. Santiago Jiménez, Xalapa, Veracruz, México
SEMC	Snow Entomological Collection, Natural History Museum / Biodiversity Research Center, University of Kansas, Lawrence, KS, USA (J. S. Ashe)
USNM	National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA (D. Furth)

The type specimens were examined for all species except *P. fulgens* (Fabricius, 1793), *P. splendens* (Blanchard, 1842), *P. leprieuri* (Laporte, 1835), *P. violaceus* (Olivier, 1795) and *P. nordmanni* (Fauvel, 1901). The types of these five species could not be located in the collections listed above, as well as the Museum National d'Histoire Naturelle, Paris, France (MNHN; T. Deuve pers. comm.) and The Natural History Museum of Denmark (ZMUC, particularly the Fabricius Collection; L. Vilhelmsem pers. comm.). For the first three species we examined the type specimens of their junior synonyms: *P. pauloensis* (Sharp, 1876), *P. discolor* (Sharp, 1876) and *P. holtzi* (Bernhauer, 1907), respectively. For *P. violaceus* we analyzed the original description and examined previously identified material. For *P. nordmanni* we borrowed the specimens from the BMNH referred to in the *Biologia Centrali-Americana* (Sharp, 1885).

The following measurements were taken with an ocular micrometer attached to a stereoscopic microscope (Figs. 7–8): total body length, length and width of head, length of antennomeres, length of labial and maxillary palpi, mandibular length, length and width of pronotum, elytral length, total length of aedeagus, length of parameres, length of median lobe, length of apical area of median lobe, and length of basal area of median lobe.

For the cladistic analysis, we used six outgroup taxa: *Philonthus testaceipennis* Erichson, 1840 (Fig. 5), belonging to the tribe Staphylinini, is the most distantly related taxon to *Plochionocerus*; *Homalolinus flavipennis* (Erichson, 1839) (Fig. 6) and *Thyrecephalus puncticeps* Sharp, 1885, belonging to the tribe Xantholinini, included to test the monophyly and relationships of *Plochionocerus* and *Renda*; and *Renda fimetaria* Sharp, 1876 (Fig. 4), *R. flagellicornis* (Nordmann, 1837) and *R. leprieuri* (Laporte, 1835; herein transferred to *Renda*), which represent the morphological variation within *Renda* (J. Márquez in prep.), genus closely related to *Plochionocerus* (Sharp 1876; Asiain 2005).

In the character discussion, we indicate in brackets the number of the characters and character state (e.g. 2:3). The analysis was conducted with Nona 2.0 (Goloboff 1993) and WinClada 0.9.99 (Nixon 2000). A heuristic search was conducted, retaining 10,000 cladograms with 1000 replications and 100 starting trees for each replication. The strategy applied was TBR + multiple TBR (Tree bisection and reconnection). Multistate characters were treated as non-additive. We used fast optimization. We applied a Jackknife test, with 1000 replications, 100 search replications (mult\*N), 10 starting trees for replication, and “Random seed” = 10. Probability values for each node are indicated as percentages.

*Plochionocerus* and *Agrodes* are redescribed; diagnostic characters are presented for the previously described species, but the new ones are described in detail and provided with a diagnosis. Where applicable, each species section includes comparative notes, geographic distribution, type material and material examined. In the material examined, data from different labels are separated by slashes, and the acronym of the collection is indicated in brackets, followed by the sex ( $\sigma$ ,  $\rho$  or “?” when sexing was not possible). In the case of type material, information is cited verbatim.

## Results and discussion

As a result of our revision, 19 species of *Plochionocerus* and 2 species of *Agrodes* are recognized. Seventeen new synonymies are established (Table 1).

The cladistic analysis involved all 21 species of *Plochionocerus* and *Agrodes*, and five species of the outgroup. The 33 characters (Appendix) were coded in the data matrix (Table 2).

We obtained 970 most parsimonious cladograms, with 110 steps, consistency index of 0.56 and retention index of 0.70. In the strict consensus cladogram (135 steps, consistency index of 0.45 and retention index of 0.54; Fig. 94) the taxa of Xantholinini analyzed (*Homalolinus*, *Thyrecephalus*, *Renda*, *Agrodes* and *Pl-*

*chionocerus*) constitute a monophyletic group based on ten synapomorphies (4:1, 9:3, 10:1, 16:4, 17:1, 18:1, 20:1, 22:2, 30:1, and 32:1; node 1, Fig. 94). This relationship should be re-evaluated in a wider analysis that includes more genera of Xantholinini. *Renda* is the sister taxon of *Agrodes* plus *Plochionocerus*. Nine synapomorphies (1:2, 5:2, 6:2, 8:1, 12:1, 18:3, 19:2, 24:1, and 29:1; node 3, Fig. 94) support this relationship.

**TABLE 1.** Valid names, synonymies, and new species of *Plochionocerus* and *Agrodes*.

Valid species	Synonyms
1. <i>Plochionocerus fulgens</i> (Fabricius, 1793)	<i>Plochionocerus violaceus</i> (Olivier, 1795) <b>syn. nov.</b> <i>P. coelestinus</i> (Erichson, 1839, synonym of <i>P. violaceus</i> ) <i>P. amazonicus</i> (Sharp, 1876) <b>syn. nov.</b> <i>P. pauloensis</i> (Sharp, 1876) <i>P. carinatus</i> (Bernhauer, 1916) <b>syn. nov.</b> <i>P. aureipennis</i> (Bernhauer, 1927) <b>syn. nov.</b>
2. <i>Plochionocerus leprieuri</i> (Laporte, 1835)	Transferred to <i>Renda</i> <i>Plochionocerus holtzi</i> (Bernhauer, 1907)
3. <i>Agrodes elegans</i> Nordmann, 1837	<i>Plochionocerus longicornis</i> (Sharp, 1876) <b>syn. nov.</b> <i>P. melancholicus</i> (Schubert, 1911) <b>syn. nov.</b>
4. <i>Plochionocerus splendens</i> (Blanchard, 1842)	<i>Plochionocerus fulgens</i> (Brullé, 1842, preoccupied) <i>P. discolor</i> (Sharp, 1876)
5. <i>Plochionocerus janthinus</i> (Erichson, 1847)	<i>Plochionocerus peruvianus</i> (Bernhauer, 1907) <b>syn. nov.</b>
6. <i>Agrodes conicicollis</i> Sharp, 1876	<i>Plochionocerus longiceps</i> (Sharp, 1876) <b>syn. nov.</b>
7. <i>Plochionocerus simplicicollis</i> (C. Waterhouse, 1879)	<i>Plochionocerus basalis</i> (Sharp, 1885) <b>syn. nov.</b> <i>P. mandibularis</i> (Sharp, 1885) <b>syn. nov.</b> <i>P. pollens</i> (Sharp, 1885) <b>syn. nov.</b> <i>P. nordmanni</i> (Fauvel, 1901) <b>syn. nov.</b>
8. <i>Plochionocerus discedens</i> (Sharp, 1885)	<i>Plochionocerus nevermanni</i> (Bernhauer, 1942) <b>syn. nov.</b>
9. <i>Plochionocerus humeralis</i> (Sharp, 1885)	<i>Plochionocerus kayseri</i> (Bernhauer, 1927) <b>syn. nov.</b>
10. <i>Plochionocerus puncticeps</i> (Sharp, 1885)	<i>Plochionocerus lautus</i> (Casey, 1906) <b>syn. nov.</b>
11. <i>Plochionocerus impressipennis</i> (Sharp, 1891)	<i>Plochionocerus punctipennis</i> (Bernhauer, 1916) <b>syn. nov.</b>
12. <i>Plochionocerus igneus</i> (Fauvel, 1901)	<i>Plochionocerus magnificus</i> (Bernhauer, 1911) <b>syn. nov.</b>
13. <i>Plochionocerus marquezii</i> Asiain, 2006	
14. <i>Plochionocerus ashei</i> <b>sp. nov.</b>	
15. <i>Plochionocerus gracilis</i> <b>sp. nov.</b>	
16. <i>Plochionocerus hermani</i> <b>sp. nov.</b>	
17. <i>Plochionocerus modestus</i> <b>sp. nov.</b>	
18. <i>Plochionocerus newtonorum</i> <b>sp. nov.</b>	
19. <i>Plochionocerus pronotalis</i> <b>sp. nov.</b>	
20. <i>Plochionocerus reticularis</i> <b>sp. nov.</b>	
21. <i>Plochionocerus transversalis</i> <b>sp. nov.</b>	

*Plochionocerus leprieuri* appears to be the sister species of two species of *Renda*; we transfer it herein to the latter (*Renda leprieuri*, **comb. nov.**; node 4, Fig. 94). *Renda* (node 4, Fig. 94) is supported by the following four synapomorphies: lateral margins of head forming a flat or depressed area with punctation and pilosity similar to that of the dorsal surface of the head (2:1), apex of labial apical palpomere truncate and laterally flattened (13:3), gular sutures more elevated than lateral contiguous areas (14:1), and upper line of pronotal hypomeron absent in the anterior third (21:1).

*Agrodes* appears to be the sister genus of *Plochionocerus*; this relationship is supported by only one synapomorphy: mesoventrite with scarce setae (27:1; node 6, Fig. 94). *Agrodes* and *Plochionocerus* are clearly separated, allowing us to revalidate the former (node 7, Fig. 94), based on five synapomorphies: head conspicuously oblong (1:3), anterior margin of labrum with two pairs of lateral, small teeth and a pair of central, bigger teeth (9:4), pronotum conspicuously oblong (length/width ratio 1.73–1.99 times; 17:2), upper line of pronotal hypomer on in the anterior third directed slightly ventrad, clearly separated from the lower line (22:1), and brush of setae on the basal 1/2 of tibiae (29:2).

**TABLE 2.** Data matrix of the species of *Plochionocerus*, *Agrodes* and the outgroup taxa analyzed. Unknown character states are denoted with '?' and inapplicable character states with '-'.  
 1 2 3  
 123456789012345678901234567890123

Taxa	Character states		
	1	2	3
<i>Philontus testaceipennis</i>	00000000000000000000000000000000		
<i>Homalolinus flavipennis</i>	10010100111010--1101020000001110		
<i>Thyrecephalus puncticeps</i>	100111003110001411010220010001010		
<i>Renda fimetaria</i>	211022010201311413001211000011021		
<i>R. flagellicornis</i>	211021010201311412001211000011021		
<i>R. leprieuri</i>	210022020201311413211211000011011		
<i>Agrodes conicicollis</i>	301022014100001423110122011022211		
<i>A. elegans</i>	300122004200001423112122011021010		
<i>Plochionocerus ashei</i>	2201220131-120211320000111111010		
<i>P. discedens</i>	12112201310120231321000111111110		
<i>P. fulgens</i>	22--22013101202113210001111112211		
<i>P. gracilis</i>	22102201310010221301000111111????		
<i>P. hermani</i>	22002200310120111321000111111010		
<i>P. humeralis</i>	220122113101202213210001111112010		
<i>P. igneus</i>	22102201311120211321000111111110		
<i>P. impressipennis</i>	22--2200310120211321000111111011		
<i>P. janthinus</i>	22012201310120211311000111111010		
<i>P. marquezii</i>	221122012100102313110012011110112		
<i>P. modestus</i>	22112201311120211321000111111010		
<i>P. newtonorum</i>	220122013101202113210001111112011		
<i>P. pronotalis</i>	221122003101202113010001111112210		
<i>P. puncticeps</i>	22112200310120231311000111111010		
<i>P. reticularis</i>	220121123111202113210001111112010		
<i>P. simplicicollis</i>	22--2201310120221321000111111010		
<i>P. splendens</i>	220122113111202113210001111112010		
<i>P. transversalis</i>	220121013111202113210001111112010		

*Plochionocerus*, with 18 species, is a monophyletic group (node 8, Fig. 94) based on six synapomorphies: lateral margins of head with nearly impunctate lateroventral furrows, except for an irregular row of setiferous punctures near dorsal margin (2:2), apex of labial apical palpomere obliquely truncated (13:2), expanded, umbilicate punctures on the ventral surface of the head (15:2), which are slightly dense (10–19 punctures), arranged in “v” (16:1), prosternum without setae (25:1), and fore margin of elytra with central notch (28:1).



Relationships of the species of *Plochionocerus* are unresolved. It seems that not enough morphological characters have been examined to resolve these relationships. Additionally, we found a high number of homoplasies, which is reflected in the low consistency and retention indices, and may help to explain why so many species have been described more than once and why there is so much taxonomic confusion.

Jackknife values (Fig. 95) indicate a stronger support for the genera of Xantholinini analyzed (100%); the relationship between *Renda*, *Agrodes* and *Plochionocerus* has 78%; *Renda* 98%; *Agrodes* plus *Plochionocerus* 75%; *Agrodes* 89%; and *Plochionocerus* 86%.

The use of molecular characters may help establish a better phylogenetic hypothesis of the species of *Plochionocerus*, and test the generic relationships herein established. Recently collected specimens of all the species are required in order to obtain the necessary tissue samples.

### Key to *Plochionocerus* and related genera

1. Head with lateroventral furrows (Fig. 15), ventral surface with expanded, umbilicate punctures (Figs. 50, 51, 53; except *P. hermani*, Fig. 52); elytral hind margin with depression or notch (Fig. 59) ..... *Plochionocerus*
- 1'. Head without lateroventral furrows (Figs. 10, 16), ventral surface lacking expanded, umbilicate punctures, (Figs. 48, 67); elytral hind margin without depression or notch (Fig. 58) ..... 2
- 2(1'). Head more than 1.5 times as long as wide (1.54–2.00 times; Fig. 3), with lateral margins convex (Fig. 10); fore margin of labrum with two pairs of small, lateral teeth and one pair of central, larger teeth (Fig. 37); apical palpomere of labium elongate (Fig. 42); prosternum slightly oblong (length/width ratio 1.04–1.20; Fig. 67) ..... *Agrodes*
- 2'. Head 1.5 times or less as long as wide (Fig. 4), lateral margins with a flat or depressed area delimited by two carinae (Fig. 16); fore margin of labrum with two pairs of lobes or teeth of variable length (Fig. 33); apical palpomere of labium slightly widened toward apex (Fig. 41); prosternum transverse (length/width ratio 0.65–0.88) ..... *Renda*

### *Plochionocerus* Dejean, 1833

*Plochionocerus* Dejean, 1833: 64 (*non* Sharp, 1885) (type species: *Staphylinus violaceus* Olivier, 1795, by monotypy); Blackwelder, 1952: 360; Herman, 2001: 3743 (catalog).

*Sterculia* Laporte, 1835: 118 (type species: *Staphylinus violaceus* Olivier, 1795, by original designation); Erichson, 1839: 301; Laporte, 1840: 180; Erichson, 1847: 88 (synonym of *Agrodes*); Lacordaire, 1854: 66 (synonym of *Agrodes*); Gemminger & Harold, 1868: 599 (catalog); Sharp, 1876: 186; Duvivier, 1883: 155 (catalog); Bernhauer & Schubert, 1914: 314 (catalog); Scheerpeltz, 1933: 1320 (catalog); Blackwelder, 1944: 149 (checklist); Blackwelder, 1952: 360 (synonym of *Plochionocerus*).

*Araeocnemus* Nordmann, 1837: 163 (type species: *Staphylinus fulgens* Fabricius, 1793, subsequent designation by Duponchel & Chevrolat, 1842); Erichson, 1839: 301 (cited as *Araeocnemis*; synonym of *Sterculia*); Lacordaire, 1854: 66 (synonym of *Agrodes*); Gemminger & Harold, 1868: 599 (synonym of *Sterculia*); Casey, 1906: 359 (cited as *Araeocnemis*); Bernhauer & Schubert, 1914: 314 (synonym of *Sterculia*).

*Plociocerus* Agassiz, 1847: 299 (unjustified emendation of *Plochionocerus*) (type species: *Staphylinus violaceus* Olivier, 1795, by objective synonymy with *Plochionocerus*); Blackwelder, 1952: 315 (synonym of *Plochionocerus*).

*Callictenus* Chevrolat, 1848: 24 (*nomen nudum*); Blackwelder, 1952: 89 (synonym of *Sterculia*).

**Diagnosis.** Body with metallic, bright coloration; head with lateroventral furrows (Figs. 11–15); ventral surface of the head with expanded, umbilicate punctures (Figs. 50, 51, 53; except *P. hermani*); labrum with a pair of lateral teeth and a pair of central teeth longer than the lateral (Figs. 35, 36; except *P. marquezii*, Fig. 34); mandibles longer than half of the head length; labial apical palpomere widened toward apex, which is trun-

cated obliquely (Figs. 43, 46, 47); upper line of the pronotal hypomerion completely developed (or only absent in the anterior third), not directed ventrad and conspicuously separated from the lower line (Fig. 63); pronotal hypomerion glabrous (except *P. marquezii*); hind margin of each elytron with central notch (Fig. 59); and internal margin of the tibiae with brush of dense setae (Fig. 62).

**Redescription.** Total length 13.2–30.0 mm. Body with metallic, bright, blue, violet, green, golden or red coloration, sometimes with combined colors.

*Head.* Variable in shape (rounded, rectangular or elongate), dorsally with black setae and dense, umbilicate punctures (Figs. 1, 2, 19); ventral surface smooth, with expanded, umbilicate punctures variable in density, sometimes combined with fine punctures (Figs. 50, 51, 53); lateroventral surface with furrows, lateroventral furrows smooth with irregular row of setiferous punctures near dorsal margin of each furrow (Figs. 11–15); antennae with basal antennomere longer than antennomeres 2+3 combined, second antennomere shorter than third, remaining antennomeres shorter than second and of variable shape (Figs. 24–31); anterior margin of labrum with two lateral teeth and two central teeth longer than the lateral (Figs. 35, 36); mandibles pointed, longer than half of length of head, left mandible with two teeth, right with one, channel on the basal, external half present or absent (Figs. 1, 2, 7, 19, 63); first maxillary palpomere shorter than second to fourth, second longest, third almost as long or slightly longer than apical palpomere and slightly widened toward apex, apical palpomere conical (Figs. 43–47); first labial palpomere shorter than second and third, second as long or slightly shorter than apical and slightly widened toward apex, apical palpomere conspicuously widened toward apex and obliquely truncated, truncate apical zone with fine sensillae (Figs. 43, 46, 47). Neck narrow, normally with anterior corners pointed (Fig. 68).

*Thorax.* Pronotum smooth; with fine and dispersed setiferous punctures, with a central longitudinal area without punctures (Figs. 1, 2, 56, 57); lateral margins slightly sinuated in posterior half; lateroposterior half of pronotum with variably developed, depressed area (Figs. 56, 57); upper line of pronotal hypomerion completely developed (or only partially absent in anterior third), not directed ventrad and conspicuously separated from the lower line (Fig. 63); surface of pronotal hypomerion glabrous. Scutellum with scarce punctures. Elytra slightly longer than pronotum (except *P. pronotalis*); surface smooth, with dense setiferous punctures; fore margin with central depression or notch variably developed (Fig. 59). Prosternum transverse, subpentagonal (Fig. 68); slightly carinate in middle, surface smooth and lacking setae (except *P. marquezii*). Mesoventrite short and wide, surface smooth and with scarce setiferous punctures in fore margin. Metaventrite big, surface smooth and with scarce setiferous punctures.

*Legs.* Long and slender; femora with dispersed setae on internal and external surfaces, with strong and short setae aligned on lower margins, ventral surface flat; internal part of tibiae with brush of dense, white or gray setae (Fig. 62), and apical spines, the internal one longer than the remaining; tarsomeres 1–4 gradually smaller toward apex, fifth tarsomere longest and almost as long as tarsomeres 2–4 combined.

*Abdomen.* Smooth and with punctures less dense than on elytra; fifth and sixth visible segments notably narrower than 1–4; pregenital sternite of male with more abundant setae than female; genital sternite in males elongate, asymmetrical and pointed toward apex, with setae in the hind part, wider than the genital tergite.

*Aedeagus.* Generally symmetrical, variably shaped (elongate, cylindrical or pear-shaped).

### Key to the species of *Plochionocerus*

1. Abdominal tergites red or metallic golden; abdominal sternites metallic blue-greenish..... 2
- 1'. Abdominal tergites and sternites metallic blue and/or green..... 3
- 2(1). Head rectangular (Fig. 2), dorsally and ventrally flat in lateral view; antennomeres 4–8 almost transverse, 9 and 10 subquadrate (Fig. 30); aedeagus pear-shaped (Fig. 92).....*P. splendens*
- 2'. Head rounded (as in Fig. 19), dorsally and ventrally convex in lateral view; antennomeres 4–10 trans-

verse (Fig. 26); aedeagus ovate (Fig. 82).....	<i>P. igneus</i>
3(1'). Head elongate, narrowed caudally; pronotal hypomeron with fine, scarce setae on anterior third; anterior margin of labrum with pair of pointed and long central teeth (Fig. 34); aedeagus elongate (Fig. 85).....	<i>P. marquezii</i>
3'. Head not elongate, not narrowed caudally (Figs. 1, 2); pronotal hypomeron lacking setae (Fig. 63); anterior margin of labrum with pair of lateral teeth, variable in length, and a pair of central teeth, longer than the lateral (Figs. 35, 36); aedeagus not elongate (Figs. 77–84, 86–93) .....	4
4(3'). Body slender; apical labial palpomere elongate, with truncate apex (Fig. 44).....	<i>P. gracilis</i>
4'. Body robust; apical labial palpomere strongly widened toward obliquely truncate apex (Fig. 43, 46, 47) .....	5
5(4'). Head rounded or ovate (Figs. 1, 19) .....	6
5'. Head rectangular or subquadrate (as Fig. 2) .....	13
6(5). Dorsal surface of head slightly to strongly convex (Figs. 11, 14, 19) .....	7
6'. Dorsal surface of head flat (Figs. 12, 13).....	11
7(6). Ventral surface of head convex (Fig. 12).....	8
7'. Ventral surface of head flat (Figs. 11, 13, 14).....	10
8(7). Apical antennomere in males shorter than 9+10 combined (0.75–0.88 times; as in Figs. 27, 28); head wider than pronotum (1.31 times).....	<i>P. impressipennis</i> (part)
8'. Apical antennomere in males as long as 9+10 combined (0.90–1.07 times; Figs. 25, 26); head as wide as or slightly wider than pronotum (1.05–1.23 times) .....	9
9(8'). Head slightly oblong (length/width: 1.13–1.31) and slightly wider than pronotum (1.13–1.35 times); apical antennomere in males moderately longer than wide (1.36–1.54 times); ventral surface of head with dense, umbilicate punctures (20–29 on each half of head; Fig. 50); aedeagus ovate, parameres moderately long (0.35–0.47 times length of median lobe), apical area of median lobe 0.28–0.41 times its length and internal sac moderately visible (Fig. 91) .....	<i>P. simplicicollis</i> (part)
9'. Head oblong (length/width: 1.22–1.54) and almost as wide as pronotum (0.86–1.11 times); apical antennomere in males conspicuously longer than wide (1.40–1.74 times); ventral surface of head with less dense, umbilicate punctures (10–19 on each half of head; similar to Fig. 52); aedeagus pear-shaped, parameres short (0.24–0.28 times length of median lobe), apical area of median lobe 0.29–0.35 times its length, internal sac clearly visible (Fig. 79).....	<i>P. fulgens</i> (part)
10(7'). Mandibular channel present (Fig. 63); ventral surface of head with very dense, umbilicate punctures (>30 on each half of head; similar to Fig. 53); pronotum slightly longer than wide (1.30–1.41 times); parameres of aedeagus long (0.58–0.61 times length of median lobe; Fig. 78).....	<i>P. discedens</i>
10'. Mandibular channel absent or poorly developed; ventral surface of head with less dense, umbilicate punctures (10–19 on each half of head; similar to Fig. 52); pronotum <i>ca.</i> 1.5 times longer than wide (1.48–1.49 times); parameres of aedeagus moderately long (0.37–0.38 times length of median lobe; Fig. 77) .....	<i>P. ashei</i>
11(6'). Ventral surface of head moderately convex, without expanded, umbilicate punctures (Fig. 52); apical antennomere in males shorter than antennomeres 9+10 combined (0.83 times their length; similar to Figs. 27, 28); head wider than pronotum (1.34 times); aedeagus ovate (Fig. 80).....	<i>P. hermani</i>
11'. Ventral surface of head flat, with expanded, umbilicate punctures (Figs. 50, 51, 53); apical antennomere in males almost as long as antennomeres 9+10 combined (0.88–1.07 times; Figs. 25, 26); head as wide as pronotum (1.03–1.07 times); aedeagus pear-shaped (Figs. 87, 93).....	12
12(11'). Mandibular channel present (Fig. 63); antennomeres 4–10 moderately transverse (similar to Figs. 24, 26); prosternum slightly transverse (length/width: 0.72–0.80); parameres of aedeagus moderately long (0.35 times length of median lobe), internal sac clearly visible (Fig. 87).....	<i>P. newtonorum</i>
12'. Mandibular channel absent; prosternum transverse (length/width: 0.61); antennomeres 4–10 strongly	

- transverse (Fig. 31); parameres of aedeagus short (0.29 times length of median lobe), internal sac moderately visible (Fig. 93) ..... *P. transversalis*
- 13(5'). Lateroposterior half of pronotum lacking obliquely depressed areas; pronotum almost as long as elytra (1.05 times length of elytra)..... *P. pronotalis*
- 13'. Lateroposterior half of pronotum with two obliquely depressed areas (Figs. 56, 57); pronotum shorter than elytra (< 0.89 times length of elytra)..... 14
- 14(13'). Apical antennomere in males shorter than antennomeres 9+10 combined (0.83–0.93 times; Figs. 27, 28); pronotum longer than wide (1.59–1.66 times)..... 15
- 14'. Apical antennomere in males as long as or longer than antennomeres 9+10 combined (> 0.96 times; Figs. 24–26); pronotum slightly oblong or *ca.* 1.5 times longer than wide (1.34–1.52 times)..... 17
- 15(14). Head slightly oblong (length/width: 1.19–1.25); ventral surface of head with very dense, umbilicate punctures (>30 on each half of head; Fig. 53); lateroposterior half of pronotum two shallow, obliquely depressed areas..... *P. puncticeps*
- 15'. Head oblong (length/width: 1.34–1.40); ventral surface of head with less dense, umbilicate punctures (10–19 on each half of head; similar to Fig. 52); lateroposterior half of pronotum with two clearly visible, obliquely depressed areas (Fig. 56)..... 16
- 16(15'). Head slightly wider than pronotum (1.15–1.29 times); aedeagus with basal half curved (in lateral view), slightly longer, with internal sac moderately visible (Fig. 84) ..... *P. janthinus*
- 16'. Head wider than pronotum (1.31–1.48 times); aedeagus with basal half straight (in lateral view), slightly shorter, with internal sac conspicuously visible (Fig. 83).....*P. impressipennis* (part)
- 17(14'). Apical antennomere in males longer than antennomeres 9+10 combined (1.21 times; Fig. 29); first antennomere almost twice as long as 2+3 combined (1.88 times; Fig. 29).....*P. reticularis*
- 17'. Apical antennomere in males almost as long as antennomeres 9+10 combined (0.96–1.06 times; Figs. 27, 30, 31); first antennomere 1.63–1.68 times the length of antennomeres 2+3 combined ..... 18
- 18(17'). Head oblong (length/width: 1.26–1.50); apical antennomere in males conspicuously longer than wide (1.52–1.80 times); aedeagus pear-shaped, with apical area of median lobe 0.26–0.31 times its total length (Figs. 79, 81) ..... 19
- 18'. Head slightly oblong (length/width: 1.22–1.24); apical antennomere in males moderately longer than wide (1.42–1.45 times); aedeagus ovate, with apex of median lobe 0.39–0.41 times its total length (Figs. 86, 91) ..... 20
- 19(18). Antennomere 9 in males shorter than antennomere 10 (0.85 times; Fig. 25); ventral surface of head with dense, umbilicate punctures (20–29 on each half of head; similar to Fig. 51); pronotum *ca.* 1.5 times longer than wide (length/width: 1.47–1.58); head wider than pronotum (1.05–1.16 times); aedeagus with parameres moderately long (0.30–0.32 times length of median lobe) and internal sac moderately visible; head dorsally and ventrally flat (Fig. 81) ..... *P. humeralis*
- 19'. Antennomere 9 in males almost as long as antennomere 10 (0.95 times); ventral surface of head with less dense, umbilicate punctures (10–19 on each half of head; similar to Fig. 52); pronotum slightly oblong (length/width: 1.16–1.40); head almost as wide as pronotum (0.86–1.05 times); aedeagus with parameres short (0.24–0.28 times length of median lobe) and internal sac conspicuously visible; head dorsally and ventrally convex (Fig. 79) ..... *P. fulgens* (part)
- 20(18'). Ventral surface of head with moderately dense, umbilicate punctures (10–19 on each half of head; similar to Fig. 52); pronotum slightly oblong (length/width: 1.34); mandibular channel absent; second antennomere 3/4 the length of third antennomere (0.75 times their length)..... *P. modestus*
- 20'. Ventral surface of head with dense, umbilicate punctures (20–29 on each half of head; Fig. 50); pronotum *ca.* 1.5 times longer than wide (length/width: 1.47); mandibular channel present (Fig. 63); second antennomere *ca.* 1/2 the length of third antennomere (0.52–0.68 times its length)... *P. simplicicollis* (part)

***Plochionocerus ashei* Asiain, Márquez & Morrone, sp. nov.**

**Type material** (2 specimens). **Holotype**, male: VENEZUELA, Aragua, Rancho Grande Biological Station, Pico Periquitos, 1300 m, 10°21'0"N, 67°41'0"W, 13.V.1998, R. Anderson, VEN1A98 0051, ex: cloud forest litter / Holotype *Plochionocerus ashei* Asiain, Márquez & Morrone, 2007" (SEMC). **Paratype**, male: "Ven., Caracas, D. F., 1933, G. Vivas-B. / Paratype *Plochionocerus ashei* Asiain, Márquez & Morrone, 2007" (FMNH).

