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ANNALES

de la
SOCIÉTÉ SUISSE DE ZOOLOGIE
et du
MUSÉUM D'HISTOIRE NATURELLE
de la Ville de Genève

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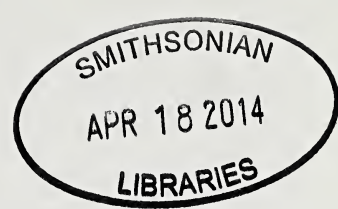
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On the Paraguayan specimens of *Nothura darwinii* (Aves: Tinamidae) and *Glaucis hirsutus* (Aves: Trochilidae) in the collection of the Natural History Museum of Geneva (Switzerland), with a review of South Brazilian reports of the latter

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On the Paraguayan specimens of *Nothura darwinii* (Aves: Tinamidae) and *Glaucis hirsutus* (Aves: Trochilidae) in the collection of the Natural History Museum of Geneva (Switzerland), with a review of South Brazilian reports of the latter. - The identity of specimens in the MHNG identified as possibly the first records of *Nothura darwinii* and *Glaucis hirsutus* from Paraguay are clarified. Specimens of *N. darwinii* are referable to *N. maculosa*. The specimen of *G. hirsutus* is correctly identified but lacks basic collection data and hence is considered hypothetical pending further evidence. The status of *G. hirsutus* in southern Brazil is discussed.

Keywords: Brazil - Mato Grosso do Sul - Paraguay - Paraná - Rio Grande do Sul - Santa Catarina - Tinamidae - Trochilidae.

INTRODUCTION

Collections were made in Paraguay from 1978 to 1991 by staff from the Museum d'Histoire Naturelle de la Ville de Genève (Natural History Museum of Geneva): a total of 1437 specimens of birds were collected. This collection includes two specimens identified as *Nothura darwinii* (Tinamidae) and a single specimen of *Glaucis hirsutus* (Trochilidae). These species were cited as "hypothetical" by Clay & del Castillo (2004) who were unable to trace the specimens. During July 2007 the specimens were located in the Department of Ornithology and Mammalogy at the Geneva Natural History Museum and their identities and status were clarified.

RESULTS

Nothura darwinii Darwin's Nothura

Figs 1-2

Two specimens from Paraguay labelled as *Nothura darwinii* are present in the Geneva collection: MHNG 1720.053 (female, 5 km east of Estancia Santa Sofia, Departamento Concepción, 30 September 1989, field number PY 7083, collected by



FIG. 1

Nothura maculosa specimens, previously labeled as *Nothura darwini*: MHNG 1720.054 (above), MHNG 1720.053 (below).



FIG. 2

Details of the primaries for MHNG 1720.054 (above) and MHNG 1720.053 (below). The barring present on both webs of the underside of the primaries is characteristic of *Nothura maculosa*.

Claude Vaucher and Alain de Chambrier) and MHNG 1720.054 (unsexed, 20 km south of Puente Zinho, Departamento Concepción, 6 November 1987, no field number and unknown collector). Both these specimens can be positively identified as Spotted Nothura *Nothura maculosa* on account of the following characteristics: i) barring present on both webs of the underside of the outer primaries, as seen in Fig. 2 (confined to the outer web in *darwinii*) (Conover, 1950); ii) tarsal measurements of 357 mm and 350 mm (*darwinii* being in the region 310-330 mm; Bump & Bump, 1969). Furthermore one of the specimens labelled as *darwinii* (MHNG 1720.053) was referred to as *maculosa* in field notes made by its collectors.

Nothura darwinii was included without comment in the Paraguayan avifauna by Contreras *et al.* (1990) presumably on the basis of these specimens, and later listed by Hayes (1995) as a species for which “no details have been published”. Amarilla &

Barreto (1999) list an undocumented sight record by B. Young from near Cerro León, Departamento Alto Paraguay in 1998 but this seems almost certain to be in error, that area being largely forested, subhumid as opposed to the arid habitats this species occupies in the rest of its range and regularly birded without any prior or additional records.

Nothura darwinii occurs in Peru, Bolivia and Argentina, the latter two sharing land borders with Paraguay (Cabot, 1992; Schulenberg *et al.*, 2007). In Argentina *N. darwinii* is distributed on the eastern slope of the Andes from Provincias Jujuy and Salta south through eastern La Pampa and southwestern Buenos Aires to Rio Negro and northern Chubut (Bump & Bump, 1969; Cabot, 1992; Davies, 2002). In Bolivia its distribution again is associated largely with uplands and foothills in La Paz, Cochabamba, Santa Cruz, Chuquisaca, Tarija and Oruro Departamentos, where it occurs locally to 4300 m (Hennessy *et al.*, 2003). In fact the closest Paraguayan territory comes to the known distribution of *N. darwinii* is extreme southwestern Boquerón department, and adjacent areas of Argentina and Bolivia in this area are occupied only by *N. maculosa*. Its presence in Paraguay must therefore be considered unlikely.

***Glaucis hirsutus* Rufous-breasted Hermit**

Fig. 3

Specimen MHNG 1723.041 is a female *Glaucis hirsutus* which exhibits an unusually strong coppery colouration dorsally (Fig. 3). According to the specimen label it was “collected in Paraguay some time between 1983 and 1989” [with no indication of collector]. It does not have a field number and it was not included in the field reports available in the archives of the Museum. Unable to trace the specimen, Clay & del Castillo (2004) list the species without comment in a list of “Possible Hypothetical” species. There are no other records for Paraguay and the species has never been reported from Argentina (Chebez, 1996; Mazar Barnett & Pearman, 2001).

Glaucis hirsutus is widely distributed in tropical cis-Andean regions of the Neotropics from Panama to west-central (Mato Grosso) and south-east (São Paulo) Brazil (Grantsau, 1988). Although Meyer de Schauensee (1982) listed the distribution as “BRAZIL south to Rio Grande do Sul” [perhaps on the basis of Ruschi (1979) which is cited in the bibliography] there are apparently no unambiguously documented records of the species anywhere in southern Brazil. The following summarises what has been published about the species in this region.

Mato Grosso do Sul: It was not reported during a series of inventories in south-western Mato Grosso do Sul immediately adjacent to the Paraguayan border (Straube *et al.*, 2006a, b; Pivatto *et al.*, 2006) and although it is mapped for the extreme north of the state in the major field guide to the region (Gwynne *et al.*, 2010), there are no documented records for the entire state (Nunes *et al.*, submitted).

Paraná: Scherer-Neto *et al.* (2011) list the species as undocumented in Paraná on the basis of its inclusion in an unpublished thesis by Bornschein (2001).

Santa Catarina: Rosário (1996) maps the species only for coastal northeastern Santa Catarina based on a single sight record at “Reserva Florestal Hoffmann, Brusque Municipality” on 28 May 1979. In fact the only alleged specimen record for Santa Catarina state is MBML-573, supposedly collected by A. Ruschi at Joinville on



FIG 3
Glaucis hirsutus female, MHNG 1723.041.

18 November 1960. However if the collection data is to be believed the same collector apparently collected several other species of hummingbirds at Joinville on the same date, as well as another specimen of *G. hirsutus* several thousands of kilometers away at “Usina Rio Branco”, Sergipe State. Consequently the locality is suspect and the species is not considered documented in the state (Vielliard, 1994).

Rio Grande do Sul: Bencke (2001) cites a Ruschi specimen in the Museu de Biologia Prof. Mello Leitão (MBML 572) supposedly collected on 31 October 1946 at “Fazenda Retiro, Nazareth, Porto Alegre”, but notes several problems with the data. All other specimens of hummingbirds from Rio Grande do Sul in the museum collection were collected by Ruschi during his visit to the state in late August and early September 1956. Although Ruschi (1951) claims to “update the distribution of various species of hummingbird not previously recorded in certain Brazilian states”, he omits mention of this species in the southern Brazilian states, including Rio Grande do Sul. Later however Ruschi (1965) does include the species in the state avifauna along with six other species of hummingbird for which there is apparently no documentation and for which there have been no further records. Bencke (2001) hesitantly considered the species a vagrant to the state on the basis of the MBML specimen, but given the uncertainty surrounding the provenance of the specimens and the revelation by Fontana (2005) that the locality was untraceable he later discounted it completely (Bencke *et al.*, 2010). Meyer de Schaunessy (1970, 1982) included the state in the range of the species, but this was rejected by Belton (1978, 1984, 1994) because of a lack of evidence.

Though correctly identified, the vagaries of the specimen label regarding both the location and date of collection of the Paraguayan specimen MHNG 1723.041 are cause for similar doubt. Given the distance from, and uncertainty surrounding records in neighbouring states in Brazil, it would seem preferable to maintain this species as hypothetical in Paraguay pending further records.

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A new *Batricavus* species from East Malaysia (Coleoptera: Staphylinidae: Pselaphinae)

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A new *Batricavus* species from East Malaysia (Coleoptera: Staphylinidae: Pselaphinae). - *Batricavus cornutus* sp. nov., from the Kinabalu National Park, Borneo, is described and illustrated. The species can be readily separated by its conspicuous horn-like projections on the frons and enlarged antennomeres VI, that provide means for unambiguous distinction. The previous identification key is modified to accommodate the new species.

Keywords: Coleoptera - taxonomy - new species - Kinabalu National Park - Borneo.

INTRODUCTION

The genus *Batricavus* Yin & Li (in Yin *et al.*, 2011) currently contains three species, all known from China: *B. tibialis* Yin & Li, 2011 (type species) from Zhejiang and Guangdong, and *B. abdominalis* Yin & Li, 2012 and *B. hainanensis* Yin & Li, 2012 from the Hainan Island. Members of the genus were found in sifted leaf litter in various types of forests. They have a pair of distinctive fovea-like pits near the anterior pronotal margin, present in both sexes. The feature is unique, and combined with the habitus that provides means for ready separation of *Batricavus* from all other batrisite genera (Yin *et al.*, 2011; Yin & Li, 2012).

A recently studied Bornean Batrisini species shares with *Batricavus* the presence of the anterior pronotal pits and most of other diagnostic characters, and is therefore considered congeneric. However, it differs drastically by conspicuous frontal horns and modified antennomeres VI, both possibly male sexual features. We describe the new species, provide illustrations of its habitus, and of relevant diagnostic characters, and give a modified key to species.

MATERIAL AND METHODS

The type material is housed in the Muséum d'histoire naturelle de la Ville de Genève, Switzerland (Giulio Cuccodoro, MHNG).

The collection data of the material referred to are quoted verbatim. A slash is used to separate different labels and additional notes are given in square brackets. Measurements are in millimeters.

The following abbreviations are used: AL – length of the abdomen along the midline; AW – maximum width of the abdomen; EL – length of the elytra along the sutural line; EW – maximum width of the elytra; HL – length of the head from the anterior clypeal margin to the occipital constriction; HW – width of the head across eyes; PL – length of the pronotum along the midline; PW – maximum width of the pronotum. The length of the body is combined HL + PL + EL + AL.

DESCRIPTION

Batricavus cornutus sp. nov.

Fig. 1

TYPE MATERIAL: Holotype, Malaysia, ♂, labeled ‘Sabah, Mt. Kinabalu, 7500 ft. [≈2315 m], 22.26.vi.68, R.W. Taylor / HOLOTYPE [red], ♂, *Batricavus cornutus* sp. n., det. Yin & Löbl, 2013, MHNG’.

DESCRIPTION: Male (Fig. 1A). Length 1.82 mm; body and appendages reddish brown, maxillary palpi and tarsi lighter. Head slightly wider than long, HL 0.36 mm, HW 0.41 mm. Eyes each composed of about 25 facets. Antennomeres VI (Fig. 1B) greatly enlarged, anterior half of mesal surface with large cavity; clubs three-segmented, with enlarged antennomeres IX-XI. Pronotum rounded laterally, slightly wider than long, PL 0.40 mm, PW 0.42 mm. Elytra wider than long, EL 0.61 mm, EW 0.71 mm; discal striae reaching almost apical margins of elytra. Mesotibiae (Fig. 1C) with distinct apical spur. Abdomen smaller than elytra, AL 0.45 mm, AW 0.62 mm. Aedeagus (Figs 1D-1E), length 0.33 mm, weakly sclerotized, with elongate, twisted median and dorsal lobes.

FEMALE: Unknown.

COMPARATIVE NOTES: *Batricavus cornutus* is a very distinctive species. It may be readily separated from congeners by the conspicuously protruding anterior margin of the frons, and by the enlarged antennomeres VI with a large mesal cavity.

DISTRIBUTION: East Malaysia: Sabah.

ETYMOLOGY: The specific epithet ‘*cornutus*’ means ‘having horns, horned’, referring to the strongly protruding anterior margin of the frons.

Revised key to male *Batricavus*

- 1a Anterior margin of frons conspicuously protruding anteriorly to form two horn-like projections (Fig. 1A); antennomeres VI greatly enlarged, with large mesal cavity (Fig. 1B). (East Malaysia: Sabah) . *B. cornutus* sp. nov.
- 1b Frons simple, without modification; antennomeres VI not enlarged 2
- 2a Protibiae simple; metafemora near apical fourth broadened mesally (Yin & Li, 2012: 37, fig. 2B); tergite IV with large median cavity (Yin & Li, 2012: 37, fig. 2A). (South China: Hainan) *B. abdominalis* Yin & Li
- 2b Protibiae expanded laterally, either at apical fourth (Yin *et al.*, 2011: 4, fig. 8) or near middle (Yin & Li, 2012: 38, fig. 3A); metafemora and tergite IV simple 3
- 3a Antennomeres VIII much larger than VII (Yin *et al.*, 2011: 4, fig. 6); apical fourth of protibiae expanded laterally and angular (Yin *et al.*, 2011: 4, fig. 8). (South China: Guangdong; East China: Zhejiang) *B. tibialis* Yin & Li

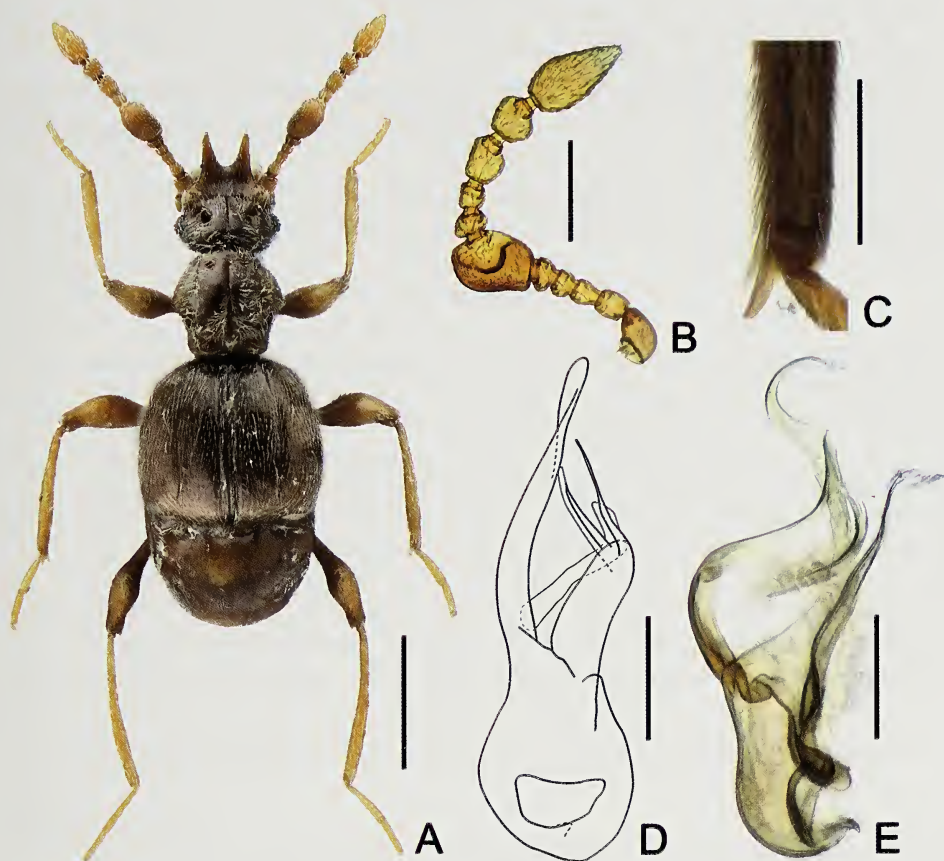


FIG. 1

Batricavus cornutus. (A) Male habitus. (B) Left antenna. (C) Apical portion of mesotibia. (D) Aedeagus, in dorsal view. (E) Same, in lateral view. Scales (mm): A = 0.5, B = 0.2, C, D, E = 0.1 mm.

3a Antennomeres VIII distinctly smaller than VII (Yin & Li, 2012: 36, fig. 1B); protibiae expanded laterally near middle and angular (Yin & Li, 2012: 38, fig. 3A). (South China: Hainan) *B. hainanensis* Yin & Li

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***Allomedmassa*, a new spider genus from evergreen forests of Southeast Asia (Araneae: Corinnidae)**

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***Allomedmassa*, a new spider genus from evergreen forests of Southeast Asia (Araneae: Corinnidae).** - *Allomedmassa* gen. nov. is established for three relatively large, non ant-mimicking species of the subfamily Castianeirinae from evergreen forests of Thailand and Borneo. The new genus can be distinguished from other Asian Castianeirinae genera by the strongly convex dorsal surface of its carapace, by the sigmoid sperm duct of the palpal organ, by the strongly sclerotized embolus, and by the elaborate retrolateral tibial apophysis of the palp. Female copulatory orifices are greatly enlarged, leading to elongated spermathecae. On the basis of morphological similarities, *Allomedmassa* gen. nov. appears closely related to *Medmassa* Simon, 1887. Three species are described: *A. mae* sp. nov., *A. day* sp. nov., and *A. deelemanae* sp. nov.

Keywords: Castianeirinae - *Medmassa* - alpha taxonomy - biodiversity.

INTRODUCTION

The Castianeirinae comprises a large number of ant-mimicking spiders. This subfamily is species-rich and common throughout the forests of the Oriental Region. Unfortunately, our knowledge of Oriental spiders is generally poor: Most early descriptions in Latin do not allow us to recognize these species. As a result, relatively few taxa have been revised; many of them have never been mentioned since their initial descriptions more than a century ago. A comprehensive book on the forest spiders of Southeast Asia published by Deeleman-Reinhold in 2001 is a successful attempt to solve this problem. The obscure taxonomic status of several taxa has been resolved and illustrations for each species were provided. In her revision of Asian Corinnidae, Deeleman-Reinhold (2001) added two new genera and a considerable number of new species to the subfamily Castianeirinae. Currently, 13 castianeirine genera are recognized from the forests of Southeast Asia. These are: *Aetius* O. P.-Cambridge, 1896, *Apochinomma* Pavesi, 1881, *Castianeira* Keyserling, 1879, *Castoponera* Deeleman-Reinhold, 2001, *Coenoptychus* Simon, 1885, *Copa* Simon, 1886, *Corinnomma* Karsch, 1880, *Echinax* Deeleman-Reinhold, 2001, *Humua* Ono, 1987, *Medmassa* Simon, 1877, *Pranburia* Deeleman-Reinhold, 1993, *Serendib* Deeleman-Reinhold, 2001 and *Sphecotypus* O. P.-Cambridge, 1895.

Although members of the Castianeirinae generally have strongly modified somatic structures and often bear a close resemblance to ants, the following three genera do not mimic ant: *Echinax*, *Medmassa* and *Humua*. They are, however, considered members of the Castianeirinae by sharing the following synapomorphies (Deeleman-Reinhold, 2001; Haddad, 2004; Reiskind, 1969): The bulb of the male palp is pyriform, provided with an apical embolus, and lacks a conductor or a median apophysis; the subtegulum is visible on the prolateral side of the bulb in ventral view; the female internal genitalia are elongate, consisting of spermathecae and bursae which are fused together; the epitracheal ridge is protruded; the palpal coxae are short and parallel to each other; the oblique meso-disal surface of the chelicerae is lined with a row of feather-like hairs; legs IV are mostly the longest (except for *A. deelemane* sp. nov.); females have three cylindrical gland spigots on PMS and two on PLS; the epigastric scutum is well-developed.

The Thai castianeirine fauna is not large but relatively diverse. Six genera and eight species are hitherto recognized: *Pranburia mahannopi* Deeleman-Reinhold, 1993, *Corinnomma severum* (Thorell, 1877), *Apochinomma nitidum* (Thorell, 1895), *Serendib suthepica* Deeleman-Reinhold, 2001, *S. volans* Deeleman-Reinhold, 2001, *Echinax panache* Deeleman-Reinhold, 2001, and two undescribed species of *Castianeira* (see also Deeleman-Reinhold, 2001: 305). The new species treated here are large castianeirine spiders (up to about 20 mm long) living on the floor (Thailand) and in the tree canopy (Borneo) of evergreen forests. These spiders are easily distinguishable by the presence of 4-10 pairs of ventral spines on their anterior tibiae, and by the rounded, strongly convex prosoma being attenuated in front. These spiders closely resemble species of *Medmassa*, which contains very agile species similarly living in forest habitats, mainly in the foliage and canopy. The genus *Medmassa* is also present in Africa and Australia. Despite being very similar in general appearance, species of *Allomedmassa* gen. nov. have a significantly different genitalic morphology from those of *Medmassa*.

MATERIAL AND METHODS

Material from the following collections has been studied: Muséum national d'Histoire naturelle, Paris, France (MNHN); Museo Civico di Storia Naturale 'Giacomo Doria', Genoa, Italy (MSNG); Nationaal Natuurhistorische Museum 'Netherlands Centre for Biodiversity Naturalis', Leiden, the Netherlands (RMNH). Type material of new species will be deposited in the collections of Muséum d'histoire naturelle, Geneva, Switzerland (MHNG) and the Thailand Natural History Museum, National Science Museum Organization, Prathum Thani Province, Thailand (TNHM).

Morphological observation and illustration were made using an Olympus SZX-9 stereomicroscope and an Olympus BX-40 light microscope equipped with drawing apparatus and photographic devices. The dorsal view of internal female genitalia was drawn in cleared state after maceration in 96% lactic acid for 15-30 minutes. Male palps were expanded by placing them in distilled water. Measurements are given in millimeters. In the text 'Fig.' and 'Figs' refer to figures herein, while 'fig.' and 'figs' refer to figures published elsewhere.

Abbreviations used in the text and in the figures are as follows: AER, anterior eye row; ALE, anterior lateral eye; ALS, anterior lateral spinnerets; AME, anterior median eyes; CO, copulatory orifice; E, embolus; FD, fertilization duct; Fe, femur; ID, insemination duct; Mt, metatarsus; P, prolateral tubercle on palpal tibia; PER, posterior eye row; PLE, posterior lateral eyes; PLS, posterior lateral spinnerets; PME, posterior median eyes; PMS, posterior median spinnerets; RTA: retrolateral tibial apophysis of male palp; S, spermatheca; SR, accessory sperm receptacle; ST, subtegulum; T, tegulum; Ti, tibia. Spination: d, dorsal; p, prolateral; r, retrolateral; v, ventral. The corresponding arrangement refers to the number of spines from the proximal to the distal part.

TAXONOMY

CORINNIDAE Karsch, 1880

Allomedmassa gen. nov.

TYPE SPECIES: *Allomedmassa mae* sp. nov.

ETYMOLOGY: The generic name refers to the morphological similarities between this new genus and *Medmassa* (Greek prefix: *allos-* = another, different), and it is feminine in gender.

DIAGNOSIS: Representatives of *Allomedmassa* gen. nov. can be easily distinguished from those of the closely related *Medmassa* by their strongly convex carapace (*Medmassa* generally bears a flat and subcircular carapace). Males can be recognized by a thick, strongly sclerotized embolus base, by a sigmoid sperm duct running medially through the pyriform tegulum (embolus filiform, sperm duct U-shaped in *Medmassa*), and by a complex modification of palpal tibia and RTA (palpal tibia normal, RTA simple in *Medmassa*). Females can be distinguished by their greatly enlarged copulatory orifices, and by the narrow, tubiform spermathecae (copulatory orifices represented by circular pits, spherical spermathecae distinctly enlarged in *Medmassa*).

DESCRIPTION: Prosoma in dorsal view rounded posteriorly, widest at coxae II, with cephalic area abruptly narrowed, strongly attenuated in front (Figs 1-2, 7-8, 26, 28), integument finely reticulated or granular (Fig. 27). Cephalic region convex dorsally, in profile highest at mid length between PME and fovea, gradually sloping posteriorly (Fig. 27). Fovea longitudinal, deep. AER recurved in dorsal view; PER straight or slightly procurved, slightly wider than AER (Figs 1-2, 4, 7-8, 26). All eyes circular, subequal in size, AME distinctly largest (Figs 26, 30); AME separated by their radius, AME and ALE separated by less than their diameter; eyes of posterior row separated by their diameter or more (Figs 4, 30); median ocular quadrangle slightly wider in front than in back, longer than wide. Clypeal height equal to AME diameter (Fig. 30). Cheliceral groove with three promarginal and three (male) to five (female) retromarginal denticles (Fig. 5). Chilum represented by a separated sclerite, triangular, devoid of hair. Palpal coxae (Figs 3, 28) expanded and anteriorly slightly inclined towards each other, anterior margin pale, with thick anteromedial brush of hairs, lateral margin medially excavated. Labium slightly longer than wide, anterior margin straight, posteriorly constricted above bases. Sternum scutiform, strongly convex, rebordered,

anterior margin medially excavated, posterior tip not prolonged between coxae IV, with bluntly pointed triangular extensions opposite coxae and between intercoxal concavities (Fig. 3). Leg formula 4123 or 1234, legs dark orange, usually with distal annulations. All leg segments except patellae and tarsi armed with few spines; spines significantly longer and larger in female than in male; femora with few dorsal spines and prominent anterior prolateral spines; anterior tibiae with 4-10 pairs of ventral spines (Figs 6, 32), spines reduced in *A. mae* sp. nov. and *A. day* sp. nov. (Fig. 6) but longer in *A. deelemanae* sp. nov. (Fig. 32); spines irregularly arranged on posterior tibiae; anterior metatarsi ventrally with two pairs of long and erect spines, as long as or slightly longer than those on tibiae; posterior metatarsi with distoventral brush of hairs; tarsi with two dentate claws (carrying eight denticles on tarsus IV) and claw tufts (Fig. 29). Metatarsi and tarsi lined with two rows of trichobothria; femora, patellae and tibiae without trichobothria.

Opisthosoma elongate-ovoid, clothed with fine, black pubescence (Fig. 27). Dorsum dark gray, with two dorsal muscle apodemes and a pale dorsal pattern consisting of paired pale patches (Fig. 26) or connected chevrons (Figs 1-2, 7-8). Male with large dorsal pigmentation covering entire dorsal surface of opisthosoma (Fig. 26) or with a rectangular, dark brown dorsal pigmentation covering up to two thirds of opisthosomal length, edges diffuse, not sharply defined (Figs 1, 7). Epigastric scutum (Fig. 28) lightly sclerotized, occupying entire epigastric area, not protruded anteriorly. Ventral scutum and post-epigastric scuta absent. Venter of opisthosoma with broad, lightly sclerotized mid-longitudinal band flanked by two longitudinal rows of numerous minute, circular sclerotizations (Fig. 28). Six spinnerets (Fig. 33); colulus digitiform. ALS conical, situated close to each other, two-segmented, basal segment heavily sclerotized, distal segment short but distinct. PMS smallest, not flattened, apical segment with three enlarged cylindrical gland spigots surrounded by aciniform gland spigots. PLS longest, subcylindrical, distal segment short, with two cylindrical gland spigots and aciniform gland spigots.

Male palp devoid of erect spines. Palpal tibia longer than wide or wider than long, heavily modified, with (Figs 10-11, 16-17, 20-21) or without (in *A. deelemanae* sp. nov.) an enlarged prolateral tubercle (P in Figs 10, 16), and a strongly developed retrolateral tibial apophysis (RTA in Figs 9, 11, 15; see also Figs 17, 20, 22, 34-37). Cymbium elongate, its apex deeply excavated ventrally to accommodate embolus. Subtegulum visible on prolateral side of tegulum (Figs 10, 16, 20-21, 34-35). Tegulum elongate-ovoid, with curving sperm duct discernible medially; sperm duct sigmoid, not forming additional loop (Figs 9, 15, 20, 34). Embolus situated apically, relatively thick at base; shape of embolus variable, spiral, corkscrew-shaped or represented by plate-like apparatus (Figs 9, 15, 20, 34-36). Conductor and median apophysis absent.