**Description.** Total length 17.1–18.1 mm. Body metallic green or blue-violet.

**Head.** Rounded; longer than wide (1.19–1.30 times), almost as long as pronotum, wider than pronotum (1.32 times); dorsal surface slightly convex; ventral surface flat, with slightly dense, expanded, umbilicate punctures (10–19 in each half of the head; similar to Fig. 52), arranged in  $\bar{v}\bar{v}$ ; first antennomere 1.58–1.60 times as long as antennomeres 2+3 combined, second antennomere 0.67–0.73 times as long as third antennomere, antennomeres 4–10 moderately transverse, gradually larger toward apex, apical antennomere moderately longer than wide (1.26 times), shorter than antennomeres 9+10 combined (0.92 times its length; similar to Fig. 28); mandible with basal external channel slightly developed.

**Thorax.** Pronotum 1.48–1.49 times as long as wide, shorter than elytra (0.85–0.91 times); with visible microsculpture; with two clearly visible depressed areas in posterior third (Fig. 56). Prosternum slightly transverse (length/width: 0.83–0.84).

**Aedeagus.** Ovate, length 2.37–2.60 mm, with parameres 0.37–0.38 times as long as the median lobe, apical area of median lobe 0.32–0.36 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 77).

**Variation.** The holotype is metallic green, the head is short (length/width: 1.19), the expanded, umbilicate punctures on the ventral surface of the head are less dense (10–14), and the external mandibular channel is slightly developed. The color of the paratype is metallic blue-violet, the head is longer (length/width: 1.3), the expanded, umbilicate punctures on the ventral surface of the head are denser (15–19), and the external mandibular channel is more strongly developed.

**Comparative notes.** The species may be confused with other species with a rounded, dorsally convex head, but only in *P. discedens* is the ventral surface of the head flat. The two species can be distinguished by the greater density of expanded, umbilicate punctures, the presence of a basal mandibular channel, and the shorter pronotum in *P. discedens*; whereas in *P. ashei* the expanded, umbilicate punctures are less dense, the mandibular channel is reduced, and the pronotum is longer.

**Geographical distribution.** Venezuela.

**Etymology.** We take pleasure in dedicating this species to the late James Steve Ashe (Snow Museum, Kansas University) for his study of Latin American Staphylinidae and his fieldwork that resulted in several of the specimens analyzed in this paper.

***Plochionocerus discedens* (Sharp, 1885)**

*Sterculia discedens* Sharp, 1885: 470; Herman, 2001: 3744 (*Plochionocerus*).

*Sterculia nevermanni* Bernhauer, 1942: 23; Herman, 2001: 3746 (*Plochionocerus*), **syn. nov.**

**Type material** (2 specimens). **Holotype** of *Sterculia discedens*, male: "Sterculia discedens Type D. S. Luichenuts, GUATEMALA, 7–9000 ft., Champion (specimen on card) / Type / Quiche Mts, 7–9000 ft, Champion / B. C. A. Col. I. 2. Sterculia discedens, Sharp / Sharp Coll. 1905–313. / Holotype" (BMNH). **Holotype** of *S. nevermanni*, female: "Costa Rica, F. Nevermann / San José, 1000–2000 m, Standt. T. T. Assmann / Sterculia nevermanni Brnh. Type / Mus. Hamburg Jischack don / nevermanni Brnh. Typus Sterculia / Chicago NHMus M. Bernhauer Collection" (FMNH).

**Additional material** (8 specimens). **COSTA RICA:** no locality data (BMNH, ♀); San Jose, La Caja (FMNH, ♂); San Jose, Fuentes, IX.1941 (FMNH, ♂); Vara Blanca, 2000 m (FMNH, ♂); San Pedro de Montes de Oca, 25.VIII.1942 (CC-UAEH, ♂; FMNH, ♀). **EL SALVADOR:** Depto. San Salvador, Finca La Gloria (Parque Saburo Hirao), 13°67'44"N 89°19'81"W, 773 m, 25.VI.1975, W. V. Hellebuyck (MNHDS, ♂). **MEXICO:** no locality data (IRSNB, ♀).

**Diagnosis.** Total length 15.0–18.5 mm; body metallic blue, sometimes abdomen metallic green; head rounded, slightly oblong (length/width: 1.11–1.17), slightly wider than pronotum (1.04–1.10 times), dorsal surface convex, ventral surface flat (Fig. 11), with very dense, expanded, umbilicate punctures (>30 in each half of head; similar to Fig. 53), arranged in “v”; apical antennomere in males slightly longer than wide (1.21–1.31 times), shorter than antennomeres 9+10 combined (0.89–0.95 times); mandibles with basal external channel (Fig. 63); pronotum slightly longer than wide (1.3–1.4 times), shorter than elytra (0.81–0.87 times their length), with two clearly visible depressed areas in posterior third (Fig. 56); prosternum slightly transverse (length/width: 0.76–0.80); and aedeagus ovate, length 1.30–1.58 mm, with parameres long (0.58–0.61 times as long as median lobe), apical area of median lobe 0.40–0.46 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 78).

**Variation.** In some females the mandibles are shorter than males and apex slightly pointed. The abdomen may be metallic blue with green reflections or metallic green with blue reflections.

**Comparative notes.** Based on the revision of the holotypes, *P. nevermanni* (Bernhauer, 1942) is a junior synonym of *P. discedens* (Sharp, 1885). The species is similar to *P. ashei*; the main differences are given in the Comparative notes of that species.

**Geographical distribution.** Mexico and El Salvador (first national records), Guatemala, and Costa Rica (Herman 2001).

### *Plochionocerus fulgens* (Fabricius, 1793)

*Staphylinus fulgens* Fabricius, 1793: 522; Erichson, 1839: 303 (*Sterculia*); Herman, 2001: 3742 (*Plochionocerus*).

*Staphylinus violaceus* Olivier, 1795: 8; Gravenhorst, 1806: 92 (synonym of *Staphylinus fulgens*); Erichson, 1839: 303 (*Sterculia*, synonym of *Sterculia fulgens*); Herman, 2001: 3746 (*Plochionocerus*, valid species), **syn. nov.**

*Sterculia coelestina* Erichson, 1839: 303; Fauvel, 1901: 252 (synonym of *Sterculia violacea*).

*Sterculia amazonica* Sharp, 1876: 186; Herman, 2001: 3744 (*Plochionocerus*), **syn. nov.**

*Sterculia pauloensis* Sharp, 1876: 187; Fauvel, 1901: 252 (*Sterculia*); Bernhauer & Schubert, 1914: 314 (synonym of *Sterculia fulgens*).

*Sterculia carinata* Bernhauer, 1916: 185; Herman, 2001: 3744 (*Plochionocerus*), **syn. nov.**

*Sterculia aureipennis* Bernhauer, 1927: 164; Herman, 2001: 3744 (*Plochionocerus*), **syn. nov.**

**Type material** (5 specimens). **Lectotype** of *Sterculia amazonica* by present designation, female: “Ega / S. America: Brazil / Sharp Coll. 1903–313 / *Sterculia amazonica* Ind. Type. D. S. Amazons / Lectotype *Sterculia amazonica* Asiain, Márquez & Morrone des. 2007” (BMNH). **Paralectotype**, female: “Type / Ega / S. America: Brazil / *idem* third label / *Sterculia amazonica* Type D.S. / Paralectotype *Sterculia amazonica* Asiain, Márquez & Morrone des. 2007” (BMNH). **Holotype** of *Sterculia pauloensis*, female: “Amazon St. Paulo / Type / S. America: Brazil / *idem* fourth label / *Sterculia pauloensis*, Type D. S. / Holotype” (BMNH). **Lectotype** of *Sterculia carinata* by present designation, female: “Bolivien, 750 m, Río Gongo, Jasze / *carinata* / Bernh. Typus / Chicago NHMus M. Bernhauer Collection / Lectotype *Sterculia carinata* Asiain, Márquez & Morrone des. 2007” (FMNH). **Holotype** of *Sterculia aureipennis*, female: “Notó, Parana / Brasilien / *Sterculia aureipennis* Bernh. Typus Staudinger / *idem* fourth label” (FMNH).

**Additional material** (170 specimens). **BOLIVIA:** Beni, 51.9 km S Riberalta, 24.XI.1994, Brzoska, Guerra (SEMC, ♂); Depto. Santa Cruz, Buenavista, 100 m, XII.1935 (BMNH, 1?); Depto. Santa Cruz, Buenavista, F. Sreinball (BMNH, 1?). **BRAZIL:** Maranhao, Rio Turiacu, II–III.1966, J. Carvalho (FMNH,

11 ♂♂); Para, Maranhao, 80 km E of Caninde, Aldeida Maracacume, Rio Maracacume, 22.V.1963, B. Malkin (FMNH, 4♂♂; CC-UAEH, ♂); Para, Maranhao, 50 km E of Caninde, Aldeida Aracu, Igarape, Gurupu-Umu, V.1963, B. Malkin (FMNH, ♂); Matto Grosso (FMNH, ♂, 1?); Para, Obidos, II.1939 (FMNH, ♂); Matto Grosso, Bajariote (FMNH, ♂); Matto Grosso, Corumbia (FMNH, 1?); Rio Tajos Itaititha, IV, J. F. Zikán (FMNH, ♀); Brasilien, Bang-Haas (FMNH, ♂); no locality data (FMNH, ♂); Para, Sonsanem Est., Shering (FMNH, 1?); no locality data (AMNH, ♂; BMNH, 2♂♂, ♀; FMNH, ♀; IRSNB, ♂); Para, Redencaovic, kayapo Territory, Pinkaiti Field Station on Riozinho R., 7°46.29'S, 51°57.65'W, XII.1998, tropical evergreen sea, sonal lowland forest on clay soil, dung pitfall or flight intercept traps, P. Y. Scheffler (FMNH, ♂, 1?); Ega (BMNH, 2♂♂, ♀; FMNH, ♀); Chapada, XI (FMNH, ♀); Am. Reserva Ducke, 26 km NE Manaus, Barbosa, M. G. V., Plot C FIT2, III.1995, G27.1 (BMNH, ♀); Para, VIII.1929, G. Arnold (BMNH, 1?); Fonte Bca R. Solomees Amazonas, 1937, F. Wucherpfennig, Cowley (BMNH, 1?); Jataly-Goyaz (IRSNB, ♀); Parana, Ypi-zanga (IRSNB, ♂); Tebas (IRSNB, 3♂♂, ♀); Manaus, X.1945, W. Praetorius (AMNH 2♀♀, 5♂♂, 2?); Manaus Region, XII.24 (AMNH, ♂); Para, Jacareacanga, II.1970, F. R. Barbosa (AMNH, 3♂♂); Puraquequara, 4.X.1945, W. Praetorius (AMNH, 2♂♂); State of Amazonas, Rio Calary-Uaupes, 1906, H. Schmidh (AMNH, ♀); Teffe, II.1925, H. Bassler (AMNH, 2?); Teffe, IX.1924, H. Bassler (AMNH, 2♂♂, 1?); Barba, III.1943, Halik (USNM, 1?); no locality data, Bowring (BMNH, 2♂♂); Fonteboa (BMNH, ♀); Guenca (BMNH, 1?, ♂); no locality data, Haudinger (FMNH, ♀); Caucathal (FMNH, 1?); San Agustin Mapiri, 8600 ft, IX.1895, Stuart (IRSNB, ♂). **GUYANA:** Upper Courantyne R., IX.1935, G. A. Hudson (BMNH, 1?); New River, 3.V.1938, C. A. Hudson (BMNH, 1?). **COLOMBIA:** Bogota (BMNH, ♂); no locality data (BMNH, ♂); Putumayo, Puerto Legulzamo, 180 m, 27–29.X.1971, M. Cooper (BMNH, ♂); PNN Amacayacu, San Martín, 3°46'S 70°18'W, 150 m, Malaise, 11–29.XI.2000, B. Amado (SEMC, ♂); Putumayo, Santa Rosa, Kofan Indian Village, along forest trail, 2–24.X.1970, B. Malkin (FMNH, ♀). **ECUADOR:** Napo, R. F. Cuyabeno, II.1985, M. García (QCAZ, 2♂♂); Napo, Cuyabeno, 400 m, VIII.1985, Quintana (QCAZ, ♂); *idem*, except: M. E. Ordoñez, ex: hojarasca (QCAZ, 1♂); Napo, E. C. Yasuni, 76°24'W 00°40'S, 230 m, XI.1997, R. Montufar (QCAZ, ♂); Napo, Tena, III.1996, G. Onore (QCAZ, ♂); Napo, Estación Científica Yasuni, 600 m, 76°24' 0°40', 04.II.1997, Z. Aguilar (QCAZ, ♂); Napo, Scyasuni, 250 m, 8.IX.1997, F. Maza (QCAZ, ♂); Sucumbios, Cuyabeno, 250 m, 15.IX.1996, E. Baus (QCAZ, ♂); Sucumbios, Cuyabeno, 269 m, 76°11' 00°01', 20.XII.1997, L. Cárdenas (QCAZ, ♂); Sucumbios, Cuyabeno, Laguna Grande, 250 m, 22.XI.1995, P. Salvador (QCAZ, ♂); Sucumbios, L. Grande, Cuyabeno, Estación Puce, 280 m, 18.XI.1995, P. Salvador (QCAZ, ♂); Postaza, Sta. Clara, 600 m, 18.III.1995, S. Espinosa (QCAZ, ♀); Sucumbios, Reventador, 17.VII.1991, P. Yanez (QCAZ, ♂); Napo, Pozo Daini, 19.IX.1989, Sandoval (QCAZ, ♂); Cotundo, XII.1978 (QCAZ, ♂); Sucumbios, Cuyabeno, 23.VII.1991, F. Campos (QCAZ, ♀); Loja, Zamora, Urien Nal., C. Carrión (BMNH, ♂); Loja, Zamora, Zamora Eastern Ecuador, C. Carrión (BMNH, ♀); Napo Reg, Tiputini Res. Stat., 0°38'S, 76°9'W, 220 m, 5–25.IX.2000, flight intercept trap, D. J. Inward & K. A. Jackson (BMNH, ♂); Napo (BMNH, ♂); no locality data (BMNH, ♂, 1?); no locality data, L. Gomez (BMNH, 1?). Buckley, Macas (FMNH, ♂, 1?); no locality data, E. Andy, Buckley (FMNH, ♀); Santo Domingo-Pichincha, Piuu. R. d. L., 20.I.1965 (FMNH, ♂); Dos Rios, 9.V.1963, L. Peña (FMNH, 1?); Napo, Onkone Gare Camp, 00°39'10"S, 76°26'00"W, 220 m, terra firma forest, in flight, 4–8.X.1995, T. L. Erwin, G. E. Ball & D. Shpeley (SEMC, ♀). **FRENCH GUIANA:** Cayenne (IRSNB, ♂, ♀). **PERU:** Madre de Dios, Rio Patuyaca?, 12°39'S, 68°55'W, 400 m (USNM, ♂); Madre de Dios, Rio Amiguillos, small river flood plain, 260 m, flight intercept trap, 12°22'25.4"S, 70°22'13.2", V.2000, W T. Larsen (USNM, ♂); Sani Beni, Junin, 4.XI.1935 (BMNH, ♂); Sani Beni, Junin, 6.X.1935 (BMNH, ♀); Sani Beni, Junin, 22.X.1935 (BMNH, ♂); no locality data (BMNH, 2♂♂, ♀); Chan-chamayo (BMNH, ♂); Madre de Dios, Cocha Cashu Biological Station, Manu Nacional Park, 350 m, 11°53'45"S, 71°24'24"W, 17.X.2000, R. Brooks (SEMC, 3♂♂); Madre de Dios, Panchita Reserved Zone, Manu Nacional Park, 300 m, 12°1'3"S, 71°13'5"W, 21.X.2000, R. Brooks, ex: miscellaneous collecting (SEMC, ♂); Madre de Dios, Pantiacolla Lodge, 4–7 km NW, El Mirador Trail, Alto Madre de Dios River, 500–800 m, 12°39'10"S, 71°15'18"W, 23.X.2000, R. Brooks, ex: on logs (SEMC, ♀); Madre de Dios, Pakitza

Biological Station, Reserved Zone Manu National Park, 317 m, 11°56'41''S, 71°17'0''W, 16.X.2000, R. Brooks, ex: misc. collecting (SEMC, ♂); Depto. Loreto, 1.5 km N Teniente Lopez, 12°35.66'S, 76°06.92'W, 28.VII.1993, 210–240 m, Richard Leschen, ex: flight intercept trap (SEMC, ♀); Chanchamayo, E. G. Smyth (SEMC, ♂); Depto. San Martin, Moyabamba, S. A., 10.XI.1936, F. Woytkowski (SEMC, ♀); Loreto, Estiron, Rio Ampiyacu, 9.XII.1961, B. Malkin (FMNH, ♀;CC-UAEH, ♂); *idem*, except: 15–22.V.1966 (FMNH, ♂); *idem*, except: 29–30.III.1970 (FMNH, ♀); Depto. Junin, Chanchamayo, 3.IX.1961 (FMNH, ♀); *idem*, except: 15.XII.1961 (FMNH, ♀); Chanchamayo, 1500 m, Heyne (FMNH, 1?); Upper Rio Tapiche, III.1928 (AMNH, ♀); Rio Tapiche, III.1928 (AMNH, 1?); *idem*, except: 5.IX (AMNH, ♂); *idem*, except: 25.XII.1923 (AMNH, 1?); *idem*, except: 12.I.1928 (AMNH, ♀); Iquitos (AMNH, 1?); *idem*, except: 21.XI.1927 (AMNH, ♀, 1?); *idem*, except: 25.IV (AMNH, ♂); *idem*, except: 25.V (AMNH, ♀); Upper Rio Marañon, 29.XII.1924 (AMNH, 2♂♂); *idem*, except: 26.IX.1924 (AMNH, ♂); Middle Rio Ucayali, 19.VII.1928 (AMNH, ♂); *idem*, except: 10.I.1929 (AMNH, ♂); Chanchamayo, 28.III.1928 (AMNH, ♀); Peru-Brazil Frontier, 27.VIII (AMNH, 1?); *idem*, except: 21.I.1928 (AMNH, 2♂♂); *idem*, except: 14.II.1928 (AMNH, 2♂♂); Tingo Maria Huan., 2200 ft, 12.I.1947, J. C. Pallister (AMNH, ♀, ♂). **VENEZUELA:** T. F. A. Camp., Cerro de la Neblina, 0°49'N, 66°0'W, 1250 m, 23–24.III.1984, O. S. Flint, Jr (USNM, ♀); Caracas, III.1984 (FMNH, 1?).

**Diagnosis.** Total length 24.4–28.9 mm; head, pronotum and elytra metallic blue, violet or blue-green; legs and abdomen metallic blue or greenish blue; head rounded to rectangular, 1.22–1.50 times as long as wide, almost as wide as pronotum (0.86–1.11 times), dorsal and ventral surface convex, moderately convex or flat, ventral surface with slightly dense, expanded, umbilicate punctures (10–19 in each half of head), arranged in ivî (similar to Fig. 52); apical antennomere in males 1.40–1.74 times longer than wide, almost as long as antennomeres 9+10 combined (1.00–1.09 times); mandibles with basal external channel (Fig. 63); pronotum slightly longer than wide (1.16–1.41 times), shorter than elytra (0.72–0.78 time its length), with two clearly visible depressed areas in posterior third (Fig. 56); prosternum transverse (length/width: 0.65–0.75); aedeagus pear-shaped, big (5.56–6.75 mm), with parameres short (0.24–0.28 times as long as median lobe), apical area of median lobe 0.29–0.35 times as long as the total length of median lobe, and internal sac conspicuous (Fig. 79).

**Variation.** Great variation in color and body length. Generally the smaller specimens have a rounded head, less convex dorsally, and shorter mandibles.

**Nomenclatural notes.** The revision of the holotype specimen of *P. pauloensis* (Sharp, 1876), a previous synonym of *P. fulgens* (Fabricius, 1793), allowed us to recognize that the names *P. amazonicus* (Sharp, 1876), *P. carinatus* (Bernhauer, 1916), *P. aureipennis* (Bernhauer, 1927) and *P. violaceus* (Olivier, 1795) refer to a single Amazonian species, *P. fulgens*, which was previously confused even with Mexican specimens that actually belong to *P. simplicicollis*. Even Sharp (1867) was not completely sure that *P. amazonicus* and *P. pauloensis*, which were described in the same paper, were in fact two different species.

**Geographical distribution.** Colombia, Guyana, Venezuela, and Ecuador (first national records), Surinam, French Guiana, Brazil, Peru, and Bolivia (not Mexico; Herman 2001).

### ***Plochionocerus gracilis* Asiain, Márquez & Morrone, sp. nov.**

**Type material. Holotype**, female: PANAMA: Chiriqui Prv., 7 km Fortuna Dam, 15–17.V.1996, Wappes Huether & Morris / gift ex J. Wappes / Holotype *Plochionocerus gracilis* Asiain, Márquez & Morrone, 2007'' (FMNH).

**Description.** Total length 16.0 mm. Body metallic violet-blue.

**Head.** Rectangular, 1.36 times longer than wide, slightly wider than pronotum (1.08 times); dorsal and ventral surface of head slightly convex (Fig. 12), ventrally with dense, expanded, umbilicate punctures (20–29 in each half of head), arranged in ivî (Fig. 51); first antennomere 1.56 times as long as antennomeres 2+3



combined; second antennomere 0.7 times as long as third antennomere; antennomeres 4–10 slightly transverse, increasing its size toward antennomere 10; apical antennomere 1.38 times as long as wide, as long as two previous antennomeres combined (Fig. 24); mandibles with basal external channel; apical labial palpomere elongate, slightly truncate in apex (Fig. 44).

*Thorax.* Pronotum 1.51 times as long as wide; shorter than elytra (0.84 times their length); without depressed areas in posterior third. Posterior margin of elytra with clearly visible central notch (Fig. 59). Prosternum almost as long as wide (length/width: 0.91–1.01).

Male unknown.

**Comparative notes.** This species, known by a single female, has some peculiar characters, shared partially with *P. marquezii*, like the small, elongate body, and the elongate labial apical palpomere. No other species of this genus has these characters. In *Plochionocerus marquezii* the head is elongate and narrowed backwards, the labrum has two central, pointed teeth at the anterior margin, and the pronotal hypomeron has fine setae in anterior third; whereas *P. gracilis* has a rectangular head that is not narrowed backwards, the labrum has two lateral teeth that are smaller than the central teeth, and the pronotal hypomeron lacks setae.

**Geographical distribution.** Panama.

**Etymology.** The name refers to the gracile habitus of this small species.

### *Plochionocerus hermani* Asiain, Márquez & Morrone, sp. nov.

**Type material. Holotype**, male: “PANAMA: Darien, Cerro Malí, 1400 m, Serranía del Darién, I.1975, C. W. Myers / Holotype *Plochionocerus hermani* Asiain, Márquez & Morrone, 2007” (AMNH).

**Description.** Total length 18.5 mm. Body metallic violet.

*Head.* Rounded, dorsally flat, ventrally moderately convex, slightly longer than wide (1.25 times), wider than pronotum (1.34 times); ventral surface of head lacking expanded umbilicate punctures (Fig. 52); first antennomere 1.56 times the length of antennomeres 2+3 combined; second antennomere 0.54 times as long as third antennomere; antennomeres 4–10 moderately transverse, increasing in size toward antennomere 10; apical antennomere in male 1.36 times as long as wide, 0.83 times as long as antennomeres 9+10 combined; mandibles with basal external channel (Fig. 63).

*Thorax.* Pronotum long (length/width: 1.6), shorter than elytra (0.81 times), with two clearly visible depressed areas in posterior third (Fig. 56). Prosternum almost as long as wide (0.92 times).

*Aedeagus.* Ovate, length 3.55 mm, with parameres short (0.29 times as long as median lobe), apical area of median lobe 0.24 times as long as the total length of median lobe, and internal sac of aedeagus moderately visible (Fig. 80).

**Comparative notes.** This species is similar to *P. newtonorum* and *P. transversalis*, based on the head rounded or ovate, with dorsal surface flat. It can be distinguished from both species as follows: the ventral surface of the head is moderately convex and lacks expanded, umbilicate punctures, the apical antennomere in males is shorter than antennomeres 9+10 combined, the head is wider than the pronotum and the aedeagus is ovate.

**Geographical distribution.** Panama.

**Etymology.** We take pleasure in dedicating this species to Lee Herman (American Museum of Natural History), for his contributions to the study of Staphylinidae, and for his friendship and support.

### *Plochionocerus humeralis* (Sharp, 1885)

*Sterculia humeralis* Sharp, 1885: 469; Fauvel, 1891: 106 (*Sterculia*); Herman, 2001: 3745 (*Plochionocerus*).  
*Sterculia kayseri* Bernhauer, 1927: 163; Herman, 2001: 3745 (*Plochionocerus*), **syn. nov.**

**Type material** (11 specimens). **Lectotype** of *Sterculia humeralis* by present designation, male: “*Sterculia humeralis*, Type, D.S., V. Chiriqui, 3–4000 ft., Champion (specimen on card) / Type / V. Chiriqui, 3–4000 ft., Champion / B. C. A. I. 2. *Sterculia humeralis*, Sharp / Sharp Coll. 1905–313 / Syntype / Lectotype *Sterculia humeralis* Asiain, Márquez & Morrone des. 2007” (BMNH). **Paralectotypes** of *Sterculia humeralis*: “*Sterculia humeralis*, D.S., V. Chiriqui, 3–4000 ft., Champion, V. Chiriqui, 3–4000 ft., Champion (specimen on card) / B. C. A. I. 2. *Sterculia humeralis*, Sharp / Sharp Coll. 1905–313 / Syntype / Paralectotype *Sterculia humeralis* Asiain, Márquez & Morrone des. 2007” (BMNH, ♀); “V. de Chiriqui, 3–4000 ft., Champion / B. C. A. Col. I. 2. *Sterculia humeralis*, Sharp / Paralectotype *Sterculia humeralis* Asiain, Márquez & Morrone des. 2007” (BMNH, ♂); “*Sterculia humeralis*, D.S., V. Chiriqui, 25–4000 ft., Champion (specimen on card) / Sp. figured / V. Chiriqui, 25–4000 ft., Champion / B. C. A. I. 2. *Sterculia humeralis*, Sharp / Sharp Coll. 1905–313 / Syntype / Paralectotype *Sterculia humeralis* Asiain, Márquez & Morrone des. 2007” (BMNH, ♂); “*Sterculia humeralis*, D.S., V. Chiriqui, 25–4000 ft., Champion (specimen on card) / V. Chiriqui, 25–4000 ft., Champion / B. C. A. I. 2. *Sterculia humeralis*, Sharp / Sharp Coll. 1905–313 / Syntype / Paralectotype *Sterculia humeralis* Asiain, Márquez & Morrone des. 2007” (BMNH, ♀, ♂); “V. Chiriqui, 25–4000 ft., Champion / B. C. A. I. 2. *Sterculia humeralis*, Sharp / Syntype / Paralectotype *Sterculia humeralis* Asiain, Márquez & Morrone des. 2007” (BMNH, 2♂♂); “Medellin, Colombia (specimen on card) / B. C. A. Col. I. 2. *Sterculia humeralis* Sharp / Sharp Coll. 1905–303 / Syntype / Paralectotype *Sterculia humeralis* Asiain, Márquez & Morrone des. 2007” (BMNH, ♂). **Lectotype** of *Sterculia kayseri* by present designation, male: “Venezuela / *kayseri* Brnh. Cotypus. Mus. Ger. / Chicago NH Mus M. Bernhauer Collection / Lectotype *Sterculia kayseri* Asiain, Márquez & Morrone des. 2007” (FMNH); **Paralectotype**, male: “Venezuel / *kayseri* / *Sterculia kayseri* Brnh. Cotypus. Mus. Ger. / Chicago NH Mus M. Bernhauer Collection / Paralectotype *Sterculia kayseri* Asiain, Márquez & Morrone des. 2007” (FMNH).

**Additional material** (106 specimens). **BRAZIL**: Jabatinga, 18.X.1904, Ducke (FMNH, ♂). **COLOMBIA**: no locality data (IRSNB, ♀). **COSTA RICA**: Prov. Puntarenas, Fca. Cafrosa, Est. Las Mellizas, P. N. Amistad, LS 316100 596100, 1300 m, V.1990, M. Ramírez & G. Mora (INBC, ♀, 4♂♂); *idem*, except: V.1991, M. Ramírez (INBC, 3♂♂); *idem*, except: VI.1991 (INBC, ♀); Prov. Guanacaste, Est. Pitilla, 9 km S Santa Cecilia, 330200, 380200, 700 m, VII.1988, GNP Biodiversity Survey (INBC, ♀); Heredia, San Rafael, centro, 10.VI.1984, E. Carvajal (INBC, ♂); Prov. Limón, Res. Biol. Hitoy Cerere, Est. Hitoy Cerere, send Bobócara, LN 184250 641800, 300 m, 16.IV.2000, W. Arana, Intersección (INBC, ♀); no locality data (FMNH, ♀); San José, San Antonio de Escazu, 9°39'16"N, 84°9'16"W, 1300 m, 1–30.IX.1998, W. Eberthard & P. Hanson (SEMC, ♀); Puntarenas, Las Alturas Field Station, 20 km N San Vito de Hava, 1400 m, 1–5.VII.1991, DeVries, malaise trap (AMNH, ♀); *idem*, except: 20–24.V.1991 (AMNH, ♂). **ECUADOR**: Napo, Rio Hollin, 1100 m, 3–5.XII.1994, N. Oleas (QCAZ, 2♂♂); Napo, Cotococha, 860 m, 15.IV.1995, X. Cisneros (QCAZ, ♂); Napo, Archidona, 500 m, 10.IV.1993, C. Segovia (QCAZ, ♂); Napo, Coca, VII.1986, E. Martínez (QCAZ, ♂); Napo, Jatun Sacha, 400 m, 6.XII.1994, I. Benitez (QCAZ, ♂); Pichincha, Sto. Domingo, IV.1973, N. Venedicto (QCAZ, 1?); Dos Rios, 9.IV.1963, L. Peña (FMNH, 3); Tena, 16.III.1923, F. X. Williams (FMNH, 1?, ♂); Pompeya, V.1965, L. Peña (FMNH, ♂; CC-UAEH, ♂); Quito (FMNH, ♂); Macas, Buckley (FMNH, ♂); West-Ecuador, Ejanus, Rolle (FMNH, ♂, ♀); Pastaza, Cushueme, Rio Cushueme, 150 km SE Puyo, 1–2.VII, B. Malkin (FMNH, ♀); Jatun Yacu, 700 m, III.1937 (BMNH, ♂); Jatun Yacu, Rio Nabo, Watershed, 700 m, I.1937 (BMNH, ♂); Quito (BMNH, ♂); Guilca, Nr. Macas, L. Gomez, Colcófn (BMNH, ♂); Prov. Loja, Zamora, C. Carrión (BMNH, ♀); Loja, 1.III.1889 (BMNH, ♂); no locality data, Buckley, 1879 (BMNH, 3♀♀, 9♂♂); no locality data (BMNH, ♂); no locality data, L. Gomez (BMNH, ♂, ♀); El Partidero, 16.XI.1935, W. Macintyre (AMNH, ♂); Morona, Santiago, Puyo-Macas Rd., 950 m, 13.2 km SW Pastaza R. (logging road), 26.IX.1995, D. Brzoska (SEMC, ♂); Pastaza, Pto. Sta. Ana, Rio Pastaza, 01°39.7'S, 77°57.9'W, 23.X.1998, D. Brzoska (SEMC, ♂); Zamora-Chinchi, Rio Bombuscaro, 4°7'0"S, 78°59'0"W, 26.VI–4.VII.1996, P. Hibbs, ex: flight intercept trap (SEMC, ♀); no locality data, Baron (IRSNB, 1?); Laja

(IRSNB, 1?). **GUATEMALA:** no locality data (IRSNB, ♀). **PANAMA:** V. de Chiriqui, 3000–4000 ft., Champion (FMNH, ♂); V. de Chiriqui, 4000–6000 ft., Champion (FMNH, ♂); Chiriqui?, Bang. Haas (FMNH, ♀); no locality data, Eing, 1925 (FMNH, ♀). Chiriqui (FMNH, ♀; IRSNB, ♀, ♂); Chiriqui, 20 km N Gualaca, Finca La Suiza, 1350 m, 08°39'N, 82°12'W, 24.V.–9.VI.1995, J. Ashe & R. Brooks, ex: flight intercept trap (SEMC, ♀). **PERU:** Middle Rio Ucayali, 14.XII.1923 (AMNH, 2♂♂, ♀); Rio Santiago, 21.XI.1928 (AMNH, 3♂♂); *idem*, except: 13.VIII.1930 (AMNH, 1?); Middle Rio Marañon, IX.1929 (AMNH, ♂); Iquitos (AMNH, 2♂♂, 2?); no locality data (BMNH, ♂); Archid., Bowring (BMNH, 1?); no locality data (FMNH, ♀); no locality data (BMNH, 1?); Archidona (BMNH, ♂); no locality data (BMNH, ♂). **USA:** California (BMNH, ♂). **VENEZUELA:** Lara Sanaré, 17.4 km SE Yacambú N. P., 1510 m, 9°42'26"N, 69°34'34"W, 18.V.–1.VI.1998, J. Ashe, R. Brooks & R. Hanley, ex: flight intercept trap (SEMC, 2♂♂, ♀); no locality data (BMNH, 3♂♂; FMNH, 2♂♂); Caracas, Waterhouse (BMNH, 1?); no locality data, Buq Varcas (BMNH, ♀); Caracas (BMNH, ♀; IRSNB, ♀, 2?); Orénoque (IRSNB, 1?); Merida (FMNH, ♂; CC-UAEH, ♂). **TOBAGO:** Roxborough (10 km NE), Gilpin Trail, 400–500 m, montane rain forest, 26–31.VI.1993, flight intercept trap, S. & J. Peck (FMNH, ♂); no locality data, Nova Granada (FMNH, ♂).

**Diagnosis.** Total length 19.8–26.0 mm; metallic violet-blue, green or a combination of both; head rectangular, 1.31–1.41 times as long as wide, moderately wider than pronotum (1.05–1.16 times), dorsal and ventral surface of head flat (Fig. 13), ventrally with dense, expanded, umbilicate punctures (20–29 in each half of head), arranged in ivî (similar to Fig. 50); antennomere 9 shorter than antennomere 10 in males (0.81–0.90 times), apical antennomere in males conspicuously longer than wide (1.66–2.00 times), as long as antennomeres 9+10 combined (0.96–1.15 times; Fig. 25); mandibles with basal external channel (Fig. 63); pronotum 1.47–1.58 times as long as wide, shorter than elytra (0.77–0.83 times their length), with two clearly visible depressed areas in posterior third (Fig. 56); prosternum moderately transverse (length/width: 0.83–0.95); and aedeagus pear-shaped, length 4.30–5.86 mm, parameres moderately long (0.30–0.32 times as long as median lobe), apical areas of median lobe 0.25–0.29 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 81).

**Variation.** Most of the specimens are entirely metallic blue, but in a few individuals the head, pronotum and elytra are metallic blue, and the abdomen metallic green or has violet reflections. More than 50% of the specimens examined have a well-developed external mandibular channel and the remainder has it reduced. A few specimens have less than 20 expanded, umbilicate punctures in each half of the head.

**Comparative notes.** Based on the revision of the types, *P. kayseri* (Bernhauer, 1927) is a junior synonym of *P. humeralis* (Sharp, 1885). The species can be confused with *P. fulgens*. For both species the head is rectangular and conspicuously oblong, the apical antennomere in males is almost as long as antennomeres 9+10 combined, and the aedeagus is pear-shaped. They can be distinguished because in *P. humeralis* the head is flat dorsally and ventrally, the ventral surface has dense, expanded, umbilicate punctures (20–29 in each half of the head), antennomere 9 in males is shorter than antennomere 10, and the internal sac of the aedeagus is moderately conspicuous. It is separated easily from other species with a rectangular or subquadrate, dorsally and ventrally flat head (as *P. impressipennis*, *P. janthinus* and *P. puncticeps*) because the apical antennomere in males of these species is shorter than antennomeres 9+10 combined.

**Geographical distribution.** Costa Rica, Brazil, Tobago, Ecuador, and Peru (first national records), USA and Guatemala (first national records with doubt, possibly due to erroneous labels, to be confirmed from BMNH and IRSNB, respectively), Panama, Colombia, and Venezuela (Herman 2001).

### *Plochionocerus igneus* (Fauvel, 1901)

*Sterculia ignea* Fauvel, 1901: 252; Herman, 2001: 3745 (*Plochionocerus*).

*Sterculia magnifica* Bernhauer, 1911: 412; Herman, 2001: 3745 (*Plochionocerus*), **syn. nov.**

**Type material** (2 specimens). **Holotype** of *Sterculia ignea*, male: “Amazonas / *ignea* Fvl. / R. I. Sc. N. B. 17.479 Coll. et det. A. Fauvel / Type” (IRSNB). **Holotype** of *Sterculia magnifica*, female: “Obidos, 1904, P. Leconte / 4010 / *magnifica* Brh. Typus / Chicago NHMus M. Bernhauer Collection” (FMNH).

**Additional material** (20 specimens). **BRAZIL**: Pará, Redencao vic., Kayapo Territory, Pinkaiti Field Station on Riozinho R., 7°43.83'S, 52°02.16'W, 23–28.XI.1998, logged gaps near, tropical evergreen seasonal lowland forest on clay soil, dung pitfall or flight intercept traps, P. Y. Scheffler (FMNH, ♀, ♂); Rio Tapajoz, Amazonas, J. F. Zikán (FMNH, ♂); Rio Yurná, Est. Amaz., 1901, Shering (CC-UAEH, ♂); Barcillos, Rio Negro, Amaz., 30.VIII.1927, J. F. Zikán (FMNH, ♂); Est. Amazonas, S. Paulo Olivenci, VIII.1913, H. C. Boy (FMNH, 1?); no locality data (BMNH, ♂); Pará, Jacaréacanga, XII.1968, M. Alvarenga (AMNH, ♀); Uypizanga, Rio Negro, 14 km From Manaus, Amazonas, 300 ft, XII.1941, A. Rabaut (AMNH, ♂); Teffe, II.1915 (AMNH, ♂); Manaus, Amazonas, X.1945, W. Praetorius (AMNH, 1?); no locality data, Bowring (BMNH, 1?); Mauacamari, Bosque secundario, 30.VI.1990, C. Reyes (USNM, ♀); Para, Baker (USNM, ♀). **FRENCH GUIANA**: Cayenne, 42.i.S, Leach (BMNH, ♀). **PERU**: Quincemil, 1–16.XI.1962, L. Peña (FMNH, ♂); Madre de Dios Depto., Tambopata, 23.X.1982, ex mushrooms & litter, E. Watrous & G. Mazurek (FMNH, ♂); Itaya, Rio Itaya, E. Le Moults (BMNH, 1?); Iquitos, 29.X.1927 (AMNH, 1?); Dept. Loreto, 1.5 km N Teniente López, 2°35.66'S, 76°06.92'W, 210–240 m, 22.VII.1993, R. Leschen, ex: general collecting (SEMC, 1 ♂).

**Diagnosis.** Total length 19.0–22.4 mm; head, pronotum and elytra blue or metallic violet, with metallic green reflections; abdomen dorsally red, with golden, blue or violet reflections, or golden with different metallic reflections; abdominal visible segments 5 and 6 metallic, and different in color from remaining segments; head rounded, 1.23–1.37 times as long as wide, moderately wider than pronotum (0.98–1.16 times), dorsally and ventrally convex, ventrally with moderately dense, expanded, umbilicate punctures (10–19 in each half of head), arranged in  $\hat{v}$  (similar to Fig. 50); apical antennomere in males moderately oblong (length/width: 1.30–1.45) and almost as long as antennomeres 9+10 combined (1.00–1.06 times; Fig. 26); mandibles without basal external channel; pronotum *ca.* 1.5 times as long as wide (length/width: 1.36–1.46), shorter than elytra (0.76–0.83 times their length), with two clearly visible depressed areas in posterior third (Fig. 56); prosternum moderately transverse (length/width: 0.70–0.82); aedeagus ovate, length 2.0–2.3 mm, with parameres long (0.50–0.56 times as long as median lobe), apical area of median lobe 0.38–0.40 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 82).

**Variation.** Males have the head dorsally more convex than females, the mandibles do not have a basal external channel (occasionally reduced), and the upper line of pronotal hypomeron may be partially or completely absent in anterior third or completely developed.

**Comparative notes.** Based on the revision of the holotypes, *P. magnificus* (Bernhauer, 1911) is a junior synonym of *P. igneus* (Fauvel, 1901). The red, metallic coloration of the body (or part of it) of this species and *P. splendens* permits easy separation from the remaining species of the genus. They can be distinguished because *P. igneus* has a rounded, dorsally and ventrally convex head, with antennomeres 4–10 transverse, and the aedeagus ovate, whereas *P. splendens* has rectangular, dorsally and ventrally flat head, with antennomeres 4–8 transverse, antennomeres 9–10 nearly as long as wide, and the aedeagus pear-shaped.

**Geographical distribution.** French Guiana, Peru (first national records), and Brazil (Herman 2001).

### *Plochionocerus impressipennis* (Sharp, 1891)

*Sterculia impressipennis* Sharp, 1891: 41; Herman, 2001: 3745 (*Plochionocerus*).

*Sterculia punctipennis* Bernhauer, 1916: 186; Herman, 2001: 3746 (*Plochionocerus*), **syn. nov.**

**Type material** (3 specimens). **Lectotype** of *Sterculia impressipennis* by present designation, male: “Type / Ecuador / Sharp Coll. 1905–303. / Syntype / *Sterculia impressipennis*. Type D. S. Nanegal. 3–4000 ft, Ecu-

dor: Whympet / Lectotype *Plochionocerus impressipennis* Asiain, Márquez & Morrone des. 2007" (BMNH). **Paralectotype**, male: "Nanegal, Ecuador 3–4000 feet. Ed. Whympet. / *Sterculia impressipennis*. var.? Nanegal 3–4000 ft. Ecuador. Whympet. 192–24. / Syntype / Paralectotype *Sterculia impressipennis* Asiain, Márquez & Morrone des. 2007" (BMNH). **Holotype** of *Sterculia punctipennis*, female: "Monte Tolima 1700 m / Columbia occ. Cali Fassl / *punctipennis* Bernh. Typus unic. / Chicago NHMus M. Bernhauer Collection" (FMNH)

**Additional material** (77 specimens). **COLOMBIA:** Santa Fe de Bogota (FMNH, ♀; IRSNB, 2?); no locality data (AMNH, 1?; BMNH, 2♂♂, 2♀♀; IRSNB, ♂, 3?; FMNH, ♂); Cali, Fassl, Cañon del Monte, Tolima, 1700 m (FMNH, ♀). **ECUADOR:** Guayaquil (FMNH, 1?); Cotopaxi, SF de las Pampas, 3.I.1988, M. Huybenz (FMNH, 2♀♀); Tungurjhua, XI.1964, L. Baños (FMNH, ♀); Macas (FMNH, 1?); Quito (CC-UAEH, ♂); no locality data, Buckley (FMNH, ♀); Chonana, Wolbb (FMNH, ♀); Mirador, Chonana, Wolbb (FMNH, ♀); Napo, Sumaco, 1900 m, 13–15.II.1996, J. Guayasamín (QCAZ, 2♂♂); Napo-Pano, 3.X.1991, M. C. Erazo (QCAZ, 2♀♀); Napo, Río Hollin, 1100 m, 4.XI.1994, J. Iturralde (QCAZ, ♂); *idem*, except: P. Ordóñez (QCAZ, ♂); Napo, Los Guacamayos, 1800 m, 29.XII.1995, D. Prado (QCAZ, ♂); Cotopaxi, Los Libres, 2000 m, 5.XI.1994, E. Baus (QCAZ, ♂); Cotopaxi, Otonga, 1800 m, VI.1994, G. Onore (QCAZ, 1?); Cotopaxi, X.1981, Cutzualo, G. Onore (QCAZ, ♂); Cotopaxi, s. f. de Pampas, 7.XI.1992, E. Pichilingue (QCAZ, ♂); Pichincha, San Miguel De Los Bancos, San Jose de Milpe, 1500 m, 27.XII.1995, G. Gallardo (QCAZ, 1?); Pichincha, Sto. Domingo, IV.1973, N. Venedicto (QCAZ, 1?); Pichincha, Mindo, 19.XI.1995, A. Muñoz, ex: flying (QCAZ, ♂); Sucumbios, Reventador, 1500 m, 6.XII.1992, M. Delpozo (QCAZ, ♂); Pichincha, Mindo, 4 km E, Mindo Gardens, 29.XI.1995, D. Brzoska (SEMC, ♂); Pichincha, Maquipucuna For. Res., 50 km NW Quito, 1300–1700 m, 18.XII.1991, C. Carlton & R. Leschen, ex: along Irail (SEMC, ♂); *idem*, except: 1300–1440 m, 22.XII.1991, ex: beating at large (SEMC, ♀); Pichincha, Maquipucuna Biological Station, Principal Trail, 1275 m, 0°7'22"N, 78°39'0"W, 27.X.1999, Z. H. Falin, misc. collecting (SEMC, ♀); Yunguilla, 1800 m, 5.IX.1936 (BMNH, ♂, ♀); Yunguilla, Rio Pastaza, watershed, 1600 m, 5.X.1936 (BMNH, ♂); Rio Blanco, 1800 m, VIII.1936 (BMNH, ♂, 1?); *idem*, except: VII.1936 (BMNH, ♀); *idem*, except: 1700 m, V.1937 (BMNH, 3♀♀, ♂); *idem*, except: 1600 m (BMNH, ♀); Sarayacu, 1879, Buckley (BMNH, 1?); no locality data, 1879, Buckley (BMNH, 2♂♂); Nanegal, 5000 ft, Dolby-Tyler (BMNH, 1?); Loja (IRSNB, 3?, 3♀♀); no locality data (IRSNB, ♂); Nanegal, Rio Guallabamba (IRSNB, ♂); Morona Prov., Santiago La Esperanza, 1900 m, 16.V.1976, G. Armstrong (USNM, ♂); Napo, Lago Agrio, 27.VII.1978, J. J. Anderson (USNM, 1?); Cotopaxi, Las Damas, X.1988, G. Onore (AMNH, ♂); Banos Tungurahua, 2.V.1937, W. MacIntyre (AMNH, ♀); Rio Blanco, 5700', VIII.1938, W. C. Macintyre (AMNH, ♂, ♀); Yunguilla, 4500 ft, VI.1938, W. C. Macintyre (AMNH, ♂, ♀, 1?); *idem*, except: 5400 ft, IX.1938 (AMNH, ♀); *idem*, except: 5100 ft, IV.1939 (AMNH, 2♀♀). **PERU:** Marcapata (IRSNB, 1?). No locality data (BMNH, ♀).

**Diagnosis.** Total length 18.7–26.3 mm; usually metallic violet-blue, some specimens green or a combination of both colors; head varied in shape (rectangular, rounded or ovate), 1.24–1.50 times as long as wide, wider than pronotum (1.20–1.48 times), dorsally and ventrally varied in convexity (convex, moderately convex or flat), ventral surface with moderately dense, expanded, umbilicate punctures (10–19 in each half of head), arranged in iv̄i (similar to Fig. 50); apical antennomere in males moderately longer than wide (1.26–1.50 times) and shorter than antennomeres 9+10 combined (0.75–0.89 times their length); mandibles with basal external channel (Fig. 63); pronotum long (length/width: 1.41–1.82), but shorter than elytra (0.72–0.86 times), with two clearly visible, depressed areas in posterior third (Fig. 56); prosternum moderately transverse (length/width: 0.77–0.97); aedeagus ovate, length 2.5–3.4 mm, with parameres moderately long (0.38–0.45 times as long as the median lobe), apical area of median lobe 0.30–0.40 times as long as the total length of median lobe, and internal sac conspicuously visible (Fig. 83).

**Variation.** Two specimens from Colombia are similar to *P. puncticeps* because the head is wider posteriorly, the labial apical palpomere is not obliquely truncate, and the central surface of the head has dense umbilicate punctures. They are assigned to *P. impressipennis* based on the aedeagal shape. Ten specimens from

Ecuador are similar to *P. fulgens*, their body is long and the head is dorsally and ventrally convex; five of them also have scarce umbilicate punctures on the dorsal surface of the head.

**Comparative notes.** Based on the revision of the types, *P. punctipennis* (Bernhauer, 1916) is a junior synonym of *P. impressipennis* (Sharp, 1891). This species is similar to *P. puncticeps*, and some specimens resemble *P. violaceus*. It is distinguished from *P. puncticeps* as follows: the labial apical palpomere is obliquely truncate apically and the internal margin is almost 0.5 times as long as the external margin, the head is oblong (length/width: 1.24–1.50; compare Figs. 43b, 47b), the ventral surface of the head has moderately dense, expanded, umbilicate punctures (10–19 in each half of head), the aedeagus is slightly longer, and the internal sac more visible and  $\text{ij}\hat{\text{i}}$  shaped. It is distinguished from *P. violaceus* in that the apical antennomere in males is shorter than antennomeres 9+10 combined and the aedeagus shorter and ovate.

**Geographical distribution.** Peru (first national record), Colombia, and Ecuador (Herman 2001).

### *Plochionocerus janthinus* (Erichson, 1847)

*Agrodes janthinus* Erichson, 1847: 88; Bernhauer & Schubert, 1914: 315 (*Sterculia*); Herman, 2001: 3745 (*Plochionocerus*).

*Sterculia peruviana* Bernhauer, 1907: 284; Herman, 2001: 3746 (*Plochionocerus*), **syn. nov.**

**Type material** (2 specimens). **Lectotype** of *Agrodes janthinus* by present designation, female: “5796 / Peru mont. Phil / *janthina* / Hist. Coll. (Coleoptera) Nr. 5796 *Sterculia janthina* N. Peru mont., Phil. Zool. Mus. Berlin / Syntypus *Agrodes janthinus* Erichson, 1847 labelled by MNHUB 2006 / *janthina* Er\*/ Lectotype *Agrodes janthinus* Asiain, Márquez & Morrone des. 2007” (ZMHB). **Holotype** of *Sterculia peruviana*, male: “Callanga, Perú / *occidua* Fvl. Det. Fauvel. Bang-Hass determ. M. Bernh. / *peruviana* Brh. Typus / Chicago NHMus M. Bernhauer Collection” (FMNH).

**Additional material** (23 specimens). **BOLIVIA:** Coroico, 1800 m, X–XII.1906, Gerlopp, Fassel (BMNH, ♀; FMNH, ♀); Rio Bongo, 750 m, Fassel (FMNH, ♀); Cochabamba, 109 km E Yungas (Cochabamba-Villa Tunari Rd), 1480 m, 17°8'59"S, 65°42'29"W, 8–12.II.1999, R. Anderson, ex: transition montane forest cloud litter (SEMC, ♂); Cochabamba, 117 km E, Yungas, Lagunitas, 1000 m, 17°6'22"S, 65°40'57"W, 1–6.II.1999, F. Genier, ex: flight intercept trap (SEMC, ♂); San Antonio (BMNH, ♂); Songo (BMNH, ♂); Yungas (IRSNB, 3♀). **PERU:** Chanchamayo, 1500 m, Hogne (FMNH, ♀); Chanchamayo, Rolle (AMNH, ♀); Chanchamayo (FMNH, ♀); Poguzo, Rolle (CC-UAEH, ♂); no locality data (BMNH, ♂; FMNH, ♀; IRSNB, ♀); Chanchamayo, 1899, E. Viale, D. Batian (FMNH, ♀); Depto. Cuzco, km 165 on Cosnipata Hwy., 1200 m, Cosnipata Vly., 13.X–25.XI.1981, tropical forest, J. Fitzpatrick & D. Willard (FMNH, ♂); Upper Rio Huallaga, 3.X.1929 (AMNH, ♂); Rio Santiago, 21.XI.1924 (AMNH, ♀); Huanuco, Piedras Grandes, 2500–3600 m, 22.XI.1937, F. Woytkowski (SEMC, ♂); Callanga (IRSNB, ♂).

**Diagnosis.** Total length 22.5–27.2 mm; metallic violet-blue with green or violet-blue reflections and green abdomen; head rectangular, 1.31–1.49 times as long as wide, moderately wider than pronotum (1.15–1.29 times), dorsally and ventrally flat (similar to Fig. 13), ventral surface with moderately dense, expanded, umbilicate punctures (10–19 in each half of head), arranged in  $\text{iv}\hat{\text{i}}$  (similar to Fig. 50); apical antennomere in males moderately longer than wide (1.33–1.70 times) and shorter than antennomeres 9+10 combined (0.88–0.93 times their length); mandibles with basal external channel (Fig. 63). Pronotum long (length/width: 1.50–1.64); shorter than elytra (0.79–0.85 times their length); with two slightly visible, depressed areas in posterior third; prosternum moderately transverse (length/width: 0.82–0.91); aedeagus ovate, with basal half curved, length 3.2–3.9 mm, with parameres moderately long (0.33–0.41 times as long as the median lobe), apical area of median lobe 0.30–0.35 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 84).

**Variation.** Usually the head is narrowed from the posterior angles toward the neck; and that the umbili-

cate punctures on the dorsal area of the head constitute deep cells, like a honeycomb. Some punctures on the pronotum are wider than the remaining fine punctures.

**Comparative notes.** Based on the revision of the holotypes, *P. peruvianus* (Bernhauer, 1907) is a junior synonym of *P. janthinus* (Erichson, 1847). The species can be confused with other species (such as some specimens of *P. impressipennis*) with a rectangular, dorsally and ventrally flattened head. The apical antennomere in males of both species is shorter than antennomeres 9+10 combined, the length/width proportions of the head and pronotum are similar, and both have moderately dense, expanded, umbilicate punctures on the ventral surface of head. They can be distinguished because in *P. janthinus* the head is moderately wider than the pronotum, some punctures are wider on the pronotum and the aedeagus is moderately longer, with its base curved and with a moderately visible internal sac.

**Geographical distribution.** Peru and Bolivia (Herman 2001).

### *Plochionocerus marquezii* Asiain, 2006

*Plochionocerus marquezii* Asiain, 2006: 406.