Epigyne represented by heavily sclerotized plate, with pair of large copulatory orifices (Figs 12-13, 18, 24) leading to elongated insemination ducts. Internal female genitalia consisting of regularly coiled insemination ducts and indistinct posterior spermathecae (Figs 12, 14, 19, 25). Fertilization ducts elliptical.

INCLUDED SPECIES: Two species from Thailand (*A. day* sp. nov. and *A. mae* sp. nov.) and one species (*A. deelemanae* sp. nov.) from Borneo.

NATURAL HISTORY: Members of *Allomedmassa* gen. nov. clearly have a preference for forested areas. In Thailand they can be found on the forest floor of primary evergreen hill forests at moderately high altitudes (770-1900 m). The type specimen from Borneo was collected by tree canopy fogging.

DISTRIBUTION: Thailand and Borneo.

Allomedmassa mae sp. nov.

Figs 1-6, 9-12, 15-19

HOLOTYPE: ♂, Thailand, Chiang Mai Province, Chom Thong District, Doi Inthanon National Park, Doi Inthanon, 1650-1700 m, evergreen hill forest, sifting, 11 January 2006, leg. P. Dankittipakul (MHNG, PDC-258).

PARATYPES: Same data as for holotype, 2 ♀ (MHNG, PDC-258). – From type locality, 1-5 October 2006, leg. P. Dankittipakul, 2 ♂ (MHNG, PDC-278). – From type locality, 21-27 September 2008, leg. P. Bunlue, 1 ♂, 1 ♀ (MHNG, PDC-281). – From type locality, pitfall trap, 1-25 August 2002, leg. P. Dankittipakul, 5 ♂, 3 ♀ (MHNG, PDC-278). – Mae Hong Son Province, Huay Nam Dang National Park, Doi Chang, evergreen forest along a trail to the summit, 1700-1900 m, 21 September 2001, leg. P. Dankittipakul, 1 ♂, 1 ♀, 1 juvenile (TNHM).

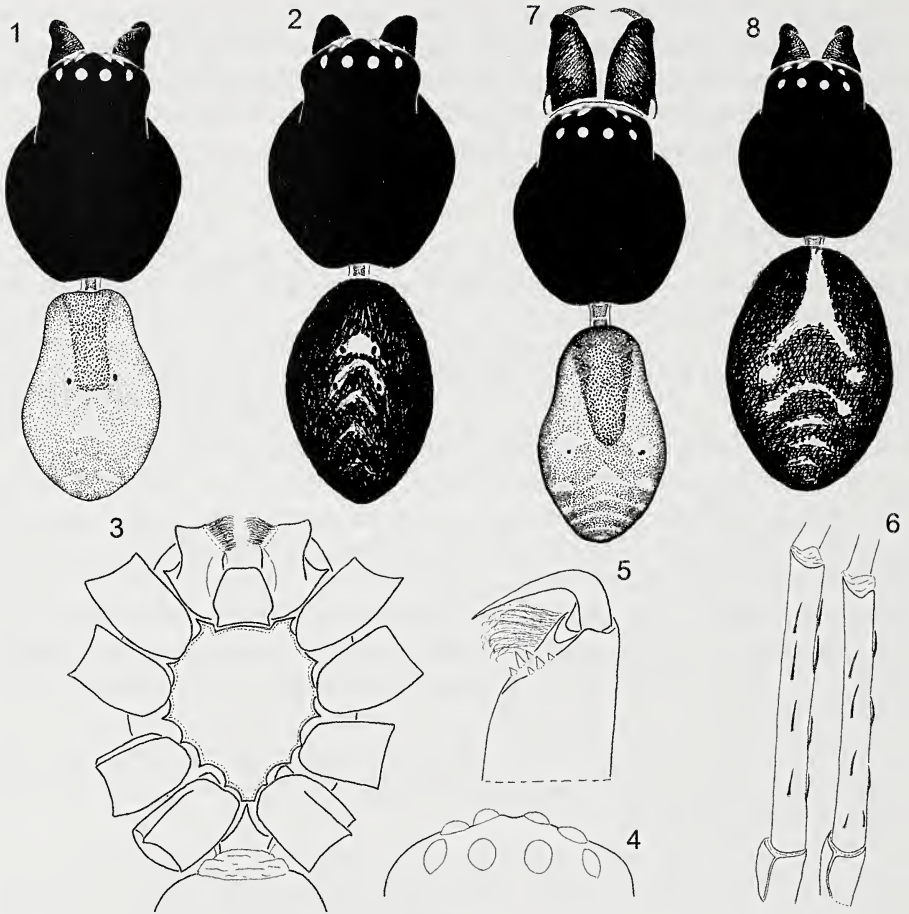
DIAGNOSIS: Males of *A. mae* sp. nov. can be recognized by the thick, relatively long and twisted embolus (Figs 9, 15), the sharply pointed RTA (Figs 9, 11, 15, 17), and the pronounced prolateral tubercle on the palpal tibia (Figs 10-11, 16-17). Females can be distinguished by the elongate-ovoid copulatory orifices (Fig. 18), and by the parallel, tubular insemination ducts connected to poorly defined posterior spermathecae (Figs 12, 19). Males and females have four pairs of reduced ventral spines on tibiae of leg I and II (Fig. 6).

ETYMOLOGY: The first author wishes to dedicate this new species to his mother, as well as every mother with a never-ending supply of unconditional love (Thai: *mae* = mother), invariable noun.

DESCRIPTION OF MALE (HOLOTYPE): Total length 11.2; prosoma 4.8 long, 4.2 wide; opisthosoma 6.4 long, 2.8 wide. Eye sizes and interdistances: AME 1.0, ALE 0.8, PME = PLE 0.7, AME-AME 0.8, AME-ALE 0.5, PME-PME 1.1, PME-PLE 1.2. Leg formula 4123. Leg measurements: Leg I 19.1 (5.2, 7.0, 4.0, 2.9), leg II 17.7 (4.8, 6.2, 4.0, 2.7), leg III 16.0 (4.5, 5.0, 4.1, 2.4), leg IV 20.6 (5.6, 6.7, 6.1, 2.2). Spination: Leg I: Fe, d-11, p-1; Ti, v-2222; Mt, v-22; leg II: Fe, p-1, d-111; Ti, v-2222, Mt, v-22; leg III: Fe, d-111, p-11, r-1; Ti, p-11, v-11, r-11; Mt, v-22; leg IV: Fe, d-111, p-1, r-1; Ti, p-11, v-12, r-11; Mt, p-11, v-1111, r-11.

Coloration and pattern (Fig. 1). Carapace black, integument finely reticulate; chelicerae, labium and palpal coxae dark brown; sternum dark reddish brown, rebordered margin reddish; legs orange, except femora dark brown. Opisthosoma elongate-ovoid; anterior median pigmentation lightly sclerotized, rectangular, occupying approximately one third of opisthosoma length; dorsum dark gray, medially with pale folium, posteriorly with three medially disconnected chevrons; venter pale brown, with dark, weakly sclerotized median band running from epigastric furrow to spinnerets.

Palp (Figs 9-11, 15-17). Palpal tibia relatively short, devoid of erect spine; ventral surface distinctly elevated, covered with numerous bristles; prolateral tubercle digitiform, well-developed, extending dorsally, distinctly broad at base, gradually tapering towards blunt apex; RTA sharply pointed, apex bent distad; tegulum pyriform,



FIGS 1-8

Allomedmassa mae gen. & sp. nov. (1-6) and *Allomedmassa day* gen. & sp. nov. (7-8). (1, 7) Male holotype, dorsal habitus. (2, 8) Female paratype, dorsal habitus. (3) Prosoma, ventral view. (4) Ocular region, dorsal view. (5) Right chelicera, ventral view. (6) Tibiae I and II, ventral view showing pairs of reduced spines.

slightly excavated in distal half of retrolateral side; sperm duct sigmoid, running almost mid-longitudinally; embolus relatively large, corkscrew-shaped, heavily sclerotized.

DESCRIPTION OF FEMALE (PARATYPE): Total length 13.3; prosoma 5.7 long, 4.9 wide; opisthosoma 7.6 long, 3.4 wide. Eye sizes and interdistances: As in male. Leg formula 4123. Leg measurements: Leg I 22.8 (6.2, 8.3, 4.7, 3.6), leg II 21.0 (5.7, 7.4, 4.7, 3.2), leg III 18.5 (5.3, 6.0, 4.4, 2.8), leg IV 24.3 (6.6, 7.9, 7.2, 2.6). Spination: Leg I: Fe, d-1; Ti, v-2222; Mt, v-22; leg II: Fe, d-11; Ti, v-2222, Mt, v-22; leg III: Fe, d-111, p-11; Ti, p-11, v-12, r-11; Mt, p-1, r-1, v12; leg IV: Fe, d-111, p-1, r-1; Ti, p-11, v-111, r-11; Mt, p-11, v-12, r-11.

Coloration and pattern (Fig. 2). Carapace black; chelicerae, labium and palpal coxae dark brown; sternum dark chestnut-brown; legs orange, except anterior femora

dark brown. Opisthosoma ovoid; dorsum dark gray, mottled with numerous pale spots, cardiac region pale, posteriorly with series of pale chevrons; venter pale, with dark median band running from epigastric furrow to spinnerets. Dorsal scutum indistinct.

Genitalia (Figs 12, 18-19). Epigynal region heavily sclerotized, with pair of elongate-ovoid copulatory orifices situated medially; epigynal atria enlarged, sub-triangular; insemination ducts heavily sclerotized, thick-walled, running parallel to mid-line then abruptly moving to lateral side, forming transverse posterior spermathecae; fertilization ducts short, elliptical, originating posteriorly; digitiform accessory sperm receptacles connected to anterior part of insemination ducts, thick-walled, apex provided with numerous pores and gland ductules.

NATURAL HISTORY: *Allomedmassa mae* sp. nov. inhabits evergreen hill forests at relatively high altitudes (1650-1900 m).

DISTRIBUTION: Known only from two localities in northern Thailand.

Allomedmassa day sp. nov.

Figs 7-8, 13-14, 20-25

HOLOTYPE: ♂, Thailand, Loei Province, Phu Ruea National Park, evergreen forests surrounding park head office, 900 m, pitfall trap, 9-10 August 2006, leg. P. Dankittipakul (MHNG, PDC-502).

PARATYPES: Nakhon Ratchasima Province, Khao Yai National Park, 770 m, 15 October 2008, leg. S. Pimpisalee, 2♂ (MHNG, PDC-541). – Khao Yai National Park, evergreen hill forest at 1000 m along a trail to view point, 10 August 2006, leg. P. Dankittipakul, 2♀ (MHNG, PDC-502). – Chiang Mai Province, Chom Thong District, Doi Inthanon National Park, Doi Inthanon, 1650-1700 m, evergreen hill forest, sifting, 11 January 2006, leg. P. Dankittipakul, 1♂, 1♀ (MHNG, PDC-258). – Doi Inthanon, 1650-1700 m, evergreen hill forest, pitfall trap, 1-25 August 2002, leg. P. Dankittipakul, 1♂, 2♀ (MHNG, PDC-278).

DIAGNOSIS: Males of *A. day* sp. nov. can be recognized by a bifurcated RTA (Fig. 22), a small, triangular proateral tubercle on the palpal tibia (Fig. 21), and a hook-shaped embolus with broad base (Fig. 20). Females can be recognized by greatly enlarged copulatory orifices fusing anteriorly (Figs 13, 24), and by tubular spermathecae (Figs 14, 25). *Allomedmassa day* sp. nov. can be distinguished from *A. mae* sp. nov. by the presence of ten and eight pairs (instead of four pairs) of reduced ventral spines on tibiae of leg I and II, respectively.

ETYMOLOGY: The first author wishes to dedicate this new species to his father. Originally Hainan Chinese: day = father; invariable noun.

DESCRIPTION OF MALE (HOLOTYPE): Total length 7.7; prosoma 3.3 long, 2.8 wide; opisthosoma 4.4 long, 1.9 wide. Eye sizes and interdistances: AME 1.0, ALE 0.5, PME = PLE 0.7, AME-AME 0.9, AME-ALE 0.5, PME-PME 1.0, PME-PLE 1.5. Leg formula 4123. Leg measurements: Leg I 13.3 (3.6, 4.8, 2.7, 2.2), leg II 12.1 (3.3, 4.3, 2.7, 1.8), leg III 10.8 (3.0, 3.5, 2.7, 1.6), leg IV 14.0 (3.8, 4.6, 4.1, 1.5). Spination: Leg I: Fe, d-11, p-1; Ti, v-222222222; Mt, v-22; leg II: Fe, d-11, p-1; Ti, v-22222222, Mt, v-22; leg III: Fe, d-11, p-11; Ti, p-11, v-12; Mt, v-22; leg IV: Fe, d-11; Ti, p-1, v-11, r-1; Mt, p-11, v-11, r-1.

Coloration and pattern (Fig. 7). Carapace and chelicerae dark brown; labium and palpal coxae brown, distal area slightly paler; sternum brown, margin distinctly darker; legs yellow, except anterior femora dark brown; femora and patellae with dark



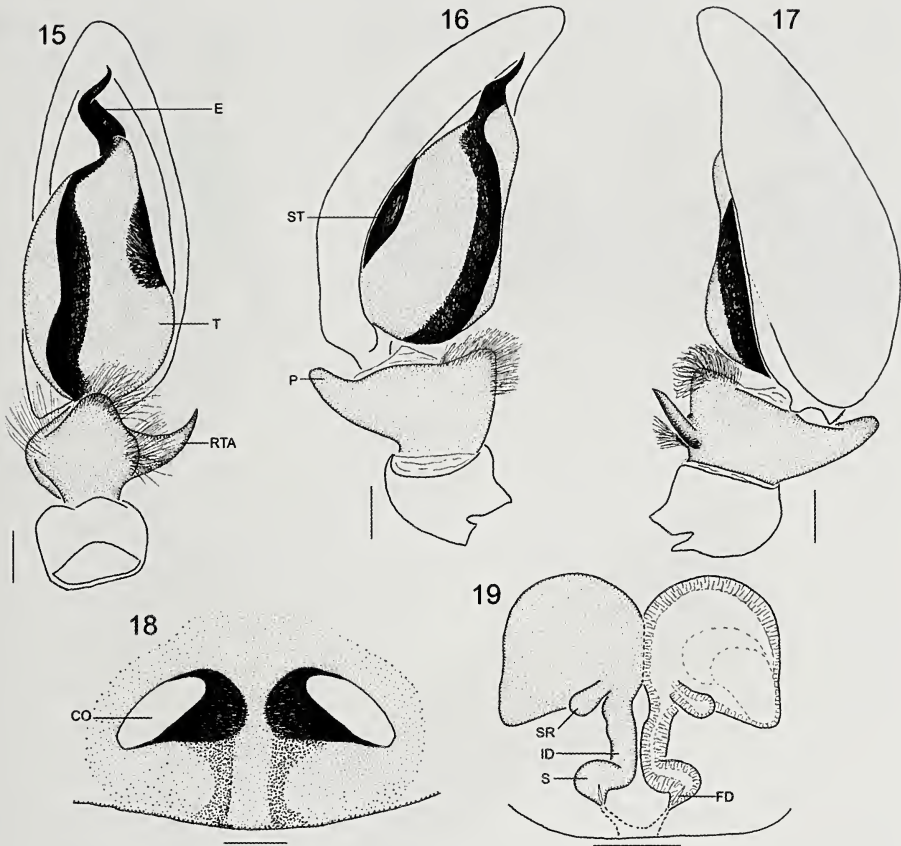
FIGS 9-14

Allomedmassa mae gen. & sp. nov. (9-12) and *Allomedmassa day* gen. & sp. nov. (13-14). (9) Left male palp, ventral view. (10) Ditto, prolateral view. (11) Ditto, retrolateral view. (12, 14) Internal genitalia, dorsal view. (13) Epigyne, ventral view. Abbreviation: P, prolateral tubercle on palpal tibia; RTA, retrolateral tibial apophysis of male palp.

greenish distal annulation; tibiae and metatarsi with subproximal and distal annulations. Opisthosoma elongate-ovoid, sparsely covered with black pubescence; anterior median pigmentation triangular, with blunt apex, occupying slightly less than half of opisthosoma length, its margin not clearly outlined; dorsum gray, medially with paired pale patches, followed by seven transverse chevrons and pre-anal ring; venter pale, with dark median band running from epigastric furrow to spinnerets.

Palp (Figs 20-23). Palpal tibia cylindrical, with slightly elevated apicoventral surface (Fig. 20); prolateral tubercle triangular, heavily sclerotized, its apex blunt (Fig. 21); RTA bifurcated in retrolateral view (Fig. 22); tegulum ovoid, slightly excavated meso-prolaterally, with sigmoid sperm duct running medially; embolus short, black, hook-shaped, apex acutely pointed, directed prolaterad.

DESCRIPTION OF FEMALE (PARATYPE): Total length 7.5; prosoma 3.2 long, 2.8 wide; opisthosoma 4.3 long, 2.0 wide. Eye sizes and interdistances: As in male. Leg formula 4123. Leg measurements: Leg I 12.9 (3.5, 4.7, 2.7, 2.0), leg II 12.0 (3.2, 4.2, 2.8, 1.8), leg III 10.7 (3.0, 3.4, 2.6, 1.7), leg IV 13.8 (3.7, 4.5, 4.1, 1.5). Spination: Leg



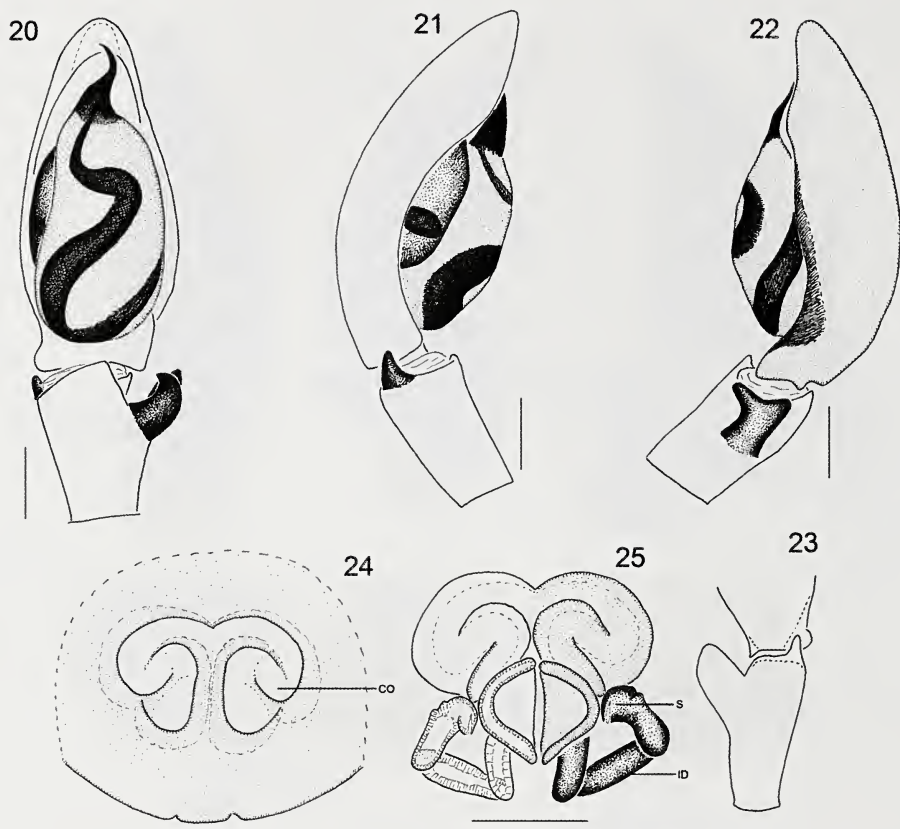
FIGS 15-19

Allomedmassa mae gen. & sp. nov.; male holotype (15-17), female paratype (18-19). (15) Left male palp, ventral view. (16) Ditto, proventral view. (17) Ditto, retrolateral view. (18) Epigyne, ventral view. (19) Internal genitalia, dorsal view. Abbreviations: CO, copulatory orifice; E, embolus; FD, fertilization duct; ID, insemination duct; P, prolateral tubercle on palpal tibia; RTA, retrolateral tibial apophysis; S, spermatheca; SR, accessory sperm receptacle; ST, subtegulum; T, tegulum. Scale lines = 0.1 mm.

I: Fe, p-1, d-11; Ti, v-2222222222; Mt, v-22; leg II: Fe, p-1, d-11; Ti, v-22222222, Mt, v-22; leg III: Fe, p-11, d-111; Ti, p-11, v-12, r-11; Mt, p-11, r-11, v112; leg IV: Fe, d-111, p-1, r-1; Ti, p-11, v-112, r-11; Mt, p-11, v-112, r-11.

Coloration and pattern (Fig. 8). Carapace anteriorly dark brown, posteriorly yellowish brown; chelicerae, labium and palpal coxae brown, distal part slightly paler than proximal part; sternum yellowish brown; anterior legs dark brown, posterior legs yellow. Opisthosoma ovoid; anterior median pigmentation indistinct; dorsum dark gray, with pale folium; venter pale.

Genitalia (Figs 13-14, 24-25). Epigynal region convex, heavily sclerotized; copulatory orifices situated medially, greatly enlarged, anteriorly fused together; internal genitalia represented by elongated, strongly convoluted insemination ducts and slightly enlarged posterior spermathecae; fertilization ducts short, elliptical.



FIGS 20-25

Allomedmassa day gen. & sp. nov.; male holotype (20-23), female paratype (24-25). (20) Left male palp, ventral view. (21) Ditto, prolateral view. (22) Ditto, retrolateral view. (23) Palpal tibia, dorsal view. (24) Epigyne, ventral view. (25) Internal genitalia, dorsal view. Scale lines = 0.1 mm.

NATURAL HISTORY: *Allomedmassa day* sp. nov. inhabits evergreen hill forests at moderately high altitudes (770-1700 m). Females were collected by sifting decomposing leaves and organic litter.

DISTRIBUTION: Northern and northeastern Thailand.

***Allomedmassa deelemanae* sp. nov.**

Figs 26-39

HOLOTYPE: ♂, Malaysia, Borneo Island, Sabah State, Tawau Division, fogging forest canopy in evergreen forests, leg. C. Deeleman (RMNH, not examined).

REMARKS: The holotype of this species has not been examined by the first author but it fits well with the definition of *Allomedmassa* gen. nov. and should be placed here (Deeleman-Reinhold pers. comm.). The male palp is quite peculiar, its retrolateral tibial apophysis is voluminous, almost as large as the tibia itself, and consists of a large bent outer lobe and a strongly chitinized inner part which ends



FIGS 26-29

Allomedmassa deelemanae gen. & sp. nov., male holotype. (26) Habitus, dorsal view. (27) Ditto, lateral view. (28) Ditto, ventral view. (29) Apex of left leg I with claw tufts, prolateral view.

distally in a strong spine or rod. The embolus is massive, very broad-based and not ending in a tapering spine as do the emboli of all other castianeirines but ending in a broad cup-shaped tip instead. The sperm duct is also sigmoid. The male of this new species can also be distinguished from those of congeners by six pairs of pronounced (not reduced as in the two congeners) spines on the ventral side of its anterior tibiae.

ETYMOLOGY: The species is dedicated to Dr Christa Deeleman-Reinhold, who collected the type specimen, helped with the description and provided insightful comments on the genus.

DESCRIPTION OF MALE (HOLOTYPE): Total length 9.9; prosoma 4.9 long; opisthosoma 5.0 long. Leg formula 1234. Leg measurements: Leg I 18.0 (5.0, 6.5, 4.5, 2.0), leg II 16.9 (4.6, 5.5, 4.8, 2.0), leg III 13.3 (4.0, 4.3, 3.5, 1.5), leg IV 12.4 (3.7, 4.0, 3.3, 1.4). Spination: Leg I: Fe, d-11, p-1; Ti, v-222222; Mt, v-22; leg II: Fe, d-11, p-1; Ti, v-222222; Mt, v-22.



FIGS 30-33

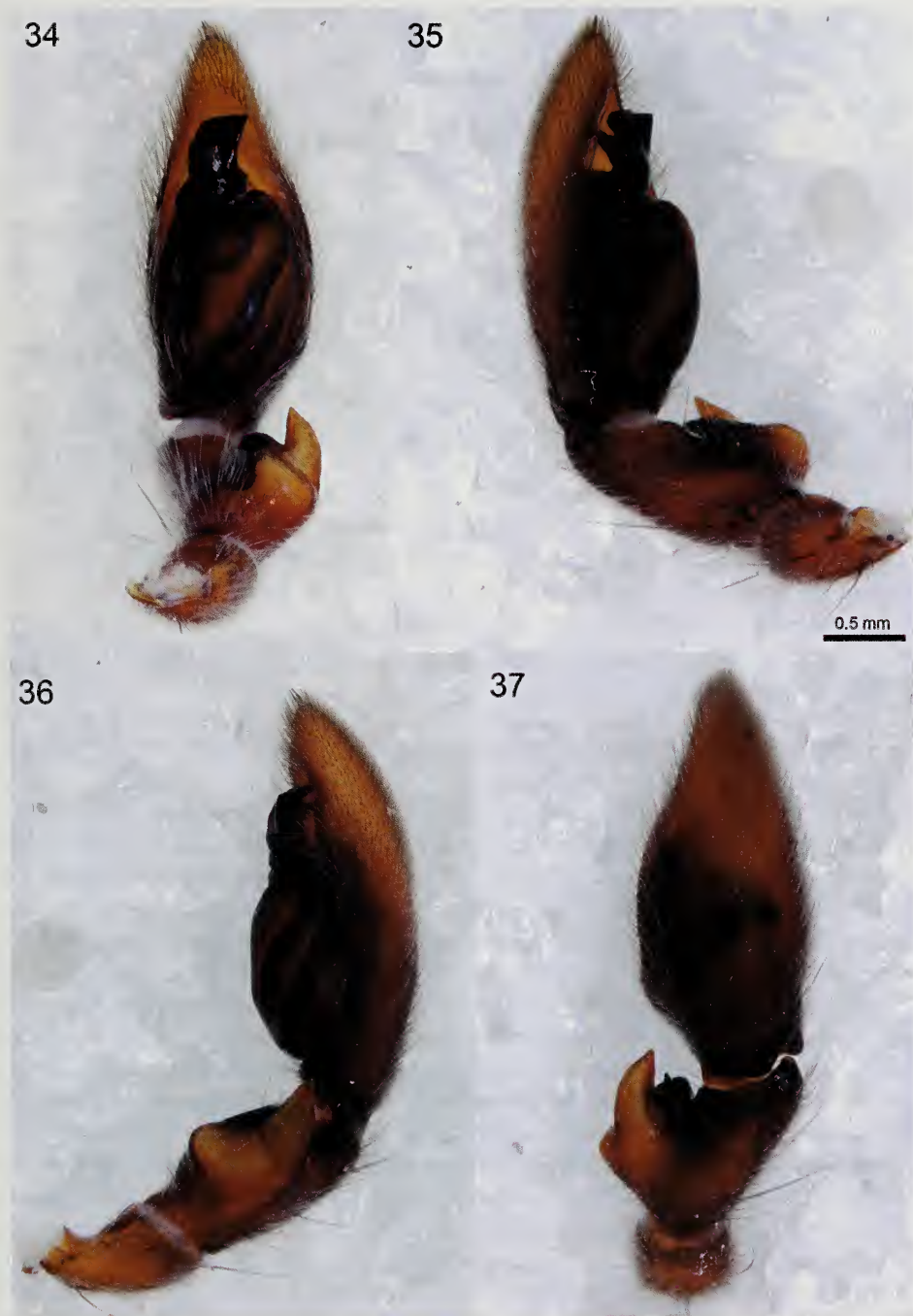
Allomedmassa deelemanae gen. & sp. nov., male holotype. (30) Prosoma, frontal view. (31) Anterior part of prosoma, ventral view. (32) Left leg I, prolateral view. (33) Spinnerets, ventral view.

Coloration and pattern (Figs 26-28, 30). Prosoma convex; carapace entirely black, covered with numerous pits; chelicerae dark brown; labium and palpal coxae reddish brown, distal areas pale; sternum reddish brown; legs orange, except proximal part of femora dark brown; tibiae and metatarsi pale proximally.

Opisthosoma elongate-ovoid, sparsely covered with black pubescence; dorsally with orange-brown pigmentation, its margin clearly outlined, covering entire dorsal surface of opisthosoma; dorsal pattern consisting of a pair of pale longitudinal patches, followed by six disconnected transverse chevrons; venter pale, with lightly sclerotized median band running from epigastric furrow to spinnerets.

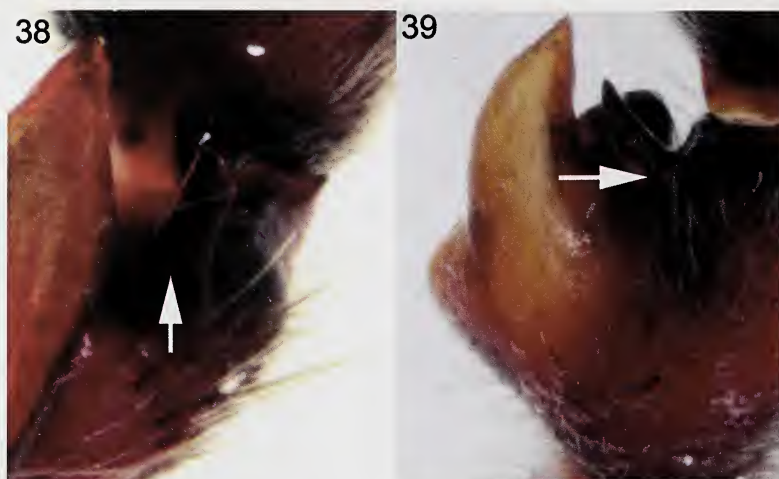
Palp (Figs 34-39). Palpal tibia with large, tripartite RTA consisting of a small, dark, retrodorsal tooth with pointed apex (Figs 38-39, indicated by arrow), a much larger, pointed, light-coloured retrolateral prong with a large bulging base, and a blunt, relatively wide dark retroventral ridge; tegulum ovoid, slightly excavated meso-pro-laterally, with sigmoid sperm duct running medially; embolus heavily sclerotized, represented by a transverse basal ridge, a distally twisted rectangular lamina, and a smaller dorso-prolateral projection.

FEMALE: Unknown.



FIGS 34-37

Allomedmassa deelemanae gen. & sp. nov., male holotype. (34) Left male palp, ventral view. (35) Ditto, prolateral view. (36) Ditto, retrolateral view. (37) Ditto, dorsal view.



FIGS 38-39

Allomedmassa deelemanae gen. & sp. nov., male holotype. (38) RTA of left palp, with arrow indicating retrodorsal tooth, retrolateral view. (39) Ditto, dorsal view.

NATURAL HISTORY: The type of *A. deelemanae* sp. nov. was collected by canopy fogging in an evergreen rain forest.

DISTRIBUTION: Known only from the type locality in northeastern Borneo.

DISCUSSION

Leg spination has long been considered an important character in spider classification. Simon (1897) used the paired ventral spines on anterior legs for disguising Liocranidae and Corinnidae. Deeleman-Reinhold (2001: fig. 543) presented an illustration of the typical leg spination pattern of *Medmassa* in which the elongated and strongly erect spines on the ventral surface of the anterior tibiae are arranged in seven to ten pairs and situated on distinctly elevated sockets. The two Thai species of *Allomedmassa* gen. nov. do not fit within this pattern, and there are some significant discrepancies: their tibial spines are greatly reduced to short and weak spines and they are widely spaced. *Medmassa* and *Allomedmassa* gen. nov. both have two to three pairs of ventral spines on anterior metatarsi, and these spines are also reduced in *Allomedmassa* gen. nov. Similarly, the great majority of Asian species currently placed in the somatically homogenous *Medmassa* have a relatively low carapace. In *Allomedmassa* gen. nov., however, the attenuated carapace (Figs 1-2) has a strongly convex cephalic region, which is gradually sloping posteriorly (Fig. 27). The heart-shaped sternum lacks additional extensions in *Medmassa*, whereas in *Allomedmassa* gen. nov. the sternum is anteriorly excavated, and provided with triangular extensions fitting into coxal and intercoxal concavities (Figs 3, 28). Species of *Medmassa* lack a distinctive pigmentation on the opisthosoma, whereas it is present and clearly visible in the males of *Allomedmassa* gen. nov. (Figs 1, 7, 26).

It becomes apparent that although these two genera share some degree of somatic similarity, their genitalia are very different. The male palpal tibia of *Allomedmassa* gen. nov. bears a prolateral tubercle and a modified retrolateral apophysis. The tubercle is usually represented by a triangular prong (Figs 10-11, 16-17). The retrolateral apophysis is generally bifid in males of *Medmassa*, whereas in *A. mae* sp. nov. it is a single sharp point (Figs 9, 15), and in *A. day* sp. nov. it is broad, laterally expanded and distally bifid (Fig. 22). The ventral surface of the palpal tibia in *M. insignis* (Thorell, 1890), *M. tigris* (Deeleman-Reinhold, 1995) and *M. diplogale* Deeleman-Reinhold, 2001 is lined with an oblique row of long, conspicuous spines (see also Deeleman-Reinhold, 2001: fig. 534). These spines are erect and strong, while only normal setae can be found on the surface of the palpal tibia in *Allomedmassa* gen. nov. The apex of the cymbium is generally provided with a narrow ventral furrow to accommodate the slender embolus in males of *Medmassa* (Deeleman-Reinhold, 2001: figs 545-548), but it is relatively broad in males of *Allomedmassa* gen. nov. The sperm duct of *Allomedmassa* gen. nov. is relatively thick, running more or less along the longitudinal axis, whereas it is thinner and U-shaped in males of *Medmassa*.

The epigyne of *Allomedmassa* gen. nov. is readily recognized by a pair of greatly enlarged copulatory orifices situated on the heavily sclerotized epigynal plate (Figs 13-14, 18, 24), while the orifices are small and usually with a thickened margin in females of *Medmassa*. The simple, straight insemination ducts directly lead to the slightly enlarged, posteriorly situated spermathecae in *Medmassa*, whereas in *Allomedmassa* gen. nov. the insemination ducts and the spermathecae are not separated structures but the spermathecae are slightly enlarged distal continuations of the ducts (Figs 12, 14, 19, 25). Of interest is the modification of the internal duct system of *Allomedmassa* gen. nov. A pair of digitiform sperm receptacles originating on dorsal surface of the insemination ducts is present in *A. mae* sp. nov. (Figs 12, 19) but not in *A. day* sp. nov. (Figs 14, 25). The walls of these receptacles are penetrated by numerous gland ductules of variable size.

Although there are some noticeable differences between *Medmassa* and *Allomedmassa* gen. nov., they are closer to one another than to species of other genera in the Castianeirinae. The presence of paired ventral spines on anterior tibiae distinguishes *Pranburia*, *Medmassa* and *Allomedmassa* gen. nov. from the rest of the Castianeirinae. However, these spines are relatively common in phrurolithines. They possibly reflect a different life style and can be considered an adaptation instead of a phylogenetic heritage (apomorphy). It is possible, if unlikely, that ventral tibial spines are plesiomorphic and that their occurrence in these three genera is coincidental. A recent phylogenetic analysis placed *Medmassa* basally in the Castianeirinae (Haddad *et al.*, 2009) despite the fact that some characters do not conform well with typical Castianeirinae (Reiskind, 1969; Haddad, 2004).

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New and little known Blattidae (Dictyoptera) from the collection of the Muséum d'histoire naturelle de Genève

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New and little known Blattidae (Dictyoptera) from the collection of the Muséum d'histoire naturelle de Genève. - A new genus and species of cockroaches, *Afrostylopyga angolensis* gen. et sp. nov., are described from Angola. A detailed morphological description of the new taxa, and a redescription of *Deropeltis erythrocephala* (Fabricius, 1781), *Maoriblatta novaeseelandiae* (Brunner von Wattenwyl, 1865) and *Celatoblatta undulivitta* (Walker, 1868) are given.

Keywords: *Afrostylopyga angolensis* gen. et sp. nov. - *Deropeltis erythrocephala* - *Maoriblatta novaeseelandiae* - *Celatoblatta undulivitta* - morphology.

INTRODUCTION

During the last two years I have had the pleasure of studying the rich dictyopteran collections of the Muséum d'histoire naturelle in Geneva. In the course of these investigations a lot of new data were discovered. This paper is the first in a series devoted to material from the collections in this museum.

The family Blattidae is one of the largest of the order Dictyoptera. It is characterized by a rather primitive type of oviposition and by very complicated structures of the male genitalia. The structures of the male genitalia are crucial for taxa determination and reconstruction of phylogeny in cockroaches. The female genitalia, i.e. ovipositor, spermatheca and related structures, are potentially very useful for taxonomical purposes as well. It is surprising that these structures have scarcely been studied in representatives of this family.

Deropeltis erythrocephala (Fabricius, 1781) and *Maoriblatta novaeseelandiae* (Brunner von Wattenwyl, 1865) are the type species of the large African genus *Deropeltis* Burmeister, 1838 and of the New Zealand and New Caledonian genus *Maoriblatta* Princis, 1966, respectively. The genus *Celatoblatta* Johns, 1966 is characterized by a peculiar habitus, more similar to that of Ectobiidae than to Blattidae. The existing morphological descriptions of these taxa are not detailed enough and therefore precise morphological descriptions are necessary for further investigations into the phylogeny and biology of cockroaches.

The purposes of this paper are to describe new taxa and give morphological descriptions suitable for further phylogenetical investigations.

MATERIAL AND METHODS

All material studied was dry and pinned. In order to study the structures of the male and female genitalia, the specimens were softened and the apical part of the abdomen was removed and treated with 10% KOH. The genitalic structures are preserved in microvials (in 70% ethanol) to prevent the distortion of delicate structures that often occurs with slide-mounted preparations, and to facilitate their detailed examination at various angles. On permanent slide mounts these structures can be observed only from one fixed angle.

The ratio “Distance between eyes/length of eye” was calculated as the interocular distance on the vertex (*i.o.* in Fig. 1) divided by the dorsoventral length of the eye (*d.e.* in Fig. 1).

The terminology of male genital sclerites follows Klass (1997), with some modifications. The terminology used by Grandcolas (1996) for genital structures is given in parentheses following the author’s designations. The terminology of the female genital structures follows McKittrick (1964) and Klass (1998). The terms introduced by the author (here and in Anisyutkin *et al.*, 2013) are given in quotation marks.

All material studied, including the types of the newly described species, is deposited in the Muséum d'histoire naturelle, Genève.

TAXONOMY

Afrostylepyga gen. nov.

TYPE SPECIES: *Afrostylepyga angolensis* sp. nov., designated here.

ETYMOLOGY: The name means “Stylepyga from Africa”.

DIFFERENTIAL DIAGNOSIS: The new genus belongs to the functionally wingless blattids, i.e. cockroaches with tegmina and wings absent or reduced to lateral lobes. This group includes the genera *Apterisca* Princis, 1963, *Brinckella* Princis, 1963, *Macrostylepyga* Anisyutkin, Anichkin & Nguyen, 2013, *Maoriblatta* Princis, 1966, *Miostylepyga* Princis, 1966 and *Neostylepyga* Shelford, 1911. The genera *Macrostylepyga*, *Maoriblatta* and *Neostylepyga* can be readily differentiated from the new genus by the structure of their male genitalia (e.g. shape of sclerites L4C, R1H and R2, see Anisyutkin, 2010; Anisyutkin *et al.*, 2013 and Figs 71-74 of this paper). From the monotypic genus *Miostylepyga*, described from Java (Princis, 1966), the new genus differs in larger size, presence of tegmina reduced to lateral lobes (Fig. 3), euplantulae on hind metatarsi and arolia on hind metatarsi.

Afrostylepyga gen. nov. is probably related to the African genera *Apterisca* and *Brinckella*, but differs from these genera in the presence of tegmina (Fig. 3), an unmodified abdominal tergite VI and a clearly diminished abdominal tergite VII (Fig. 9) (in *Apterisca* and *Brinckella* these tergites are: “Tergite 6-7 eingesenkt und lateral aufwärts gebogen...” Princis, 1963: 90-91). Additionally, the new genus differs from *Brinckella* in the presence of an arolium on the pretarsi of all legs (Fig. 8).

INCLUDED SPECIES: The type species only.

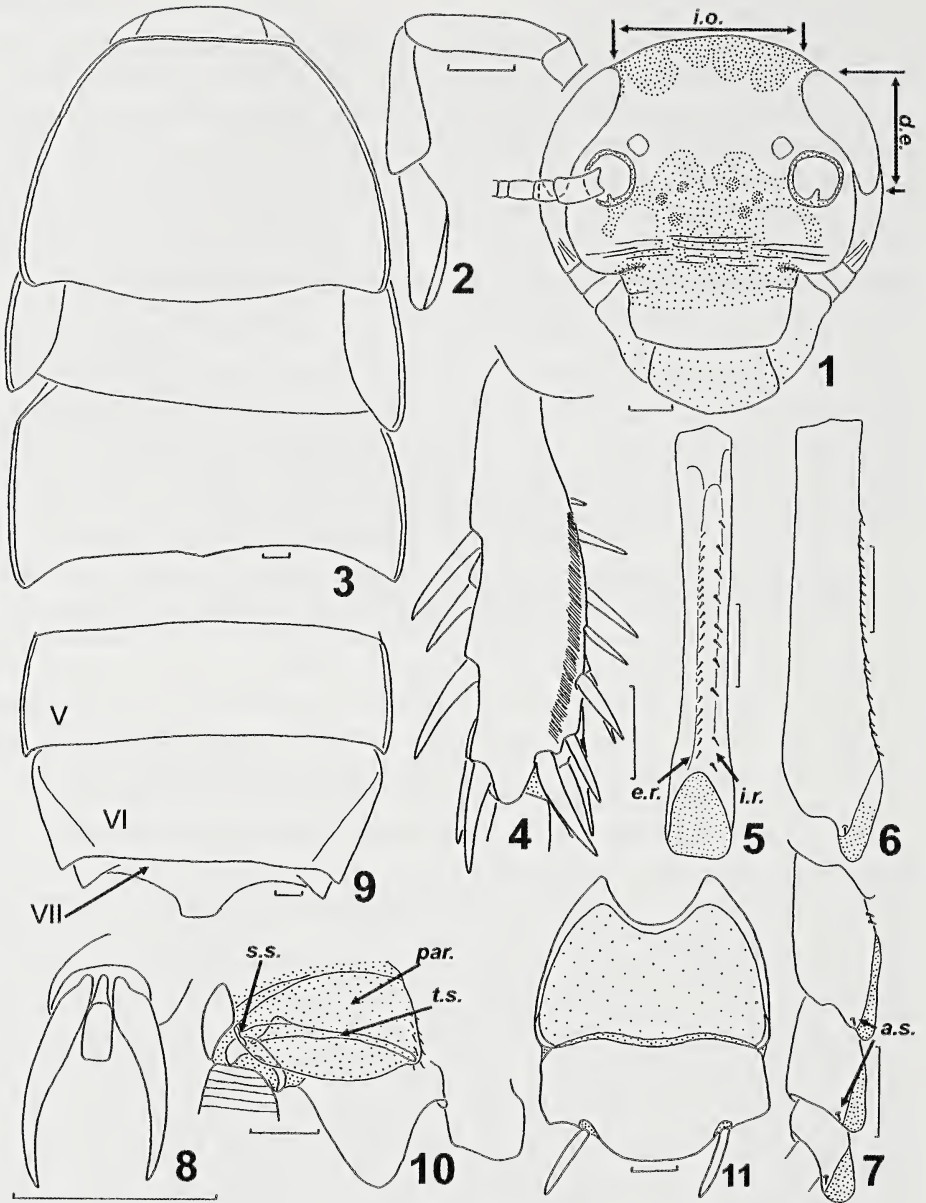
Afrostylopyga angolensis sp. nov.

Figs 1-21, 26-29

MATERIAL: ♂ holotype; Angola, "Plan Alto Lobito VII", "Angola Miss. se. Suisse 1928-29". – 1 larva paratype; Angola, "Lobito pl. VIII", "Angola Miss. se. Suisse 1928-29".

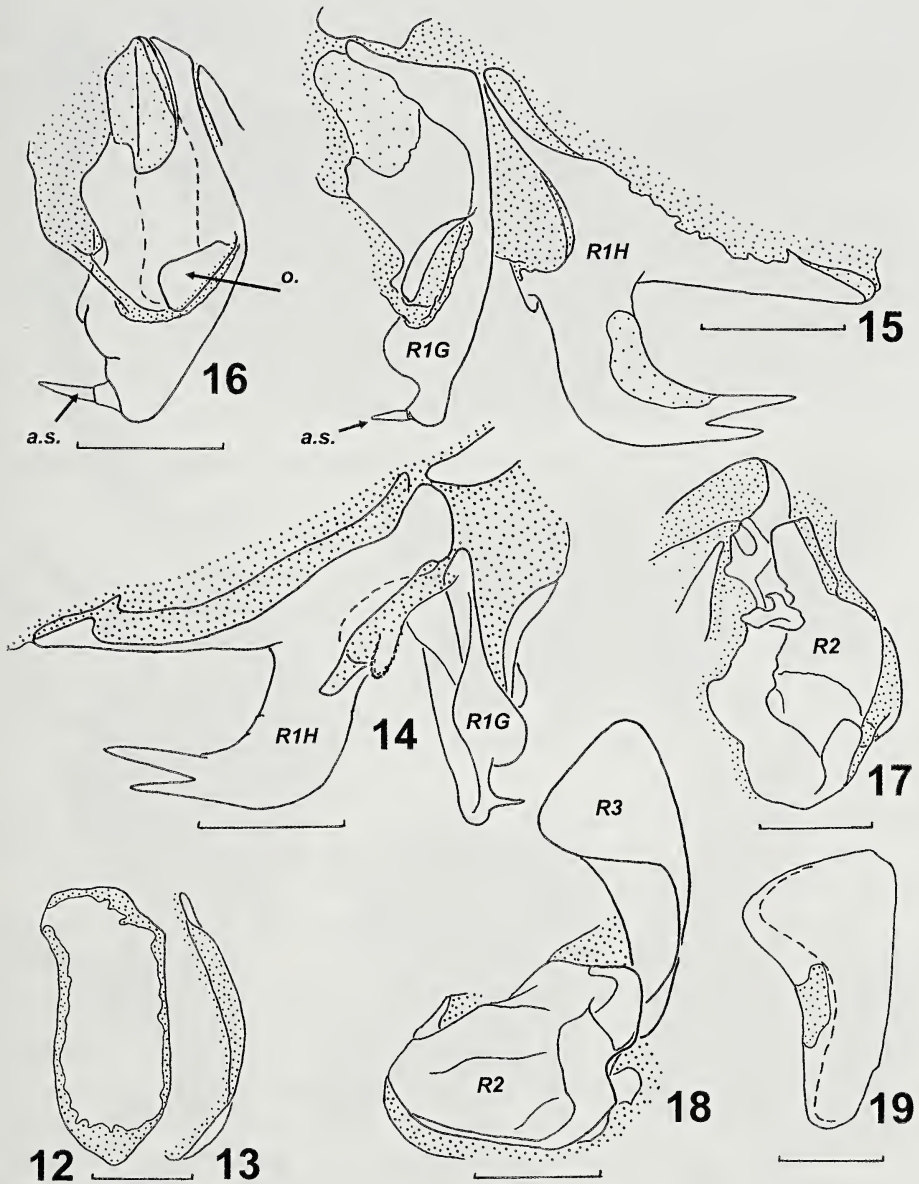
DESCRIPTION OF MALE: Vertex of head, thoracic tergites, abdomen and most of legs dark reddish brown; eyes black; facial part of head yellow, with large brown macula at middle and with brownish labrum and apices of mandibulae, vertex striate (Fig. 1); antennae brown; mouthparts yellow, but two apical segments of maxillary palps and apical segment of labial palps brownish; most of coxae yellow; fore legs comparatively lighter, reddish. Surfaces smooth and lustrous; facial part of head, pronotum and, to a lesser degree, meso- and metanotum with weak punctation; facial part of head with wrinkles (Fig. 1). Head rounded, slightly longer than wide (Fig. 1); eyes comparatively small; ocellar spots small; distance between eyes 1.5 times eye length; distance between antennal sockets 2.9 times scape length; approximate length ratio of articles 3-5 of maxillary palps 1.1 : 1 : 1 (Fig. 2). Pronotum trapezoidal, with anterior margin nearly straight, lateral margin rounded and posterior margin weakly projected caudally (Fig. 3), postero-lateral angles weakly projected caudally. Mesonotum with posterior margin very widely arcuate (Fig. 3). Metanotum with lateral margins widely rounded and posterior margin sinuate (Fig. 3). Tegmina reduced to lateral lobes; wings absent (Fig. 3). Pronotum, costal margin of tegmina along with outer margin, metanotum and abdominal tergites II-V marginated laterally (Figs 3, 9). Anterior margin of fore femur armed according to the type A (*sensu* Bey-Bienko, 1950; Roth, 2003), with 15-16 spines, including three apical ones. All tibiae not thickened distally, apical spines not reinforced (Fig. 4). Tibiae with three rows of spines on outside. Structure of hind tarsi (Figs 5-8): metatarsus about as long as other articles combined, with two rows of spines along lower margin [exterior row (Fig. 5, *e.r.*) consisting of 21-22, interior one (Fig. 5, *i.r.*) of 10-11 spines]; 2nd article with 1-2/1-2 spines in exterior/interior rows, respectively; other articles without spines along lower margin (Fig. 7); metatarsus and articles 2-4 with apical euplantulae and two additional spines bordering euplantulae (Figs 6, 7, *a.s.*); claws symmetrical, simple; arolium vestigial (Fig. 8). Abdominal tergites without visible glandular specializations; postero-lateral angles attenuate caudally; tergites VI and VII weakly sclerotized (Fig. 9); tergite VI with lateral margins directed upward, with caudal margin straight; tergite VII short, mostly hidden under tergite VI, with medial projection. Anal plate transverse, with triangular median incision in caudal margin; divided by membranous median strip (Fig. 20, *m.s.*) into two parts. Cerci fusiform and flat. Paraprocts membranous, without armament, with very small sclerites (Fig. 10, *s.s.*) at lateral margin and long thin transverse sclerites on upper side (Fig. 10, *t.s.*). Hypandrium as in Fig. 11, with caudal margin roundly projecting between styles; styli elongated, fusiform.

Genitalia (Figs 16-19, 21, 26-29): Left phallomere (Figs 26-29) with sclerite L4C (L2D, here and in the following the terminology according to Grandcolas, 1996 is given in parentheses) large, bent ventrally in cranial part with long outgrowth (Figs 27, 29, *l.o.*), occupying most of dorsal and part of outer sides of phallomere, with dorsal field of spinules (Fig. 26, *spi.*, similar to those of *D. erythrocephala*, Fig. 24, *spi.*, but smaller), without outgrowths or process, caudally rounded and membranous; sclerite L4D (L3v) small, convex (Figs 26-29); sclerite L3 (L3d) comparatively slender



FIGS 1-11

Afrostylopyga angolensis gen. et sp. nov. (1) Facial part of head. (2) Distal articles of maxillary palps. (3) Head and thorax, dorsal view. (4) Fore tibia seen from anterior. (5) Hind metatarsus, ventral view. (6) The same seen from outside. (7) Articles 2-4 of hind tarsus seen from outside. (8) Hind pretarsus. (9) Abdominal tergites V-VII, dorsal view. (10) Right half of anal plate, ventral view. (11) Hypandrium, ventral view. Dotted areas show dark colour (1) or membranous parts (4-7, 10, 11). Abbreviations: V, VI, VII = numbers of abdominal tergites; *a.s.* = additional spines; *d.e.* = dorsoventral length of eye; *e.r.* = exterior row of spines; *i.o.* = interocular distance on vertex; *i.r.* = interior row of spines; *par.* = paraproct; *s.s.* = small sclerite of paraproct; *t.s.* = transverse sclerite of paraproct. For details see text. Scale bars 1 mm.



FIGS 12-19

Afrostylopyga angolensis gen. et sp. nov., male genitalia structures. (12) Ventral phallomere, ventral view. (13) The same seen from outside. (14) Sclerites R1H and R1G of right phallomere, dorsal view. (15) The same, ventral view. (16) Sclerite R1G seen from outside. (17) Upper part of sclerite R2, ventral view. (18) Lower part of sclerite R2 and sclerite R3, dorsal view. (19) Sclerite R3 seen from outside. Dotted areas show membranous parts. Abbreviations: *a.s.* = apical spine of sclerite R1G; *o.* = outgrowth on outer side of sclerite R1G; R2, R3, R1G, R1H = sclerites of right phallomere. For details see text. Scale bars 1 mm.

(Figs 27, 29); sclerite L4F vestigial (Figs 27-28); sclerite L2 (L2v) occupying ventral and lower half of inner sides of phallomere (Figs 28-29), terminating in sharp caudal process with two spines (Figs 27-28, *c.p.L2*), with membranous lobe above this process (Fig. 28, *m.l.*); large membranous lobe (Figs 26-28, *l.m.l.*) partly sclerotized at apex, with small thin sclerite (Fig. 28, *t.s.*) situated above L2 on inner side of phallomere. Ventral phallomere L4G (VP) as in Figs 12-13, slightly bent upward, membranous at margins. Right phallomere complex in shape; basal sclerite R2 rounded, dorsoventrally compressed, consisting of upper and lower parts (Figs 17-18, 21); cranial part of sclerite R1H transverse, caudal with forked apex, well sclerotized (Figs 14-15, 21); sclerite R1G comparatively short, with apical spine (Figs 15-16, *a.s.*) and outgrowth on outer side (Fig. 16, *o.*); sclerite R3 as in Figs 18-19.

MEASUREMENTS (in mm): Head length 8.8, head width 7.9; pronotum length 10.3, pronotum width 14.3; tegmen length 5.7, tegmen width 2.1.

DESCRIPTION OF LARVA: Similar to male, but smaller; body (thoracic and abdominal tergites) from above lighter, more reddish.

COMPARISON: As given for the genus.

NOTES: The presence of unequal rows of spines on the lower margins of the tarsi (Fig. 5) is unusual and similar to the spination in the genus *Macrostylopyga* described from South-East Asia (Anisyutkin *et al.*, 2013). This is due to convergence, because these genera are very distinct by the structure of their very complicated male genitalia.