**Type material** (8 specimens). **Holotype**, male: “Naranjo, VI.43. COSTA RICA / Typus / Field Mus. Nat. Hist. 1966 A. Bierig Colln. Acc. Z-13812 / *Sterculia flagellum* Big. / *flagellum* / Holotype *Plochionocerus marquezii* Asiain 2006.” (FMNH). **Paratypes**: “Costa Rica: Puntarenas Prov. Altamira Biol. Sta., 510–1600 m. 09°01.76’N, 83°00.49’W, 5.VI.2004. J. S. Ashe, Z. Falin, I. Hinojosa, Ex: tree fall litter CR1AFH04 111 / Paratype *Plochionocerus marquezii* Asiain 2006.” (SEMC, ♂, 1♀; CC-UAEH, ♀); *idem*, except: “7.VI.2004, CR1AFH04 145 / Paratype *Plochionocerus marquezii* Asiain 2006” (SEMC, ♂); “Costa Rica: Puntarenas Prov. Las Cruces Biol. Sta., 1330 m. 08°47.14’N, 82° 57.58’W 28.V.2004, J. S. Ashe, Z. Falin, I. Hinojosa, Ex: tree fall litter CR1AFH04019 / Paratype *Plochionocerus marquezii* Asiain 2006.” (SEMC, ♂); “ECUADOR / R.I.Sc.N.B. 17.679 Coll. et. det. A. Fauvel / Paratype *Plochionocerus marquezii* Asiain 2006.” (IRSNB, ♀); “VENEZUELA: Aragua Rancho Grande Biol. Stn. 10°21’0”N, 67°41’0”W, 1200–1300 m. 13 May 1998; J. Ashe, R. Brooks, R. Hanley. VEN1ABH98 016 ex: tree fall litter / Paratype *Plochionocerus marquezii* Asiain 2006.” (SEMC, ♂).

**Diagnosis.** Total length 13.5–16.6 mm; metallic blue or green with violet elytra; head elongate, tapering posteriad, 1.44–1.51 times as long as wide, moderately wider than pronotum (1.02–1.13 times), dorsal surface convex, ventral surface flat (Fig. 14), with very dense, expanded, umbilicate punctures (>30 in each half of head), arranged in “v” (similar to Fig. 53); apical antennomere in males conspicuously oblong (length/width: 1.68–1.85), but shorter than antennomeres 9+10 combined (0.89–0.92 times; Fig. 27); anterior margin of labrum with pair of central, pointed, big teeth (Fig. 34); mandibles with basal external channel (Fig. 63); apical labial palpomere elongate, slightly truncated at apex (Fig. 45); pronotum 1.57–1.73 times as long as wide, shorter than elytra (0.79–0.84 times their length), with two slightly visible depressed areas in posterior third; pronotal hypomeron with fine and scarce setae in anterior third (at level of procoxae); prosternum slightly oblong (length/width: 1.00–1.11), with fine and dispersed setae in anterior region; aedeagus elongate, length 1.40–1.68 mm, with parameres long (0.58–0.59 times as long as median lobe), apical area of median lobe 0.41 times as long as the total length of median lobe, and internal sac not visible (Fig. 85).

**Variation.** In addition to the length and color, the posterior half of the lateral margins of the pronotum can be straight or slightly curved and the sixth visible abdominal sternite of males has more setae than the female.

**Comparative notes.** This species was recently described by Asiain (2006). It is similar to *P. gracilis*; the main differences are discussed in the Comparative notes of that species.

**Geographical distribution.** Costa Rica, Venezuela, and Ecuador (Asiain 2006).

***Plochionocerus modestus* Asiain, Márquez & Morrone, sp. nov.**

**Type material.** **Holotype**, male: “VENEZUELA, Caracas / Venezuela. 55.59 / Holotype *Plochionocerus modestus* Asiain, Márquez & Morrone, 2007” (BMNH).

**Description.** Total length 18.0 mm. Metallic violet.

**Head.** Subquadrate, slightly oblong (length/width: 1.24), moderately wider than pronotum (1.1 times); dorsally slightly convex, ventrally flat and with moderately dense, expanded, umbilicate punctures (10–19 in each half of head; similar to Fig. 50); first antennomere 1.68 times as long as antennomeres 2+3 combined, second antennomere 0.75 times as long as third antennomere, antennomere 4 subquadrate, antennomeres 5–10 transverse, antennomere 9 as long as antennomere 10, apical antennomere in male moderately oblong (length/width: 1.42), as long as antennomeres 9+10 combined; mandibles without basal external channel.

**Thorax.** Pronotum moderately oblong (length/width: 1.34); shorter than elytra (0.83 times their length); with two clearly visible depressed areas in posterior third (Fig. 56). Prosternum transverse (length/width: 0.72).

**Aedeagus.** Ovate, length 2.8 mm, with parameres moderately long (0.41 times as long as median lobe), apical area of median lobe 0.33 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 86).

**Comparative notes.** The head of the only specimen is subquadrate, but the posterior angles are somewhat convex, so it is difficult to be precise about its shape. Because the head is subquadrate, and the dorsal and ventral surfaces are flat or moderately convex, and the apical antennomere in male is as long as antennomeres 9+10 combined, this species can be confused with *P. humeralis*, *P. fulgens* and *P. simplicicollis*. From *P. humeralis* it is distinguished by antennomere 9 being as long as antennomere 10 in the male, the slightly dense, ventral punctation of the head and the ovate aedeagus. From *P. fulgens* it is separated by the moderately oblong head, the small, ovate aedeagus and with the moderately visible internal sac; and from *P. simplicicollis* by the slightly dense, umbilicate punctures on the ventral surface of the head and the absence of the external basal mandibular channel.

**Geographical distribution.** Venezuela.

**Etymology.** The name of this species refers to the moderate range of its characters, when compared with other species of the genus.

***Plochionocerus newtonorum* Asiain, Márquez & Morrone, sp. nov.**

**Type material** (3 specimens). **Holotype**, male: “FRENCH GUIANA: Decembre / Guyane Francaise, Nouveau Chantier Collection Le Mount / *fulgens* F. det. Bernh. / Chicago NHMus M. Bernahuer Collection / Holotype *Plochionocerus newtonorum* Asiain, Márquez & Morrone, 2007”. (FMNH). **Paratypes**: “Guyane Francaise, Nouveau Chantier Collection Le Mount / Mars / *fulgens* F. det. Bernh. / *idem* fourth label / Paratype *Plochionocerus newtonorum* Asiain, Márquez & Morrone, 2007” (FMNH, ♀). “Fevrier / Guyane Francaise St-Laurent du Maroni Collection Le Mount / *fulgens* F. det. Bernh. / *idem* fourth label / Paratype *Plochionocerus newtonorum* Asiain, Márquez & Morrone, 2007” (FMNH, ♀).

**Description.** Total length 19.7–21.2 mm. Metallic green or violet-blue.

**Head.** Almost rounded, 1.29–1.33 times as long as wide, almost as wide as pronotum (1.03–1.07 times), dorsally and ventrally flat (similar to Fig. 13); ventral surface with slightly dense, expanded, umbilicate punctures (10–19 in each half of head), arranged in  $\hat{v}$  (similar to Fig. 50); first antennomere 1.64 times as long as antennomeres 2+3 combined, second antennomere 0.60 times as long as third antennomere, antennomeres 4–10 moderately transverse, increasing in size toward antennomere 10, antennomere 9 as long as antennomere



10, apical antennomere in males 1.33 times as long as wide and as long as antennomeres 9+10 combined; mandibles with basal external channel (Fig. 63).

*Thorax.* Pronotum moderately oblong (length/width: 1.34–1.41); shorter than elytra (0.76–0.77 times their length); with two clearly visible, depressed areas in posterior third (Fig. 56). Prosternum moderately transverse (length/width: 0.72–0.80).

*Aedeagus.* Pear-shaped, length 3.86 mm, with parameres moderately long (0.35 times as long as median lobe); apical area of median lobe 0.27 times as long as the total length of median lobe, and internal sac conspicuously visible (Fig. 87).

**Variation.** One specimen has the mandibular channel slightly visible.

**Comparative notes.** Because of its rounded head, with its flat or almost flat dorsal surface, *P. newtonorum* can be confused with *P. hermani* and *P. transversalis*. The species is differentiated from *P. hermani* in the Comparative notes of that species. *Plochionocerus newtonorum* can be distinguished from *P. transversalis* because antennomeres 4–10 are less transverse, the mandibular channel is present and the aedeagus has long parameres, and the internal sac is conspicuously visible.

**Geographical distribution.** French Guiana.

**Etymology.** We take pleasure in dedicating this species to Alfred F. Newton Jr. and Margaret K. Thayer (Field Museum of Natural History), for their constant support of our studies of Staphylinidae and their important contributions to the study of this group.

### ***Plochionocerus pronotalis* Asiain, Márquez & Morrone, sp. nov.**

**Type material** (2 specimens). **Holotype**, male: “COLOMBIA, Specimen on card / Del Colombia, Cordill Medina, 2000 m, 4.igii / *simplicicollis* Was. det. Bernh. / Chicago NHMus M. Bernahuer Collection / Holotype *Plochionocerus pronotalis* Asiain, Márquez & Morrone, 2007” (FMNH). **Paratype**, female: “Colombia, Cali, Fassel / Medina V.igii. on Colomb. 500 m. / Was. det. Bernh. / *idem* fourth label / Paratype *Plochionocerus pronotalis* Asiain, Márquez & Morrone, 2007” (FMNH).

**Description.** Total length 19.5–20.8 mm. Metallic violet-blue.

*Head.* Subquadrate, 1.22 times as long as wide, 1.35 times wider than pronotum; dorsally convex and ventrally flat (similar to Fig. 11); ventral surface of head with slightly dense, expanded, umbilicate punctures (10–19 in each half of head), arranged in *iv* (similar to Fig. 50); first antennomere 1.57 times as long as antennomeres 2+3 combined, second antennomere 0.67 times as long as third antennomere, antennomeres 4–10 moderately transverse and increasing in size toward antennomere 10, antennomeres 9 as long as antennomere 10, apical antennomere in males moderately longer than wide (1.38 times) and shorter than antennomeres 9+10 combined (0.88 times); mandibles with basal external channel (Fig. 63).

*Thorax.* Pronotum 1.62 times as long as wide; almost as long as elytra (1.05 times their length); without depressed areas; upper line of pronotal hypomeron almost completely absent. Prosternum moderately transverse (length/width: 0.84).

*Aedeagus.* Pear-shaped, length 4.33 mm, parameres short (0.24 times as long as median lobe), apical area of median lobe 0.26 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 88).

**Variation.** The mandibular channel is slightly to clearly developed, but always visible; the upper line of the pronotal hypomeron is almost completely absent in the holotype and slightly visible in the paratype; and the mandibles in males are slightly shorter than in females.

**Comparative notes.** Easily distinguished from other species by the rectangular or almost subquadrate head, the pronotum that is almost as long as the elytra, the lack of depressed areas on the posterior third of the pronotum, and the poorly developed upper line of the pronotal hypomeron.

**Geographical distribution.** Colombia.

**Etymology.** The name refers to the pronotum, which possesses some important diagnostic features.

***Plochionocerus puncticeps* (Sharp, 1885)**

*Sterculia puncticeps* Sharp, 1885: 470; Herman, 2001: 3746 (*Plochionocerus*).

*Araeocnemus lauta* Casey, 1906: 360; Bernhauer & Schubert, 1914: 315 (*Sterculia*); Herman, 2001: 3745 (*Plochionocerus*), **syn. nov.**

**Type material** (2 specimens). **Holotype** of *Sterculia puncticeps*, male: “*Sterculia puncticeps*, Type D.S., Costa Rica, Van Patten (specimen on card) / Type / Costa Rica, Van Patten / B. C. A. Col. I. 2. *Sterculia puncticeps*, Sharp / Sharp Coll. 1905–313 / Holotype” (BMNH). **Holotype** of *Araeocnemus lauta*, male: “Casey, bequest 1925 / Panama / Type USNM 48182 / *Araeocnemis lauta* Cay. Washington” (USNM).

**Additional material** (57 specimens). **COSTA RICA:** Puntarenas, Monte Verde, Chomogo Trail, 1690 m, 23.V.1898, J. Ashe, R. Brooks & R. Leschen ex., pitfall trap (SEMC, 2♂, ♀); Puntarenas Prov., Monteverde Biol. Sta., 1540 m, 10°19.672'N, 84°49.141'W, 10–17.VI.2001, S. & J. Peck, ex FIT, cloud forest (SEMC, ♂); Puntarenas, Monte Verde, IV.1989 (SEMC, ♂); *idem*, except: 1610 m, 26.VI.1990, S. E. Roberts, ex. flight intercept trap (SEMC, ♂); *idem*, except: 1520 m, 21.V.1989, J. Ashe, R. Brooks & R. Leschen (SEMC, ♂); Puntarenas Prov., Las Alturas Biol. Sta., 1660 m, 08°56.17'N, 82°50.01'W, 2.VI.2004, J. S. Ashe, Z. Falin & I. Hinojosa, ex: fungus covered logs (SEMC, ♀); *idem*, except: ex: flight intercept trap (SEMC, ♀); San José Prov., Santo Domingo, Hotel Robledales, 1100 m, 14.XI.2001, R. Brooks, ex. misc. collections (SEMC, ♂); San José Prov., 3 km S San Antonio de Escazú, 1700 m, 9.VI.1988, W. Wcislo (SEMC, ♂); San José, San Antonio de Escazú, 1300 m, 9°39'16"N, 84°9'16"W, 1.VII–30.VIII. 1998, W. Eberthard & P. Hanson (SEMC, ♀); San José, Zurquí de Moravia, 1600 m, 1–30.V.1995, P. Hanson, ex: malaise trap (SEMC, ♀); Puntarenas, Wilson Botanical Garden, 14.VIII.1992, D. Brzoska (SEMC, ♂); Puntarenas, Las Cruces, Wilson Bot. Res., 25.V.1989, D. Brzoska (SEMC, ♂); Cartago Prov., Refugio Nac. De Fauna Silvestre Tapantí, 1 km E Station, 1300 m, 9°44.974'N, 83°46.902'W, 31.X.2001, R. Brooks, ex. under fermenting bark (SEMC, ♂); Alajuela, Peñas Blancas, 800–870 m, 19.V.1989, J. Ashe, R. Brooks & R. Leschen (SEMC, ♀); Prov. Puntarenas, Est. Biol. Las Alturas, 1500 m, Coto Brus, LS 322500, 591300, X.1991, M. A. Zumbado (INBC, 3♂♂); *idem*, except: XI.1991, M. Ramírez (INBC, ♂, ♀); *idem*, except: I.1992 (INBC, ♂, 2♀); Prov. Heredia, Transecto Las Alturas, Cerro Echandi, Z. P. Las Tablas, Coto Brus, LS 328000, 592500, 2000–2500 m, 15–17.X.1991, M. A. Zumbado (INBC, ♀); Prov. San José, Est. Zurquí, P. N. Braulio Carrillo, 500 m antes del Tunel, LN 226800, 535200, 1600 m, V.1991, G. Maass (INBC, 3♂♂); *idem*, except: IV.1991 (INBC, ♂); Prov. Puntarenas, Est. La Casona, Res. Biol. Monteverde, LN 253250, 449700, 1520 m, IV.1993, N. Obando (INBC, ♂); *idem*, except: XII.1992 (INBC, ♀); Prov. Puntarenas, Coto Brus, Est. Pittier, Send Cerro Pittier, LS 330030 578645, 1670 m, 9.IX.1999, R. González, red de golpe (INBC, ♂); *idem*, except: 1680 m, 4–16.VIII.2000, Intersección (INBC, ♂); Prov. Puntarenas, San Luis, R. B. Monteverde, LN 250850, 449250, 1040 m, X.1992, Z. Fuentes (INBC, 1?, ♂); *idem*, except: Buen Amigo, 1000–1350 m, VIII.1994, Intersección (INBC, ♂); Prov. San José, Est. Las Nubes de Santa Elena, LS 372500 507700, 1400 m, 7.IX.1995, E. Alfaro (INBC, ♂); Prov. San José, Send. Rio #2, 1 km al NE de la Estación Sta. Elena, LS 372000 508800, 1300 m, 9–12.I.1996, A. M. Maroto (INBC, ♂); Prov. Puntarenas, Cerro Frantzius, LS 334150 574450, 2134 m, 7.VIII.—7.IX.1997, R. Villalobos (INBC, ♂); Puntarenas, Cerro Quemado, LS 335600, 575100, 2100 m, 3–6.VI.1996, R. Villalobos (INBC, ♀); Puntarenas, Est. Pittier, Pila-Acla, LN 330900, 1670–2050 m, 5–18.I.1995, Z. Fuentes (INBC, ♂); Estrella de Cartago (IRSNB, 3♂♂); *idem*, except: Underwood (IRSNB, ♂); Irazu (IRSNB, ♂); El Gallita (Barba), 1600 m, VI.1942 (FMNH, ♂); Volcan Irazu, 1500–2000 m, Westing Vulkan Irazu, 1500–2000 m (FMNH, ♂); San J. de Coronado, 30.VI.1926, T. Assmann (CC-UAEH, ♂); San Isidro Coronado, V.1931. (T. Assmann) (FMNH, ♂); San Isidro Coronado, 22.I.1933 (FMNH, 1?); Pittier

(FMNH, ♀); Cartago (BMNH, ♀); Coronado, 1400–1500 m, T. Assmann, F. Nevermann, 4.IX.1932, “in kaffepo Flansung Auf Erdboden” (BMNH, ♂); Puntarenas, Las Alturas Field Station, 20 km N San Vito de Hava, 1500 m, 21–24.VI.1992, Zinder, malaise trap (AMNH, ♂); Pacayas (AMNH, ♂). **PANAMA:** Volc. Chiriqui, 5000 ft, VII.1930 (FMNH, 1?); Chiriqui (FMNH, 1?).

**Diagnosis.** Total length 18.3–26.4 mm; metallic violet-blue, metallic green in abdomen and legs; head subquadrate, slightly longer than wide (1.19–1.34 times), wider than pronotum (1.25–1.46 times), dorsally slightly convex, ventrally almost flat (in some specimens slightly convex), with very dense, expanded, umbilicate punctures (>30 in each half of head), arranged in  $\hat{v}$  (Fig. 53); apical antennomere in males moderately oblong (length/width: 1.33–1.64), shorter than antennomeres 9+10 combined (0.78–0.90 times; Fig. 28); mandibles with basal external channel (Fig. 63); pronotum 1.6–1.7 times as long as wide, shorter than elytra (0.81–0.90 times their length), with two slightly visible depressed areas in posterior third; prosternum moderately transverse (length/width: 0.75–0.86); aedeagus ovate, length 2.6–3.4 mm, parameres 0.37–0.48 times as long as median lobe, apical area of median lobe 0.32–0.38 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 89).

**Variation.** The body is violet-blue, but in one specimen the abdomen is green. In most specimens (mostly males) the head is wider at the posterior angles than the anterior ones, in some they are equal in width. The majority of the specimens has dense punctation that covers almost the entire ventral surface of the head, in some specimens the punctures are less dense and are confined to the lateral and posterior areas.

**Comparative notes.** Based on the revision of the holotypes, *P. lautus* (Casey, 1906) is a junior synonym of *P. puncticeps* (Sharp, 1885). Casey (1906) was unable to identify *P. lautus* with any species of *Sterculia*, *Agrodes* or *Plochionocerus* described in the *Biologia Centrali-Americana*. He probably did not study the type specimens of the species described by Sharp (1885) and only examined a small number of specimens; however, the original description of both species are coincident in describing the development of the punctures in the ventral surface of the head and the length/width proportions of the antennomeres. It is similar to *P. impresipennis*; the main differences are discussed in the Comparative notes of that species.

**Geographical distribution.** Costa Rica and Panama (Herman 2001).

### *Plochionocerus reticularis* Asiain, Márquez & Morrone, sp. nov.

**Type material** (2 specimens). **Holotype**, male: Mérida, VENEZUELA / Coll. et. det. A. Fauvel. *Sterculia humeralis* Sharp. R.I.Sc.N.M.17.479 / Holotype *Plochionocerus reticularis* Asiain, Márquez & Morrone, 2007 (IRSNB). **Paratype**, female: *idem* / Paratype *Plochionocerus reticularis* Asiain, Márquez & Morrone, 2007 (IRSNB).

**Description.** Total length 18.5–20.7 mm. Metallic, obscure green blue.

**Head.** Rectangular, 1.33–1.37 times as long as wide, as wide as pronotum, dorsally and ventrally flat (similar to Fig. 13), ventrally with slightly dense, expanded, umbilicate punctures (10–19 in each half of head; similar to Fig. 50); first antennomere almost twice as long as antennomeres 2+3 combined (1.88 times), second antennomere 0.73 times as long as third antennomere, antennomeres 4–10 moderately transverse, increasing in size toward antennomere 10, antennomere 9 shorter than antennomere 10 in males (0.86 times its length), apical antennomere in males conspicuously longer than wide (1.62 times) and longer than antennomeres 9+10 combined (1.21 times; Fig. 29); mandibles without basal external channel.

**Thorax.** Pronotum 1.48 times as long as wide; shorter than elytra (0.77–0.80 times their length); with two clearly visible depressed areas in posterior third and with some small and fine, umbilicate punctures combined (Fig. 57). Prosternum moderately transverse (length/width: 0.72–0.79).

**Aedeagus.** Pear-shaped, length 4.0 mm, with parameres moderately long (0.37 times as long as median lobe), apical area of median lobe 0.33 times as long as the total length of median lobe, and internal sac moder-

ately visible (Fig. 90).

**Variation.** The apical antennomere in males is slightly longer than in females; the upper line of pronotal hypomeron in males is absent at the level of the procoxae and reappears at the anterior corner, but in the females it is completely developed.

**Comparative notes.** It can be distinguished from the rest of the species, especially those with a rectangular or subquadrate head, because the apical antennomere in males is longer than antennomeres 9+10 combined, the head is flat dorsally and ventrally, the umbilicate punctures on the ventral surface of head are less dense, and the pronotum has fine punctures combined with some umbilicate punctures.

**Geographical distribution.** Venezuela.

**Etymology.** The name of this species refers to the umbilicate punctures on the head, which are deep, with their margins constituting a conspicuous web.

### *Plochionocerus simplicicollis* (C. Waterhouse, 1879)

(Fig. 1)

*Sterculia simplicicollis* C. Waterhouse, 1879: 421; Herman, 2001: 3746 (*Plochionocerus*).

*Sterculia basalis* Sharp, 1885: 469; Herman, 2001: 3744 (*Plochionocerus*), **syn. nov.**

*Sterculia mandibularis* Sharp, 1885: 468; Herman, 2001: 3745 (*Plochionocerus*), **syn. nov.**

*Sterculia pollens* Sharp, 1885: 469; Herman, 2001: 3746 (*Plochionocerus*), **syn. nov.**

*Araeocnemus fulgens*: Nordmann, 1837: 165; Bernahuer & Schubert, 1914: 315 (misidentification, *non* Fabricius, 1793).

*Sterculia nordmanni* Fauvel, 1901: 252 (replacement name for *S. fulgens* sensu Nordmann, 1837); Herman, 2001: 3746 (*Plochionocerus*), **syn. nov.**

**Type material** (9 specimens). **Lectotype** of *Sterculia simplicicollis*, male: "Medellin 78.39 / Type / *Sterculia simplicicollis* (Type) C. Waterh. / Holotype / Lectotype *Sterculia simplicicollis* Asiain, Márquez & Morrone des. 2007" (BMNH). **Lectotype** of *Sterculia basalis* by present designation, male: "*Sterculia basalis*. Type. Mexico. Coll. Guerin Meneville. (specimen on card) / Type / Mexico / Sharp Coll. 1905–313. / B. C. A. Col. I. 2. *Sterculia basalis*, Sharp. / Type / Lectotype *Sterculia basalis* Asiain, Márquez & Morrone des. 2007" (BMNH). **Paralectotype**, male: "*Sterculia basalis* var. Jalapa. Mexico. Höge (specimen on card) / Jalapa Mexico. Hoeg / B. C. A. Col. I. 2. *Sterculia basalis* Sharp / Paralectotype *Sterculia basalis* Asiain, Márquez & Morrone des. 2007". (BMNH). **Lectotype** of *Sterculia mandibularis* by present designation, male: "*Sterculia mandibularis* Type D. S. Jalapa. Mexico. Höge (specimen on card) / Type / Jalapa, Mexico. Hoeg / B. C. A. Col. I. 2. *Sterculia mandibularis*, Sharp. / Sharp Coll. 1905–313. / Syntype / Lectotype *Sterculia mandibularis* Asiain, Márquez & Morrone des. 2007" (BMNH). **Paralectotypes**, males: "*Sterculia mandibularis* D. S. Chontales. Nicaragua. Janson (specimen on card) / B. C. A. Col. I. 2. *Sterculia mandibularis*, Sharp. / Syntype / Paralectotype *Sterculia mandibularis* Asiain, Márquez & Morrone des. 2007" (BMNH); "*Sterculia mandibularis* D.S. / Jalapa. Mexico. Höge (specimen on card) / B. C. A. Col. I. 2. *Sterculia mandibularis*, Sharp. / Syntype / Paralectotype *Sterculia mandibularis* Asiain, Márquez & Morrone des. 2007" (BMNH). **Lectotype** of *Sterculia pollens* by present designation, male: "*Sterculia pollens*. Type D. S. Cache Costa Rica. Rogers (specimen on card) / Type / Cache Costa Rica. H. Rogers / B. C. A. Col. I. 2. *Sterculia pollens*, Sharp. / Sharp. Coll. 1905–313 / Syntype / Lectotype *Sterculia pollens* Asiain, Márquez & Morrone des. 2007" (BMNH); **Paralectotypes**, males: "*Sterculia pollens*. Chontales. Nicaragua. Janson (specimen on card) / Chontales, Nicaragua. Janson. / B. C. A. I. 2. *Sterculia pollens*, Sharp / Syntype / Paralectotype *Sterculia pollens* Asiain, Márquez & Morrone des. 2007" (BMNH); "Coban Vera Paz. Champion / B. C. A. Col. I. 2. *Sterculia pollens* var. Guatemala. Champion / Syntype / Paralectotype *Sterculia pollens* Asiain, Márquez & Morrone des. 2007" (BMNH).

**Additional material** (123 specimens). **COLOMBIA:** Santa Fé de Bogota, Dunckier (FMNH, 2♂♂); Muzo (FMNH, ♂); Santa Fé de Bogota (IRSNB, 2♂♂); no locality data (IRSNB, 2♂♂, 1♀); Guayaquil, Caesar

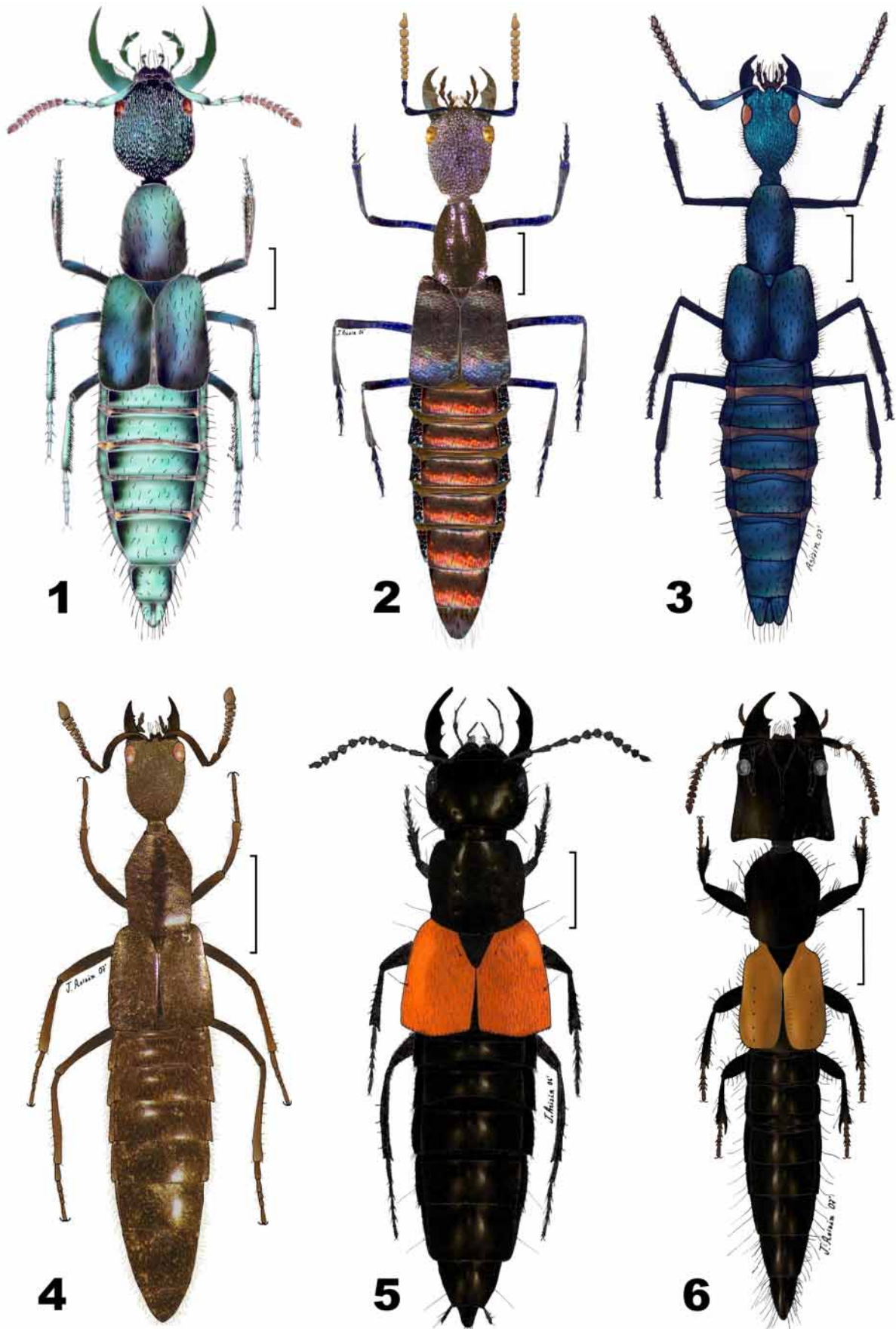
Urban ded., 14.II.1898 (IRSNB, ♂); State of Darien, 1909, H. Godge (BMNH, ♂); no locality data, Amazonas (IRSNB, ♂). **COSTA RICA:** Prov. Puntarenas, San Luis Monteverde, A.C. Arenal, LN 250850 449250, 1004–1350 m, VII.1993, Z. Fuentes (INBC, 2♂); *idem*, except: 900 m (INBC, ♂); Prov. Puntarenas, San Luis, R. B. Monteverde, LN 250850, 440850, 449250, 1040 m, 7.VIII.1992, Z. Fuentes (INBC, ♂); *idem*, except: VIII.1992 (INBC, ♀); *idem*, except: VII.1992 (INBC, ♂); *idem*, except: 1000–1350 m, IX.1993 (INBC, ♂); Prov. Guanacaste, Estac. Pitilla, 9 km S Santa Cecilia, 330200, 380200, 700 m, malaise trap, 1988, GNP Blod. Sur (INBC, ♀); *idem*, except: VI.1989, GNP Biodiversity Survey (INBC, 3♂♂); *idem*, except: Alajuela Prov., VII.1988, Espinoza & Chavez (INBC, ♂); *idem*, except: IX.1989, C. Moraga & P. Ríos (INBC, ♂); Prov. Heredia, Sardinalito, Braulio Carrillo N. P., 257500, 531200, 360–500 m, X.1989, R. Aguilar & M. Zumbado (INBC, 2♂♂); Prov. Limón, Manzanillo, RNFS Gandoca y Manzanillo, LS 398100, 610600, 0–100 m, 4–12.XII.1992, F. Quesada (INBC, ♂); Prov. San José, Est. Zurquí, 500 m antes de Tunel, LN 226800, 535200, 1600 m, IV.1991, G. Maass (INBC, ♂); Prov. Limón, Reserva Biol. Hitoy Cerere, Estación Hitoy Cerere, Send. Espavel, LS 401558 570460, 220 m, 12–26.VI.1999, W. Arana, Manual (red libre) (INBC, ♂); *idem*, except: Sendero Espavel, LS 570200 401500, 300 m, 24–30.V.2000, intersección (INBC, ♀); *idem*, except: 220 m, 13–17.V.1999, Manual (red libre) (INBC, ♂); *idem*, except: Valle La Estrella, LN 643400 184600, 100–200 m, 4–20.IV.1994, G. Carballo (INBC, ♂); Prov. Limón, Talamanca, San Miguel, Cabecur, LS 397900 576150, 325 m, 20.II.1997, I. A. Chacon, Manual (INBC, ♀); Prov. Guanacaste, Est. Cacao, lado SO Vol. Cacao, P. N. Guanacaste, LS 323300 375700, 800–1600 m, 12–17.VII.1993, M. Reyes (INBC, ♂); *idem*, except: M. A. Zumbado (INBC, ♂); Prov. Limón, Sector Cerro Cocorí, Fca. de E. Rojas, LN 286000, 567500, 150 m, VI.1991, E. Rojas (INBC, ♂); *idem*, except: V.1991 (INBC, ♂); *idem*, except: 31.I–21.II.1992 (INBC, ♂); Prov. Alajuela, Upala, Alb. Heliconias, Send Heliconias, LN 422600 299100, 700 m, 23.VI–2.VII.2000, A. López, intersección (INBC, ♂); *idem*, except: P. N. Volcán Tenorio, 17–28.VI.2001 (INBC, ♀); Prov. Alajuela, Sector Tucanes, LN 269600 457600, 640 m, 14.X–3.XII.1998, G. Caballo, Malaise (INBC, ♂); Puntarenas, Est. Biol. Las Alturas, Coto Brus, LS 322500, 591300, 1500 m, X.1991, M. Ramírez (INBC, ♂); Vara Blanca (FMNH, ♂); Vara Blanca, 2000 m, III.1936 (CC-UAEH, ♂); Zapote (Mayalg), VIII.1939 (FMNH, ♂); San Pedro de Montes de Oca, XI.1939 (FMNH, ♂); San José, 11.XI.1937, Nevermann, S. J. 2.XI.1937 (FMNH, ♂); Tapantí, IV.1941, Guzmán (FMNH, ♂); San José, Desamparado (FMNH, ♀); no locality data, F. Nevermann (FMNH, 1?); no locality data, C. H. Lankester (BMNH, ♂); Coronado, 1400–1500 m, T. Assmann & F. Nevermann (BMNH, ♀); Heredia, La Selva Res. Sta., 11–17.VI.1986, W. Hanson & G. Bohart (SEMC, ♂); Heredia, Sto. Domingo de Heredia, INBIO, Cafetal, 1100 m, 25–28.VI.1997, S. & J. Peck, ex: flight intercept trap (SEMC, ♂); Guanacaste, S. E. slope volcan Miravalles, nr. Rio Naranjo, Finca Agropecuaria Rio Naranjo, 28.III.1973, cloud forest, Dr. Whitehead (USNM, ♂). **EL SALVADOR:** Depto. Ahuachapán, San Benito, El Imposible (P. Nac. El Imposible), 13°49'09"N; 89°56'34"W, 22.VI.1997, 700 m, J. Davis (MNHDS, ♂); Depto. La Libertad, Los Chorros, 800 m, 9.II.1973, V. Hellebuyck (MNHDS, ♀). **GUATEMALA:** no locality data, C. C. Hoffmann (CNIN, ♂); Chimaltenango, Conradt (BMNH, ♂); no locality data (IRSNB, ♀). **HONDURAS:** Olancho, La Unión, 14 km N, P. N. La Muralla, 1500 m, 16.VIII.1994, wet, montane forest, flight intercept trap, S. & J. Peck (FMNH, ♂). **MEXICO:** Jalapa, Höge (BMNH, 2♂♂, 3♀♀); Veracruz, Jalapa, Höge (BMNH, ♀, 3?; FMNH, 2♂♂); Cordova, Salle (BMNH, ♂); Cordova, Sallé (BMNH, ♂); no locality data, Flohr (BMNH, 2♂♂); Durango, Villa Lerdo, Höge (BMNH, ♀); no locality data, Sharp Coll. ex Chevrolat (BMNH, ♀); Coatepec, J. Quiroz (BMNH, ♂); Veracruz, 7.1 km E Huatusco, 1230 m, 16.VII.1990, R. L. Minckley, ex., Compositae (SEMC, ♂); Veracruz, 7 km E Huatusco, Hwy. 125, 16.VII.1990, 1230 m, J. Ashe, K. J. Ahn & R. Leschen, ex: general collecting (SEMC, ♀); Veracruz, 2.3 km S Jalapa, 13.VII.1992, 1320 m, J. S. Ashe, ex: under logs (SEMC, 2♂♂); Veracruz, Coatepec, 25.X.1995, en la banqueta, R. Arce (IEXA, ♂); Veracruz, Ixtacaoquitlán, Cuautlapan, Cerro Cementos, 1300 m, 14–20.VIII.1996, A. Hernández, M. Torres & L. Delgado (IEXA, ♂); Ver., Xalapa, 17.VIII.1978, J. Peña M. (IEXA, ♀); Veracruz, Xalapa, 15.VIII.1996, al vuelo, R. Arce (IEXA, 1?); Veracruz, Banderilla, La Martinica, 1500 m, 31.VII.2004, bosque mesófilo, volando a las 13:00 hrs., A. y L. Delgado (IEXA, ♂); Veracruz, Xalapa, Jardín Botánico, 7.VII.2005, bosque mesófilo de montaña perturbado, Q. Santiago (QJSJ, ♂); Veracruz,

Sontecomapan, Los Tuxtlas. SAP, 18°35'06"N, 95°04'30"W, ex. bajo hojarasca, 22.VIII.2000, G. Ball (QJSJ, ♀); Veracruz, Coatepec, La Pitaya, selva mediana subcaducifolia perturbada, 1245 m, 19°29'28"N, 96°56'59"W, en suelo, 12.VIII.2000, J. Asiain, Q. Santiago & J. Márquez (MZFC, ♀); Ver., Xalapa, P. F. Clavijero, 5.VIII.1981, R. Ayala (MZFC, 2♂♂); Veracruz, Cascadas de Xico, bosque mesófilo de montaña y cultivo de temporal, ex. suelo, 4–5.VIII. 1996, Q. Santiago & J. Márquez (MZFC, ♀); Istmo, IX.1986 (CNIN, ♂); Ver., ca. Xalapa, 12.VIII.2004, E. Maya, ex basurero, cerca borde arroyo (CZUG, ♂); Ver., Huatusco, 19.VII.1993, bosque mesófilo de montaña, hojarasca, J. Márquez (JLN, ♂); Orizaba (IRSNB, 1?); Veracruz, Cayon Metlac, near Fortín, 3200 ft, 28.VII–1.VIII.1973, walking in path, A. Newton (FMNH, ♂); Veracruz, 2 mi Catemaco, 15.II.1976, F. Fisk (FMNH, ♀); Sallé, Cordova (FMNH, ♂); Cintalapa, La Pilar, 25.VIII.2001, C. J. Morales (CZUG, ♂); Oaxaca (IRSNB, ♀); Oaxaca, Soyalapa, VI.64 (CNIN, ♂); Chiapas, El Sumidero Park, Mirador La Coyola, 750 m, VII.1991, D. B. Thomas, ex: flight intercept (SEMC, ♀); Chiapas, Ocosingo, 1200 m, zona montañosa bosque primitivo, 6.IX.1947, M. del Toro (CNIN, ♀); no locality data (AMNH, ♂; BMNH, ♂; FMNH, ♀; IRSNB, ♀, 1?). **NICARAGUA:** Chontales, Janson (FMNH, 2♂♂). **PANAMA:** Panama, Cerro Campana, nr. Capira, 790 m, 08°44'N, 79°57'W, 8.VII.1995, A. Gillogly (SEMC, 3♂♂); *idem*, except: 30.V.1995, N. Upton, ex: crawling on ground (SEMC, ♂); *idem*, except: 1–5.VI.1995, J. Ashe & R. Brooks, ex: flight intercept trap (SEMC, ♀); *idem*, except: 820 m, 8°40'N, 79°56'W, 9.VI.1984, Stockwell (FMNH, ♂); Cerro Jefe (Cerro Azul), 09°19'N, 79°25'W, 600–870 m, 28.V.1995, J. & A. Ashe (SEMC, ♂); Chiriquí, 5.6 km N Boquete, La Culebra Trail, 1800 m, 8°49'23", 82°25'18"W, 15.VI.1996, R. Anderson, ex: cloud forest litter (SEMC, ♂); no locality data, Cent. Am. (AMNH, 2♂♂).

**Diagnosis.** Total length 18.0–25.2 mm; metallic violet or green blue, or head and thorax violet-blue and abdomen green; head varied in shape (rectangular to rounded with intermediate shapes), 1.13–1.31 times as long as wide, slightly longer than pronotum (1.13–1.35 times), dorsal and ventral surface of head varied in convexity, from flat to convex, ventral surface with dense, expanded, umbilicate punctures (20–29 in each half of head), arranged in  $\hat{\nu}$  (Fig. 50); apical antennomere in males moderately oblong (length/width: 1.36–1.54) and almost as long as antennomeres 9+10 combined (0.83–1.00 times); mandibles with slightly visible, basal external channel; pronotum 1.36–1.65 times as long as wide; shorter than elytra (0.67–0.86 times its length), with two clearly visible depressed areas in posterior third (Fig. 56); prosternum transverse, slightly transverse to as long as wide (length/width: 0.61–0.97); aedeagus ovate, with parameres moderately long (0.35–0.47 times as long as median lobe), apical area of median lobe 0.30–0.41 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 91).

**Variation.** Specimens from Mexico, Guatemala and El Salvador are smaller than specimens from Honduras, Nicaragua, Costa Rica, Panama and Colombia. The length of the body corresponds to the length of the aedeagus. The head of larger specimens is more convex and rounded and the mandibles larger (mandible length 2.15–3.90 mm); the head of smaller specimens is slightly convex and less rounded, and the mandibles are shorter. The body color may be violet-blue, metallic green or combinations of blue, green and violet. The mandibular channel can be slightly visible or reduced to 2–3 big punctures.

**Comparative notes.** Based on the revision of the type specimens (except for *S. nordmanni*), *P. basalis* (Sharp, 1885), *P. mandibularis* (Sharp, 1885), *P. pollens* (Sharp, 1885) and *P. nordmanni* (Fauvel, 1901) are junior synonymies of *P. simplicicollis* (Waterhouse, 1879). Sharp (1885) noted that *P. basalis* presents a rugosity at the base of the elytra, that was slightly visible in few specimens that we analyzed. Additionally, he mentioned that the mandibles and antennae of *P. mandibularis* and *P. basalis* were similar, but different in color; now we know that color is not a character useful to distinguish species of the genus. The long mandibles of *P. mandibularis* are not a reliable character, because they are also long in *P. pollens*. In the specimens analyzed, the length of the mandibles, color, size and convexity of head were very variable, but the body, mandibles and aedeagus of the specimens from Mexico and Guatemala are smaller than specimens distributed in the south. When Fauvel (1901) described *P. nordmanni*, he characterized it by the shorter mandibles and smaller body length than *P. fulgens*, character states that are within the range of intraspecific variation of *P.*

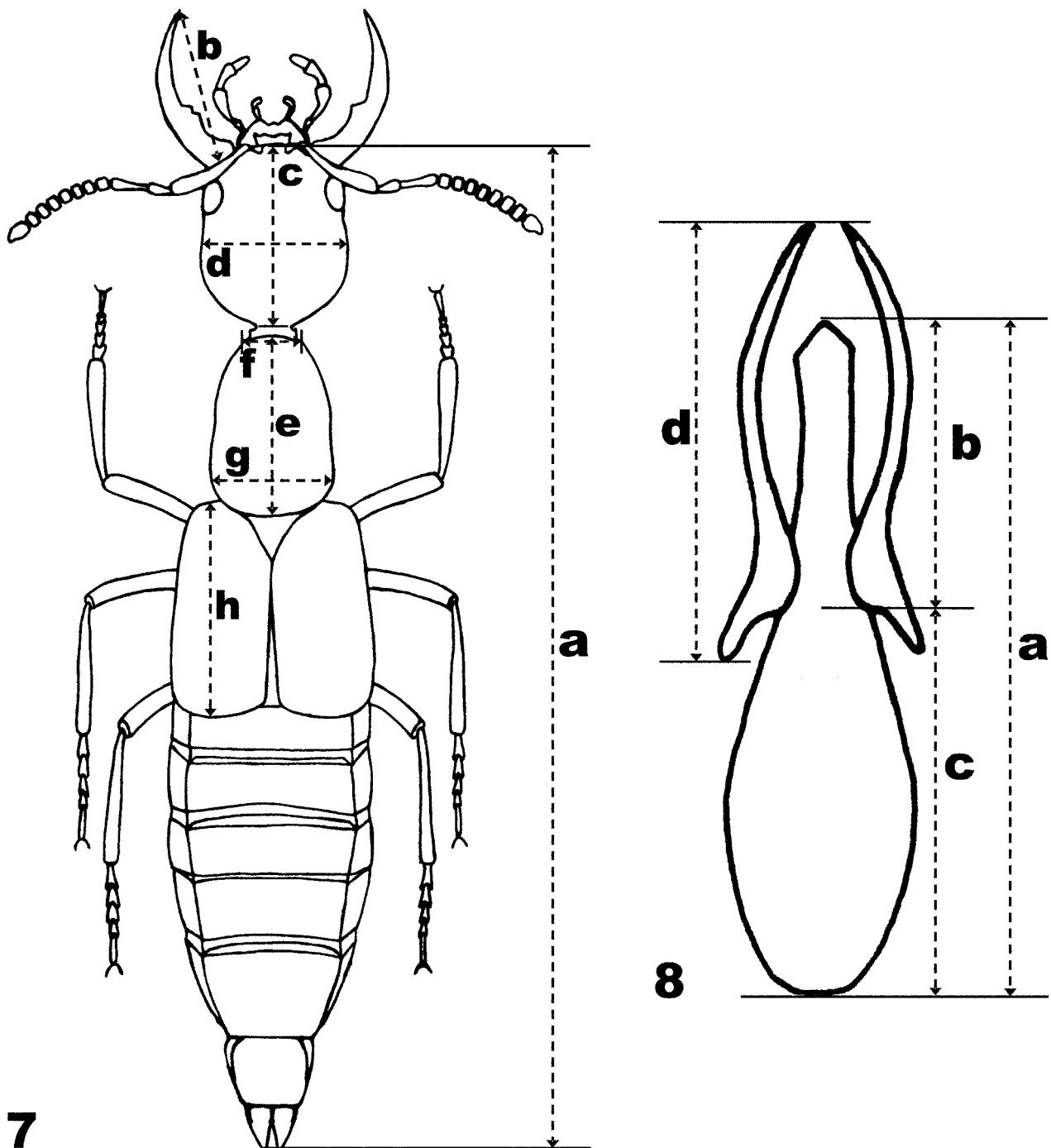


**FIGURES 1–6.** Habitus, dorsal view: 1, *Plochionocerus simplicicollis*; 2, *P. splendens*; 3, *Agrodes elegans*; 4, *Renda fimetaria*; 5, *Philonthus testaceipennis*; 6, *Homalolinus flavipennis*. Scale bar 3 mm.



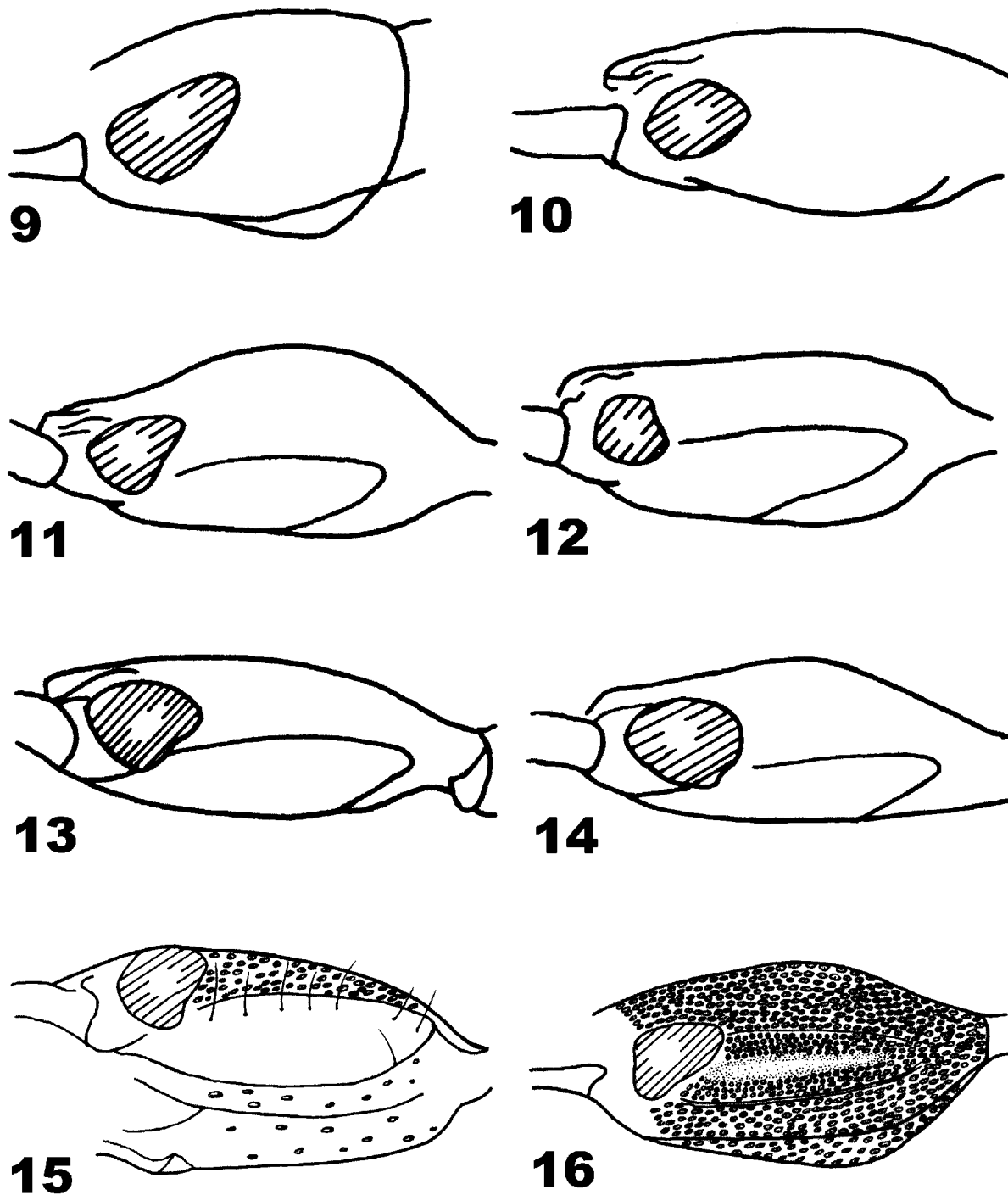
*simplicicollis*. Also, the labels of several specimens identified as *P. fulgens*, *P. basalis*, *P. nordmanni* or *P. pol-lens* suggest that they have been considered as variation (“var”) since their original description.

**Geographical distribution.** El Salvador, Honduras, and Panama (first national records), Mexico, Guatemala, Nicaragua, Costa Rica, and Colombia (Herman 2001).



**FIGURES 7–8.** Measurements scheme: 7, Dorsal view of *Plochionocerus simplicicollis* (a: total length of body, b: mandible length, c: head length, d: maximum width of head, e: pronotum length, f: anterior width of pronotum, g: posterior width of pronotum, h: elytral length); 8, aedeagus of *Plochionocerus discedens* (a: total length of aedeagus, b: apical area of median lobe, c: basal area of median lobe, d: paramere length).





**FIGURES 9–16.** Lateral view of head: 9, *Philonthus testaceipennis*; 10, *Agrodes elegans*; 11, *Plochionocerus discedens*; 12, *P. gracilis*; 13, *P. humeralis*; 14, *P. marquezii*; 15, *P. simplicicollis*; 16, *Renda flagellicornis*.

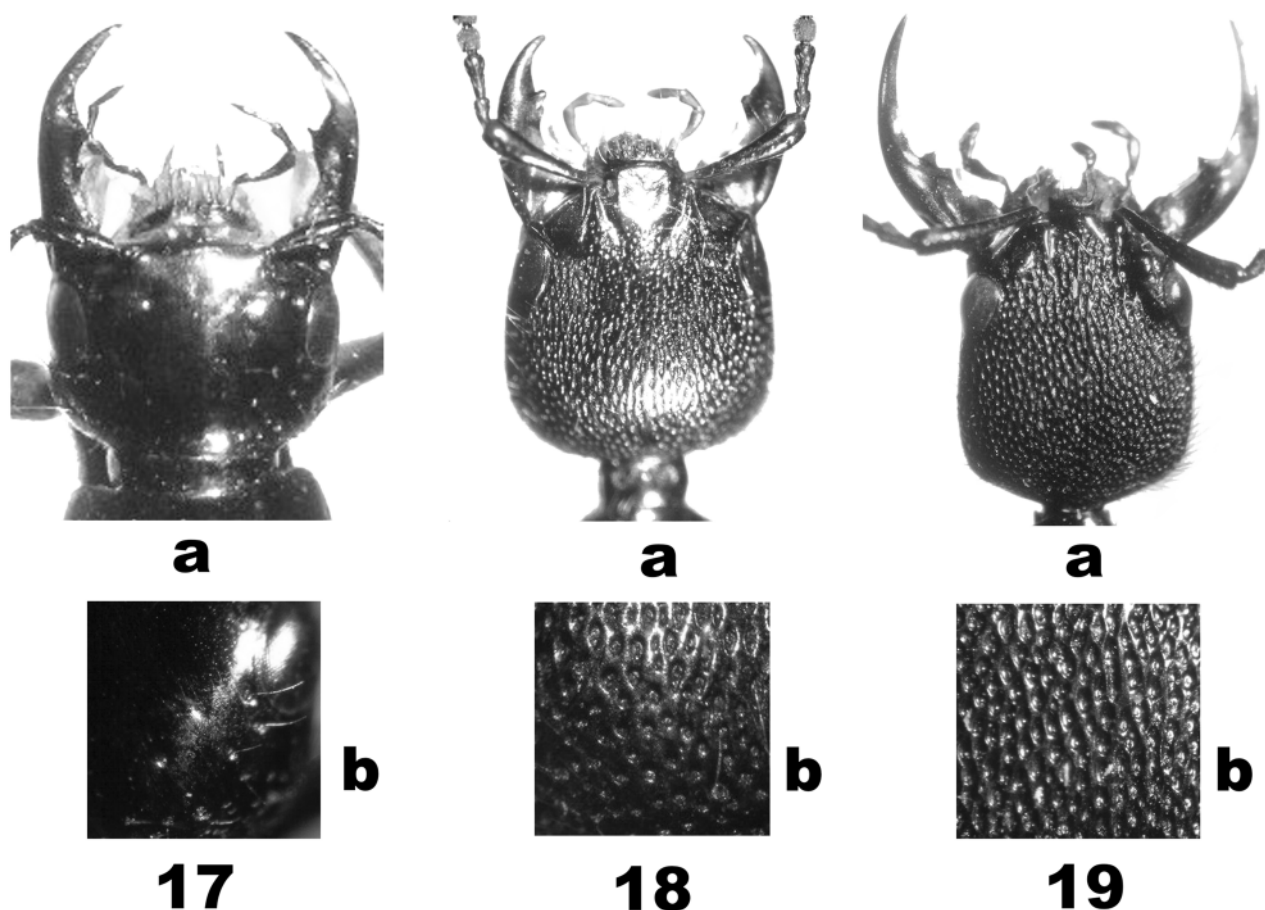
***Plochionocerus splendens* (Blanchard, 1842)**

(Fig. 2)

*Sterculia splendens* Blanchard, 1842: 83; Herman, 2001: 3746 (*Plochionocerus*).

*Sterculia fulgens* Brullé, 1842: pl. 5, fig. 10 (*non* Fabricius, 1793); Blanchard, 1842: 83 (synonym of *S. splendens*).