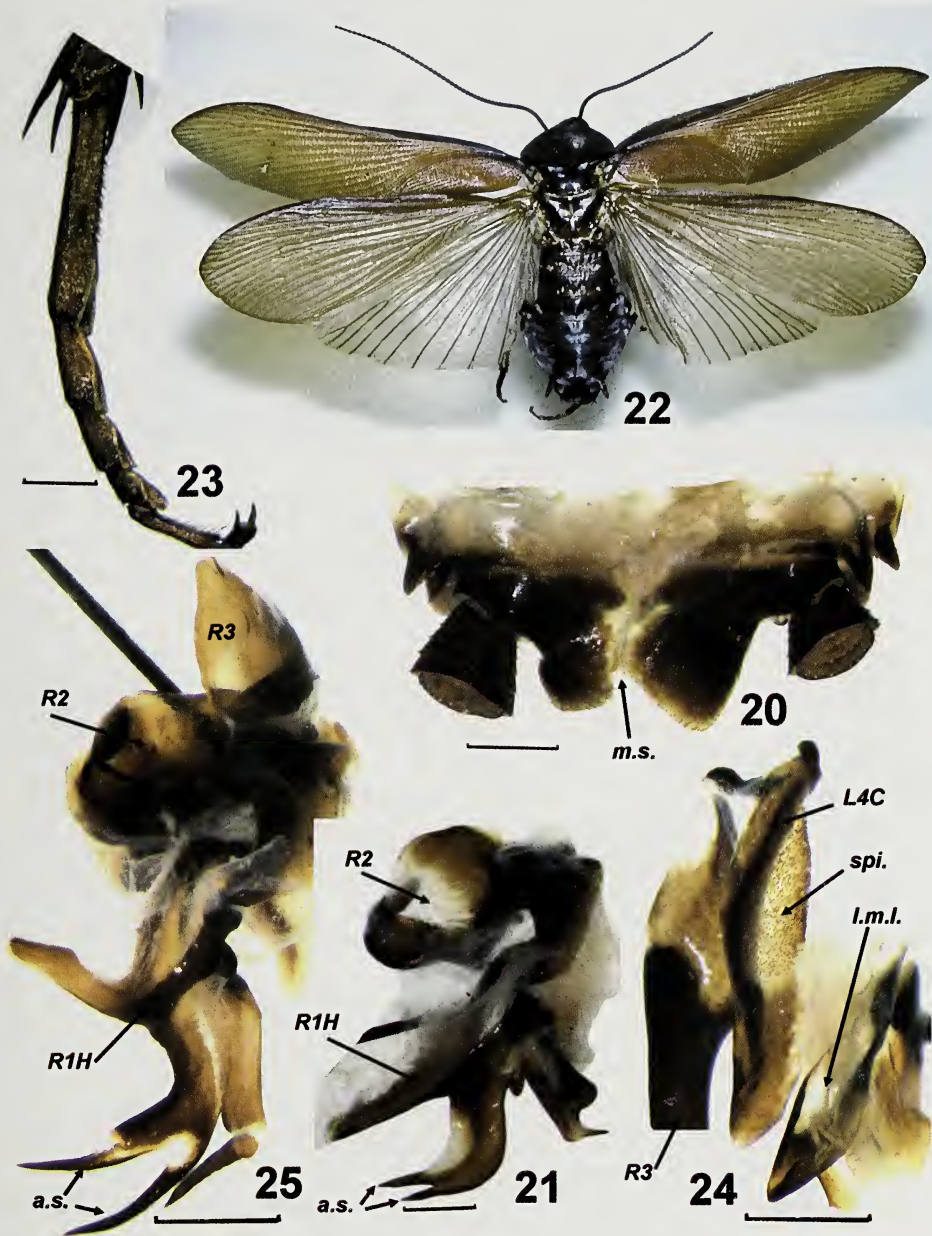
The structure of the anal plate, which is divided into two parts by a longitudinal membranous strip (Fig. 20, *m.s.*), seems to be unique among cockroaches.

***Deropeltis erythrocephala* (Fabricius, 1781)**

Figs 22-25, 30-45

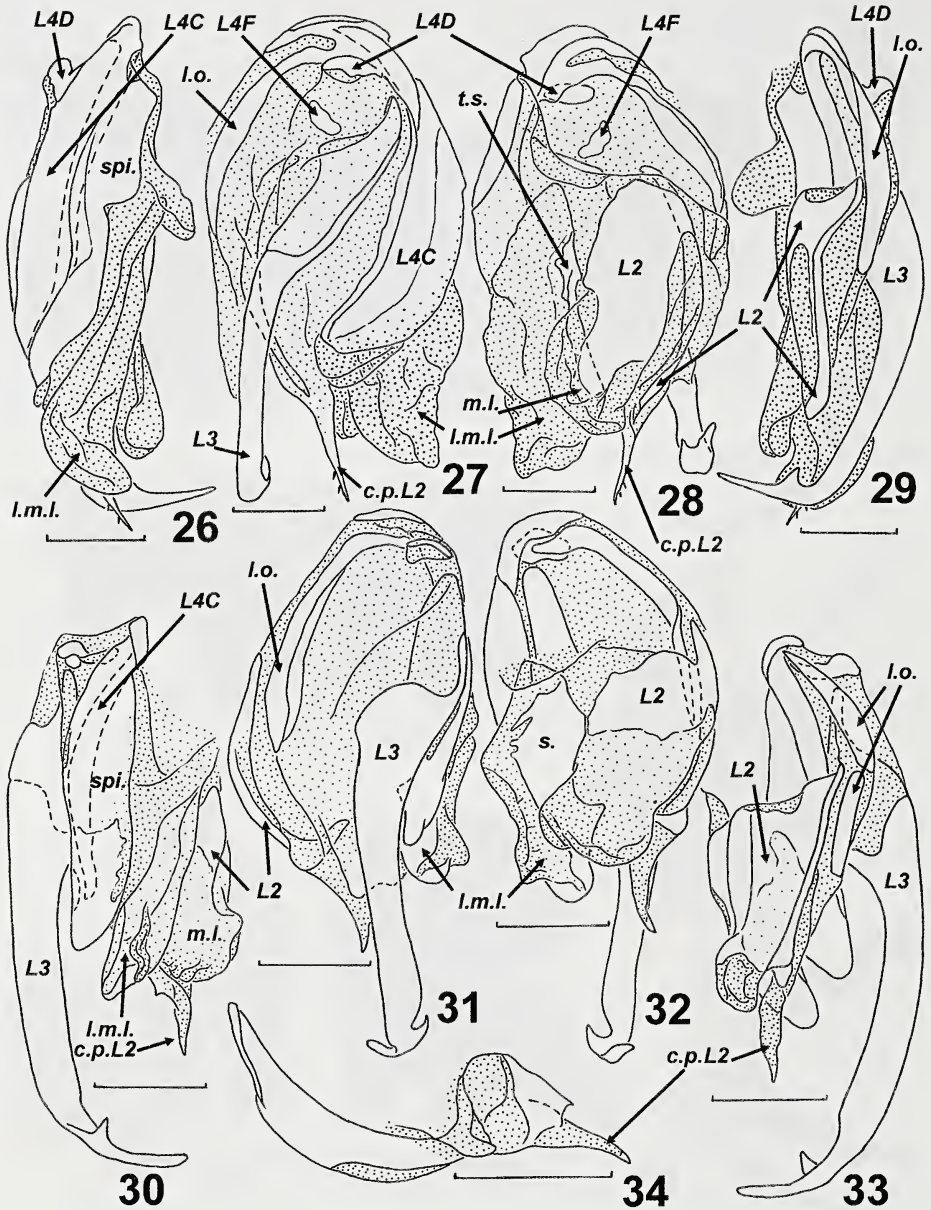
MATERIAL: 1 ♂; “♂, Bau d'Algoa, Cap b. sp. M H de Saussure”, “erythrocephala Fab. Cap. B.”, “*Deropeltis erythrocephala* Fab. ♂”, “erythrocephala F. det. Princis”.

REDESCRIPTION OF MALE: General colour reddish brown, partly black (Fig. 22); eyes, antennae (with exception of scapus), pronotum, parts of thorax and abdomen dark brown, nearly black; facial part of head, scapi, mouthparts, tegmina, wings, legs and part of thorax and abdomen reddish brown; ocelli yellowish. Surfaces mostly lustrous; antennae and pronotum dull; punctation absent; facial part of head with weakly expressed wrinkles (Fig. 35). Head rounded (Fig. 35), distinctly convex, about as long as wide; eyes large; ocellar spots large; distance between eyes 0.7 times eye length; distance between antennal sockets about 1.6 times scape length; approximate length ratio of articles 3-5 of maxillary palps 1.3 : 1.1 : 1. Pronotum transverse, rounded, emarginated cranially (Figs 22, 36). Tegmina and wings fully developed, not sclerotized, with distinct venation (Fig. 22). Anterior margin of fore femur armed as in type A (*sensu* Bey-Bienko, 1950; Roth, 2003), with 11-13 spines, including 2-3 apical spines. Fore tibiae not thickened distally, spines not reinforced. Structure of hind tarsi (Figs 23, 37-38): metatarsus longer than other articles combined, with large euplantula occupying about one third of metatarsus length, and three or four irregular rows of spines along lower margin, euplantula bordered with additional spines (Fig. 38, *a.s.*); articles 2-4 with large euplantulae, without spines; claws symmetrical, simple; arolium



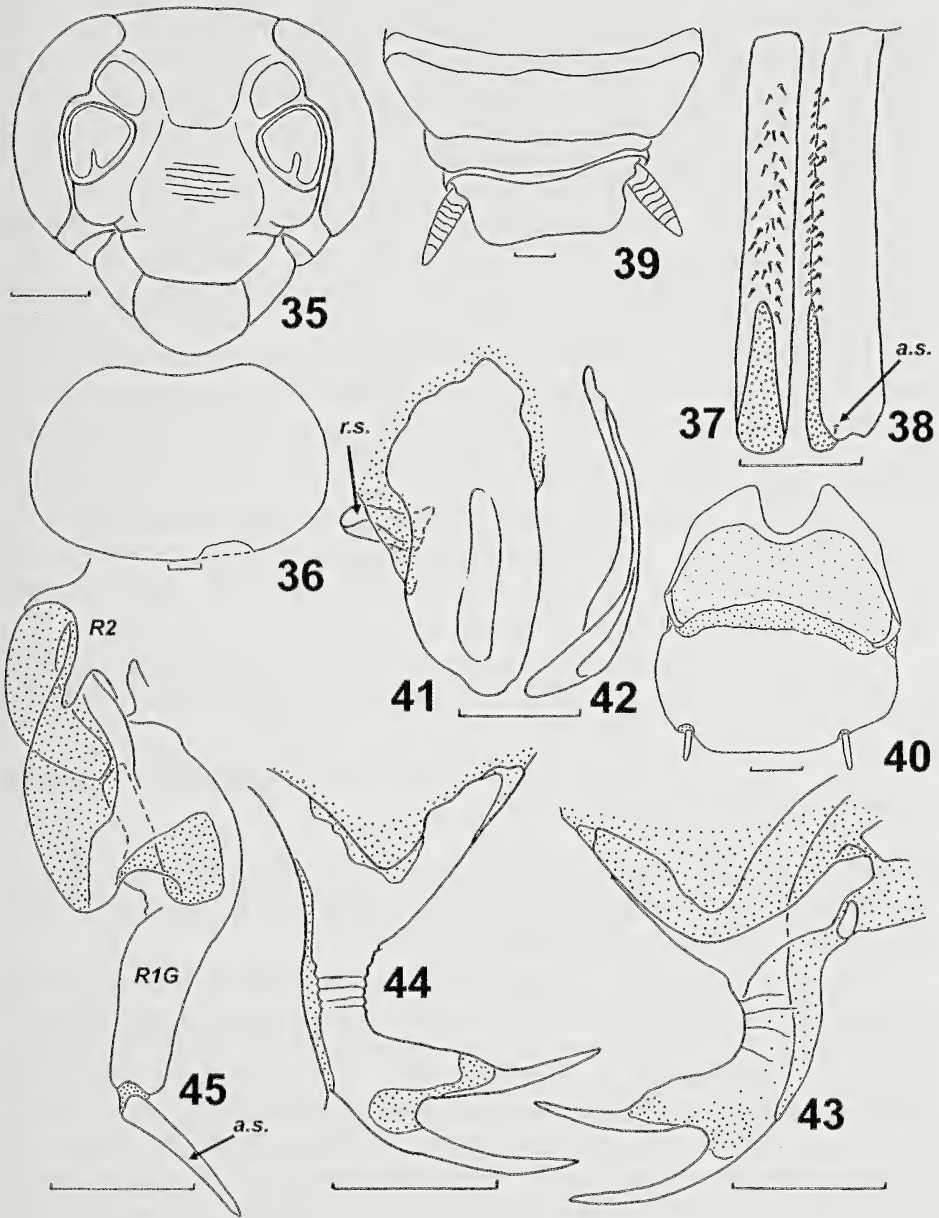
FIGS 20-25

Afrostylopyga angolensis gen. et sp. nov. (20-21) and *Deropeltis erythrocephala* (Fabricius) (22-25). (20) Abdominal apex, dorsal view. (21) Caudal part (sclerites R1H, R1G and part of R2) of right phallomere, dorsal view. (22) Habitus (wingspan: 75 mm), dorsal view. (23) Hind tarsus seen from posterior. (24) Proximal half of left phallomere, dorsal view. (25) Right phallomere, dorsal view. Abbreviations: *a.s.* = apical spines of sclerite R1H; L4C = sclerite of left phallomere; *l.m.l.* = large membranous lobe, of left phallomere; *m.s.* = membranous median strip of anal plate (indicated by arrow); R1H, R2, R3 = sclerites of right phallomere; *spi.* = dorsal field of spinules of left phallomere. For details see text. Scale bars 1 mm.



FIGS 26-34

Afrostylopyga angolensis gen. et sp. nov. (26-29) and *Deropeltis erythrocephala* (Fabricius) (30-34). (26, 30) Left phallomeres of the male genitalia, dorsal view. (27, 31) The same, outside view. (28, 32) The same, inside view. (29, 33) The same, ventral view. (34) Sclerite L2, ventrolateral view. Dotted areas show membranous parts. Abbreviations: *c.p.L2* = caudal process of sclerite L2; L2, L3, L4C, L4D, L4F = sclerites of left phallomere; *l.m.l.* = large membranous lobe; *i.o.* = lower part of sclerite L4C; *m.l.* = membranous lobe of sclerite L2; *s.* = sclerite on inner side of phallomere; *spi.* = dorsal field of spinules; *t.s.* = small thin sclerite. For details see text. Scale bars 1 mm.



FIGS 35-45

Deropeltis erythrocephala (Fabricius). (35) Facial part of head. (36) Pronotum, dorsal view. (37) Hind metatarsus, ventral view. (38) The same, outside view. (39) Abdominal apex, dorsal view. (40) Hypandrium, ventral view. (41) Ventral phallomere, ventral view. (42) The same seen from outside. (43) Sclerite R1H, dorsal view. (44) The same, ventral view. (45) Sclerite R1G seen from outside. Dotted areas show membranous parts. Abbreviations: *a.s.* = additional spines; *r.s.* = "rolled sclerite"; R1G, R2 = sclerites of right phallomere. For details see text. Scale bars 1 mm.

about one half of claw length (Fig. 23). Abdominal tergites without visible glandular specializations; posterolateral angles of tergites blunt, with exception of tergite V with slightly acute angles. Anal plate (tergite X) wide, trapezoidal in shape, widely concave at caudal margin (Fig. 39). Cerci comparatively short, with articles solidly connected (Fig. 39). Paraprocts symmetrical, rounded, without armament. Hypandrium nearly symmetrical, caudal margin nearly straight; styli comparatively short (Fig. 40).

Genitalia (Figs 24, 25, 30-34, 41-45): Left phallomere (Figs 24, 30-34) generally similar to that of *A. angolensis* gen. et sp. nov., but sclerite L4C comparatively smaller, outgrowth separated from L4C and divided into two parts (Figs 31, 33, *l.o.*), dorsal field of spinules larger (Figs 24, 30, *spi.*); sclerite L3 (L3d) comparatively more robust (Figs 30-33); sclerite L4F absent; sclerite L2 (L2v), complicated, occupying ventral and lower half of inner sides of phallomere (Figs 31-34), terminating in sharp caudal process (Figs 30, 33-34, *c.p.L2*), with membranous lobe above this process (Figs 30, 32, *m.l.*); large dorsal membranous lobe (Figs 30, 32, *l.m.l.*) with sclerite (Fig. 32, *s.*) situated above L2 on inner side of phallomere. Ventral phallomere L4G (VP) as in Figs 41-42, slightly bent upward, associated with small "rolled sclerite" (Fig. 41, *r.s.*). Right phallomere complex in shape (Fig. 25); generally similar to that of *A. angolensis* gen. et sp. nov. but caudal part of sclerite R1H less sclerotized, with apical spines larger (Figs 25, 43-44); sclerite R1G longer, with long apical spine (Figs 25, 45, *a.s.*); sclerite R3 as in Fig. 25.

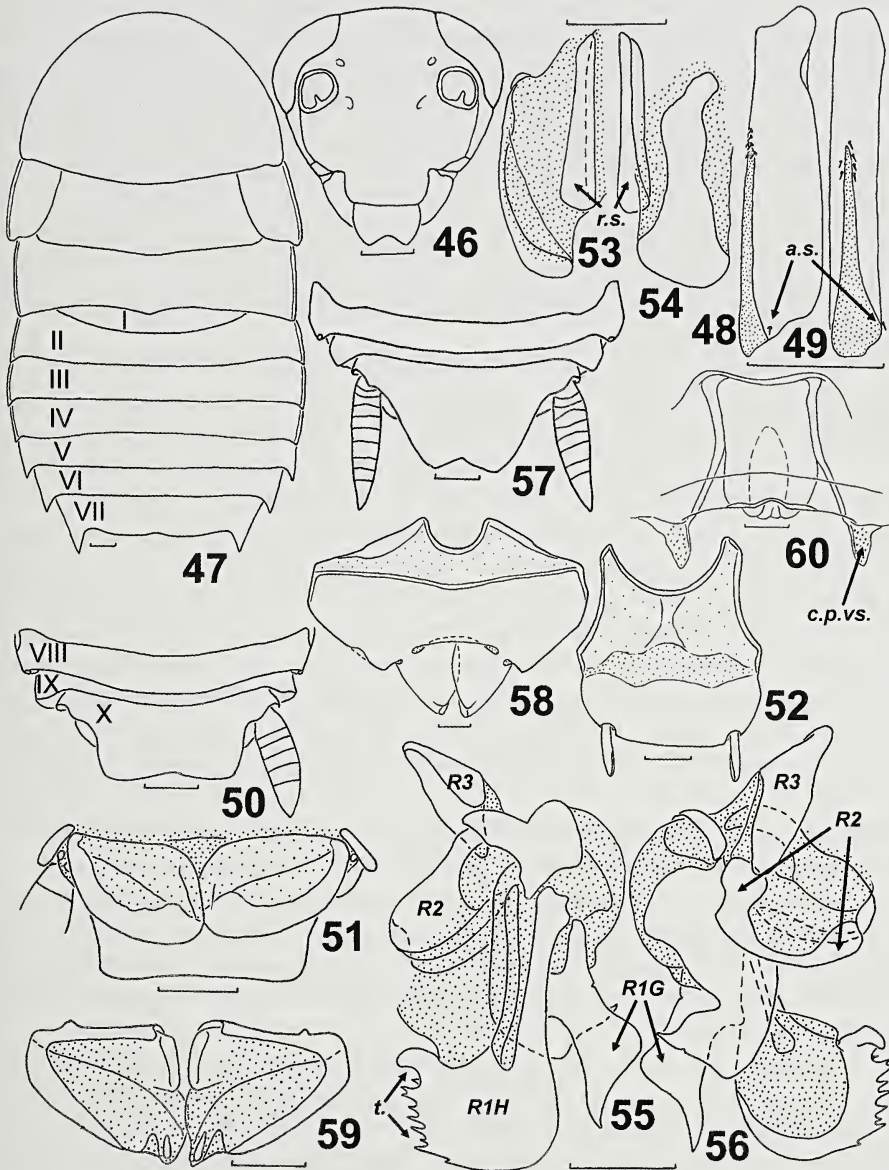
MEASUREMENTS (in mm): Head length 4.4, head width 4.4, pronotum length 5.5, pronotum width 8.7, tegmen length 35.0, tegmen width (at place where *CuP* running into posterior margin of tegmen) 9.0.

NOTE: The "rolled sclerite" (Fig. 41, *r.s.*) of the ventral phallomere is probably a sclerotized part of the ejaculatory duct.

Maoriblatta novaeseelandiae (Brunner von Wattenwyl, 1865) Figs 46-60, 71-74, 79-81

MATERIAL: 1 ♂, 1 ♀; New Zealand, "Platyzosteria Novae Zeelandiae Brunn.", "602 34 Nue Zealand Mr. Helms", "Nouvelle Zealand".

REDESCRIPTION OF MALE: General colour piceous black; eyes greyish; ocellar spots and part of mouthparts yellowish; thoracal sclerites ventrally and legs partly reddish. Surfaces lustrous; thorax and abdomen dorsally with distinct punctations, abdomen ventrally punctate to a lesser degree; facial part of head dull, without punctations or sculpture (Fig. 46). Head widely rounded at vertex, distinctly convex, about as long as wide (Fig. 46); eyes comparatively small; ocellar spots very small; distance between eyes about as long as eye length; distance between antennal sockets about 2.5 times scape length; approximate length ratio of articles 3-5 of maxillary palps 1.3 : 1.2 : 1. Pronotum campaniform, transverse, anterior and lateral margins widely rounded, posterior margin weakly projecting caudally (Fig. 47). Meso- and metanotum transverse, with posterior margins weakly projecting caudally (Fig. 47). Tegmina lateral; wings absent (Fig. 47). Tegmina, metanotum and abdominal tergites II-IV marginated laterally (Fig. 47). Anterior margin of fore femur armed as in type A (*sensu* Bey-Bienko, 1950; Roth, 2003), with seven spines, including two apical spines. Fore tibiae not thickened distally, spines not reinforced. Structure of hind tarsi (Figs 48-49):



FIGS 46-60

Maoriblatta novaeseelandiae (Brunner von Wattenwyl), male (46-56) and female (57-60). (46) Facial part of head. (47) Thorax and abdominal segments I-VII, dorsal view. (48) Hind metatarsus seen from outside. (49) The same, ventral view. (50, 57) Abdominal apex, dorsal view. (51) Abdominal apex with hypandrium and genitalia removed, ventral view. (52) Hypandrium, ventral view. (53) Ventral phallosome and "rolled sclerite" seen from outside. (54) Ventral phallosome, ventral view. (55) Right phallosome, dorsal view. (56) The same, ventral view. (58) Genital plate, ventral view. (59) Paraprocts, ventral view. (60) Vestibular sclerite, ventral view. Dotted areas show membranous parts. Abbreviations: I-X = numbers of abdominal tergites; a.s. = additional spines; c.p.vs. = caudal process of vestibular sclerite; r.s. = "rolled sclerite"; R1G, R2, R3 = sclerites of right phallosome. For details see text. Scale bars 1 mm.

metatarsus a little shorter than other articles combined, with large euplantula occupying more than one half of metatarsus length, a few spines located proximal to euplantula and single additional spine at apex of metatarsus (Figs 48-49, *a.s.*); articles 2-4 with large euplantulae, without spines; claws symmetrical, simple; arolium about one half of claw length. Abdominal tergites without visible glandular specializations; posterolateral angles of tergites II-VII distinctly attenuate caudally; tergite VII with caudal margin very weakly sinoidally curved (Fig. 47). Anal plate (tergite X) wide, trapezoidal in shape, widely concave at caudal margin (Fig. 50). Cerci comparatively short (Fig. 50). Paraprocts symmetrical, rounded, with laterocaudal sclerotizations, without armament (Fig. 51). Hypandrium nearly symmetrical, caudal margin nearly straight; styli elongated (Fig. 52).

Genitalia (Figs 53-56, 71-74): Left phallomere (Figs 71-74) with sclerite L4C (L2D) large, sharply bent ventrally in cranial part (Figs 72-73), occupying most of dorsal and part of outer and inner sides of phallomere, distinctly widened caudally, with row of teeth along inner side (Figs 71, 73, *t.r.*), without outgrowths or process; sclerite L4D (L3v) a comparatively large plate (Figs 71-72); sclerite L3 (L3d) comparatively slender (Figs 71-72); sclerite L4F, possibly L4E+L4F, distinct (Fig. 72); sclerite L2 (L2v) large, occupying ventral side of phallomere (Figs 73-74), terminating in plate-like caudal process separated from L2 (Figs 73-74, *c.p.L2*); large membranous lobe situated above L2 on outer side of phallomere (Fig. 72, *m.l.*); an "additional complicated sclerite" (Figs 73-74, *a.c.s.*) situated above L2 on inner side of phallomere. Ventral phallomere L4G (VP) as in Figs 53-54; distinctly bent upward and widened caudally; "rolled sclerite" comparatively large (Figs 53-54, *r.s.*). Right phallomere complex in shape (Figs 55-56); basal sclerite R2 rounded, dorsoventrally compressed, consisting of upper and lower parts; cranial part of sclerite R1H elongated, caudal part hammer-like, with teeth on inner side (Fig. 55, *t.*); sclerite R1G comparatively short, robust, apically pointed; sclerite R3 as in Figs 55-56.

REDESCRIPTION OF FEMALE: Similar to male. Anal plate (tergite X) more elongated (Fig. 57) than in male. Paraprocts complicated, without armament, attenuate medio-caudally and sclerotized along latero-cranial margin (Fig. 59). Genital plate (sternite VII) transverse, with two pairs of weakly sclerotized and striated lobes on upper side (Fig. 58).

Genitalia (Figs 60, 79-81): intercalary sclerite absent; only tergal extension of abdominal segment IX present (Fig. 79, *te. IX*); gonangulum distinct (Fig. 79, *gg.*); 1st and 3rd ovipositor valves large (Fig. 79, *1v.*, *3v.*), 2nd ovipositor valves smaller, entirely concealed by 1st and 3rd valves; basivalvulae symmetrical (Figs 79-80, *bsv.*) with two membranous outgrowths (Figs 79-80, *out.*); spermatheca fusiform, well sclerotized (Fig. 81, *sp.*); vestibular sclerite (= laterosternal plate *sensu* Johns, 1966) as in Figs 60, 79, with numerous short spines on caudal processes (Figs 60, 79, *c.p.vs.*).

MEASUREMENTS (in mm): Head length: male 4.3, female 4.5; head width: male 4.2, female 4.3; pronotum length: male 6.0, female 6.5; pronotum width: male 9.6, female 10.4; tegmen length: male 3.1, female 3.3; tegmen width: male 2.1, female 2.1.

Celatoblatta undulivitta (Walker, 1868)

Figs 61-70, 75-78, 82-83

MATERIAL: 1 ♂; New Zealand, "619 41 Nue Zealand Mr. Suter", "Cutilia Heydeniana Sauss ♂", "Nov. Zealand 619. 41", "Blatta Horsteiell (? - illegible inscription - L.A.) N. 2 leg. H. Suter", "Temnelytra ?undulivitta (Walk.) M.J. Mackerras det.". 1 ♀; New Zealand, "623 5 Nue Zealand", "Cutilia heydeniana ♀ Sss."

REDESCRIPTION OF MALE: The description of Johns (1966) can be supplemented with the following details. Head as in Fig. 61; distance between eyes as long as eye length; distance between antennal sockets about 1.7 times scape length; approximate length ratio of articles 3-5 of maxillary palps 1 : 1 : 1. Anterior margin of fore femur armed as in type A (*sensu* Bey-Bienko, 1950; Roth, 2003), with 11 spines, including two apical spines; apical spines distinctly enlarged. Fore tibiae not thickened distally, spines not reinforced. Hind tarsi broken off (see description of female). Anal plate (tergite X) wide, trapezoidal in shape, weakly concave at caudal margin (Fig. 63). Cerci comparatively short (Fig. 63). Paraprocts symmetrical, sclerotized caudo-laterally, without armament (Fig. 64). Hypandrium nearly symmetrical, caudal margin widely concave between styli; styli elongated, comparatively long (Fig. 65).