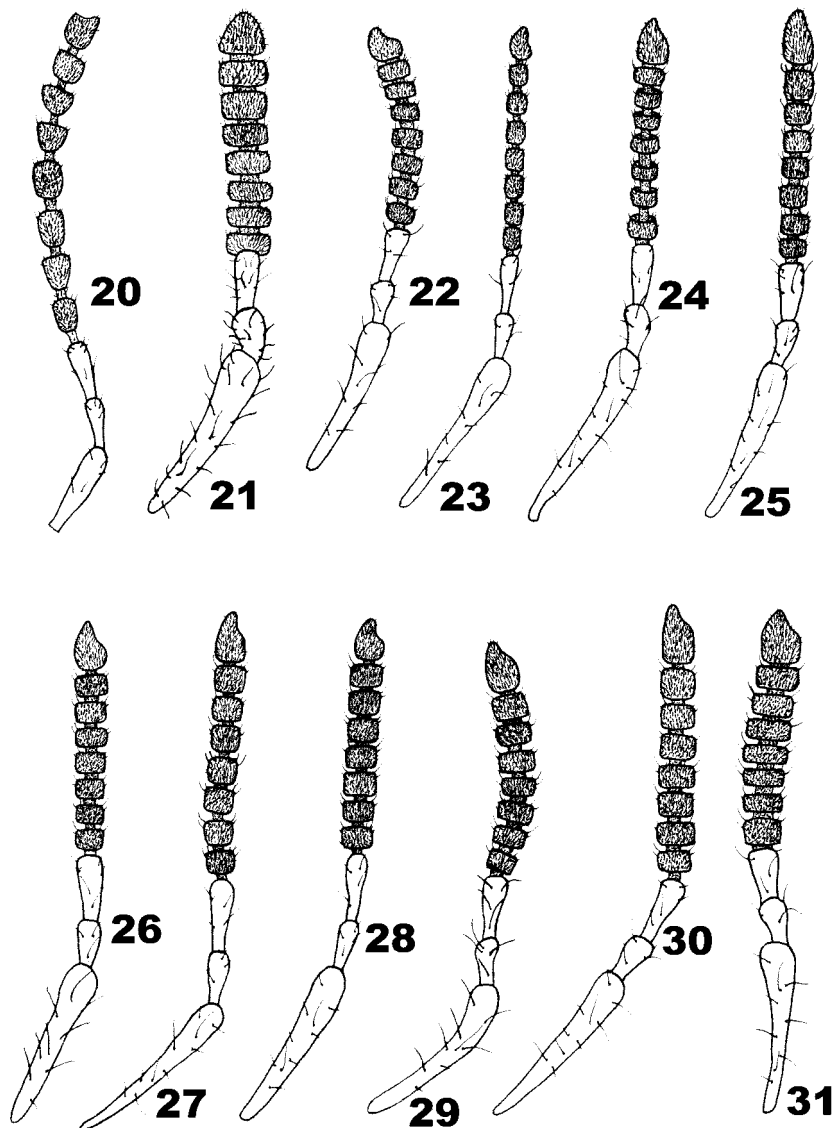
*Sterculia discolor* Sharp, 1876: 188; Bernhauer & Schubert, 1914: 315 (synonym of *S. splendens*).



**FIGURES 17–19.** Dorsal view of head (a) and detail of punctation (b): 17, *Philonthus testaceipennis*; 18, *Thyreocephalus puncticeps*; 19, *Plochionocerus simplicicollis*.

**Type material** (5 specimens). **Lectotype** of *Sterculia discolor* by present designation, male: “Ega / ♂ / S. America: Brazil. / Sharp Coll. 1905–313 / *Sterculia discolor* ind. Typ. D. S. Amazons Type / Lectotype *Sterculia discolor* Asiain, Márquez & Morrone des. 2007” (BMNH); **Paralectotypes**: “Type / Ega / S. America: Brazil. / Sharp Coll. 1905–313 / *Sterculia discolor* Type D. S. / Syntype / Paralectotype *Sterculia discolor* Asiain, Márquez & Morrone des. 2007” (BMNH, ♀); “Ega / ♂ / S. America: Brazil. / *idem* fourth label / *Sterculia discolor* ind. Typ. D. S. Amazons syntype / Paralectotype *Sterculia discolor* Asiain, Márquez & Morrone des. 2007” (BMNH, ♂); “Amazons / S. America: Brazil. / *idem* fourth label / *Sterculia discolor* ind. Typ. D. S. Amazons / syntype / Paralectotype *Sterculia discolor* Asiain, Márquez & Morrone des. 2007” (BMNH, ♂); syntype / Amazons / S. America: Brazil. / *idem* third label / *Sterculia discolor* ind. Typ. D. S. Amazons / Paralectotype *Sterculia discolor* Asiain, Márquez & Morrone des. 2007” (BMNH, ♂).

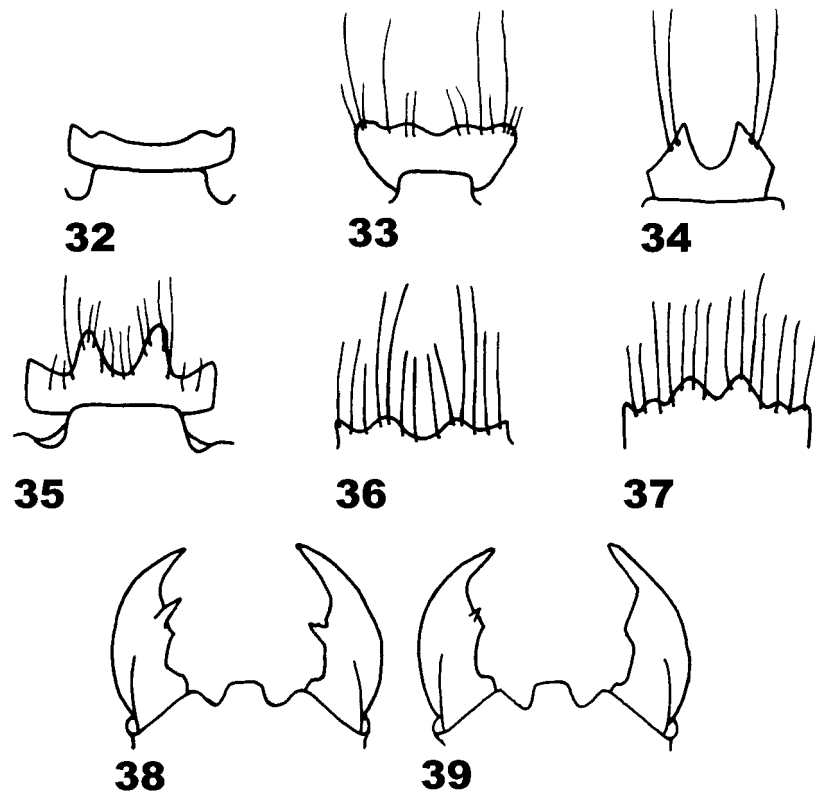
**Additional material** (49 specimens). **ARGENTINA:** Prov. Misiones, P.N. Iguazu, Sendero Macuco, 180 m, 23.XII.1990–6.I.1991, forest, S & J Peck, FIT (FMNH, 9♂♂, ♀; CC-UAEH, ♀). **BOLIVIA:** Rio Gongo, 450 m, Fassl (AMNH, ♀; FMNH, ♀); Coroico, 1800 m, X–XI.1906, Ganlopp (FMNH, 2♂♂); Yungas (IRSNB, 1?); no locality data (BMNH, ♂; FMNH, ♂). **BRAZIL:** S. America, Ega (FMNH, ♂); no locality data, Chapada, XI (FMNH, 1?); Cuaba, Matto Grosso, Bang-Haas (FMNH, ♂); Amazonas Ladonerika don-Schusler (FMNH, ♀); no locality data, Amazons Nauta (FMNH, ♂); no locality data, Bates (FMNH, 2♂♂); no locality data, Bowring (BMNH, ♂); Ega (BMNH, 2♂♂; IRSNB, ♂); Teffe, III.1925 (AMNH, 4♂♂); Teffe, X.1924 (AMNH, ♀); Teffe, II.1924 (AMNH, ♀); Goiaz, Jatal, XI.1972, F. M. Oliveira (AMNH, ♂). **PERU:** Madre de Dios, Rio Amiguillos, small river flood plain, 260 m, fligh intercept trap, 12°22'25.4"S,



**FIGURES 20–31.** Antennae: 20, *Philonthus testaceipennis*; 21, *Renda flagellicornis*; 22, *Agrodes conicicollis*; 23, *A. elegans*; 24, *Plochionocerus gracilis*; 25, *P. humeralis*; 26, *P. igneus*; 27, *P. marquezii*; 28, *P. puncticeps*; 29, *P. reticularis*; 30, *P. splendens*; 31, *P. transversalis*.

70°22'13.2"W, V.2000, T. Larsen (USNM, ♂); Chanchamayo (CC-UAEH, ♂); Chanchamayo, 1500 m, Heyne (FMNH, 1?); Chanchamayo, A. Heyne, Berlin-Wilm (FMNH, 1?); Marcapata (FMNH, ♂); San Martín?, "Huallagas", I–III.1984, L. E. Peña (FMNH, 2♂♂); Cuzco Dept., Consuelo, Manu rd km 165, 2.X.1982, ex leaf litter, L. E. Watrous & G. Mazurek (FMNH, 2♂♂); Chorumago, VII.1926, A. F. Porter (FMNH, ♂); Madre de Dios, Cocha Cashu Bio. Stn., Manu Nacional Park, 350 m 11°53'45"S, 71°24'24"W, 18.X.2000, R. Brooks (SEMC, 2♂♂); Madre de Dios, Cocha Otorongo, Reserved Zone Manu Nacional Park, 310 m, 12°2'1"S, 71°11'18"W, 21.X.2000, R. Brooks (SEMC, ♂); Middle Rio Ucayali, II.1926 (AMNH, ♀, 2♂♂); Jan., Tingo Maria Huan., 2200 ft, XII.1947, J. C. Pallister (AMNH, ♂); *idem*, except: 22.XI.1946 (AMNH, ♂); *idem*, except: 28.V.1947 (AMNH, ♂); *idem*, except 16.X.1946 (AMNH, ♂); Rioja (Genou), Cumfrial Perou (IRSNB, 1?).

**Diagnosis.** Total length 21.2–29.0 mm; head, pronotum and elytra metallic violet or blue, with green, blue or violet reflections; elytra darker than the rest; abdomen dorsally red, with golden, blue or violet reflections, ventrally green with blue reflections or vice versa; head rectangular (Fig. 2), 1.25–1.42 times as long as wide,



**FIGURES 32–39.** Labrum: 32, *Homalolinus flavipennis*; 33, *Renda flagellicornis*; 34, *Plochionocerus marquezii*; 35, *P. simplicicollis*; 36, *P. puncticeps*; 37, *Agrodes elegans*. Mandibles: 38, *Agrodes conicicollis*; 39, *A. elegans*.

slightly wider than pronotum (1.00–1.13 times), dorsally and ventrally flat (similar to Fig. 13), ventral surface with slightly dense, expanded, umbilicate punctures (10–19 in each half of head), arranged in iv̂ (Fig. 68); antennomere 9 shorter than antennomere 10 in males (0.84–0.90 times its length), apical antennomere in males conspicuously oblong (length/width: 1.81–1.83), almost as long as antennomeres 9+10 combined (0.95–1.06 times; Fig. 30); mandibles without or scarcely developed basal external channel; pronotum 1.44–1.55 times as long as wide, shorter than elytra (0.77–0.83 times their length), with two clearly visible depressed areas in posterior third (Fig. 56); prosternum moderately transverse (length/width: 0.71–0.79; Fig. 68); aedeagus pear-shaped, length 4.40–6.36 mm, with parameres moderately long (0.25–0.34 times as long as median lobe), apical area of median lobe 0.24–0.33 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 92).

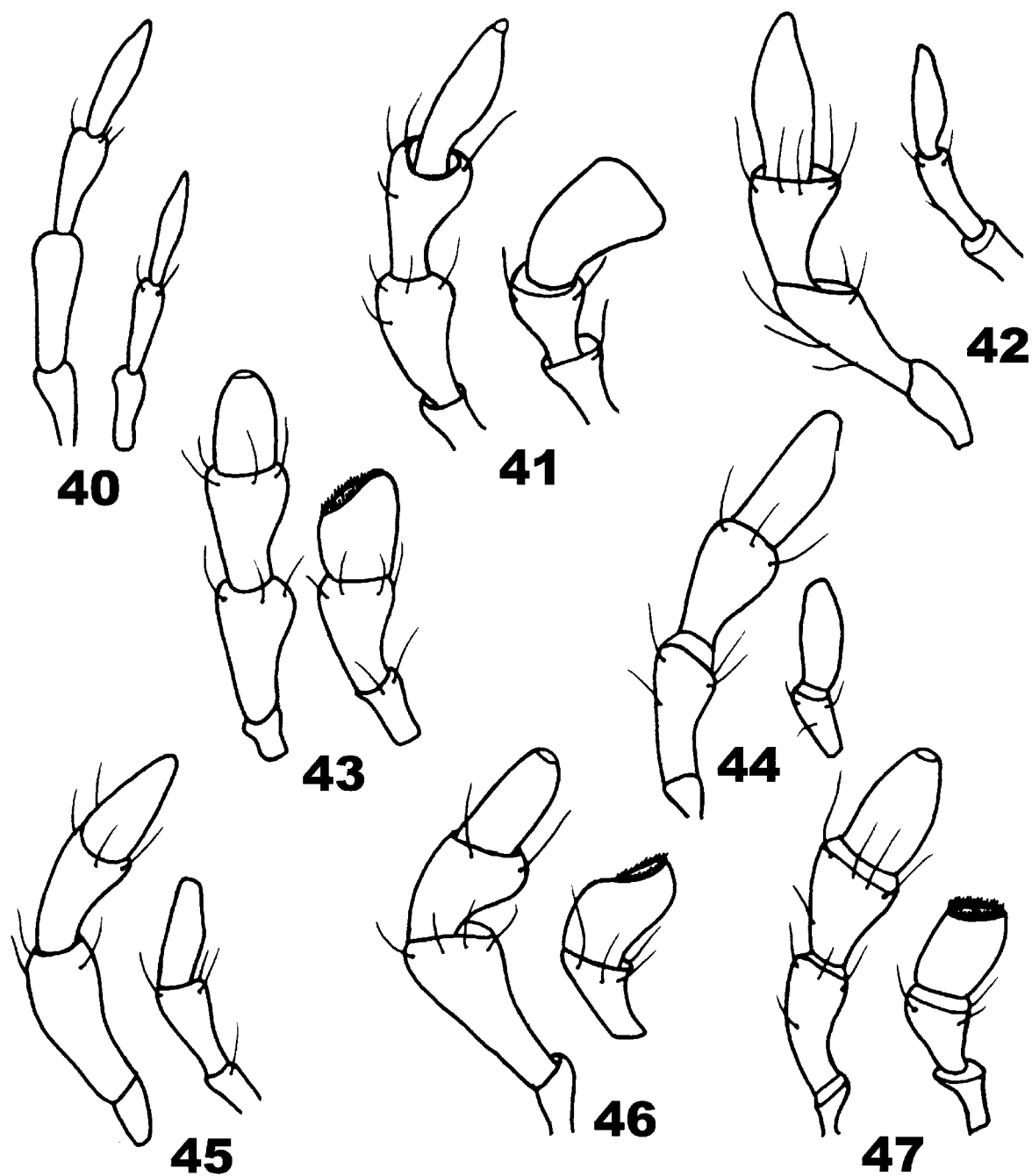
**Variation.** This species presents variation in body color, which can be violet, blue or green on the head, pronotum and elytra; and red, violet and blue on the abdomen, and the ventral surface is always lighter. The apical antennomere in males is longer than in females; the external basal mandibular channel is poorly developed in some specimens (30%).

**Comparative notes.** The species is similar to *P. igneus* in the color pattern of the abdomen; the main differences are noted in the Comparative notes of that species .

**Geographical distribution.** Argentina (first national record), Brazil, Peru, and Bolivia (Herman 2001).

***Plochionocerus transversalis* Asiain, Márquez & Morrone, sp. nov.**

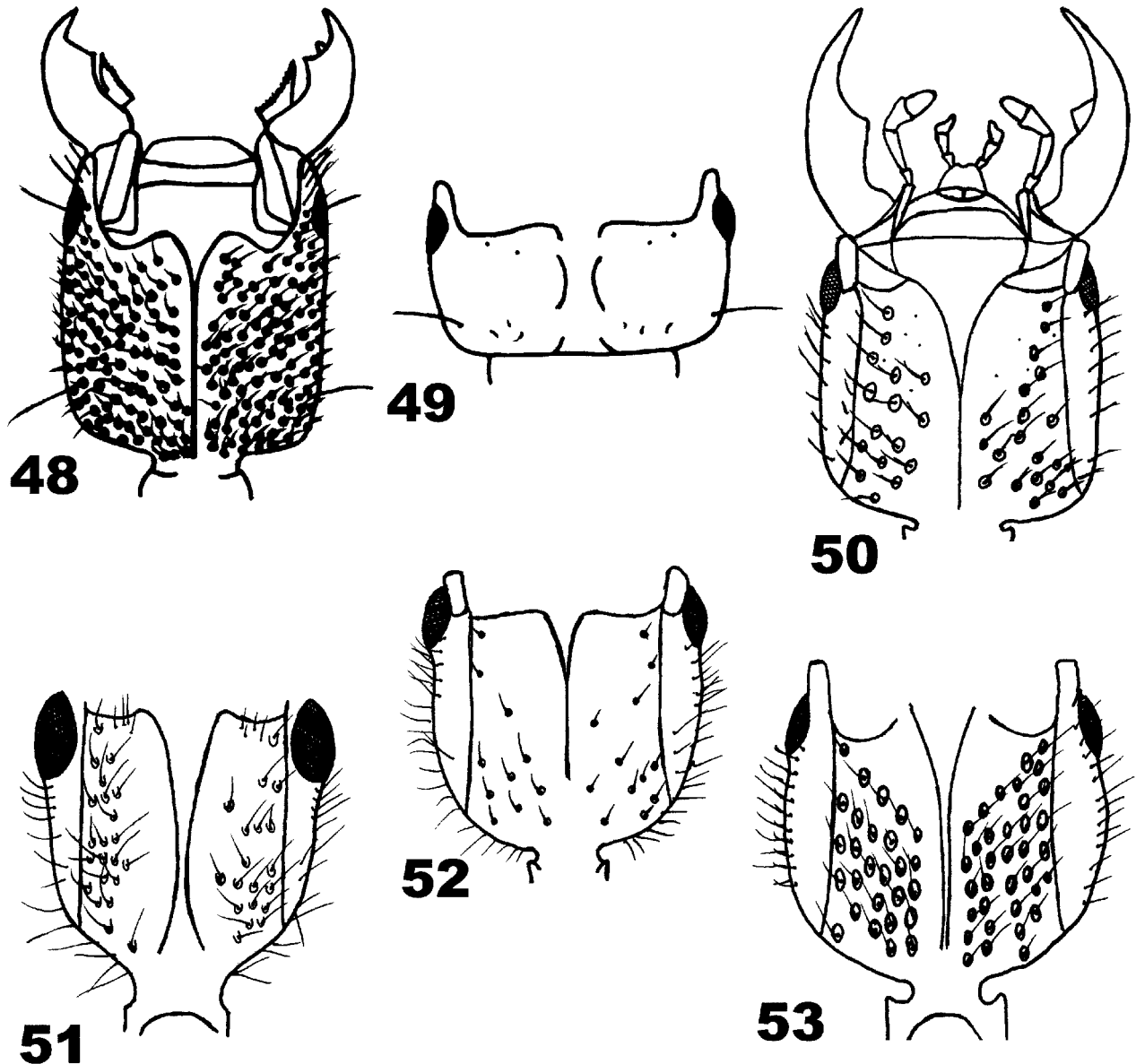
**Type material. Holotype**, male: “ECUADOR: Barou / *curticornis* Fvl. / R. I. Sc.N. B. 17.479 Coll. et det. A. Fauvel / Holotype *Plochionocerus transversalis* Asiain, Márquez & Morrone, 2007” (IRSNB).



**FIGURES 40–47.** Maxillary (a) and labial (b) palpi: 40, *Philonthus testaceipennis*; 41, *Renda flagellicornis*; 42, *Agrodes elegans*; 43, *Plochionocerus impressipennis*; 44, *P. gracilis*; 45, *P. marquezii*; 46, *P. simplicicollis*; 47, *P. puncticeps*.

**Description.** Total length 22.6 mm. Metallic blue green.

*Head.* Rounded, 1.26 times as long as wide, almost as wide as pronotum (1.03 times), dorsally and ventrally almost flat or slightly convex; ventral surface of head with slightly denser expanded, umbilicate punctures (10–19 punctures on each half of head), arranged in iv̂ (similar to Fig. 50); first antennomere 1.9 times as long as antennomeres 2+3 combined, second antennomere almost as long as third (0.81 times its length), antennomeres 4–10 conspicuously more transverse than remaining species, antennomere 9 almost as long as antennomere 10, apical antennomere in males 1.45 times as long as wide, almost as long as antennomeres 9+10 combined (1.07 times their length; Fig. 31); mandibles without basal external channel.



FIGURES 48–53. Cephalic ventral view: 48, *Renda flagellicornis*; 49, *Philonthus testaceipennis*; 50, *Plochionocerus simplicicollis*; 51, *P. gracilis*; 52, *P. hermani*; 53, *P. puncticeps*.

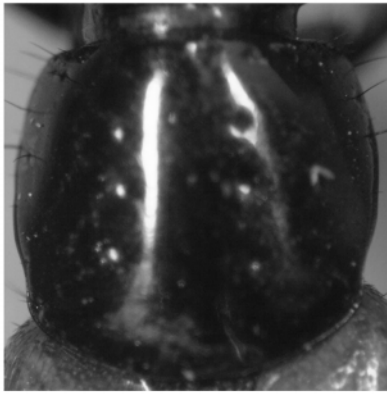
*Thorax*. Pronotum 1.44 times as long as wide, shorter than elytra (0.85 times their length), with two clearly visible, depressed areas in posterior third (Fig. 56). Prosternum transverse (length/width: 0.61).

*Aedeagus*. Pear-shaped, length 5.4 mm, parameres short (0.29 times as long as median lobe), apical areas of median lobe 0.28 times as long as the total length of median lobe, and internal sac moderately visible (Fig. 93).

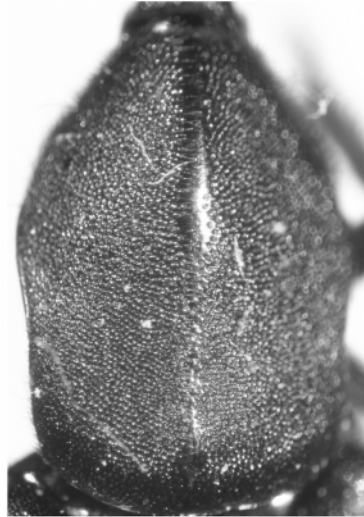
**Comparative notes.** This species has the antennomeres 4–10 conspicuously transverse, some umbilicate punctures are slightly wider on the pronotum, the upper line of the pronotal hypomeron is completely developed, the umbilicate punctures are slightly dense on the ventral surface of head, and mandibular channel are absent.

**Geographical distribution.** Ecuador.

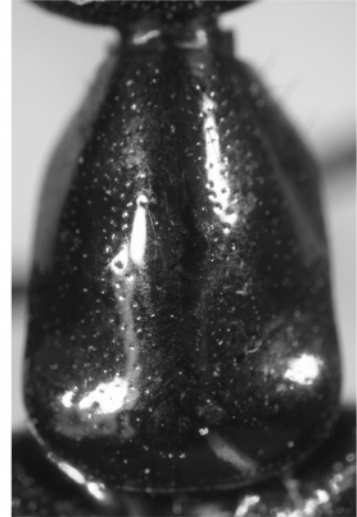
**Etymology.** The name of this species refers to the transverse antennomeres 4–10.



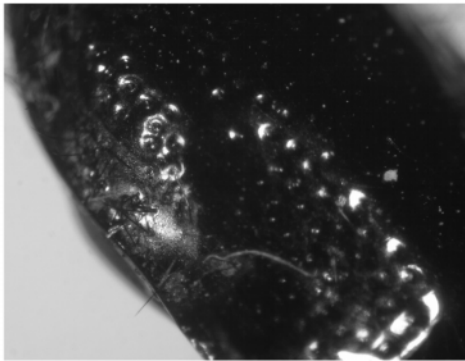
**54**



**55**



**56**



**57**



**58**



**59**



**60**

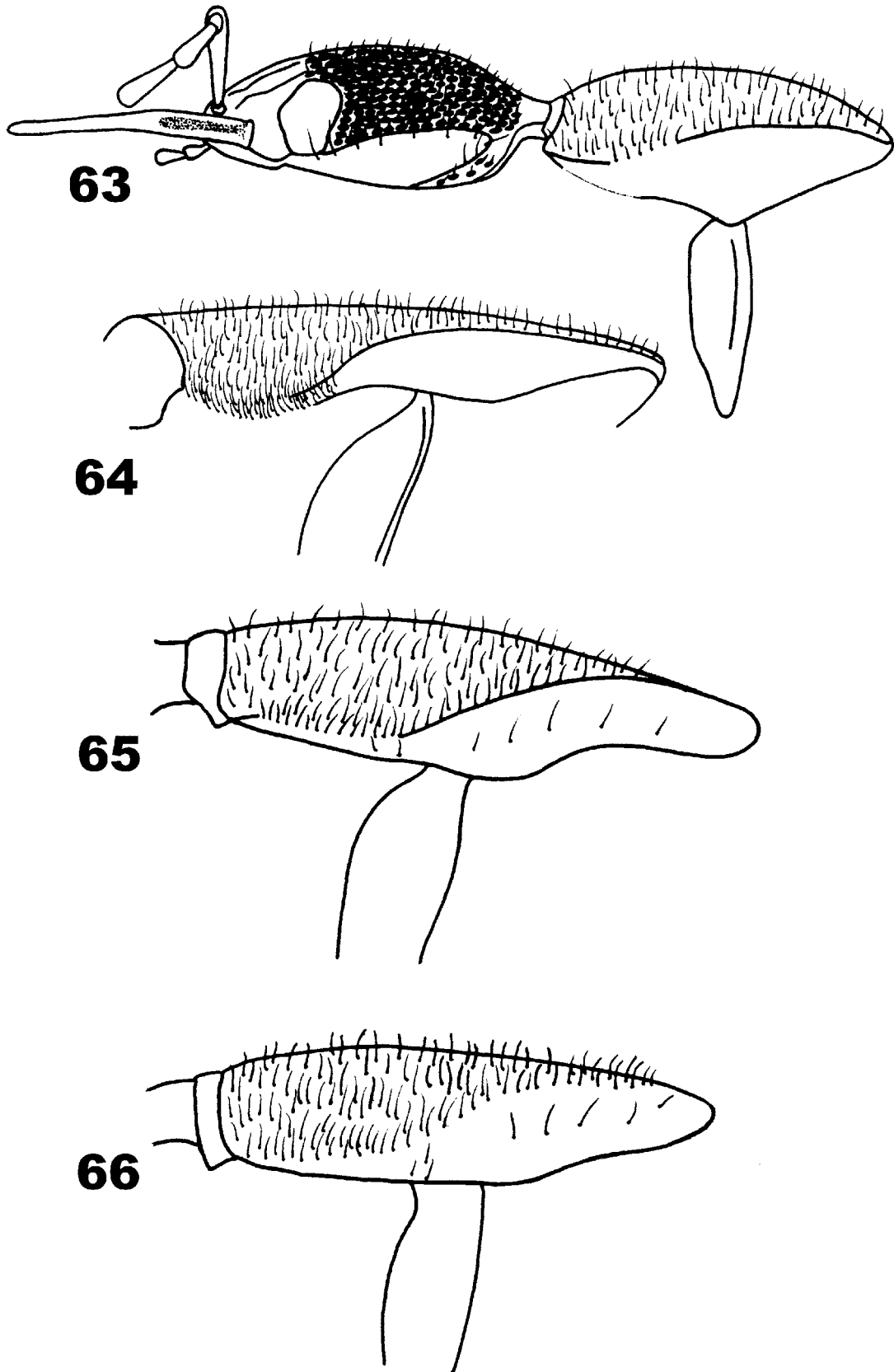


**61**



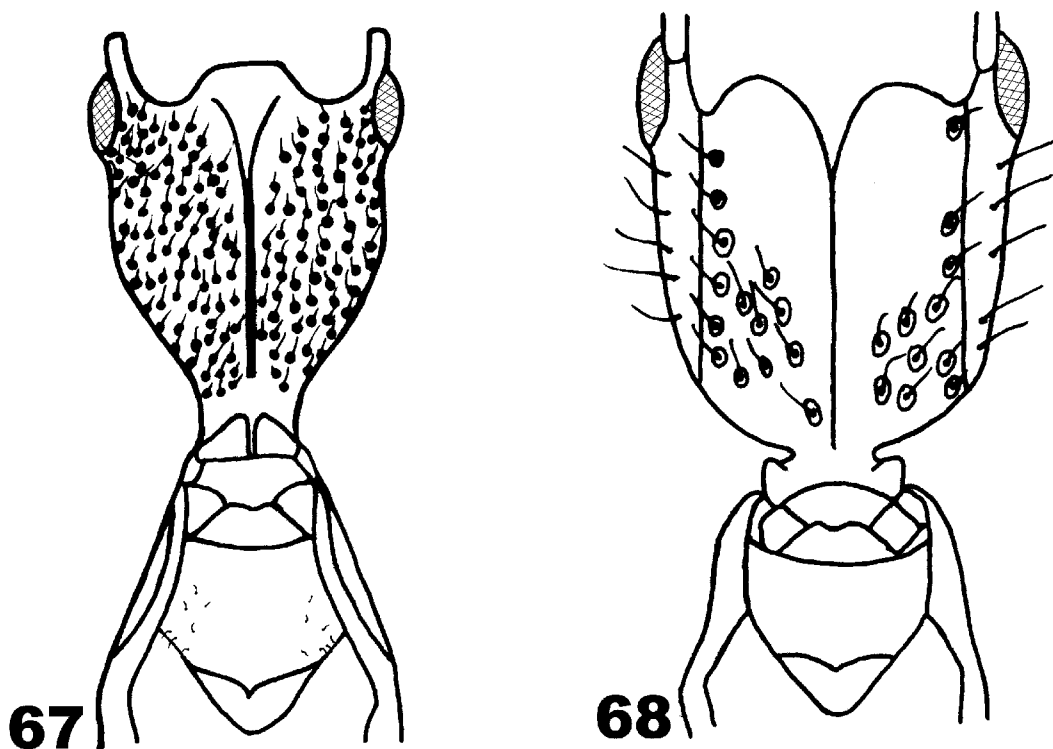
**62**

**FIGURES 54–62.** Pronotum: 54, *Philonthus testaceipennis*; 55, *Renda flagellicornis*; 56, *Plochionocerus simplicicollis*; 57, *P. reticularis*. Elytra: 58, *Agrodes* spp.; 59, *Plochionocerus* spp. Midleg: 60, *Philonthus testaceipennis*; 61, *Agrodes* spp.; 62, *Plochionocerus* spp.



**FIGURES 63–66.** Lateral view of pronotal hypomerite: 63, *Plochionocerus simplicicollis*; 64, *Renda* spp.; 65, *Agrodes conicollis*; 66, *A. elegans*.





FIGURES 67–68. Ventral view of anterior part of body: 67, *Agrodes conicicollis*; 68, *Plochionocerus splendens*.

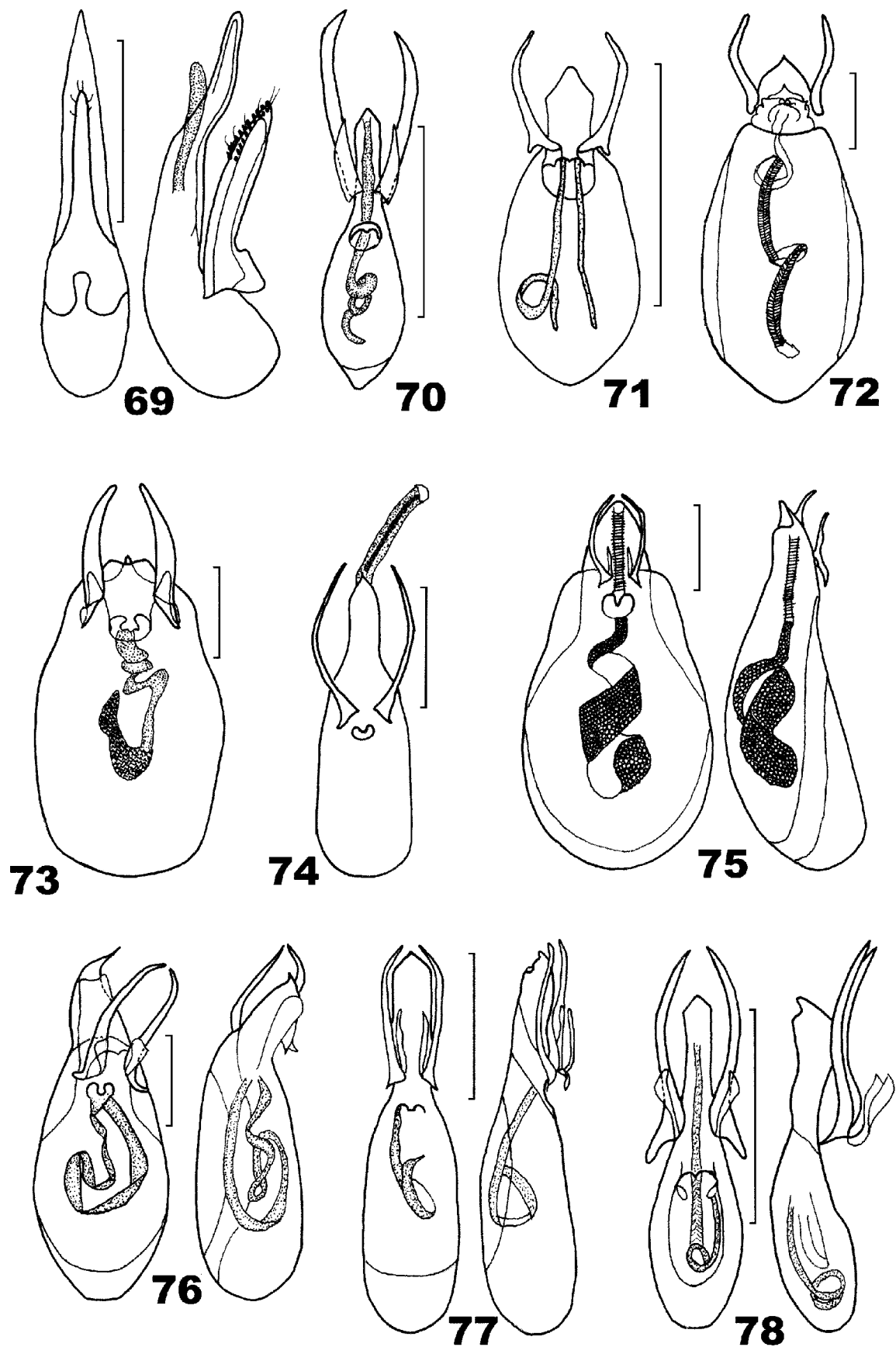
***Agrodes* Nordmann, 1837 stat. rev.**

*Agrodes* Nordmann, 1837: 161 (type species: *A. elegans* Nordmann, 1837, by monotypy); Erichson, 1847: 88; Lacordaire, 1854: 66; Gemminger & Harold, 1868: 599 (synonym of *Sterculia*); Sharp, 1876: 192; Bernhauer & Schubert, 1914: 314 (subgenus of *Sterculia*); Blackwelder, 1952: 42 (subgenus of *Plochionocerus*); Newton, 1995: 51 (request to the ICZN to place *Agrodes* on the Official List of Generic Names in Zoology); ICZN, 1996: 215 (Official List of Generic Names in Zoology).

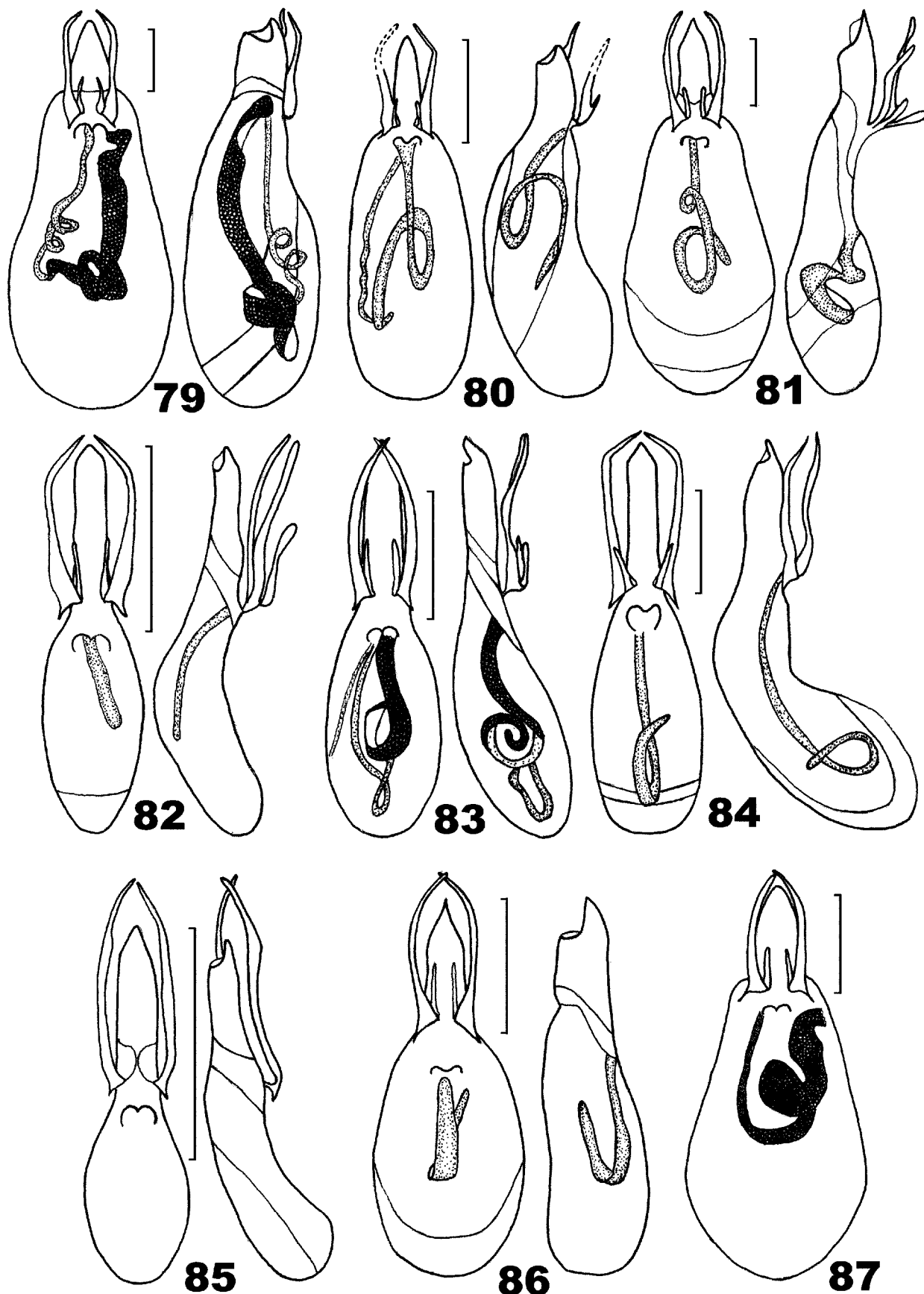
**Diagnosis.** Body bright metallic; head conspicuously oblong (length/width: 1.54–2.00); lateral margins of the head contiguous dorsally and ventrally, lacking lateroventral furrows; ventral surface of the head with very dense, not expanded, umbilicate punctures (> 30 on each half of the head) distributed homogeneously; anterior margin of labrum with two pairs of small, lateral teeth and a pair of central, longer teeth (Fig. 37); mandibles almost as long as half of the head length; apical labial palpomere elongate; upper line of the pronotal hypomeron completely developed (*A. conicicollis*) or absent (*A. elegans*), slightly directed downwards in anterior third, but clearly distinct from lower line; pronotal hypomeron with fine, scarce setae in all area or in posterior 2/3; posterior margin of the elytra lacking notch; and internal margin of the tibiae with brush of dense and light setae covering the basal half or basal 2/3 of the tibiae.

**Redescription.** Total length 17.5–23.8 mm. Body metallic blue, green or violet.

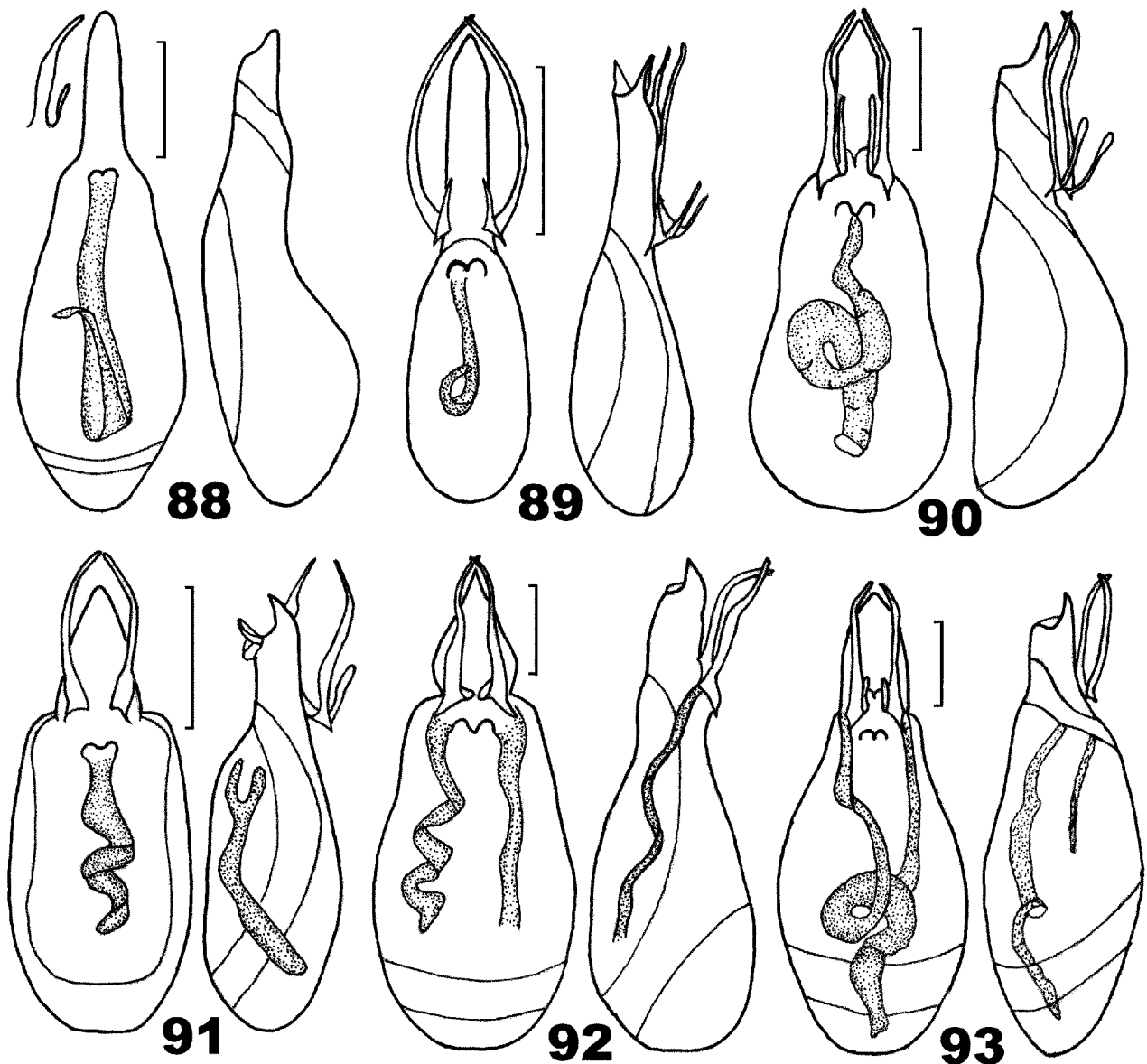
**Head.** Elongate (length/width: 1.54–2.00), narrow posteriorly, dorsally with dense, umbilicate punctures (Fig. 3), ventral surface with very dense, not expanded, umbilicate punctures (> 30 in each half of head) distributed homogeneously (Fig. 67); lateral margins of head without lateroventral furrows (Fig. 10); antennae with basal antennomere longer than antennomeres 2+3 combined, second antennomere shorter than third, remaining antennomeres shorter than second, apical antennomere shorter than antennomeres 9+10 combined (Figs. 22, 23); anterior margin of labrum with two pairs of small, lateral teeth and a pair of bigger, central



**FIGURES 69–78.** Ventral (left) and lateral (right) view of aedeagus: 69, *Philonthus testaceipennis*; 70, *Homalolinus flavipennis*; 71, *Thyrecephalus puncticeps*; 72, *Renda fimetaria*; 73, *R. flagellicornis*; 74, *R. leprieuri*; 75, *Agrodes conicicollis*; 76, *A. elegans*; 77, *Plochionocerus ashei*; 78, *P. discedens*. Scale bar 1 mm.



**FIGURES 79–87.** Ventral (left) and lateral (right) view of aedeagus: 79, *Plochionocerus fulgens*; 80, *P. hermani*; 81, *P. humeralis*; 82, *P. igneus*; 83, *P. impressipennis*; 84, *P. janthinus*; 85, *P. marquezii*; 86, *P. modestus*; 87, *P. newtonorum*. Scale bar 1 mm.

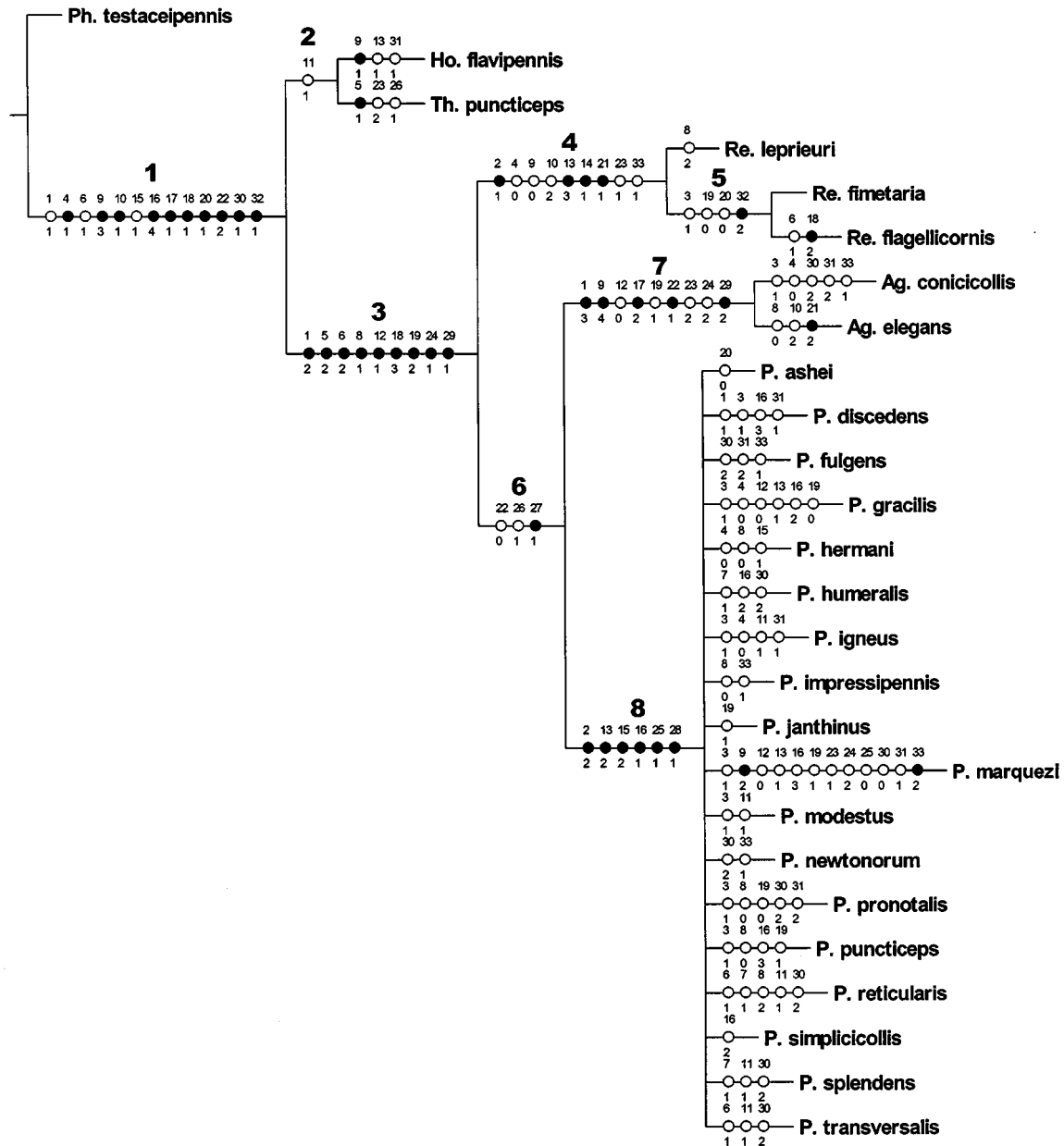


**FIGURES 88–93.** Ventral (left) and lateral (right) view of aedeagus: 88, *Plochionocerus pronotalis*; 89, *P. puncticeps*; 90, *P. reticularis*; 91, *P. simplicicollis*; 92, *P. splendens*; 93, *P. transversalis*. Scale bar 1 mm.

teeth (Fig. 37); mandibles acute, almost as long as half of head length, with two teeth on left mandible and one on right, with channel on external basal half (Figs. 38, 39); first maxillary palpomere shorter than remaining articles, second longest, third almost as long as apical palpomere and slightly widened toward apex, apical palpomere elongate-conical (Fig. 42); first labial palpomere shorter than palpomeres 2+3, second almost as long as apical or slightly longer and slightly widened toward apex, apical palpomere elongate (Fig. 42). Neck narrow, with anterior corners obtuse (Fig. 67).

*Thorax.* Pronotum smooth; with fine, dispersed setiferous punctures, central longitudinal area without punctures (Fig. 3); lateral margins of posterior half slightly sinuate; posterior part of pronotum with slightly visible, depressed area in each half; upper line of pronotal hypomeron completely developed, except in anterior third (*A. conicicollis*, Fig. 65) or absent (*A. elegans*, Fig. 66), slightly directed downwards in anterior third, but clearly distinct from lower line; pronotal hypomeron with fine, scarce setae on whole area or in posterior 2/3 (Figs. 65, 66). Scutellum with scarce punctures. Elytra almost as long as pronotum; with dense, setiferous punctures; posterior margin without notch (Figs. 3, 58). Prosternum slightly oblong (length/width

ratio 1.04–1.20; Fig. 67), with fine, dispersed setae (Fig. 67). Mesoventrite short and wide, surface smooth and with scarce setiferous punctures on posterior margin. Metaventrite biggest, with its surface smooth and with few setiferous punctures.



**FIGURE 94.** Strict consensus cladogram. Black circles = synapomorphies; open circles = homoplasies; font numbers refer to clades discussed in the text.

*Legs.* Long and slender; femora with dispersed setae on the internal and external faces; internal face of tibiae with brush of dense white setae in the basal half or 2/3 (Fig. 61), with apical spines, of which the internal one is longest; first and second tarsomeres almost equal in length, longer than third and fourth, third longer than fourth, and fifth longest (almost as tarsomeres 2+3 combined).

*Abdomen.* Surface with smooth and setiferous punctures as dense or slightly less dense than those on elytra; fifth and sixth visible abdominal segments conspicuously narrow than previous segments; male genital sternite elongate, asymmetrical and acute toward apex, with setae in anterior part, wider than genital tergite.

*Aedeagus.* Variable in shape (Figs. 75, 76).

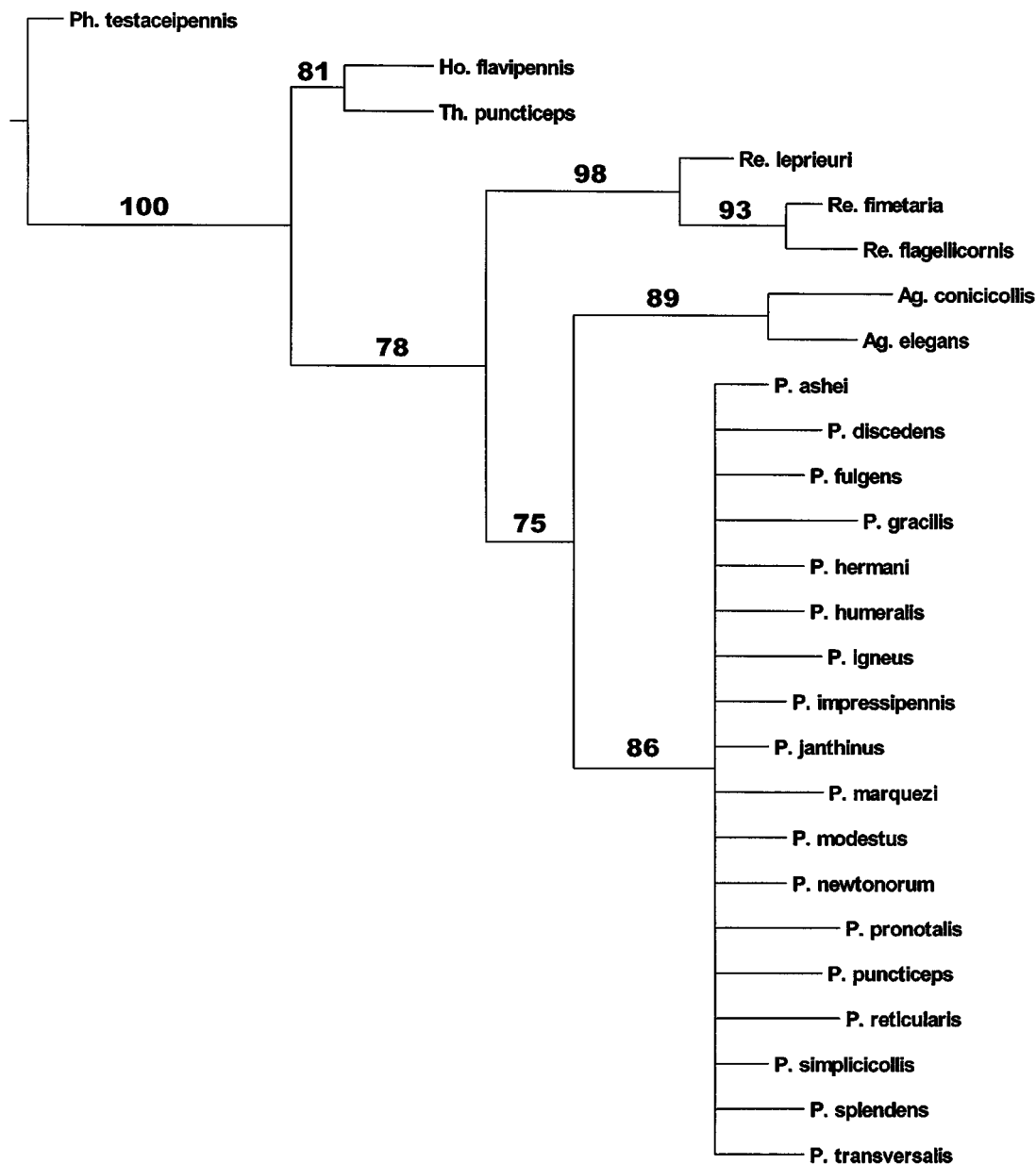


FIGURE 95. Results of the Jackknife analysis. Numbers on the branches indicate percentage bootstrap values.