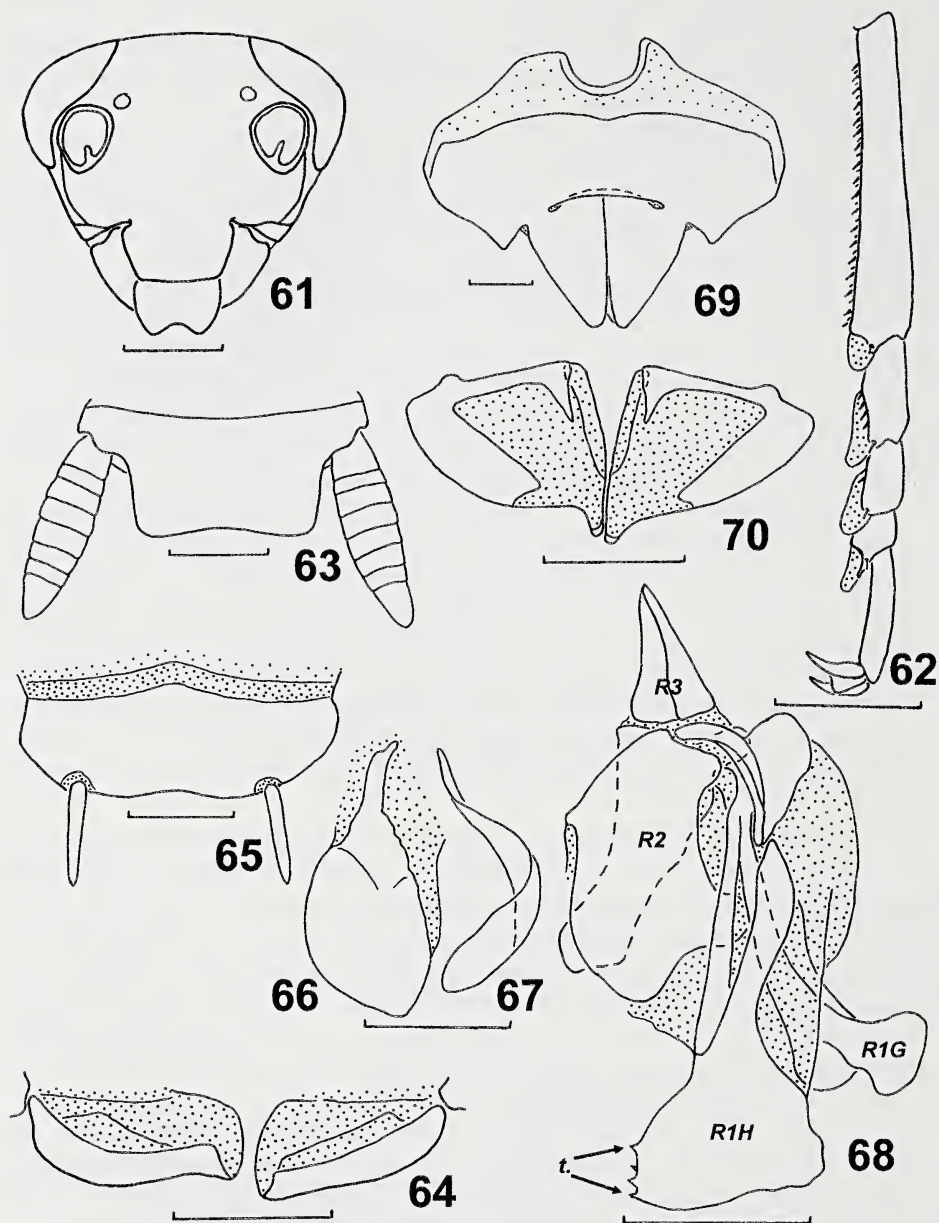
Genitalia (Figs 66-68, 75-78): Similar to those of *M. novaeseelandiae*, but left phallomere (75-78) with sclerite L4C (L2D) less sclerotized, row of teeth along inner side (Figs 75, 77, *t.r.*) comparatively weaker, sclerite L4F smaller (Fig. 76), plate-like caudal process of L2 (L2v) not separated from L2 (Figs 77-78, *c.p.L2*), "additional complicated sclerite" (Figs 77-78, *a.c.s.*) smaller in size, connected to dorsal outgrowth covered with numerous teeth (Figs 75, 77-78, *d.o.*). Ventral phallomere L4G (VP) as in Figs 66-67; distinctly bent upward, convex, widened in caudal part; "rolled sclerite" absent. Right phallomere complex in shape (Fig. 68); caudal part of RIH comparatively larger, with teeth on inner side less expressed (Fig. 68, *t.*); sclerite R1G apically rounded.

REDESCRIPTION OF FEMALE: The description of Johns (1966) can be supplemented with the following details. Similar to male. Structure of hind tarsi (Fig. 62): metatarsus about as long as other articles combined, with two more or less equal rows of spines along lower margin, euplantula small and apical; articles 2-4 with large euplantulae bordered with spines; claws symmetrical, simple; arolium about one half of claw length. Anal plate (tergite X) more elongated (Fig. 82) than in male. Paraprocts complicated, similar to those of *M. novaeseelandiae*, but sclerotized parts comparatively wider (Fig. 70). Genital plate (sternite VII) transverse, with two pairs of weakly sclerotized and striated lobes on upper side (Fig. 69).

Genitalia (Figs 82-83): Similar to those of *M. novaeseelandiae*, but basi-valvulae asymmetrical and elongated (Fig. 83, *bsv.*), without outgrowths; spermatheca basally widened, well sclerotized (Fig. 82, *sp.*); vestibular sclerite (= laterosternal plate *sensu* Johns, 1966) as in Fig. 83, entirely covered with numerous short spines.

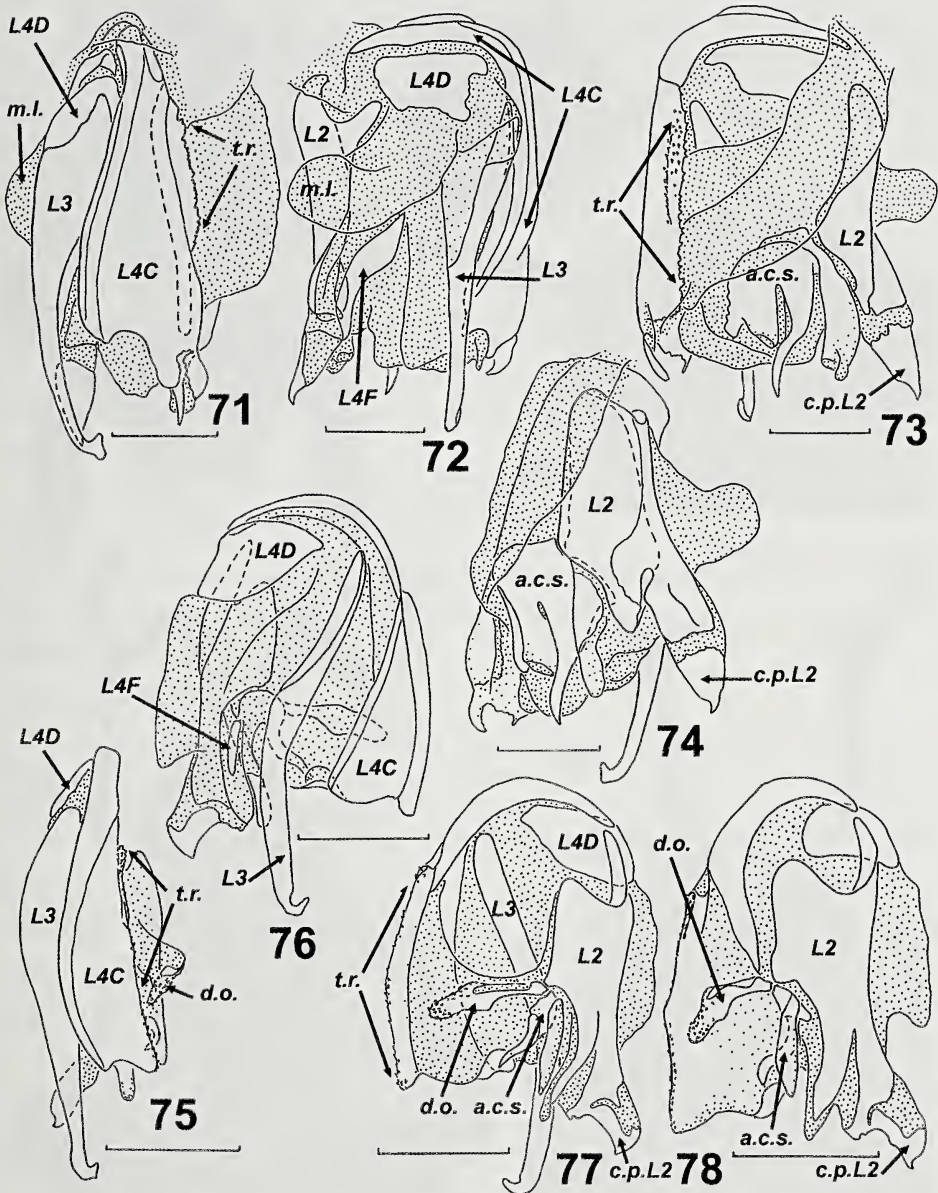
MEASUREMENTS (in mm): Head length: male 3.0, female 3.2; head width: male 3.0, female 3.1; pronotum length: male 4.2, female 4.8; pronotum width: male 6.1, female 6.6; tegmen length: male 4.5, female 4.5; tegmen width: male 3.5, female 4.0.

NOTE: The specimens examined were incorrectly identified as *Cutilia heydeniana* (Saussure, 1864). This species is now placed in the genus *Drymaplaneta* Tepper, 1893. *Drymaplaneta heydeniana* clearly differs from *Celatoblatta undulivitta* in having its tegmina reduced to lateral lobes (Beccaloni, 2007).



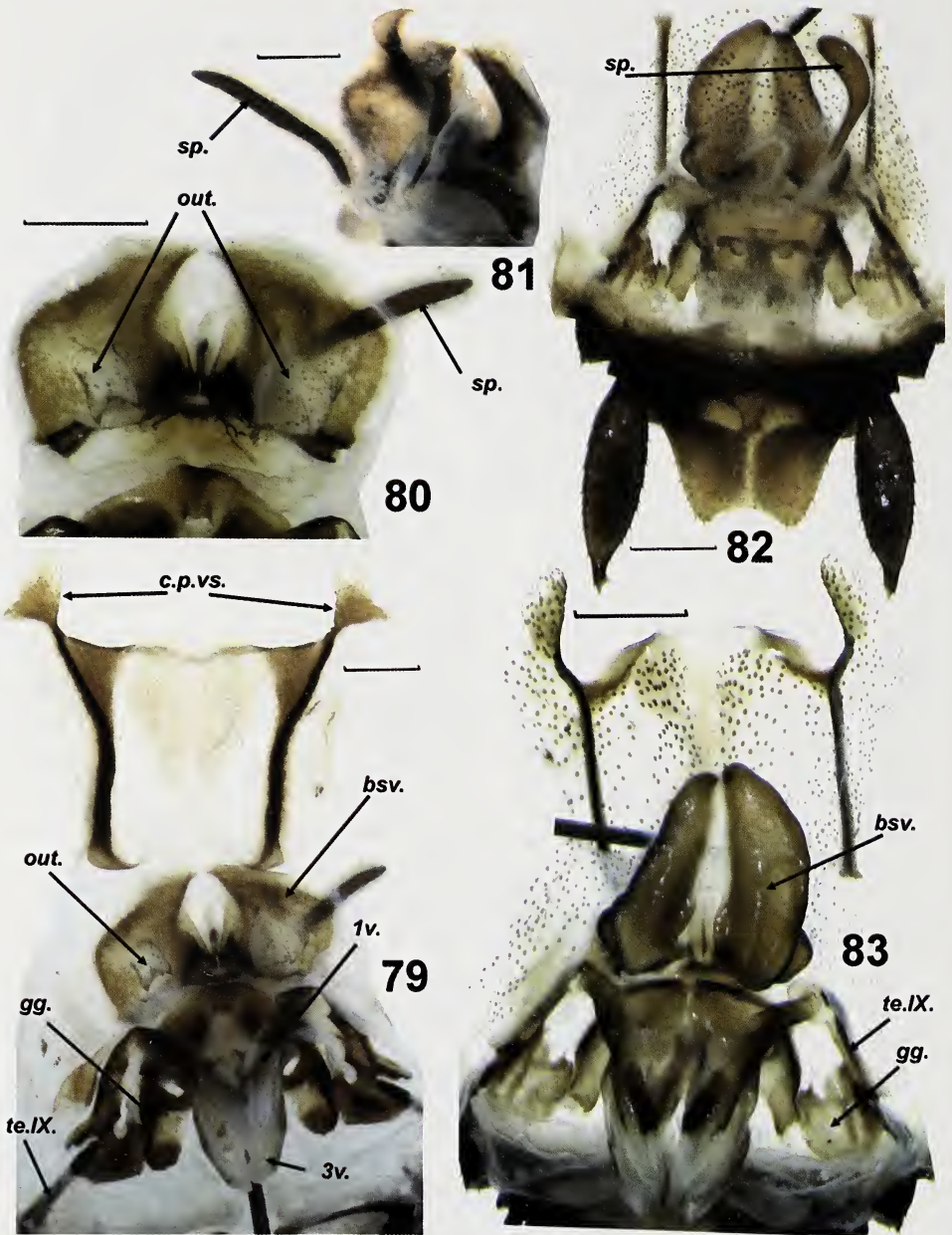
FIGS 61-70

Celatoblatta undulivitta (Walker), male (61, 63-68) and female (62, 69, 70). (61) Facial part of head. (62) Hind tarsus seen from posterior. (63) Anal plate and cerci, dorsal view. (64, 70) Paraprocts, ventral view. (65) Caudal part of hypandrium, ventral view. (66) Ventral phallomere, ventral view. (67) The same seen from outside. (68), Right phallomere, dorsal view. (69) Genital plate, ventral view. Dotted areas show membranous parts. Abbreviations: R1G, R1H, R2, R3 = sclerites of the right phallomere. For details see text. Scale bars 1 mm.



FIGS 71-78

Maoriblatta novaeseelandiae (Brunner von Wattenwyl) (71-74) and *Celatoblatta undulivitta* (Walker) (75-78). (71, 75) Left phallomeres of male genitalia, dorsal view. (72, 76) The same seen from outside. (73, 77) The same seen from inside. (74) The same, ventral view. (78) The same with sclerite L3 not shown, ventrolateral view. Dotted areas show membranous parts. Abbreviations: *a.c.s.* = "additional complicated sclerite"; *c.p.L2* = caudal process of sclerite L2; *d.o.* = dorsal outgrowth of "additional complicated sclerite"; L2, L3, L4C, L4D, L4F = sclerites of left phallomere; *m.l.* = membranous lobe of sclerite L2; *t.r.* = row of teeth of sclerite L4C. For details see text. Scale bars 1 mm.



FIGS 79-83

Maoriblatta novaeseelandiae (Brunner von Wattenwyl) (79-81) and *Celatoblatta undulivitta* (Walker) (82, 83). (79, 83) Female genitalia, ventral view, vestibular sclerite folded back. (80) Basivalvula, ventral view. (81) Spermatheca and basivalvula, dorsolateral view. (82) Abdominal apex and female genitalia, dorsal view. Abbreviations: *1v.*, *3v.* = 1st and 3rd ovipositor valves, respectively; *bsv.* = basivalvula; *c.p.vs.* = caudal process of vestibular sclerite; *gg.* = gonangulum; *out.* = membranous outgrowth of basivalvula; *sp.* = spermatheca; *te.IX.* = processes of abdominal segment IX. For details see text. Scale bars 1 mm.

DISCUSSION

Afrostylepyga angolensis gen. et sp. nov. shows some similarity with *Deropeltis erythrocephala*, the type species of the genus *Deropeltis*, and some other species of this genus (unpublished data) in the structure of the male genitalia. This particularly refers to the left (shape of sclerites L4C, presence of dorsal field of spinules, long ventral outgrowth of L4C, structure of inner side of phallomere, shape of L2 etc.; compare Figs 26-29 with 30-34) and right (shape of cranial part of sclerite R1H and sclerite R1G; compare Fig. 21 with 25 and 16 with 45) phallomeres. The new genus differs from the genus *Deropeltis* in having the tegmina reduced to lateral lobes, wings absent, a more rounded head with comparatively smaller eyes, reduced ocelli (compare Fig. 1 with 35), and a different pronotum shape, presumably all of them larval features. It is possible that *Afrostylepyga* gen. nov. and similar wingless genera (e.g. *Apterisca* and *Brinckella*) have evolved as a result of retardational paedomorphosis (retrogenesis) (sensu Iordansky, 2005). Unfortunately, the male genitalia of *Apterisca* and *Brinckella* are still undescribed.

The genera *Maoriblatta* and *Celatoblatta* have a strongly dissimilar appearance. *Maoriblatta* represents a typical wingless blattid with wide flat body (Fig. 47) and strongly sclerotized surfaces. *Celatoblatta* shows a rather gracile appearance, more similar to some representatives of the family Ectobiidae than to normal Blattidae. It is therefore surprising that the structure of the male genitalia of representatives of these genera is rather similar.

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I am greatly indebted to Dr Peter Schwendinger (MHNG) for the possibility to study the Dictyoptera collections of the Muséum d'histoire naturelle and for his hospitality during my visits to Genève. Dr Francesco Crespo (ANLIS, Argentina) and John Hollier (MHNG) provided helpful comments on this paper.

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On the identity of *Oberea formosana* Pic, 1911, with description of *Oberea pseudoformosana* sp. n. from China (Coleoptera: Cerambycidae)

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On the identity of *Oberea formosana* Pic, 1911, with description of *Oberea pseudoformosana* sp. n. from China (Coleoptera: Cerambycidae). - *Oberea pseudoformosana* sp. n. is described from mainland China. It differs mainly from the widely distributed Chinese and Oriental *O. formosana* Pic by longer legs and genital characters. *Oberea formosana* is also redescribed. Colour pictures of the habitus, head and abdomen, as well as drawing of genital characters are presented for the two species. *Oberea formosana* is recorded here for the first time from Bangladesh and India.

Keywords: Taxonomy - Phytoeciini - new species - new country record.

INTRODUCTION

Oberea formosana Pic, 1911 is widely distributed in Asia and China (Gressitt, 1951; Breuning, 1960-1962; Breuning, 1967; Kurihara & Ohabayashi, 2007; Hua *et al.*, 2009; Löbl & Smetana, 2010).

In the frame of a taxonomic study of the *Oberea* from China and adjacent countries by the first author, we noticed that some specimens from mainland China keying out as *O. formosana* in the global key to *Oberea* species (Breuning, 1960) had unusually long hind legs. After detailed examination of their genitalia, we concluded that they belong to a distinct new species, which is described below. We take this opportunity to redescribe *O. formosana*, which is newly recorded here from India and Bangladesh.

MATERIALS AND METHODS

Material examined in this work (119 specimens) is deposited in the following collections (abbreviations as used in the text): China Agricultural University, Beijing, China (CAU), Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZAS), Musée des Confluences, Lyon, France (MHNL), Muséum d'histoire naturelle de la Ville de Genève, Geneva, Switzerland (MHNG), Muséum National d'Histoire Naturelle, Paris, France (MNHN), Natural History Museum, London, UK (BMNH), Northwest Agriculture & Forestry University, Yanglin, China (NWFU), Southwest University, Chongqing, China (SWU), Zoologisches Forschungsmuseum Alexander

Koenig, Bonn, Germany (ZFMK), Jianyue Qiu & Hao Xu Personal Collection, Chongqing, China (QCCC).

The infra-subspecific names *O. formosana* v. *ruficornis* Breuning, 1956, *O. formosana* v. *clarior* Breuning, 1960 and *O. formosana* v. *spinipennis* Breuning, 1960, were unambiguously introduced for infra-subspecific taxa that have subsequently not been raised to subspecific rank or higher until 1985; these names are thus unavailable (ICZN 1999: art 45.6) and treated accordingly. Nevertheless we made an effort to locate and examine types of these taxa, which are listed below either under additional material when assigned to *O. formosana*, or as paratypes when assigned to *O. pseudoformosana*.

Measurements were taken dorsally and are defined as follows: Body length = distance between front of head and elytral apex, including spines; Body width = maximal width of elytra combined.

For detailed examination, genitalia were extracted from specimens softened in water, cleared in KOH, observed in water on glass microscope slides, then transferred into ethanol 70% and stored in capsules mounted on the same pin as the specimens. Drawings were made using a drawing tube mounted onto a compound microscope. Pictures are composites taken using a digital camera mounted onto a Leica MZ Apo dissecting microscope and subsequently processed using Automontage® software.

The label data of ancient material are reproduced verbatim between “ ”, with our comments in []. Data pertaining to recent material are given in standard format, those from CAU, QCCC, NWFU and SWU translated from Chinese to English.

Taxonomy

Oberea formosana Pic, 1911

Figs 1-3

Oberea formosana Pic, 1911: 20.

TYPE MATERIAL: Lectotype (♂): “Taiwan, Formosa, IV” [handwriting], (MHNH), by present designation. – Paralectotype, 1 ♀, “Taiwan, Formosa, IV” (MHNH).

ADDITIONAL MATERIAL (69 specimens): BANGLADESH: 1 ♂, Sylhet (MHNG). – CHINA: **Taiwan**: 1 ♀, “Formosa” (MHNG). – 1 ♀, “Eboshiyama Formosa” 17-21.v.1933 (MHNG). – 1 ♀, “Shotoka Formosa, 10.v.1937, leg. T. Mitono” (MHNG). – 1 ♂ and 1 ♀, “Hori Formosa” (MHNL). – **Chongqing**: 1 ♂, Jinyunshan, Beibei, 20.v.2006, leg. Wang Zhijin (SWU). – 1 ♂, same data, but leg. Lou Binhai (SWU). – 3 ♂♂ and 1 ♀, same data but 8.vii.2006, leg. Wang Zhijin (SWU). – 1 ♀, same data but 8.vii.2006, leg. Feng Bo (SWU). – 2 ♂♂ and 1 ♀, same data but 13.vi.2009, leg. Shi Shuqing (SWU). – 2 ♂♂ and 2 ♀♀, Xiangshuitan, Simianshan, Jiangjin, 1200m, 27.vii.1991, leg. Yin Youping (SWU). – 1 ♂ and 1 ♀, same data but leg. Wang Zhongkang (SWU). – 2 ♀♀, Dahonghai, Simianshan, Jiangjin 9.vii.2008, leg. Chen Li (SWU). – 1 ♀, same data but 9.vii.2008, leg. Shi Shuqing (SWU). – 1 ♀, Feilongmiao, Simianshan, Jiangjin, 14.vii.2006, leg. Song Yaqin (SWU). – 1 ♂, same data but 14.vii.2008, leg. Mu Hailiang (SWU). – 1 ♂, Dawopu, Simianshan, Jiangjin, 11.vii.2008, leg. Shi Shuqing (SWU). – 1 ♀, same data but 11.vii.2008, leg. Li Zhu (SWU). – 2 ♀♀, Simianshan, Jiangjin, 14.vii.2006, leg. Wang Zhijin (SWU). – **Fujian**: 2 ♀♀, Guadun, Cong’an, Fujian, 11-12.vii.1963, leg. Zhou Yao (NWFU). – 2 ♀♀, Shaowu, Dazhulan, 16.vii.1963, leg. Zhou Yao (NWFU). – **Guangxi**: 1 ♀, Jinxiu, Dayaoshan, 14.vi.1982, leg. Wang Xinli (CAU). – **Guizhou**: 2 ♂♂, Xishui, 26.ix.2000, leg. Shi Fuming (SWU). – 1 ♂, same data but leg. Li Zizhong (SWU). – 1 ♂, Jinshagou, Chishui, 21-23.ix.2000 (SWU). – 1 ♂, Datangwan, Leigongshan, 11-viii.2006 (SWU). – 1 ♀, Leigongshan, 31.v-1.vii.2005, leg. Zhang Zhengguang (SWU). – 1 ♀, Linjiang, Chishui, 29.v.2000 (SWU). – **Hunan**: 3 ♀♀, Hengshan, 11.vii.1963, leg. Zhou Yao (NWFU). – 1 ♀, Hupingshan, 1000-1200m, 15.vii.2012, leg. Qiu Jianyue and Xu Hao (SWU). – **Jiangxi**: 1 ♀,

“Kuling Jiangxi, 12.ii.1935, leg. O. Piel” (MHNG). – **Shaanxi**: 4 ♀ ♀, Louguantai, 24.vii.1984 (NWAUFU). – **Sichuan**: 1 ♀, Emeishan, Sichuan, 18.vi.2007, leg. Wang Zhongkang (SWU). – **Zhejiang**: 2 ♀ ♀, Qingliangfeng, Longtangsi, 29.vi.2012, leg. Xu Hao (SWU). – 1 ♂, Dajingwu, 7.vi.2012, leg. Qiu Jianyue and Xu Hao (SWU). – 2 ♂ ♂, 23.vi.1957, leg. Li Fasheng (CAU). – 1 ♀ ? [abdomen missing], “Szechuan, Tienmushan” [misabeled? Tienmushan is in Zhejiang, not in Sichuan] (MHNG), mislabeled paratype of *O. formosana* v. *ruficornis* Breuning. – **INDIA**: **Assam**: 1 ♂, “Assam” (MHNG). – **Meghalaya**: 1 ♀, “Khasia [= Khasi] Hills” (MHNL). – 1 ♂, “Khasis [Khasi], 1869.v.” mislabeled paratypes of *O. formosana* v. *spinipennis* Breuning (MHNL). – **Sikkim**: 1 ♂, “Sikkim MAND” (MHNG). – **INDONESIA**: 2 ♀ ♀, “SE. Borneo [Kalimantan]” (MHNG & MHNL), mislabeled paratypes of *O. formosana* v. *spinipennis* Breuning. – **MALAYSIA**: 1 ♀, Sarawak, Lundu (BMNH), type of *O. formosana* v. *spinipennis* Breuning [unavailable name, see under Material and Methods]. – **VIETNAM**: 1 ♂ and 1 ♀, “Tonkin, Hoa Binh” (MHNL). – 1 ♀, “Mauson” [handwritten, barely readable; Mt Mau Son, Lang Son province?] (MHNL), mislabeled paratypes of *O. formosana* v. *spinipennis* Breuning.

DESCRIPTION

Male: Body (Figs 1a, b) 8.0-13.5 mm long and 2.0-2.5 mm wide, predominantly yellowish-brown to reddish-brown, except legs paler and apex of mandibles, hind tibiae and tarsi dark brown, and antennae with dark brown scape and slightly paler flagellum. Entire body and appendages clothed with short golden pubescence; presence of scattered dark hairs on undersides of basal antennomeres, and some erect yellow hairs on pronotum and elytra. Head, pronotal disc, metepisternum and sides of abdominal segments finely and densely punctured. Elytra with basal half of disc bearing six longitudinal rows of coarse and deep punctures, latter becoming gradually finer and disorganized towards apex.

Head nearly as long as wide, slightly wider than prothorax, with surface finely and densely punctured. Eyes very large, with inferior lobes 1.5 times longer than genae; depression between base of antennae and head with a medial groove. Antennae approximately 1.5 times longer than body; antennomeres ratio (from scape to apex): 4.9 - 1.0 - 5.5 - 9.2 - 9.1 - 8.6 - 8.3 - 7.8 - 7.7 - 7.1 - 5.5.

Pronotum in dorsal view about as long as wide, slightly constricted basally and apically, with lateral outlines arcuate in middle; apical and basal margins shallowly emarginated in middle; center of disc raised. Scutellum trapezoidal, with posterior margin shallowly emarginated in middle. Elytra approximately 4.5 times longer than combined humeral width, and 3.1 times longer than head and pronotum combined, in dorsal view slightly constricted on basal third; apex obliquely truncate with acute sutural and marginal angles. Posterior legs with femora reaching level of posterior edge of third abdominal ventrite (Fig. 1b) and tibiae approximately 1.6 times as long as tarsi.

Abdominal ventrite VII with shallow triangular medial depression extended on entire length (Fig. 2d).

Male genitalia: Tergite VIII densely clothed with short hairs, transverse, apex truncated and shallowly emarginated, broadly (Fig. 3a). Tegmen curved in lateral view, lateral lobes elongate and slender, dorsal surface mostly covered with long setae; base of each lateral lobe transversely and obliquely ridged ventrally, those ridges densely furnished with fine hairs (Fig. 3b-e). Median lobe 0.9 times as long as tegmen and curved in lateral view; median struts 2/3 as long as median lobe; dorsal plate slightly longer than ventral plate; ventral plate with apex rounded, and median foramen acutely angled (Fig. 3f). Endophallus with 2 pairs of slender subapical sclerites, longer pair



a

b

FIG. 1

Oberea formosana Pic. (a) Habitus, male, from Zhejiang, dorsal view. (b) Lateral view (scale bar = 1.0 mm).

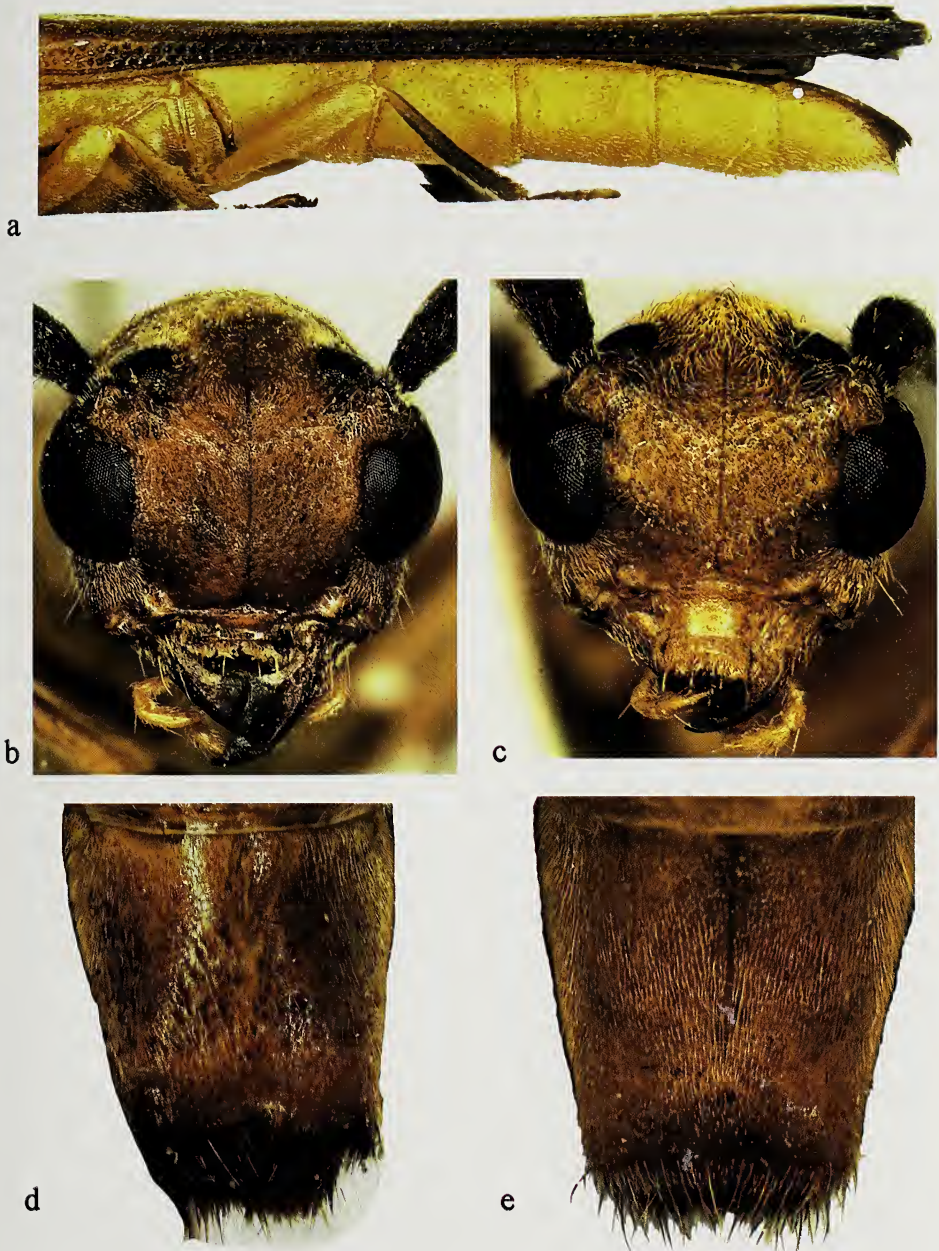


FIG. 2

Oberea formosana Pic. (a) Female, abdomen, lateral view. (b) Head of male, frontal view. (c) Head of female, frontal view. (d) Abdominal ventrite VII of male. (e) Abdominal ventrite VII of female (not to scale).

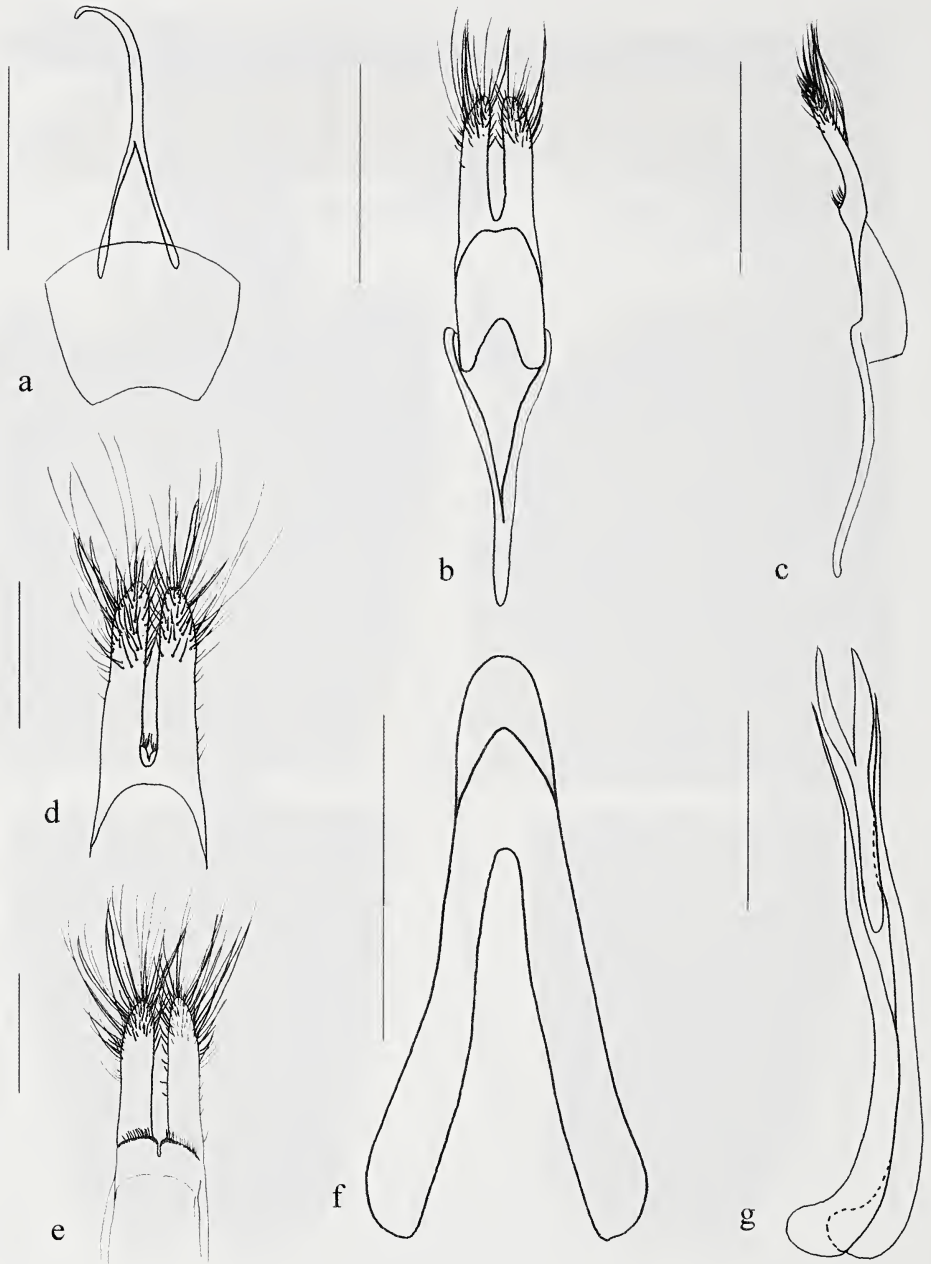


FIG. 3

Oberea formosana Pic. male genitalia. (a) Tergite VIII. (b) Tegmen, dorsal view. (c) Tegmen, lateral view. (d) Lateral lobes, dorsal view. (e) Lateral lobes, ventral view. (f) Median lobe, ventral view. (g) Sclerites in endophallus. (a, b, c & f: scale bar = 1.0 mm; d, e & g: scale bar = 0.5 mm).

very slender, baculiform, shorter pair fused at base and 2 times shorter than long one (Fig. 3g).

Female: Body 15.0-18.5 mm long and 2.0-3.0 mm wide. Frons wider than that of male (Fig. 2c). Inferior lobes of eyes 1.5 times as long as genae. Antennomeres ratio (from scape to apex): 4.5 - 1.0 - 5.3 - 7.9 - 7.9 - 7.5 - 7.4 - 6.9 - 6.6 - 6.3 - 5.8. Abdominal ventrite VII with a narrow medial groove (Fig. 2e).

DISTRIBUTION: Bangladesh (new country record), China (Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Zhejiang), India (Assam, West Bengal, Sikkim - new country record), Indonesia (Kalimantan), Malaysia (Sabah), Nepal, Korea, Laos, Myanmar, Thailand and Vietnam.

COMMENTS: In China, *O. formosana* and *O. pseudoformosana* are easily distinguished from other congeners by their body color pattern in combination with antennae measuring almost 1.5 times the body length and possessing the third antennomere shorter than the fourth. These two species differ however notably by the length of the posterior femora, and their male genitalia are also diagnostic.

The original description is based on an unspecified number of syntypes of both sexes. The two type specimens located in MNHN and here designated as lectotype and paralectotype are in moderate conditions, set dorsally with antennae partly missing.

***Oberea pseudoformosana* Li, Cuccodoro & Chen sp. nov.**

Figs 4-6

HOLOTYPE: ♂, CHINA, Guizhou: Chishui, 29.v. 2000, leg. Li Zizhong (SWU)

PARATYPES (47): CHINA, **Chongqing**: 1♂, Simian shan, 14.vii.2006, leg. Feng Bo (SWU). - 1♂, Jiangjin, Simian shan, Chaqishan, 10.ix.2008 (IZAS, IOZ(E)1858301). - **Fujian**: 1♂, Wuyishan, Tongmuguan, 1100m, 28.vii.1997, leg. Youwei Zhang (IZAS, IOZ(E)1905164). - 2♂♂ 1♀, Chongan, Xingcun, Sangang, 740m / 720-750m / 800m, 17/28.vii.1960 / 12.vi.1973, leg. Yirang Zhang, Peiyu Yu, Yong Zuo (IZAS, IOZ(E)1905165-167). - 1♂, Chongan, Xingcun, Tongmuguan, 900m, 5.vii.1960, leg. Yong Zuo (IZAS, IOZ(E)1905168). - 1♂ "Kuatun (2300m) 27.40n. Br. 117. 40ö. L. J. Klapperich, 14.vi.1938, Fukien [=Fujian]" (ZFMK), holotype of *O. formosana* v. *ruficornis* [unavailable name, see under Material and Methods, and under Comments]. - 1♂, same data (ZFMK), paratype of *O. formosana* v. *ruficornis* [see comments]. - 1♀, same data but 17.vi.1938, (ZFMK), paratype of *O. formosana* v. *ruficornis* [see comments]. - 1♂, same data but 18.vi.1938 (ZFMK), paratype of *O. formosana* v. *ruficornis* [see comments]. - 1♂, same data but 19.vi.1938 (ZFMK), paratype of *O. formosana* v. *ruficornis* [see comments]. - **Guangxi**: 2♂♂ 1♀, Longsheng, Huaping Cuijiang, 8.viii.2006, leg. Meiyang Lin (IZAS, IOZ(E)1905169-171). - 3♂♂, Jinxiu, Luoxiang, 400m, 14-16.v.1999, leg. Decheng Yuan (IZAS, IOZ(E)1905172-174). - **Guizhou**: 1♂, Jiangkou Fanjingshan, 520-2100m, 5.vii.1988, leg. Decheng Yuan (IZAS, IOZ(E)1905156). - 1♂, Jiangkou Fanjingshan, 550-850m, 16.vii.1988, leg. Shuyong Wang (IZAS, IOZ(E)1905157). - 1♀, Jiangkou Fanjingshan, 530m, 12.vii.1988 (IZAS, IOZ(E)1905158). - 2♂♂, Fanjingshan, Huixiangping 1600m, 2.viii.2001, leg. Kangzhen Dong (IZAS, IOZ(E)1905159-160). - **Hunan**: 2♂♂, Shenjingdong, Mt. Hupingshan National Nature Reserve, Shimen, 30°01'28.69"N, 110°35'21.53"E, Alt. 800m, 15. vii. 2012, leg. Qiu Jianyue and Xu Hao (QCCC & MHNG). - 1♂2♀♀, Yongshun, Shanmuhelinchang, 600-900m, 8-9.viii.1988, leg. Shuyong Wang (IZAS, IOZ(E)1905152-154). - 1♂, same data but 600m, but 7.viii.1988, leg. Xingke Yang (IZAS, IOZ(E)1905155). - **Sichuan**: 1♀, Emei shan, 18.vi.2007, leg. Wang Zhijin (SWU). - 2♂♂, Youyang, Qinghualinchang, 1200m, 16.vii.1989, leg. Shuyong Wang (IZAS, IOZ(E)1905141-142). - 2♂♂, Emei shan, 29-30.vi.1955, leg. Huang & Jin (IZAS, IOZ(E)1905143-144). - 1♂, Emei shan, 25.vi.1955, leg. Keren Huang & Gentao Jin (IZAS, IOZ(E)1905151). - 2♂♂ 1♀, Emei shan, 2.vii.1955, leg. Keren Huang & Gentao Jin (IZAS, IOZ(E)1905145-147). - 2♂♂ 1♀, Emei



FIG. 4

Oberea pseudoformosana, sp. n. (a) Habitus, holotype, male, from Guizhou, dorsal view. (b) Lateral view (scale bar = 5.0 mm).

shan, Baoguosi, 550-750m, 14-22.vi.1957, leg. Zongyuan Wang (IZAS, IOZ(E)1905148-150). – **Zhejiang**: 2♂♂ 1♀, Shunxiwu, Mt. Qingliangfeng National Nature Reserve, Lin'an, 25.vi.2012, leg. Qiu Jianyue and Xu Hao (SWU). – 2♂♂ 1♀, Tienmu shan, 21.vi.1936, leg. O. Piel (IZAS, IOZ(E)1905161-163).

DESCRIPTION

Male: (Figs 4a, b) 12.5-17.5 mm long and 2.0-3.5 mm wide. Body yellowish-brown to reddish-brown except apex of mandibles and tarsi dark brown, and antennae with reddish brown to dark brown scape and slightly paler flagellum. Entire body and appendages clothed with short golden pubescence; antennae with scattered dark hairs on

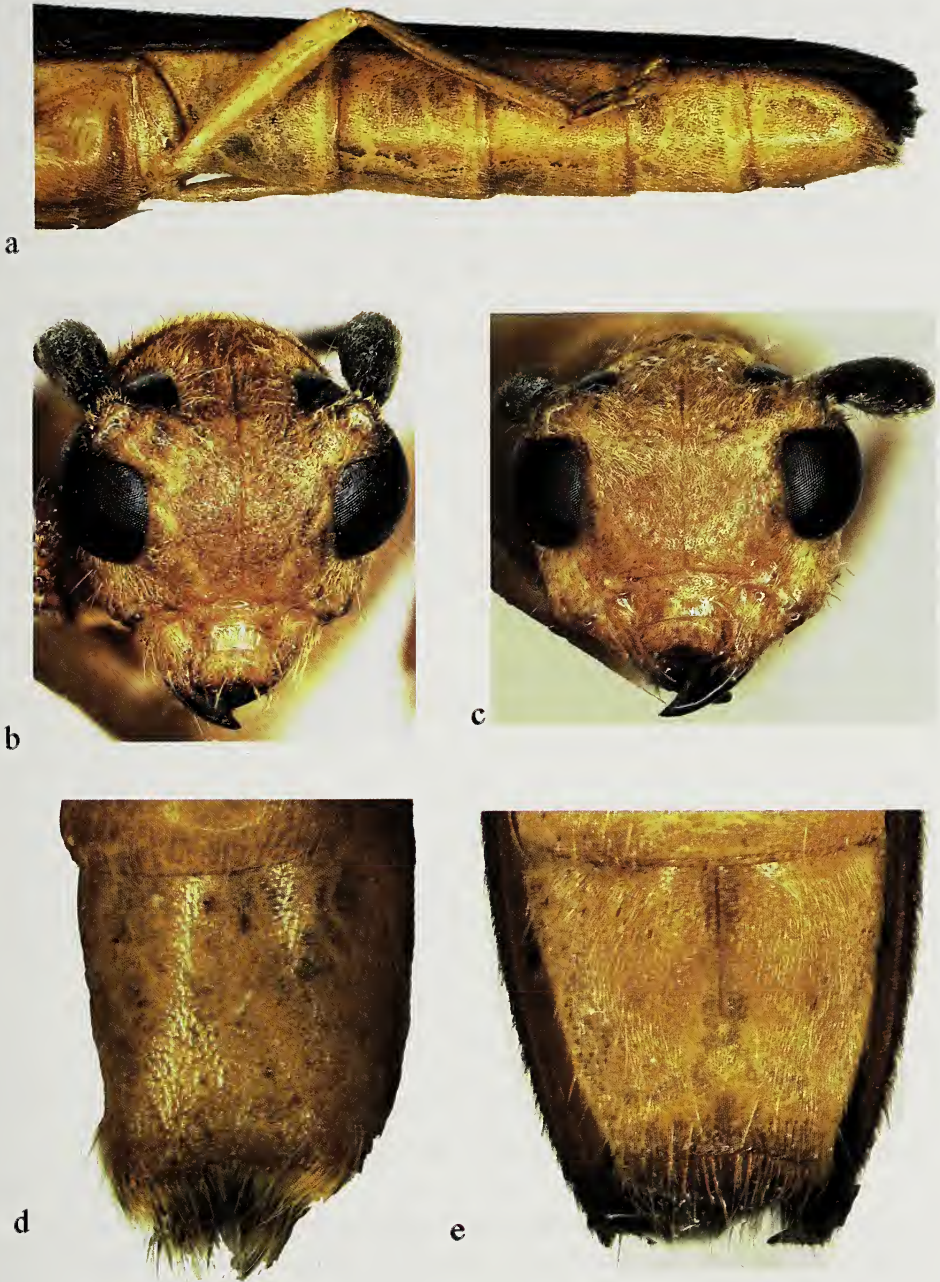


FIG. 5

Oberea pseudoformosana, sp. n. (a) Female, abdomen, lateral view. (b) Head of male, frontal view. (c) Head of female, frontal view. (d) Abdominal ventrite VII of male. (e) Abdominal ventrite VII of female (not to scale).

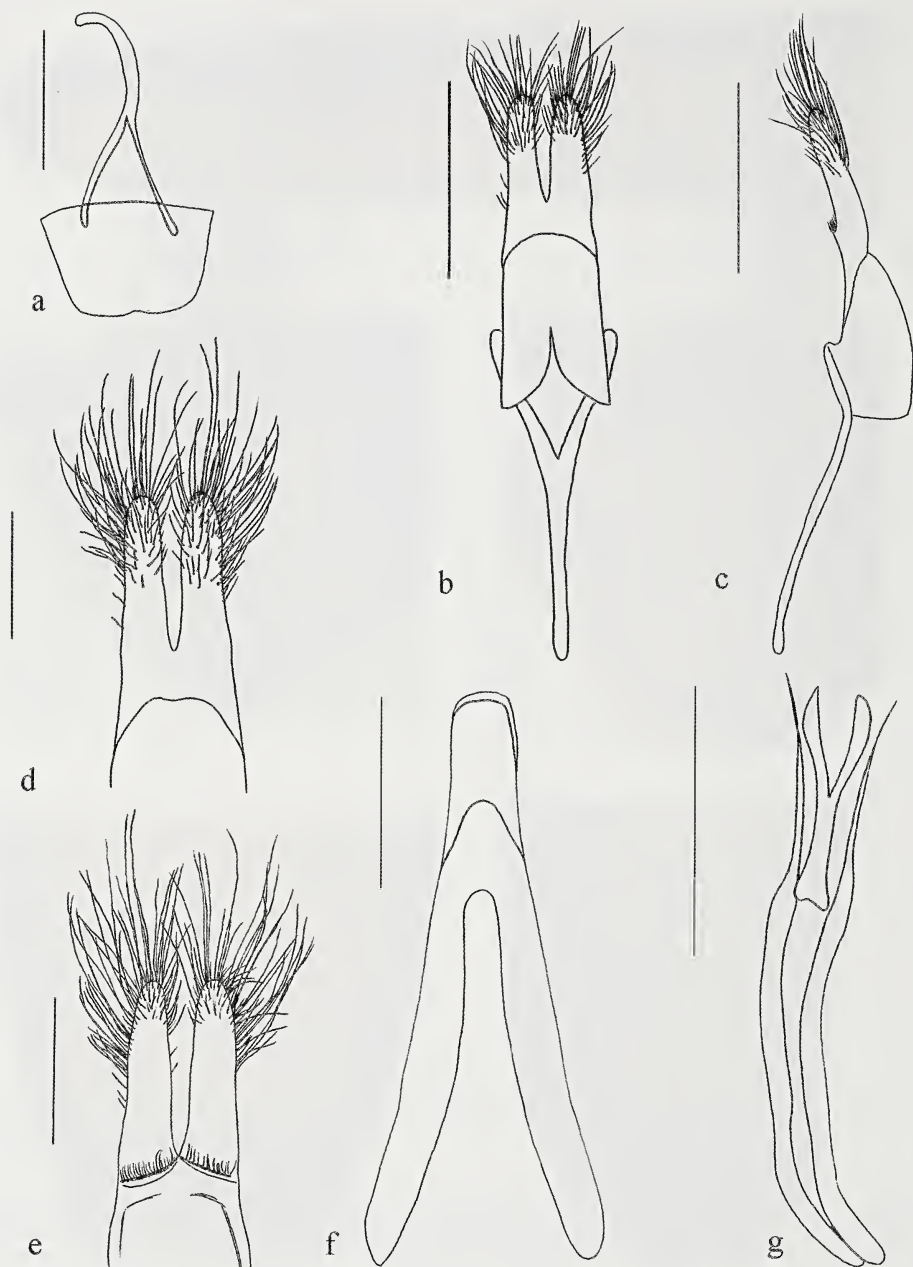


FIG. 6

Oberea pseudoformosana, sp. n. male genitalia (a) Tergite VIII. (b) Tegmen, dorsal view. (c) Tegmen, lateral view. (d) Lateral lobes, dorsal view. (e) Lateral lobes, ventral view. (f) Median lobe, ventral view. (g) Sclerites in endophallus. (a, b, c, f & g: scale bar = 1.0 mm; d & e: scale bar = 0.5 mm).

undersides of basal antennomeres, and some erect yellow hairs on pronotum and elytra. Head, pronotal disc, metepisternum and sides of abdominal segments finely and densely punctured. Elytra with basal half of disc bearing six longitudinal rows of coarse and deep punctures, latter becoming gradually finer and disorganized towards apex.

Head nearly as long as wide, slightly wider than prothorax. Eyes very large, inferior lobes 1.5 times longer than genae; depression between base of antennae and head with a medial groove. Antennae approximately 1.5 times longer than body; antennomeres ratio (from scape to apex): 4.0 - 1.0 - 5.5 - 6.8 - 6.5 - 6.4 - 6.4 - 6.3 - 5.9 - 5.4 - 4.9.

Pronotum in dorsal view about as long as wide, slightly constricted basally and apically, with lateral outlines accurate in middle; apical and basal margins shallowly emarginated in middle; center of disc raised. Scutellum trapezoidal, with posterior margin shallowly emarginated in middle. Elytra approximately 4.5 times longer than humeral width, and 3.5 longer than head and prothorax combined, in dorsal view slightly constricted from behind base to apical quarter; apex obliquely truncate with acute sutural and marginal angles. Posterior legs with femora reaching middle of fourth abdominal segment; hind tibiae 2 times longer than as tarsi.

Abdominal ventrite VII with a shallow triangular medial depression extended on entire length (Fig. 5d).

Male genitalia: Tergite VIII densely clothed with short hairs, transverse, apex truncated and shallowly emarginated in middle, bilobed (Fig. 6a). Tegmen curved in lateral view, lateral lobes elongate, wide at base, dorsal surface mostly covered with long setae; base of each lateral lobe transversely and obliquely ridged ventrally, those ridges densely furnished with fine hairs (Fig. 6b-e). Median lobe 1.1 times as long as tegmen and curved in lateral view; median struts 0.6 times shorter than length of median lobe; dorsal plate slightly longer than ventral plate; ventral plate with apex rounded, and median foramen rounded (Fig. 6f). Endophallus with 2 pairs of slender subapical sclerites, longer pair very slender, baculiform, shorter pair fused at base and 3 times shorter than long one (Fig. 6g).

Female: Body 17.5 mm long and 3-3.2 mm wide. Frons wider than that of males (Fig. 5c). Inferior lobes of eyes 1.2 times as long as genae. Antennomeres ratio (from scape to apex): 5.2 - 1.0 - 5.6 - 7.2 - 7.1 - 6.9 - 6.8 - 6.5 - 6.2 - 5.6 - 5. Abdominal ventrite VII with a narrow medial groove (Fig. 5e).

DISTRIBUTION: China (Chongqing, Fujian, Guangxi, Guizhou, Hunan, Sichuan, and Zhejiang).

COMMENTS: *Oberea pseudoformosana* share most characters in common with *O. formosana*, notably its colour pattern and particularly long antennae with shorted third antennomere. This new species has however longer posterior legs (reaching middle of fourth abdominal segment instead of just level of posterior margin of third segment) and hind tibiae usually yellowish brown (instead of dark brown) 2 times longer than tarsi (instead of 1.6 times), and fourth antennomere about 1.2 times longer than third instead of 1.5 times (in *O. formosana*). Other distinctive features are notably the conformation of the abdominal tergite VIII (with apex bilobed instead of broadly

emarginated) and of the male genitalia (ventral plate of median lobe with median foramen acute instead of rounded; lateral lobes of tegmen; long pair of sclerites in endophallus about 3 times longer than shorter pair instead of 2 times only).

Oberea formosana v. *ruficornis* Breuning, 1956 is an unavailable name (see Material and methods) which should be ignored. Nevertheless, the original description of this taxon refers to a male holotype and “zahlreiche” (= “numerous”) paratypes collected by J. Klapperich in China (“Fukien [= Fujian]: Kuatun”) on 3.VI.1938, while the data labels attached to the types located in ZFMK mention different collecting days. Despite these minor discrepancies, it is reasonable to assume that these specimens belong indeed to the original type series.

ETYMOLOGY: The name refers to the easy confusion of the new species with *O. formosana*.

ACKNOWLEDGEMENTS

We are grateful to following colleagues for the loan or gift of specimens upon which the present work is based: Dirk Ahrens (ZFMK), Maxwell V. L. Barclay (BMNH), Michael Geiser (BMNH), Harold Labrique (MHNL), Meiying Lin (IZAS), Jianyue Qiu (SWU), Azadeh Taghavian (MHNH), Xinli Wang (CAU), Yinglun Wang (NWFU), and Hao Xu, Chongqing, China. We also thank Meiying Lin for constructive comments on the manuscript. This research was supported by China Scholarship Council (CSC).

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The type specimens of Orthoptera described by American entomologists in the collection of the Muséum d'histoire naturelle de Genève

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The type specimens of Orthoptera described by American entomologists in the collection of the Muséum d'histoire naturelle de Genève. -

The Muséum d'histoire naturelle de Genève (MHNG) collection, which includes that of Henri de Saussure, contains many type specimens of Orthoptera from the Americas. Most of these were deposited by the North American entomologists Lawrence Bruner and Morgan Hebard, who received loans from or worked directly on the collection, even though their main collections are deposited in North American institutions. The eighty five species or sub-species described by American entomologists and represented by type specimens in the MHNG collection are here listed by family; the number, sex and type status of the specimens is given, along with the depository of the holotype or lectotype if it is not in the MHNG collection.