**Comparative comments.** *Agrodes* was established by Nordmann (1837), who distinguished it from the species then placed in *Plochionocerus*. Some authors (Erichson 1839, Laporte 1840, Gemminger & Harold 1868, Blackwelder 1944), however, synonymized it with *Sterculia*, whereas others (Erichson 1847, Lacordaire 1854) considered it valid, treating *Sterculia* and *Araeocnemus* as synonyms of *Agrodes* or as its subgenera (Bernhauer & Schubert, 1914). Sharp (1876, 1885) was the first author to distinguish *Agrodes* from *Sterculia* (now *Plochionocerus*) and *Renda* (named by him as *Plochionocerus*) and provided characters (such as the elongate head and development of the prosternum) that have been important for our decision to consider *Agrodes* a distinct genus.

#### Key to the species of *Agrodes*

1. Upper line of pronotal hypomeron absent (Fig. 66); antennomeres 4–10 quadrate or subquadrate (Fig. 23);

mandibular teeth small (Fig. 39); aedeagus small and asymmetrical, with moderately long parameres, and internal sac with inconspicuous microsculpture (Fig. 76) ..... *A. elegans*  
1'. Upper line of pronotal hypomeron developed, except in anterior third (Fig. 65); antennomeres 4–10 transverse (Fig. 22); mandibular teeth big (Fig. 38); aedeagus big and symmetrical, with short parameres, and internal sac with conspicuous microsculpture (Fig. 75) ..... *A. conicicollis*

### *Agrodes conicicollis* Sharp, 1876

*Agrodes conicicollis* Sharp, 1876: 192; Herman, 2001: 3744 (*Plochionocerus*).

*Agrodes longiceps* Sharp, 1876: 193; Bernhauer & Schubert, 1914: 315 (subgenus of *Sterculia*); Herman, 2001: 3745 (*Plochionocerus*), **syn. nov.**

**Type material** (2 specimens). **Holotype** of *Agrodes conicicollis*, female: “Type / Ega / S. América: Brazil. / Sharp Coll 905–313 / *Agrodes conicicollis* type D. S. / Holotype” (BMNH). **Holotype** of *Agrodes longiceps*, female: “Type / Amazon Tunantins / S. América: Brasil / Sharp Coll 1905–313 / *Agrodes longiceps* type D. S. / Holotype” (BMNH).

**Additional material** (8 specimens). **BRAZIL:** Mato Grosso, Lat.12°31' & Long.55°37', Sinop, X.1974, M. Alvarenga (AMNH, ♂); Para, Jacareacanga, XII.1968, M. Alvarenga (AMNH, ♀). **ECUADOR:** Buckley (FMNH, ♂); Macas, Buckley (FMNH, 2♀ ♀); Napo, mid. Rio Tiputini, Yasuní Res. Stn., 0°40.5'S 76°24'W, 7.VII.1999, AKT#057, *Eciton hamatum* colony, EC#16, total bivouac sampling, A. Tishechkin (SEMC, ♂). **PERU:** Jauja Prov. Satipo, III.1945, P. Paprzycki (AMNH, ♀); Huambo (IRSNB, ♀).

**Diagnosis.** Total length 17.5–21.9 mm; body metallic violet-blue, greenish blue or green; head dorsally slightly convex and ventrally convex; antennomeres 4–10 transverse, apical antennomere in males slightly longer than wide (1.22–1.28 times) and shorter than antennomeres 9+10 combined (0.83–0.93 times their length; Fig. 22); mandibles with basal, external channel; head almost as wide as pronotum (0.88–1.00 times); pronotum elongate (1.06–1.20 times as long as wide), posterior area with two slightly visible, depressed areas, upper line of pronotal hypomeron almost completely developed in its entire length, except in anterior third where it is absent (Fig. 65); elytra as long as pronotum (0.95–1.05 times); aedeagus pear-shaped, big (4.0–4.2 mm) and symmetrical, with parameres short (0.22 times as long as the total length of median lobe), and internal sac with conspicuous microsculpture (Fig. 75).

**Variation.** The species shows variation in the total body length (17.5–21.9 mm), the color of the body that can be metallic violet-blue, greenish blue or green and some specimens have the head widest at the eyes level and narrows toward the neck.

**Comparative notes.** Based on the revision of the holotypes, *A. longiceps* Sharp, 1876 is a junior synonym of *A. conicicollis* Sharp, 1876. Sharp (1876) examined two specimens and assigned them to different species (*A. conicicollis* and *A. longiceps*), mainly because of differences in color and size; however, the analysis of larger series has shown those characters to be intraspecifically variable. This elongate species may be confused with *A. elegans*, but differences in the head of males, antennomeres, upper line of the pronotal hypomeron and aedeagus allow them to be distinguished easily.

**Geographical distribution.** Ecuador (first national record), Colombia, Brazil, Peru, and Bolivia (Herman, 2001).

### *Agrodes elegans* Nordmann, 1837

(Fig. 3)

*Agrodes elegans* Nordmann, 1837:162; Erichson, 1839: 303 (subgenus of *Sterculia*); Herman, 2001: 3744 (*Plochionoc-*

erus).

*Agrodes longicornis* Sharp, 1885: 467; Bernhauer & Schubert, 1914: 315 (subgenus *Sterculia*); Herman, 2001: 3745 (*Plochionocerus*), **syn. nov.**

*Sterculia melancholica* Schubert, 1911: 13; Herman, 2001: 3745 (*Plochionocerus*), **syn. nov.**

**Type material** (3 specimens). **Holotype** of *Agrodes elegans*, female: “5798 / Holotypus *Agrodes elegans* Nordmann, 1837 labelled by MNHUB 2006 / *elegans* Nordm. Para ind. Sieb.” (ZMHB, ♀). **Holotype** of *Agrodes longicornis*, male: “*Agrodes longicornis*. Type. D. S. Chontales. NICARAGUA. Belt. (specimen on card) / Type / Sp. Figured. / Nicaragua. T. Belt. / B. C. A. Col. I. 2. *Agrodes longicornis*, Sharp. / Sharp Coll. 1905–313. / Holotype” (BMNH, ♂). **Holotype** of *Sterculia melancholica*, female: “Chanchamayo Peru. 200 m / Type / *melancholica* m. / Holotypus *Sterculia melancholica* Schubert, 1911 labelled by MNHUB 2006” (ZMHB, ♀).

**Additional material** (35 specimens). **BOLIVIA**: no locality data, Fassl (FMNH, ♂); Coroico, 1800 m, X–XII.1906, Goulopp (BMNH, 1?; FMNH, ♀); no locality data, D. Sharp (BMNH, ♀). **BRAZIL**: Para, Caninde, Río Gurupi, 4–5.II.1963, B. Malkin, forest sweep (FMNH, ♀); Para, Aldeia Coraci, 12 km W of Caninde, R. Gurupi, 16–24.IV.1963, B. Malkin, forest sweep (FMNH, ♂); Rio Uatuma, Amazonas, I.1944, W. Praetorius (AMNH, ♂). **COLOMBIA**: Bogota (BMNH, ♀); no locality data, W. E. Pratt (FMNH, 2♀♀); Villavicencio, Meta, 3.IV.1965, J. A. Ramos (USNM, 1?). **COSTA RICA**: Guanacaste, Cacao Biological Station, 1050 m, 10°55'38", 85°27'7"W, 10.VII.2000, J. Ashe, R. Brooks & Z. Falin, ex: treefall litter (SEMC, ♀); Alajuela, Peñas Blancas, 800–870 m, 19.V.1989, J. Ashe, R. Brooks & R. Leschen (SEMC, ♂); Prov. Puntarenas, Buenos Aires, Estación Altamira, Sendero a Casa Coca, 1700 m, 9–26.V.2001, O. Alemán, LS 331750 574400 (INBC, ♀); Prov. Guanacaste, Est. Cacao, Lado SO Vol. Cacao, P. N. Guan., LN 323300, 375700, 1000–1400 m, 21–29.V.1992, F. A. Quesada (INBC, ♂); Prov. Cartago, M. N. Guayabo, Turialba, LN 570000 217400, 1100 m, 21.VI.1994, J. F. Corrales (INBC, ♂). **ECUADOR**: no locality data, Buckley (FMNH, ♂); Pastaza, Mera, 1200 m, 30.VI.1971, B. Malkin, beaten ex dry foliage and debris (FMNH, ♂, ♀); Sarayacu, 1879, Buckley (BMNH, ♀); Jarugui (BMNH, ♀); no locality data (BMNH, ♂). **PANAMA**: Chiriqui (IRSNB, 1?); Darién, Cana Biological Station, Serranía de Pirra, 950 m, 7°45'18"N, 77°41'6"W, 6.VI.1996, J. Ashe & R. Brooks, ex: fungusy log-tree fall litter (SEMC, ♂); **PERU**: Cuzco Depto., Consuelo, Manu rd. km 165, 5.X.1982, L. E. Watrous & G. Mazurek, ex rotten palm (FMNH, ♀; CC-UAEH, ♂); *idem*, except: 3.X.1982 (FMNH, ♂); *idem*, except: 10.X.1982, beating dead branches (FMNH, ♂); *idem*, except: 7.X.1982 (FMNH, ♂); *idem*, except: 2.X.1982, ex leaf litter (FMNH, ♀); *idem*, except: 6–7.X.1982, flight intercept trap (FMNH, ♂); *idem*, except: 7.X.1982, ex litter under crown of felled tree (FMNH, 2♂♂, 1?); Chanchamayo, 1500 m, Heyno (FMNH, ♂).

**Diagnosis.** Total length 20.0–24.1 mm; body metallic violet-blue or green; head dorsally and ventrally flat (Fig. 10), or slightly convex dorsally; antennomeres 4–10 quadrate or subquadrate; apical antennomere in males moderately longer than wide (1.38–1.50 times) and shorter than antennomeres 9+10 combined (0.82–0.92 times their length; Fig. 23); mandibles with basal external channel; head slightly wider than pronotum (1.11–1.22 times); pronotum slightly elongate (1.04–1.12 times as long as wide), posterior area with two slightly visible, depressed areas, upper line of pronotal hypomeron absent (Fig. 66); elytra almost as long as pronotum (1.00–1.06 times); aedeagus ovate, small (3.8–4.0 mm) and asymmetrical, with parameres moderately long (0.45 times as long as the total length of median lobe), and internal sac with slightly conspicuous microsculpture (Fig. 76).

**Variation.** The majority of the specimens are metallic blue with green reflections, but some specimens are completely metallic green. The head of one female specimen is conspicuously wider below the eyes. Male specimens from Costa Rica and Nicaragua have an aedeagus longer than the specimen from Panama (2.1 mm); however, its shape, proportions and remaining characters are not different.

**Comparative notes.** Based on the revision of the holotypes, *P. longicornis* (Sharp, 1885) and *P. melancholicus* (Schubert, 1911) are junior synonymies of *A. elegans* Nordmann, 1837. The description of this spe-



cies under three synonyms (*P. elegans*, *P. longicornis* and *P. melancholicus*) is due to variation in color and length. *Plochionocerus elegans* is similar to *P. conicicollis*, the main differences are discussed in the Comparative notes of that species.

**Geographical distribution.** Costa Rica, Panama, Colombia, Ecuador, and Bolivia (first national records), Nicaragua, Brazil, and Peru (Herman, 2001).

## Acknowledgements

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**Appendix.** List of the character and characters states analysed (based on the taxonomic changes presented in the Table 1)

1. Head length/width ratio: (0) wider than long (< 0.8 times): *Philonthus testaceipennis*; (1) almost as long as wide (0.97–1.13 times): *Homalolinus flavipennis*, *Thyrecephalus puncticeps* and *Plochionocerus discedens*; (2) oblong (1.22–1.50 times): *Renda* spp. and *Plochionocerus* spp. (except *P. discedens*); (3) conspicuously oblong (> 1.7): *A. conicicollis* and *A. elegans*.
2. Lateral margins of head: (0) without furrows or depressed areas (Figs. 9–10): *Ph. testaceipennis*, *H. flavipennis*, *T.*

- puncticeps*, *A. conicicollis* and *A. elegans*; (1) forming a flat or depressed area with punctures and pilosity as in dorsal surface of head (Fig. 16): *Renda* spp.; (2) forming near smooth lateroventral furrows, except for an internal line with fine punctures (Figs. 11–15): *Plochionocerus* spp.
3. Head dorsal convexity in males (lateral view): (0) flat (Figs. 9, 10, 12, 13): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps*, *R. leprieuri*, *A. elegans*, *P. ashei*, *P. hermani*, *P. humeralis*, *P. janthinus*, *P. newtonorum*, *P. reticularis*, *P. splendens* and *P. transversalis*; (1) convex (Figs. 11, 14, 16): *R. fimetaria*, *R. flagellicornis*, *A. conicicollis*, *P. discedens*, *P. gracilis*, *P. igneus*, *P. marquezii*, *P. modestus*, *P. pronotalis* and *P. puncticeps*; (-) inapplicable (great variation): *P. fulgens*, *P. impressipennis* and *P. simplicicollis*.
  4. Head ventral convexity in males (lateral view): (0) convex (Figs. 9, 12, 16): *Ph. testaceipennis*, *Renda* spp., *A. conicicollis*, *P. gracilis*, *P. hermani* and *P. igneus*; (1) flat (Figs. 10, 11, 13, 14): *H. flavipennis*, *T. puncticeps*, *A. elegans*, *P. ashei*, *P. discedens*, *P. humeralis*, *P. janthinus*, *P. marquezii*, *P. modestus*, *P. newtonorum*, *P. pronotalis*, *P. puncticeps*, *P. reticularis*, *P. splendens* and *P. transversalis*; (?) inapplicable (great variation): *P. fulgens*, *P. impressipennis* and *P. simplicicollis*.
  5. Head dorsal punctures: (0) scarce, not umbilicate (Fig. 17): *Ph. testaceipennis* and *H. flavipennis*; (1) moderately dense, umbilicate (Fig. 18): *T. puncticeps*; (2) very dense, umbilicate (Fig. 19): *Renda* spp., *A. conicicollis*, *A. elegans* and *Plochionocerus* spp.
  6. Length of first antennomere with respect to antennomeres 2+3 combined in males (Figs. 20–31): (0) as long as 2+3 (0.82–1.00 times; Fig. 20): *Ph. testaceipennis*; (1) almost twice as long as 2+3 (1.88–1.99 times; Figs. 21, 29, 31): *H. flavipennis*, *T. puncticeps*, *R. flagellicornis*, *P. reticularis* and *P. transversalis*; (2) 1.55–1.78 times longer than 2+3 (Figs. 22–28, 30): *R. fimetaria*, *R. leprieuri*, *A. conicicollis*, *A. elegans* and *Plochionocerus* spp. (except the species of state 1).
  7. Length of antennomere 9 with respect to antennomere 10 in males: (0) almost as long as 10 (0.93–1.0 times, Figs. 20–24, 26–28, 31): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps*, *Renda* spp., *A. conicicollis*, *A. elegans* and *Plochionocerus* spp. (except the species of state 1); (1) shorter than 10 (0.85–0.87 times, Figs. 25, 29, 30): *P. humeralis*, *P. reticularis* and *P. splendens*.
  8. Length of apical antennomere with respect to antennomeres 9+10 combined: (0) shorter than 9+10 (0.62–0.88 times, Figs. 20–23, 27, 28): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps*, *A. elegans*, *P. hermani*, *P. impressipennis*, *P. pronotalis* and *P. puncticeps*; (1) almost as long as 9+10 (0.90–1.07 times, Figs. 24–26, 30, 31): *R. fimetaria*, *R. flagellicornis*, *A. conicicollis*, *P. ashei*, *P. discedens*, *P. fulgens*, *P. gracilis*, *P. humeralis*, *P. igneus*, *P. janthinus*, *P. marquezii*, *P. modestus*, *P. newtonorum*, *P. simplicicollis*, *P. splendens* and *P. transversalis*; (2) longer than 9+10 (1.10–1.21 times, Fig. 29): *R. leprieuri* and *P. reticularis*.
  9. Anterior margin of labrum: (0) lobed, lacking teeth (Fig. 33): *Ph. testaceipennis* and *Renda* spp.; (1) with pair of lateral, small teeth (Fig. 32): *H. flavipennis*; (2) with pair of central, big teeth (Fig. 34): *P. marquezii*; (3) with pair of lateral teeth variable in length and a pair of central teeth longer than the lateral ones (Figs. 35, 36): *T. puncticeps* and *Plochionocerus* spp. (except *P. marquezii*); (4) with two pairs of lateral, small teeth and a pair of central, bigger teeth (Fig. 37): *A. conicicollis* and *A. elegans*.
  10. Mandible length with respect to head length in males: (0) longer than head (1.12 times): *Ph. testaceipennis*; (1) more than half of the head length (0.52–0.74 times): *H. flavipennis*, *T. puncticeps*, *A. conicicollis* and *Plochionocerus* spp.; (2) less than half of the head length (0.40–0.45 times): *Renda* spp. and *A. elegans*.
  11. Mandibular channel: (0) present (Fig. 63): *Ph. testaceipennis*, *Renda* spp., *A. conicicollis*, *A. elegans*, *P. discedens*, *P. fulgens*, *P. gracilis*, *P. hermani*, *P. humeralis*, *P. impressipennis*, *P. janthinus*, *P. marquezii*, *P. newtonorum*, *P. pronotalis*, *P. puncticeps* and *P. simplicicollis*; (1) absent or scarcely developed: *H. flavipennis*, *T. puncticeps*, *P. igneus*, *P. modestus*, *P. reticularis*, *P. splendens* and *P. transversalis*; (?) inapplicable (variable): *P. ashei*.
  12. Shape of labial apical palpomere: (0) elongate (Figs. 40, 42, 44, 45): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps*, *A. conicicollis*, *A. elegans*, *P. gracilis* and *P. marquezii*; (1) widened toward apex (Figs. 41, 43, 46, 47): *Renda* spp. and *Plochionocerus* spp. (except *P. gracilis* and *P. marquezii*).
  13. Shape of apex of labial apical palpomere: (0) pointed (Figs. 40, 42): *Ph. testaceipennis*, *T. puncticeps*, *A. conicicollis* and *A. elegans*; (1) slightly truncated (Figs. 44, 45): *H. flavipennis*, *P. gracilis* and *P. marquezii*; (2) obliquely truncated (Figs. 43, 46, 47): *Plochionocerus* spp. (except *P. gracilis* and *P. marquezii*); (3) truncated and laterally flattened (Fig. 41): *Renda* spp.
  14. Gular sutures: (0) more depressed than lateral contiguous areas or at the same level than them (Figs. 10–15): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps*, *A. conicicollis*, *A. elegans* and *Plochionocerus* spp.; (1) more elevated than lateral contiguous areas (Fig. 16): *Renda* spp.
  15. Type of punctures in the ventral surface of head: (0) fine (Fig. 49): *Ph. testaceipennis*; (1) umbilicate (combined with few fine punctures or not, Fig. 52): *T. puncticeps*, *Renda* spp., *A. conicicollis*, *A. elegans* and *P. hermani*; (2) expanded, umbilicate (combined with few fine punctures or not, Figs. 50, 51, 53): *Plochionocerus* spp. (except *P. hermani*); (?) inapplicable (without punctures): *H. flavipennis*.
  16. Density and distributional pattern of the umbilicate punctures on each half of the ventral surface of head: (0) scarce (2 punctures), on the center (Fig. 49): *Ph. testaceipennis*; (1) slightly dense (10–19 punctures), arranged in  $\text{iv}\hat{\text{v}}$  (Fig. 52):

- P. ashei*, *P. fulgens*, *P. hermani*, *P. igneus*, *P. impressipennis*, *P. janthinus*, *P. modestus*, *P. newtonorum*, *P. pronotalis*, *P. reticularis*, *P. splendens* and *P. transversalis*; (2) dense (20–29 punctures), arranged in  $\hat{iv}\hat{v}$  (Figs. 50, 51): *P. gracilis*, *P. humeralis* and *P. simplicicollis*; (3) very dense (>30 punctures), arranged in  $\hat{iv}\hat{v}$  (Fig. 53): *P. discedens*, *P. marquezzi* and *P. puncticeps*; (4) very dense (> 30 punctures), homogeneously distributed (Fig. 48): *T. puncticeps*, *Renda* spp., *A. conicicollis* and *A. elegans*; (?) inapplicable (without punctures): *H. flavipennis*.
17. Pronotum length/width ratio: (0) wider than long: *Ph. testaceipennis*; (1) oblong (1.24–1.66 times): *H. flavipennis*, *T. puncticeps*, *Renda* spp. and *Plochionocerus* spp.; (2) conspicuously oblong (1.73–1.99 times): *A. conicicollis* and *A. elegans*.
  18. Pronotum puncture: (0) with two longitudinal central rows, each with four punctures (Fig. 54): *Ph. testaceipennis*; (1) smooth (lacking punctures or with some on the margins): *H. flavipennis* and *T. puncticeps*; (2) with very dense, umbilicate puncture, leaving a longitudinal, narrow, smooth band (Fig. 55): *R. flagellicornis*; (3) with fine, dense punctures, leaving a longitudinal, wide, smooth band (Figs. 56, 57): *R. fimetaria*, *R. leprieuri*, *A. conicicollis*, *A. elegans* and *Plochionocerus* spp.
  19. Pronotum hind area: (0) without depressed areas (Figs. 54, 55): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps*, *R. fimetaria*, *R. flagellicornis*, *P. gracilis* and *P. pronotalis*; (1) with two scarcely visible, depressed areas: *A. conicicollis*, *A. elegans*, *P. janthinus*, *P. marquezzi* and *P. puncticeps*; (2) with two clearly visible, depressed areas (Figs. 56, 57): *R. leprieuri*, *P. ashei*, *P. discedens*, *P. fulgens*, *P. hermani*, *P. humeralis*, *P. igneus*, *P. impressipennis*, *P. modestus*, *P. newtonorum*, *P. reticularis*, *P. simplicicollis*, *P. splendens* and *P. transversalis*.
  20. Head length/pronotum length ratio: (0) head shorter than pronotum (0.76–0.82 times): *Ph. testaceipennis*, *R. fimetaria*, *R. flagellicornis* and *P. ashei*; (1) head almost as long as pronotum (0.89–1.07 times): *H. flavipennis*, *T. puncticeps*, *R. leprieuri*, *A. conicicollis*, *A. elegans* and *Plochionocerus* spp. (except *P. ashei*).
  21. Development of upper line of pronotal hypomeron: (0) completely developed, or partially absent in the anterior third, visible in the hind corner (Figs. 63, 65): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps*, *A. conicicollis* and *Plochionocerus* spp.; (1) absent in the anterior third, not visible in the anterior third (Fig. 64): *Renda* spp.; (2) absent (Fig. 66): *A. elegans*.
  22. Direction of upper line of the pronotal hypomeron in the anterior third: (0) straight (Fig. 63): *Ph. testaceipennis* and *Plochionocerus* spp.; (1) slightly directed ventrad, clearly separated from the lower line (Figs. 65, 66): *A. conicicollis* and *A. elegans*; (2) directed ventrad, close to the lower line (without joining it; Fig. 64): *H. flavipennis*, *T. puncticeps* and *Renda* spp.
  23. Pattern of setae on pronotal hypomeron: (0) lacking setae (Fig. 63): *Ph. testaceipennis*, *H. flavipennis* and *Plochionocerus* spp. (except *P. marquezzi*); (1) with fine, scarce setae in the anterior third (at level of the procoxae, Fig. 64): *Renda* spp. and *P. marquezzi*; (2) with fine, scarce setae in all the area or at least in fore 2/3 (Figs. 65, 66): *T. puncticeps*, *A. conicicollis* and *A. elegans*.
  24. Prosternum shape (length/width ratio): (0) very transverse (0.43–0.52 times): *Ph. testaceipennis*, *H. flavipennis* and *T. puncticeps*; (1) transverse (0.61–0.94 times; Fig. 68): *Renda* spp. and *Plochionocerus* spp. (except *P. marquezzi*); (2) slightly oblong (1.06–1.14 times, Fig. 67): *A. conicicollis*, *A. elegans* and *P. marquezzi*.
  25. Setae on prosternum: (0) fine, dispersed setae, on area behind precoxal carina (Fig. 67): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps*, *Renda* spp., *A. conicicollis*, *A. elegans* and *P. marquezzi*; (1) without setae (Fig. 68): *Plochionocerus* spp. (except *P. marquezzi*).
  26. Setae on mesoventrite: (0) abundant setae (as in the abdominal segments): *Ph. testaceipennis*, *H. flavipennis* and *Renda* spp.; (1) scarce setae (less than in the abdominal segments): *T. puncticeps*, *A. conicicollis*, *A. elegans* and *Plochionocerus* spp.
  27. Setae on metaventrite: (0) abundant setae (almost as in the abdominal segments): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps* and *Renda* spp.; (1) scarce setae (less than in the abdominal segments): *A. conicicollis*, *A. elegans* and *Plochionocerus* spp.
  28. Fore margin of elytra: (0) without notch (Fig. 58): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps*, *Renda* spp., *A. conicicollis* and *A. elegans*; (1) with central notch (Fig. 59): *Plochionocerus* spp.
  29. Dense, light setae on internal margin of tibiae (brush): (0) absent, only dispersed, dark setae (Fig. 60): *Ph. testaceipennis*, *H. flavipennis* and *T. puncticeps*; (1) with brush covering all the internal face of tibiae (Fig. 62): *Renda* spp. and *Plochionocerus* spp.; (2) with brush in the basal 1/2 or slightly more of tibiae (Fig. 61): *A. conicicollis* and *A. elegans*.
  30. Aedeagus shape: (0) elongate (Figs. 69, 85): *Ph. testaceipennis* and *P. marquezzi*; (1) ovate (Figs. 70–74, 76–78, 80, 82–84, 86, 89, 91): *H. flavipennis*, *T. puncticeps*, *Renda* spp., *A. elegans*, *P. ashei*, *P. discedens*, *P. hermani*, *P. igneus*, *P. impressipennis*, *P. janthinus*, *P. modestus*, *P. puncticeps* and *P. simplicicollis*; (2) pear-shaped (Figs. 75, 79, 81, 87, 88, 90, 92, 93): *A. conicicollis*, *P. fulgens*, *P. humeralis*, *P. newtonorum*, *P. pronotalis*, *P. reticularis*, *P. splendens* and *P. transversalis*; (?) female: *P. gracilis*.
  31. Length of parameres in relation to the length of the median lobe of the aedeagus: (0) moderately long (0.29–0.48 times, Figs. 69, 71, 73, 76, 77, 81, 83, 84, 86, 87, 89–92): *Ph. testaceipennis*, *T. puncticeps*, *Renda* spp., *A. elegans* and *Plochionocerus* spp. (except species of states 1 and 2); (1) long (> 0.53 times, Figs. 70, 74, 78, 82, 85): *H. flavi-*

- pennis*, *P. discedens*, *P. igneus* and *P. marquezii*; (2) short (0.22–0.26 times, Figs. 72, 75, 79, 80, 88, 93): *A. conicicollis*, *P. fulgens* and *P. pronotalis*; (?) female: *P. gracilis*.
32. Length of the apical area in relation to the total length of the median lobe of the aedeagus: (0) 0.7 times (Fig. 69): *Ph. testaceipennis*; (1) 0.20–0.42 times (Figs. 74, 78, 85): *H. flavipennis*, *T. puncticeps*, *R. leprieuri*, *A. conicicollis*, *A. elegans* and *Plochionocerus* spp.; (2) 0.12–0.14 times (Figs. 70, 76, 77, 82–84, 86, 89–91): *R. fimetaria* and *R. flagellicornis*; (?) female: *P. gracilis*.
33. Internal sac of aedeagus: (0) moderately visible (Figs. 69–71, 76–78, 80–82, 84, 86, 88–93): *Ph. testaceipennis*, *H. flavipennis*, *T. puncticeps*, *A. elegans*, *P. ashei*, *P. discedens*, *P. hermani*, *P. humeralis*, *P. igneus*, *P. janthinus*, *P. modestus*, *P. pronotalis*, *P. puncticeps*, *P. reticularis*, *P. simplicicollis*, *P. splendens* and *P. transversalis*; (1) conspicuously visible (Figs. 72–75, 79, 83, 87): *Renda* spp., *A. conicicollis*, *P. fulgens*, *P. impressipennis* and *P. newtonorum*; (2) Not visible (Fig. 85): *P. marquezii*; (?) female: *P. gracilis*.