Keywords: Acrididae - Tetrigidae - Joseph Hancock - Samuel Scudder.

INTRODUCTION

The Muséum d'histoire naturelle de Genève (MHNG) collection is important for American entomologists because it contains the collection of, and material studied by, Henri de Saussure (1829-1905). Saussure travelled in the West Indies, Mexico and the United States in 1854-1856, and described many Orthoptera species using the specimens he collected (Saussure, 1859, 1861). His interest in the region was lasting (Hollier & Hollier, 2013), and towards the end of his career he was responsible for the first Orthoptera volume of the series *Biologia Centrali-Americana*, edited by Frederick DuCane Godman (1834-1919) and Osbert Salvin (1835-1898). It is therefore, not surprising that type specimens from some of the other important names in North American entomology have ended up in the MHNG collection.

The second Orthoptera volume of the *Biologia Centrali-Americana* (published in parts between 1900 and 1909) was largely the work of Lawrence Bruner (1856-1937). In the introduction Bruner states that Saussure loaned him types of some of the species he (Saussure) had described and this probably accounts for the fact that in some instances a couple of specimens from an apparent series have been labelled as types while others have not (i.e. only those specimens that were loaned have the label). It

would appear that some unidentified material was also sent to Bruner because he based some of his descriptions on specimens from the MHNG. When these specimens were returned, it was common practice to donate syntypes of some other species with long type series to the lending institution's collection.

Morgan Hebard (1887-1946) was invited to study some of the specimens collected during the expedition of Jean Carl (then curator of arthropods at the MHNG) and Konrad Escher to central India in 1926-1927. The many Hebard determination labels in the collection suggest that he visited the MHNG, but the correspondence between Carl and Hebard preserved in the MHNG archives does not explicitly mention this. The correspondence does show that considerable exchanges of material were made, which explains the many specimens from Hebard's own collection in the MHNG and the presence of Saussure syntypes in the Academy of Natural Sciences of Philadelphia (ANSP) collection. Hebard's collection included that of Joseph Hancock (1864-1922), and many specimens from his long-term collaborator James Rehn (1881-1965), and Hebard exchanged some of these type specimens as well. Hebard labelled all of these specimens from his collection as paratypes, but the earlier ones were actually syntypes (although most of these are now paralectotypes).

There are also a few type specimens of species described by Samuel Scudder (1837-1911), identified as types by a printed label "Scudder's Type 18--" (as mentioned by Rehn & Hebard, 1912: 67). It is not clear when these came to the MHNG and it is possible that these too came from Hebard's collection, given the mention of the labels by the latter. However, it is noticeable that all of the species represented were described early in Scudder's career, implying that they were sent earlier.

A few other North American specialists have left specimens in the MHNG collection, either sent with returned loans or donated on visits to study the rich holdings.

ARRANGEMENT

The species names are arranged by family. The author and publication, original generic placement, the number and sex of type specimens in the MHNG collection, the location of the holotype or lectotype if not in the MHNG and the current nomenclatural combination are given. The nomenclature and systematics follow Eades *et al.* (2013).

The following abbreviations are used for type depositories:

- ANSP Academy of Natural Sciences, Philadelphia
- BMNH Natural History Museum, London
- CSCA California State Collection of Arthropods, Sacramento
- MHNG Muséum d'histoire naturelle, Geneva
- NHMW Naturhistorisches Museum Wien, Vienna
- NMNH Smithsonian Institution, Washington
- OXUM Oxford University Museum of Natural History, Oxford
- UNSM University of Nebraska, Lincoln
- ZMHB Museum für Naturkunde der Humboldt-Universität, Berlin

CATALOGUE OF TYPE SPECIMENS

CAELIFERA

Ripterygidae

nodicornis Hebard, 1924a: 228 [*Ripteryx*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Ripteryx nodicornis Hebard, 1924

Acrididae

alticola Hebard, 1923b: 214 [*Scyllina*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Rhammatocerus alticola (Hebard, 1923)

annectens Hebard, 1923b: 202 [*Cumarala*].

One ♂ paratype. The holotype is in the ANSP.

Orphula annectens (Hebard, 1923)

balloui Rehn, 1905a: 178 [*Orphulella*].

One ♀ syntype. There are further syntypes in the ANSP.

Orphulina balloui (Rehn, 1905)

bicolor Bruner, 1908: 260 [*Inusia*].

One ♂ and one ♀ paralectotype. The lectotype (designated by Rehn & Hebard, 1912: 119) is in the ANSP.

A junior synonym of *Stenopola dorsalis* (Thunberg, 1827)

bowditchi canus Hebard, 1925a: 120 [*Melanoplus*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Melanoplus bowditchi canus Hebard, 1925

calapooyae Hebard, 1920: 385 [*Phoelaliotes*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

A junior synonym of *Melanoplus validus* Scudder, 1898

carlinianus strepitus Rehn, 1921: 174 [*Aerochoreutes*].

Two ♀ paratypes. The holotype is in the ANSP.

Circotettix strepitus (Rehn, 1921)

caroli Gurney & Helfer in Gurney, 1960: 150 [*Melanoplus*].

One ♂ and one ♀ paratype. The holotype is in the NMNH.

Melanoplus caroli Gurney & Helfer, 1960

ceratiola Hubbell & Walker, 1928: 2 [*Schistocerca*].

Two ♂ and two ♀ paratypes. The holotype is in the NMNH.

Schistocerca ceratiola Hubbell & Walker, 1928

chocoensis Hebard, 1923b: 247 [*Opshomala*].

One ♂ paratype. The holotype is in the ANSP.
Stenacris fissicauda chocoensis (Hebard, 1923)

communis Bruner, 1904: 56 [*Silvitettix*].

Two ♂ and two ♀ paralectotypes. The lectotype (designated by Rehn & Hebard, 1912: 110) is in the ANSP.

Silvitettix communis Bruner, 1904

conspersa Scudder, 1875b: 514 [*Arphia*].

One ♀ syntype. There are further syntypes in the ANSP.

Arphia conspersa Scudder, 1875

conspersus Bruner, 1900: 76 [*Dichroplus*].

One ♂ and one ♀ paralectotype. The lectotype (designated by Liebermann, 1966: 98) is in the UNSM.

Dichroplus conspersus Bruner, 1900

costaricensis Bruner, 1904: 82 [*Orphulella*].

One ♀ paralectotype. The lectotype (designated by Rehn & Hebard, 1912: 66) is in the ANSP.

A junior synonym of *Orphulella punctata* (De Geer, 1773)

cupido Bruner, 1904: 88 [*Phaneroturis*].

♂ holotype.

Phaneroturis cupido Bruner, 1904

davisi Hebard, 1918: 153 [*Eotettix*].

One ♀ paratype. The holotype is in the ANSP.

Melanoplus davisi (Hebard, 1918)

digitifera Hebard, 1923b: 289 [*Chibchacris*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Chibchacris digitifera Hebard, 1923

eumera Hebard, 1923b: 249 [*Oxyblepta*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Stenopola puncticeps eumera (Hebard, 1923)

furcata Hebard, 1923b: 291 [*Chibchacris*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Chibchacris furcata Hebard, 1923

glaucipes Rehn, 1906: 34 [*Staurorhectus*].

One ♀ paratype. The holotype is in the ANSP.

Notopomala glaucipes (Rehn, 1906)

goethalsi Hebard, 1924b: 117 [*Opshomala*].

One ♀ paratype. The holotype is in the ANSP.

Stenacris fissicauda goethalsi (Hebard, 1924)

gracilis Bruner, 1908: 340 [*Rhachicreagra*].

One ♂ and one ♀ paralectotype. The lectotype (designated by Rehn & Hebard, 1912: 122) is in the ANSP.

Rhachicreagra gracilis Bruner, 1908

halophila Rehn & Hebard, 1916: 166 [*Orphulella*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

A junior synonym of *Orphulella pelidna* (Burmeister, 1838)

harperi Gurney & Buxton, 1965: 4 [*Melanoplus*].

One ♂ and one ♀ paratype. The holotype is in the CSCA.

Melanoplus harperi Gurney & Buxton, 1965

herbaceus Bruner, 1905: 142 [*Encoptolophus*].

One ♂ paralectotype. The lectotype (designated by Rehn & Hebard, 1912: 115) is in the ANSP.

A junior synonym of *Encoptolophus otomitius* (Saussure, 1861)

insignis Hebard, 1923b: 189 [*Amblytropidia*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

A junior synonym of *Amblytropidia trinitatis* Bruner, 1904

luteola Scudder, 1875b: 515 [*Arphia*].

One ♀ syntype. There are further syntypes in the ANSP.

A junior synonym of *Arphia simplex* Scudder, 1875

marschalli Bruner, 1908: 256 [*Arnilia*].

One ♂ and one ♀ paralectotype. The lectotype (designated by Rehn & Hebard, 1912: 119) is in the ANSP.

A junior synonym of *Stenacris vitreipennis* (Marschall, 1836)

melanopleura Hebard, 1923b: 205 [*Orphulella*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

A junior synonym of *Orphulella losamatensis* Caudell, 1909

meridionalis Bruner, 1908: 271 [*Anniceris*].

One ♂ paralectotype. The lectotype (designated by Rehn & Hebard, 1912: 120) is in the ANSP.

Ampelophilus meridionalis (Bruner, 1908)

microtatus Hebard, 1919: 285 [*Melanoplus*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Melanoplus microtatus Hebard, 1919

miniatula Rehn, 1905b: 423 [*Dellia*].

One ♀ syntype. There are further syntypes in the ANSP.

Lithoscirtus miniatulus (Rehn, 1905)

modesta Bruner, 1908: 288 [*Leptomerinthoprora*].

One ♂ and one ♀ paralectotype. The lectotype (designated by Rehn & Hebard, 1912: 120) is in the ANSP.

A junior synonym of *Leptomerinthoprora brevipennis* Rehn, 1905

mono Rehn, 1964: 11 [*Hebardacris*].

One ♂ and one ♀ paratype. The holotype is in the NMNH.

Hebardacris mono Rehn, 1964

nothra Rehn, 1905b: 444 [*Rhachicreagra*].

One ♂ and one ♀ syntype. There are further syntypes in the ANSP.

Rhachicreagra nothra Rehn, 1905

nudus Scudder, 1878: 77 [*Pezotettix*].

One ♀ syntype. There is at least one further syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

A junior synonym of *Paraidemona punctata* (Stål, 1878)

paraguayensis Rehn, 1906: 36 [*Isonyx*].

One ♀ syntype. There are further syntypes in the ANSP.

Orphulella paraguayensis (Rehn, 1906)

picta Scudder, 1877: 31 [*Trimerotropis*].

One ♂ paralectotype. The lectotype (designated by Otte, 1984: 151) is in the ANSP.

Spharagemon marmorata picta (Scudder, 1877).

polia Hebard, 1923b: 297 [*Rhytidochrota*].

One ♀ and one juvenile ♂ paratype. The holotype is in the ANSP.

Rhytidochrota polia Hebard, 1923

pratensis Bruner, 1904: 84 [*Parachloebata*].

♀ holotype. There are many more specimens in the same series as the holotype in the MHNG, but apparently only one specimen was sent to Bruner.

A junior synonym of *Orphulella scudderi* (Bolivar, 1888)

pulchella Hebard, 1925b: 288 [*Sinaloa*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Sinaloa pulchella Hebard, 1925

smaragdipes Bruner, 1908: 287 [*Leptomerinthoprora*].

One ♂ and one ♀ paralectotype. The lectotype (designated by Rehn & Hebard, 1912: 120) is in the ANSP.

A junior synonym of *Leptomerinthoprora brevipennis* Rehn, 1905

steini Rehn, 1914: 122 [*Pteropera*].

Two ♀ paratypes. The holotype is in the ZMHB.

Pteroperina steini (Rehn, 1914)

tenuis Hebard, 1923b: 303 [*Opaonella*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Opaonella tenuis Hebard, 1923

viatorius cyanomera Hebard, 1923b: 212 [*Scyllina*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Rhammatocerus viatorius cyanomeres (Hebard, 1923)

viridis Scudder, 1862: 455 [*Chloealtis*].

One ♀ syntype. There is at least one further syntype in the ANSP.

Dichromorpha viridis (Scudder, 1862)

viridulus Bruner, 1908: 269 [*Anniceris*].

One ♀ paratype. The holotype does not appear on the BMNH online database and its whereabouts is apparently unknown.

Tela viridula (Bruner, 1908)

vitripenne Bruner, 1904: 69 [*Thyripton*].

One ♂ and one ♀ paralectotype. The lectotype (designated by Rehn & Hebard, 1912: 69) is in the ANSP.

Orphula vitripenne (Bruner, 1904)

Episactidae

lithocolletus Rehn & Rehn, 1934: 14 [*Gymnotettix*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Gymnotettix lithocolletus Rehn & Rehn, 1934

Eumastacidae

californica dumicola Rehn & Hebard, 1918: 229 [*Morsea*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Morsea dumicola Rehn & Hebard, 1918

lita Hebard, 1923b: 185 [*Santanderia*].

One ♂ and one juvenile paratype. The holotype is in the ANSP.

Santanderia lita Hebard, 1923

Romaliidae

femorata Bruner, 1907: 245 [*Taeniophora*].

One ♂ and one ♀ paralectotype. The lectotype (designated by Rehn & Hebard, 1912: 119) is in the ANSP.

Taeniophora femorata Bruner, 1907

gracilis Hebard, 1924a: 210 [*Phaeoparia*].

One ♀ paratype. The holotype is in the ANSP.

A junior synonym of *Maculiparia rotundata carrikeri* (Hebard, 1923)

juncorum Berg in Pictet & Saussure, 1887: 356 [*Zoniopoda*].

♂ lectotype (designated by Carbonell, 2007: 24) and two ♂ and two ♀ paralectotypes. There are further paralectotypes in the NHMW.

Zoniopoda juncorum Berg, 1887

Tetrigidae

attenuatus Hancock, 1904: 151 [*Hedotettix*].

One ♂ and one ♀ syntype. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

Hedotettix attenuatus Hancock, 1904

bigibbosus Hancock, 1900: 3 [*Tetticerus*].

One ♂ and one ♀ syntype. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

Pterotettix bigibbosus (Hancock, 1900)

carli Hebard, 1930: 569 [*Gavialidium*].

♀ Holotype.

Gavialidium carli Hebard, 1930

cornutus Hancock, 1900: 6 [*Notocerus*].

One ♂ and one ♀ paralectotype. The lectotype (designated by Rehn, 1929: 492) is in the ANSP.

Notocerus cornutus Hancock, 1900

corpulentus Hancock, 1912: 158 [*Euparatettix*].

One ♂ and one ♀ syntype. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

A junior synonym of *Euparatettix variabilis* (Bolivar, 1887)

costatus Hancock, 1912: 150 [*Hedotettix*].

Two ♂ and two ♀ syntypes. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

Hedotettix costatus Hancock, 1912

crassipes Hancock, 1912: 153 [*Indatettix*].

Two ♂ and two ♀ syntypes. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

Ergatettix crassipes (Hancock, 1912)

eurycephalus brevipennis Hancock, 1902: 100 [*Apotettix*].

One ♂ and one ♀ syntype. There is at least one further syntype in the ANSP.

Paratettix brevipennis (Hancock, 1902)

extenuatus Hancock, 1906: 91 [*Stenodorsus*].

Three ♂ and three ♀ syntypes. There is at least one further syntype in the ANSP.

Stenodorsus extenuatus Hancock, 1906

humilis Hebard, 1930: 568 [*Deltonotus*].

♀ Holotype and three ♀ paratypes.

Deltonotus humilis Hebard, 1930

interruptus lobulatus Hancock, 1915: 129, 130 [*Indatettix*].

One ♀ syntype.

Probably a junior synonym of *Ergatettix interuptus* (Brunner von Wattenwyl, 1893) [not mentioned by Eades *et al.* (2013)]

latifrons Hebard, 1930: 578 [*Criotettix*].

One ♂ paratype. The holotype is in the ANSP.

Criotettix latifrons Hebard, 1930

longipennis mutabilis Hancock, 1909: 413 [*Tetrix*].

One ♂ paralectotype. The specimen has been labelled as “longipennis dimorpha Hancock” by Hebard, but the locality “Victoria Australia” agrees with that given by Hancock in his description of the variety of *T. longipennis*. The ♂ lectotype (designated by Key, 1981: 51), is in the OXUM.

A junior synonym of *Paratettix argillaceus* (Erichson, 1842)

longipes Hancock, 1906: 87 [*Amphibotettix*].

One ♂ and one ♀ syntype. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

Amphibotettix longipes Hancock, 1906

marcapata Hancock, 1907b: 44 [*Otumba*].

One ♂ and two ♀ syntypes. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

Otumba marcapata Hancock, 1907

minutus Hancock, 1902: 134 [*Paratettix*].

One ♂ syntype. There is at least one other syntype in the ANSP.

A junior synonym of *Paratettix azetcus* (Saussure, 1861)

oculatus magnus Hancock, 1907a: 221 [*Criotettix*].

One ♀ syntype. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

Eucriotettix magnus (Hancock, 1907)

similis Hancock, 1907a: 238 [*Euparatettix*].

One ♀ syntype. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

Euparatettix similis Hancock, 1907

spinilobus Hancock, 1904: 129 [*Criotettix*].

One ♀ syntype. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

Eucriotettix spinilobus (Hancock, 1904)

tectatus Hebard, 1923a: 350 [*Misythus*].

One ♀ paratype. The holotype is in the ANSP.

Misythus tectatus Hebard, 1923

tenuis Hancock, 1912: 153 [*Euparatettix*].

Two ♂ and three ♀ syntypes. There is at least one other syntype, referred to as the holotype by Eades *et al.* (2013), in the ANSP.

A junior synonym of *Euparatettix variabilis* (Bolivar, 1887)

ENSIFERA

Gryllidae

gracilis Rehn, 1918: 210 [*Aphemogryllus*].

One ♀ paratype. The holotype is in the ANSP.

Aphemogryllus gracilis Rehn, 1918

Tettigoniidae

concinnum Scudder, 1862: 452 [*Orchelimum*].

One ♂ and one ♀ paralectotype. The lectotype (designated by Rehn & Hebard, 1915: 60) is in the ANSP.

Orchelimum concinnum Scudder, 1862

ictum Scudder, 1875a: 461 [*Xiphidium*].

One ♂ syntype. There are at least two other syntypes in the ANSP.

Conocephalus ictus (Scudder, 1875).

paraguayensis Rehn, 1907: 385 [*Turpilia*].

One ♀ syntype. There are further syntypes in the ANSP.

A junior synonym of *Ceraia similis* Caudell, 1906

robusta Rehn, 1914: 156 [*Horatosphaga*].

One ♀ paratype. The holotype is in the ZMHB.

A junior synonym of *Horatosphaga leggei* (Kirby, 1909)

sinaloae Hebard, 1925: 293 [*Insara*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Insara sinaloae Hebard, 1925

sinaloae Rehn & Hebard, 1920: 240 [*Rehnia*].

One ♀ paratype. The holotype is in the ANSP.

Neobarrettia sinaloae (Rehn & Hebard, 1920)

tridactyla Rehn & Hebard, 1914: 149 [*Dichopetala*].

One ♂ and one ♀ paratype. The holotype is in the ANSP.

Dichopetala tridactyla Rehn & Hebard, 1914

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Review of the genus *Parosus* Sharp, 1887 (Coleoptera: Staphylinidae, Oxytelinae)

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Review of the genus *Parosus* Sharp, 1887 (Coleoptera: Staphylinidae, Oxytelinae). - The tropical Central and South American genus *Parosus* Sharp, 1887 is reviewed. Adults are most frequently found in forest litter or collected from narrow spaces between sappy plant parts. The three earlier named species are redescribed with the most distinctive of the still unnamed taxa added to this account. Lectotypes are designated for *P. hilaris* Sharp and *P. skalitzkyi* Bernhauer. Seventeen new taxa are described in this paper: *P. bicoloratus* sp. nov. (Ecuador: Pichincha), *P. brasiliensis* sp. nov. (Brazil: São Paulo), *P. campbelli* sp. nov. (Ecuador: Napo), *P. colombiensis* sp. nov. (Colombia: Magdalena, Ecuador: Napo), *P. gigantulus* sp. nov. (Colombia: Magdalena), *P. hermani* sp. nov. (Ecuador: Cotopaxi, Pichincha), *P. longicornis* sp. nov. (Peru: Junín), *P. longipennis* sp. nov. (Bolivia: Cochabamba, Peru: Cuzco), *P. major* sp. nov. (Peru: Cuzco, Bolivia: La Paz, Cochabamba, Santa Cruz), *P. minutus* sp. nov. (Panama: Panamá), *P. newtoni* sp. nov. (Panama: Bocas del Toro, Panamá), *P. portobelo* sp. nov. (Costa Rica: Colon, Coclé, Puntarenas, Panama: Heredia), *P. rossii* sp. nov. (Costa Rica: Cotopaxi), *P. simplex* sp. nov. (Peru: Cuzco), *P. taliaferroae* sp. nov. (Panama: Coclé, Bocas del Toro, Chiriquí), *P. thayerae* sp. nov. (Peru: Huánuco), *P. unicoloratus* sp. nov. (Brazil: São Paulo). The diagnostic characters are illustrated for all species and a key is presented for well-developed specimens.

Keywords: Neotropics - Cloud forests - Atlantic forests - *Parosus* - key - lectotypes - new species.

INTRODUCTION

The genus *Parosus* is known from the tropical areas of Central and South America. Adults can be found on foliage and in forest litter (particularly that of palm trees) and are inhabitants of Cloud forests and Atlantic forests, their habitats endangered. While it is clear that they are not subcortical (were never encountered in such habitat by specialists) they were recorded from narrow spaces in between plant parts (e.g. under bract, at node of palm frond), where they perhaps have mode of life similar to those of corticolous species. An affinity is suggested by the remarkably flattened body built of most species. Sometimes specimens are found in light or flight intercept traps, too. The relationships of the genus are controversial. Larvae are unknown.

The superficial appearances of most species are similar and the male genitalia are also rather alike, with just one or two exceptions. As a general guideline for the present work, only those species are treated where adequate material is available for the description (at least one male) and the species can be distinguished by external and internal features of well-developed (male) specimens. All others – where a male is not available or the distinction of the species is not possible based on the studied material – are left undescribed for the time being. Possibly the internal sclerites of male aedeagi could be used for the separation of these closely allied and therefore problematic taxa (e.g. Makranczy, 2013), but such a study would require more material (especially as the sclerites are mostly weakly sclerotized, not conspicuous), instead of the few solitary specimens at our disposal today. Most of the descriptions presented here are largely based on these males (holotypes) rather than the whole type series (some exceptions are noted in the text). Only of two species there was abundant material available. These two series indicated a beyond average variability in terms of external traits and their developments. On the other hand, the male aedeagus has proved to be quite stable in its characters, even between strikingly different looking specimens.

It is difficult to know what a well-developed specimen (large male or 'major' male are terms frequently used in related genera) is with only one or a couple of specimens at hand. These usually have much broader temples (and often the ratio of the eye length compared to the enlarged temple is smaller). Females cannot be separated from males without dissection, in fact some females can even be larger than a well-developed male. It means that a large female can be readily identified, while there is no key in the world that could separate the abnormally small specimens by external traits alone. A small male could still be identified by comparison of its aedeagus. Females have no significant differences in their genital traits. Spermathecae look almost the same even for obviously distantly related species. As a general rule, all specimens that could be safely identified with a taxon are included in the material (as paratypes, or as 'other' if their conditions did not allow them to become type). Measurements and the key are for the best developed (largest) specimens (there might be a few females among them), while the descriptions themselves are mostly based on the male holotype (some exceptions are noted in the text).

Specimens of *Parosus* are rather rare in collections. Taking into account the known distribution range and the rather specialized habitats in which specimens are found, it is not surprising that the amount of the available material of this genus is small. In fact, one third of the species dealt with here are known by 3 or less specimens.

MATERIAL AND METHODS

The material used in this study comes predominantly from recent decades, yet most are from times when GPS units were not available for recording geographical coordinates. Every effort was made to pin down these locations on maps as precisely as possible, but of course, these calculated data will never be as precise or trustworthy as GPS measured coordinates. The label data of the historical type specimens are reproduced verbatim in quotation marks “ ” with “\” as a separator between each individual label and “;” between lines and additional information pertaining to data or localities provided in square brackets []. For holotypes of the here described species

the original label data are faithfully reproduced but not literally, not line-by-line. Geographical coordinates are given for each different locality, but the calculated ones (provided in square brackets) have to be taken with caution.

Abbreviations of collections used in the present study are:

- AMNH American Museum of Natural History, New York, NY, USA
 BMNH The Natural History Museum, London, United Kingdom
 CNCI Canadian National Collection of Insects, Ottawa, ON, Canada
 FMNH Field Museum of Natural History, Chicago, IL, USA
 FSCA Florida State Collection of Arthropods, Gainesville, FL, USA
 HHNM Hungarian Natural History Museum, Budapest, Hungary
 ICNC Instituto de Ciencias Naturales de la Universidad Nacional de Colombia, Bogotá, Colombia
 ISNB Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium
 MHNG Muséum d'histoire naturelle, Geneva, Switzerland
 MNHP Muséum National d'Histoire Naturelle, Paris, France
 NHMW Naturhistorisches Museum Wien, Vienna, Austria
 QCAZ Museo de la Pontificia Universidad Católica del Ecuador, Quito, Ecuador
 SEMC Snow Entomological Collection, University of Kansas, Lawrence, KS, USA
 SMNS Staatliches Museum für Naturkunde, Stuttgart, Germany
 USNM National Museum of Natural History (Smithsonian I.), Washington DC, USA
 ZMHB Museum für Naturkunde der Humboldt Universität, Berlin, Germany

Codes used for the measurements: HW = head width with eyes; TW = head width at temples; PW = maximum width of pronotum; SW = approximate width of elytra at shoulders; MW = approximate maximum width of elytra; AW = maximum width of abdomen; HL = head length from front margin of clypeus to the beginning of neck (the line connecting posterior ends of temples); EL = eye length; FL = faceted eye length; TL = length of temple; PL = length of pronotum in the middle-line; SL = length of elytra from shoulder; SC = length of elytra from hind apex of scutellum; FB = fore-body length (combined length of head, pronotum and elytra); BL = approximate body length. All measured from dorsal view.

Carrying out the traditional measurements presented some difficulties. Elytra are significantly wider at the hind part (MW) than at the shoulders, where measurements are usually made. Eyes in the genus are often modified to not form (as usual) a full spherical calotte, but leaving (in dorsal view) a triangular area without facets; therefore the (dorsal view) measurement of the eye length require a supplemental figure (FL) that refers to the approximate length of the faceted area. Since the well-developed specimens look very different from the less developed ones, only the former were measured; it has to be taken into account that much smaller specimens might exist for all species, but their inclusion in the measurements would hide the real differences between the well-developed ones.

For descriptions and measurements a Leica MZ 12.5 stereoscopic microscope was used. For the line drawings permanent preparations were made in Euparal mounting medium on plastic cards pinned with the specimens or on regular micro-

scopic slides with cover glasses. The preparation techniques for these are described in detail in Makranczy (2006). Drawing was done with an Olympus BH-2 or a Jenalab (Carl Zeiss, Jena) compound microscope and drawing tubes (camera lucida). The Scanning Electron Micrographs (SEM) of gold+palladium coated objects were taken with a LEO1550 Field Emission Scanning Electron Microscope, other images of uncoated specimens with a Hitachi S-2600 N Scanning Electron Microscope. For the colour habitus photographs a Leica DFC 490 camera was attached to a Leica MZ16 stereoscopic microscope and layers montaged with AutoMontage.

For surface sculpture features Harris (1979) is consulted. The very characteristic punctuation type seen on the dorsal surface of *Parosus* is sometimes referred to in literature as "foveolate" (e.g. Harris, 1979), but by convention and consultation with English speaking colleagues the term "umbilicate" is used throughout. As the punctures on the vertex and pronotal disc are generally very dense, there is not much use in following the tradition of giving the approximate ratios of the puncture diameters vs. puncture interspaces as a diagnostic feature. The roughness/density of punctuation is thereby characterized by the approximate number of longitudinal rows on the dorsal surface of the head. It must be noted that this is somewhat illusory as there are no such 'longitudinal' rows; but if there were perfectly straight puncture rows, approximately that many would fit in. The Scanning Electron Micrographs (SEM) presented here depict certain traits well, but for example microsculpture is displayed poorly. This has to be considered when comparing the images with the verbal descriptions (made with regular light microscopy).

TAXONOMY

KEY TO THE KNOWN *PAROSUS* SPECIES

In the early drafts of this paper no identification key was presented. The primary reason was the likely vast number of still undescribed which renders this effort almost useless. Why it was still decided to be valuable is that (in the absence of a phylogeny) it gives the genus a structure and also an idea on what characters might be useful in distinguishing the species. Besides key couplets, diagnostic information is also given for each species under "Comparative notes".

The use of the presence/absence of a medially deeply serrate hind margin of tergite VII as a primary diagnostic character separates obviously closely related species and places them in very different points of the key. While the taxonomic value of this character is somewhat unsure, its use was still considered desirable as it was such an easy-to-observe feature.

Throughout the key much difficulty was experienced with the secondary sexual differences in the head shape, as it made problematic to separate both the males and females of not even the most closely related taxa by unambiguous characters, although the major males of these species could be distinguished rather easily. Consequently the key works with satisfactory results only if well-developed specimens (males) are available.

- | | | |
|----|---|---|
| 1a | Fimbriate hind margin of tergite VII may form an angle (190-200°) medially, but otherwise simple, without modifications | 2 |
| 1b | Fimbriate hind margin of tergite VII medially deeply serrate with several digitiform processes | 5 |

- 2a Temples sharply narrowing behind eye, head and pronotum so coarsely punctured that only about 18 'longitudinal' puncture rows fit on the whole breadth on head and pronotum, clypeus fully punctured, head (vertex) and pronotum (disc) very convex [Peru: Huánuco] . *P. thayerae* sp. nov.
- 2b Temples slightly broadening behind eye, head and pronotum still coarsely punctured but with smaller punctures, so about 26 'longitudinal' puncture rows fit on them, clypeus unpunctured, head (vertex) and pronotum (disc) never unambiguously convex 3
- 3a Head reddish medium brown (body same, except shoulders and basal tergites often lighter, yellowish), pronotal disc with two shallow longitudinal depressions along the elevated, shiny posterior midline, these, however, do not modify the predominantly convex appearance of the dorsal surface of the pronotum [Peru: Cuzco] *P. simplex* sp. nov.
- 3b Head dark brown to blackish (contrasting bright orangeish pronotum and light basal tergites), pronotal disc with broad depressions surround the elevated, shiny posterior midline, these depressions cover most of the pronotal disc 4
- 4a Abdomen darkened on tergites V-VI, mid-antennal segments about as long as broad [Panamá: Coclé, Chiriquí, Panamá, Canal Zone]
 *P. taliaferroae* sp. nov.
- 4b Abdomen darkened on tergites VII-VIII, mid-antennal segments slightly elongate [Ecuador: Pichincha] *P. bicoloratus* sp. nov.
- 5a Temples behind the eye (at least on a distance equal to the eye length) either dilated, or run parallel (but in this case not at a least bit curving inwards) 6
- 5b Temples behind eye narrowing or at least within short distance start curving inwards 11
- 6a Medium-large species (pronotal width 0.50-0.75 mm), strikingly bi-coloured (yellowish-reddish pronotum, shoulders, abdominal base) 7
- 6b Very large species (pronotal width 0.80-1.00 mm), without such contrasting colours 8
- 7a Dark body with striking orangeish pronotum. Abdomen base lighter, but no obvious, delimited cross-stripe. Loosely punctured area of vertex not reaching neck: posterior 1/4 with similar punctation to that of sides. [Costa Rica] *P. rossii* sp. nov.
- 7b Shoulders and surrounding area light (yellow), abdomen light, with darker tergites V-VI forming cross-stripe. Posterior 1/4 of vertex slightly more loosely punctured than sides of head. [Costa Rica, Panamá, Venezuela] *P. hilaris* Sharp
- 8a Antennae elongate, mid-antennal articles about twice as long as wide (Fig. 22) [Peru: Junín] *P. longicornis* sp. nov.
- 8b Mid-antennal articles not more than 1.5 times longer than wide 9
- 9a Head with much finer umbilicate punctation (more than 30 'longitudinal' puncture rows). Shoulders lighter than rest of elytra [Brazil, São Paulo] *P. unicoloratus* sp. nov.

- 9b Head with more rough umbilicate punctation (30 or less 'longitudinal' puncture rows). Shoulders with colour similar to the rest of elytra 10
- 10a Punctation behind clypeus almost as dense as in posterior part of vertex. Elytra usually lighter (reddish-brownish) than head and pronotum [Peru, Bolivia] *P. major* sp. nov.
- 10b Punctation behind clypeus (anterior vertex) gets very sparse. Colour of the elytra much closer to that of the head and pronotum [Colombia: Magdalena] *P. gigantulus* sp. nov.
- 11a Head so coarsely but sparsely punctured, that a maximum of 14-16 'longitudinal' puncture rows fit the width of the head 12
- 11b Head with finer and more dense punctation, so that a minimum of 18, but usually 20-24 'longitudinal' puncture rows fit the width of the head 13
- 12a Head (with eyes) much narrower than elytra (at its broadest – hind – part). A very shiny species [Ecuador: Pichincha] *P. hermani* sp. nov.
- 12b Head (with eyes) much broader than elytra (at its broadest – hind – part). A rather shiny species, punctation on the elytra characteristically indistinct and its surface a little dull [Ecuador: Napo] *P. campbelli* sp. nov.
- 13a Elytra with indistinct punctation very different from that of the head; stair-like transversal formation across the middle of pronutum [Lesser Antilles/West Indies: Grenada, St. Vincent] *P. skalitzkyi* Bernhauer
- 13b Elytra with distinct punctation (may differ in size from that of the head); no transversal formation across the middle of pronotum 14
- 14a Eyes fit perfectly in the curve of the temples, with the postocular process filling this curve [Panamá: Panamá, Bocas del Toro] *P. newtoni* sp. nov.
- 14b Eyes do not fit perfectly in the curve of the temples, postocular process not so well developed 15
- 15a 'Unicoloured' dark species, larger (pronotal width 0.55-0.60 mm) 16
- 15b 'Bicoloured' species, smaller (pronotal width around or less than 0.55 mm) 17
- 16a Temples much longer than the eye length and always characteristically angled [Colombia: Magdalena, Ecuador: Napo] *P. colombiensis* sp. nov.
- 16b Temples not much longer than the eye length and broadly rounded [Antilles: Guadeloupe, Trinidad & Tobago, Venezuela: Aragua] *P. antillarum* Wendeler
- 17a The smallest of all species (pronotal width less than 0.40 mm), pronotum not much lighter than head, never reddish-yellowish [Panamá: Panamá] *P. minutus* sp. nov.
- 17b Larger species (pronotal width 0.40-0.55 mm), pronotum much lighter than head, reddish-yellowish 18
- 18a Eyes not bulging, head with strongly developed postocular process [Brazil: São Paulo] *P. brasiliensis* sp. nov.
- 18b Eyes bulging, head with very weakly developed postocular process 19
- 19a Shoulders not yellowish, antennae more elongate (middle antennomeres in Fig. 24) [Costa Rica, Panamá] *P. portobelo* sp. nov.
- 19b Shoulders yellowish, antennae more stout (middle antennomeres in Fig. 23) [Bolivia: Cochabamba, Peru: Cuzco] *P. longipennis* sp. nov.

***Parosus* Sharp, 1887**

Parosus Sharp, 1887: 704; type species: *Parosus hilaris* Sharp, 1887 (by monotypy).

DIAGNOSIS: *Parosus* can be recognized by the medially broadly and deeply incised labrum and unusually strong umbilicate cephalic and pronotal punctation. Members of the genus can be distinguished from the most closely related genera by a three-segmented tarsus, unmodified sternite VIII in both sexes, reverse trapezoid pronotum without marginal bead and in most species (except only 4 of the named) a medially deeply serrate fringe on the posterior margin of tergite VII, a comb-like formation with several large incisions (Figs 27-31).

DESCRIPTION: Medium-sized (2.0-5.3 mm). Body strongly depressed, moderately densely pubescent. Specimens usually either 'bicoloured' or 'unicoloured' (these colouration types are referred to in the descriptions). When abdomen light coloured, hind margin (keel) of tergal fold on tergites III-VI-(VII) with a darker line. Head usually larger than pronotum, latter much broader apically than basally. Umbilicate punctation most prominent on head and pronotum, but punctation almost always strong on elytra as well. Abdominal segments mostly shiny with indistinct punctation.

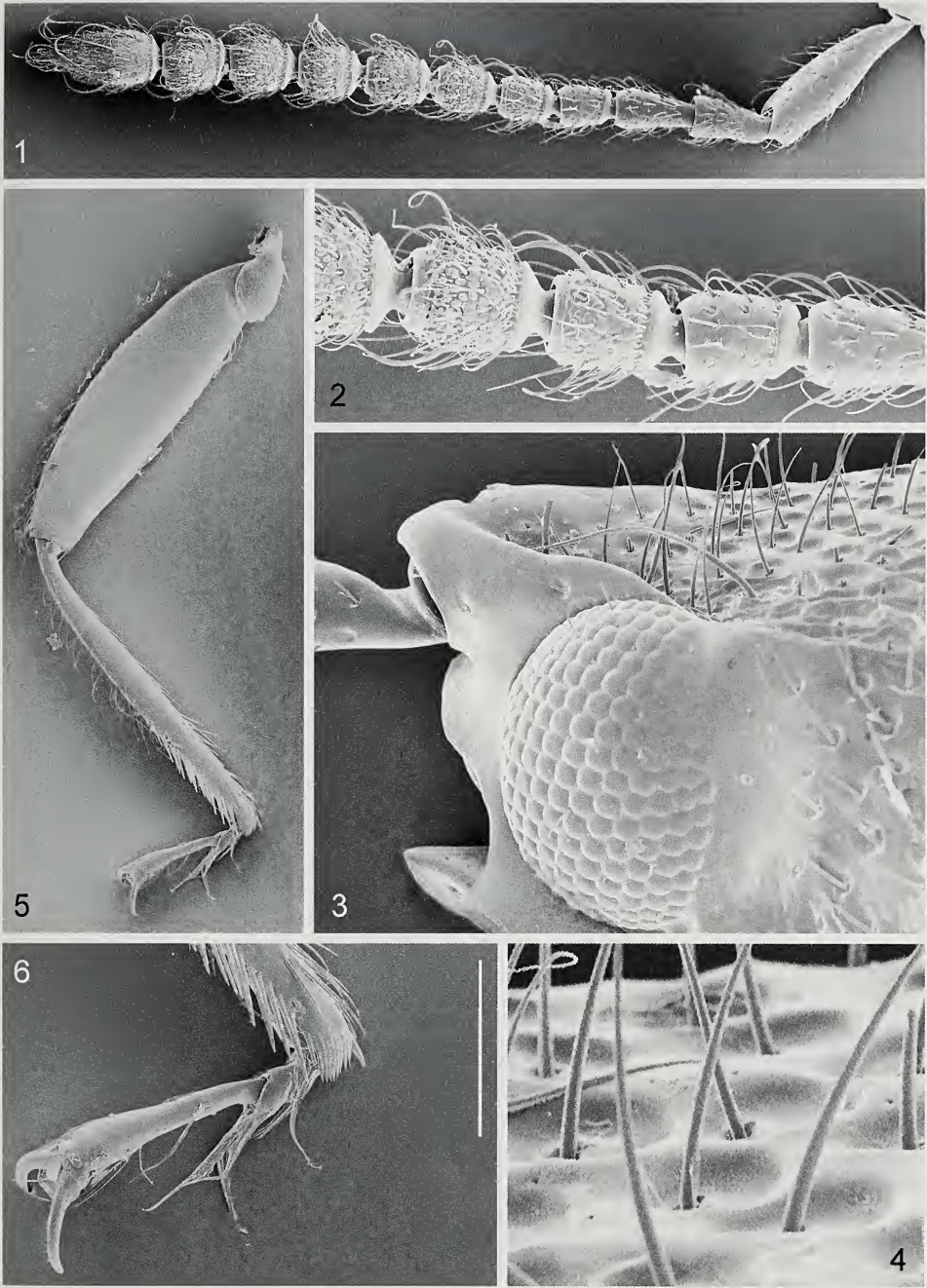
Head. Clypeus in most cases recognizable as a shiny, almost unpunctured area, poorly delimited by obsolete epistomal groove (feeble, broad, arcuate depression). Dorsum of head with strong umbilicate punctation (Fig. 4). Supraantennal prominence generally well developed and a ridge (hypostomal suture?) leads to the upper edge of the eyes, in some species even running further posteriorly above the side of the head (temples, gena). Distance of supraantennal prominence and eye variable, sometimes very small, in other cases rather long. Spherical calotte of eye (Fig. 3) not fully occupied by facets, its hind part, a broader or thinner slice without facets, sclerotized, often continuing in a triangular projection posteriorly (hereafter referred to as post-ocular process). (This feature makes giving traditional measurements for the specimens somewhat difficult.) Gular sutures confluent anteriorly, sutures gradually divergent posteriorly from middle; near base sutures strongly divergent. Dorsum of head usually with a shallow medial/longitudinal impression connecting epistomal and occipital impressions. Punctation generally more sparse towards middle of vertex, lateral areas (especially near eyes) microsculptured interfering with punctation. Base of head slightly to strongly constricted to form well-defined/broad neck, but without distinct occipital groove (obsolete; evident as broad, arcuate depression). Antenna (Fig. 1) slightly incrassate apically, length of segment 1 almost equal to length of articles 2-3 together, basal dish (Fig. 2) from antennomere 4 onwards quite prominent, sculpture from article 5 onwards strong. Compound eyes vary in size and appearance: from rather small (less than 1/4 length of temples) to rather large (length almost equal to length of temples); often they bulge, but in some species fitting into the arch of temples. Median portion of labrum bearing a U-shaped deep emargination with strongly sclerotized border and two small teeth on anterior margin, emargination often broadly rounded at base (Fig. 18) but sometimes only narrowly rounded (Fig. 97). Lateral portions bearing large membranous lobes. Anterior lateral edge (laterad of emargination) less sclerotized, rather truncate. Mandibles (Figs 9-10) denticulate with

four teeth, first three following each other at equal distances, fourth separated by rounded emargination and itself rather round. Prosthema extending from inner edge, about half as long as mandible itself, composed of rather long and weak processes. In maxilla, cardo very small, transversally elongate triangular, lacinia enlarged with basal lobe, galea relatively smaller, both with moderately dense setation on apex. Maxillary palpus (Fig. 7) with first segment very small and ringlike, second and third segments rather large, with apex broadening and about equal in size and shape, fourth segment (Fig. 8) slender and acicular, length about half of second or third segment. In labium (Fig. 11), mentum (Fig. 17) trapezoid. Hypopharynx (Fig. 12) laterally with row of bulbous setae, some at midline also. One lobe with spinelike setae. Coronal pegs (sensillum basiconicum) (Fig. 13) scattered on disc of hypopharynx and a few at middle near apical edge. Labial palps (Fig. 15) three segmented, each segment about the same in length, but with width only about 3/4 the width of the previous segment. Third segment with a couple of very short sensillae on tip. Second segment with one coronal peg at apex, first segment with a few also at its apex. Platelike armature in hypopharynx as in Fig. 16.

Thorax. Prosternal process pointed, scutellum without pubescence, hypomera not exposing protrochantins. Pronotum with reverse trapezoid shape, sides strongly convergent from middle to base, posterior edge margined. Posterior part of pronotal midline usually appearing as elevated shiny stripe. Disc with umbilicate punctation. – Legs. Tibia (Fig. 5) with mid-tibial spur(s) and spines or rows of stiff setae. Tarsal segmentation 3-3-3 (Fig. 6) with no pseudosegment. Ventral setae modified to form tarsal lobes, last tarsomere only with sparse setae. – Elytra. Elytra without distinct puncture-rows, elytral suture parallel, epipleural ridge present.

Abdomen. Abdomen with two pairs of laterosclerites. Intersegmental membrane without brickwall pattern. Second sternite fully developed, first sternite completely absent. Tergal basolateral ridges absent, carina not present on any sternites. Fimbriate edge on tergite VII either modified medially (see under species treatments) or unmodified (in a minority of the known taxa). Sternites VII-VIII lacking peculiar modifications in both sexes. Tergite X (Fig. 21) with oblique desclerotized lines (suggesting precursor state to "rhomboid fusion" but basolateral parts still not fused to tergite IX), dorsal struts not developed, formation the same in both sexes.

Secondary sexual characters. With a slight expression of macrocephaly (mostly a great variability among individuals, rather than a real difference between sexes). – Male terminalia. Sternite IX (Fig. 20) present, with setae on apex. Tergite IX (Fig. 19) with small, slender ventral strut. – Male genitalia. Aedeagus median lobe bulb-like, internal sclerites present but weakly sclerotized, inconspicuous, symmetrical/paired. Apical opening simplified, truncate. Median face membranous, without apicomedial hook. Parameres not wrapping, without extra lobe or membranous region, with only one strong bristle on each. Without visible pump and flagellum. – Female terminalia. Tergite IX (Fig. 32) with only a trace of a ventral strut. Female genital appendages (Fig. 33) divided into coxites, valvifers but no styli. – Female genitalia. Spermatheca (Figs 34-36) sclerotized. Receptacle divided, not associated with visible spermathecal gland, tubular portion not penetrating distal bulb, umbilicus absent.



FIGS 1-6

Parosus gigantulus sp. n.; left antenna (1), antennomeres 4-6 (2), left eye (3), punctures on dorsal head surface (4), metaleg (5), metatarsus (6). Scale bar = 0.03 mm for 4, 0.12 mm for 3, 0.15 mm for 2, 0.17 mm for 6, 0.3 mm for 1, 0.4 mm for 5.

DIVERSITY: The genus has previously stood with 3 described species. Based on the examined material it looks likely that the real diversity could be at least double of the number of species treated here (i.e. upwards of 40 species). Considering the rapid destruction of the Neotropical forests and the primary wooded habitats in general, it is possible that many species go extinct without ever being discovered.

DISTRIBUTION: *Parosus* is a montane Neotropical genus: in Central America it occurs south of Nicaragua, in the West Indies south of Puerto Rico, in South America only present in the tropical areas. Southernmost occurrences: Peru, Bolivia, Brazil (Estado de São Paulo).

NATURAL HISTORY: Not much is known about the bionomics of most species, collecting methods for half of the species are unrecorded. Many of the specimens are captured in flight intercept traps or window traps, some collected in litter or by beating branches. The information gathered so far suggests that at least some species actually live in foliage.

***Parosus antillarum* Wendeler, 1928**

Figs 40, 52-55

Parosus antillarum Wendeler, 1928: 33. – Blackwelder, 1943: 104. – Herman, 1970: 400.

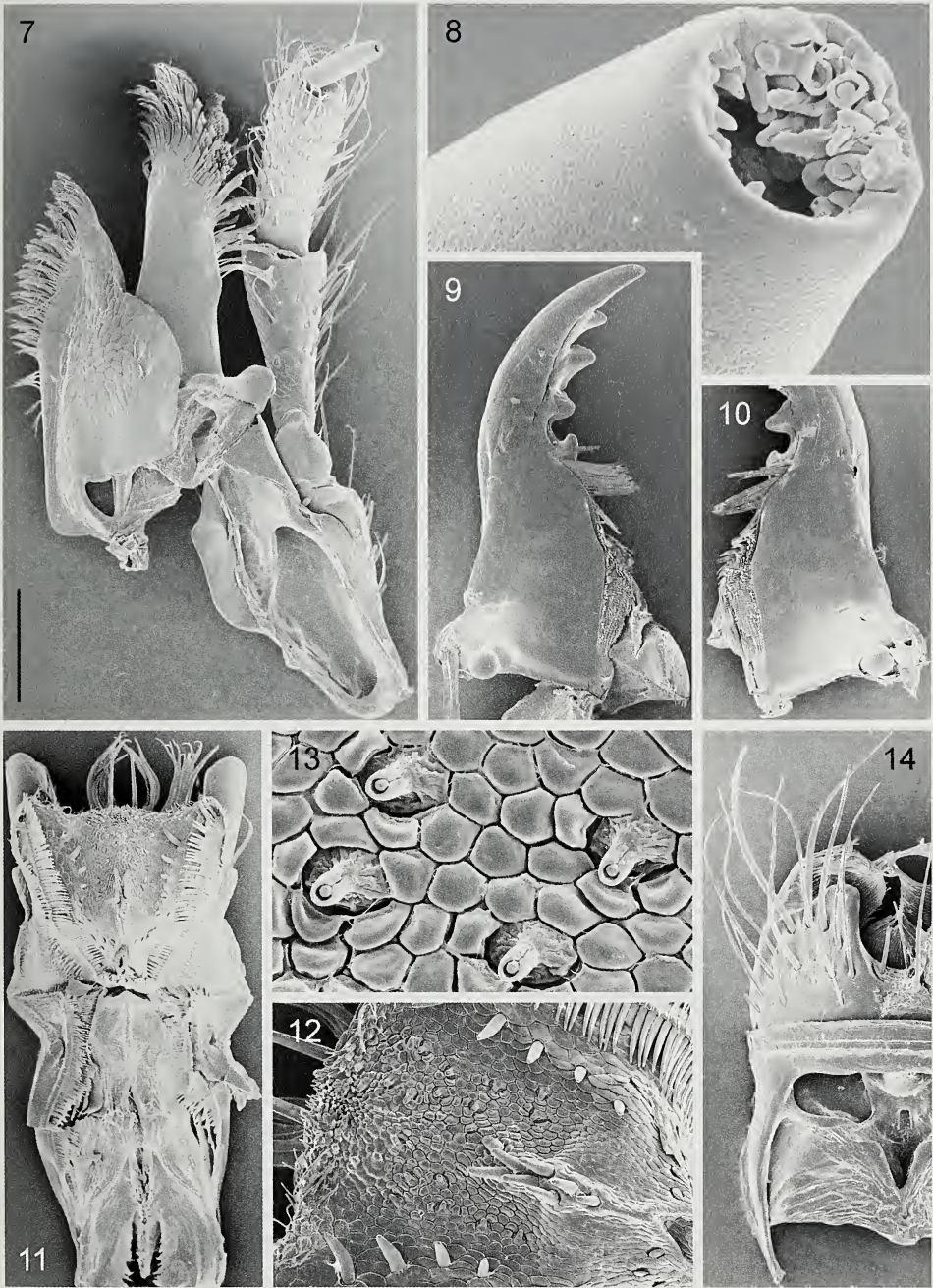
Parosus antillarum: Herman, 2001: 1463.

TYPE MATERIAL EXAMINED: HOLOTYPE (♀), “Trois Rivières; (Guadeloupe); Dufau \ Parosus; antillarum; Fvl. \ Parosus; antillarum n.sp.; Wendeler det. \ Holotypus \ antillarum x; Wdlr. \ Holotypus; Parosus; antillarum Wendeler; ver. Makranczy, 2000 \ Parosus; antillarum Wendeler; det. Makranczy, 2000” (ZMHB).

OTHER MATERIAL: FRENCH ANTILLES: Guadeloupe [15°58'N, 61°38'W], leg. Plason (coll. Bernhauer, FMNH, 1). – TOBAGO: 10km NE Roxborough, Gilpin Trail, montane rain forest [11°18'N, 60°33'W], 400-500m, 26-31.VI.1993, leg. S. & J. Peck (#93-50), flight intercept trap (FMNH, 1♂). – VENEZUELA: Aragua, Rancho Grande Biol. Stn., 1140m, 10°21'N, 67°41'W, 1-8.III.1995, leg. Robert W. Brooks (#045), flight intercept trap (SEMC, 1♂), Aragua, Rancho Grande Biol. Stn., Pico Periquitos, 1300m, 10°21'N, 67°41'W, 27.II.-6.III.1995, leg. Robert W. Brooks (#051), flight intercept trap (MHNG, 1).

REDESCRIPTION: Measurements (n=4): HW = 0.63 (0.57-0.65); TW = 0.61 (0.55-0.63); PW = 0.53 (0.49-0.57); SW = 0.56 (0.53-0.60); MW = 0.68 (0.64-0.71); AW = 0.59 (0.55-0.66); HL = 0.44 (0.40-0.46); EL = 0.13 (0.13-0.14); FL = 0.11 (0.11-0.12); TL = 0.15 (0.12-0.16); PL = 0.39 (0.36-0.41); SL = 0.62 (0.58-0.66); SC = 0.60 (0.56-0.63); FB = 1.55 (1.46-1.61); BL = 2.80 (2.74-2.85) mm. Body predominantly 'unicoloured', with a darker head. Head very dark brown to black (front of clypeal region and supraantennal prominences appear lighter), pronotum reddish dark brown, elytra dark brown except shoulder area (poorly delimited) a tiny bit lighter (almost medium brown), darkening towards apex. Abdomen medium to dark brown, darkening towards apex. Legs, mouthparts and antennae medium to dark brown, legs sometimes yellowish, antennae sometimes slightly darkening from middle. Pubescence short and medium dense, much longer on abdomen.

Head and pronotum. Mid-antennal articles moderately elongate (antennomere 6 length:width = 0.062:0.049 mm). Clypeus (Fig. 52) basally broad trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.67-0.72. Infraocular ridge (Fig. 55) stronger anteriorly, finer posteriorly, terminating in a short keel at posterior edge of eye. Temple most strongly



FIGS 7-14

Parosus gigantulus sp. n.; maxilla (7), apex of maxillary palp, coronal pegs (8), left mandible (9), basal part of right mandible (10), adoral surface of labium (11), hypopharynx (12), coronal pegs on median region of hypopharynx (13), left side of labrum (14). Scale bar = 0.005 mm for 8, 0.008 mm for 13, 0.04 mm for 12, 0.01 mm for 7, 11, 14, 0.16 mm for 9, 10.

curved in middle (therefore sometimes possibly appearing as slightly angled), eye strongly bulging from this arch. Pronotum (Fig. 53) with maximum width 1.59-1.64x base width, sides curved all the way, most strongly anteriorly, anterior angles slightly sharp (strongly curved sides near the angle). Clypeus and supraantennal ridges unpunctured, shiny. Vertex arcuately convex, occasional slight longitudinal depressions not breaking the arch of vertex. Frontoclypeal groove rather broad, but not so shallow. Posterior pronotal midline as a shiny, elevated, unpunctured stripe, continuing anteriorly in two fine vanishing lines. Two longitudinal depressions along sides of posterior midline, punctation mixed with microsculpture in them. Laterad (approximately at middle of these depressions) with two shiny, elevated spots. Pronotal sides with impressions around the middle. Head with 26-30 'longitudinal' puncture lines, pronotum with 20-24 'longitudinal' puncture lines, on mid- and anterior vertex loosened, pronotal punctation more sparse on lateral elevations.

Elytra and abdomen. Elytra (Fig. 54) slightly dilating posteriorly, with a moderately shiny appearance, punctured areas not separating sharply. Elytra bear two small, elongate, rather deep impressions behind the scutellum. Medially serrate fringe present on hind margin of tergite VII. Head, pronotum and elytra with similarly sized punctures, but elytral punctation not umbilicate, interspaces about 1/3-1/2 of puncture diameters. Very base of abdominal tergites (posterior to basal ridges) slightly scabrous, segments with very few scattered punctures. Aedeagus as in Fig. 40.

COMPARATIVE NOTES: Compared to *P. skalitzkyi*, the other species known from the Lesser Antilles, it has smaller, more bulging eyes, if there are depressions on the vertex, they do not form a longitudinal furrow and do not divide the vertex into halves. Similar to the slightly larger *P. colombiensis*, where the head punctation is more coarse.

DISTRIBUTION: The species is known only from the Lesser Antilles and adjacent coastal areas of Venezuela.

BIONOMICS: Unknown.

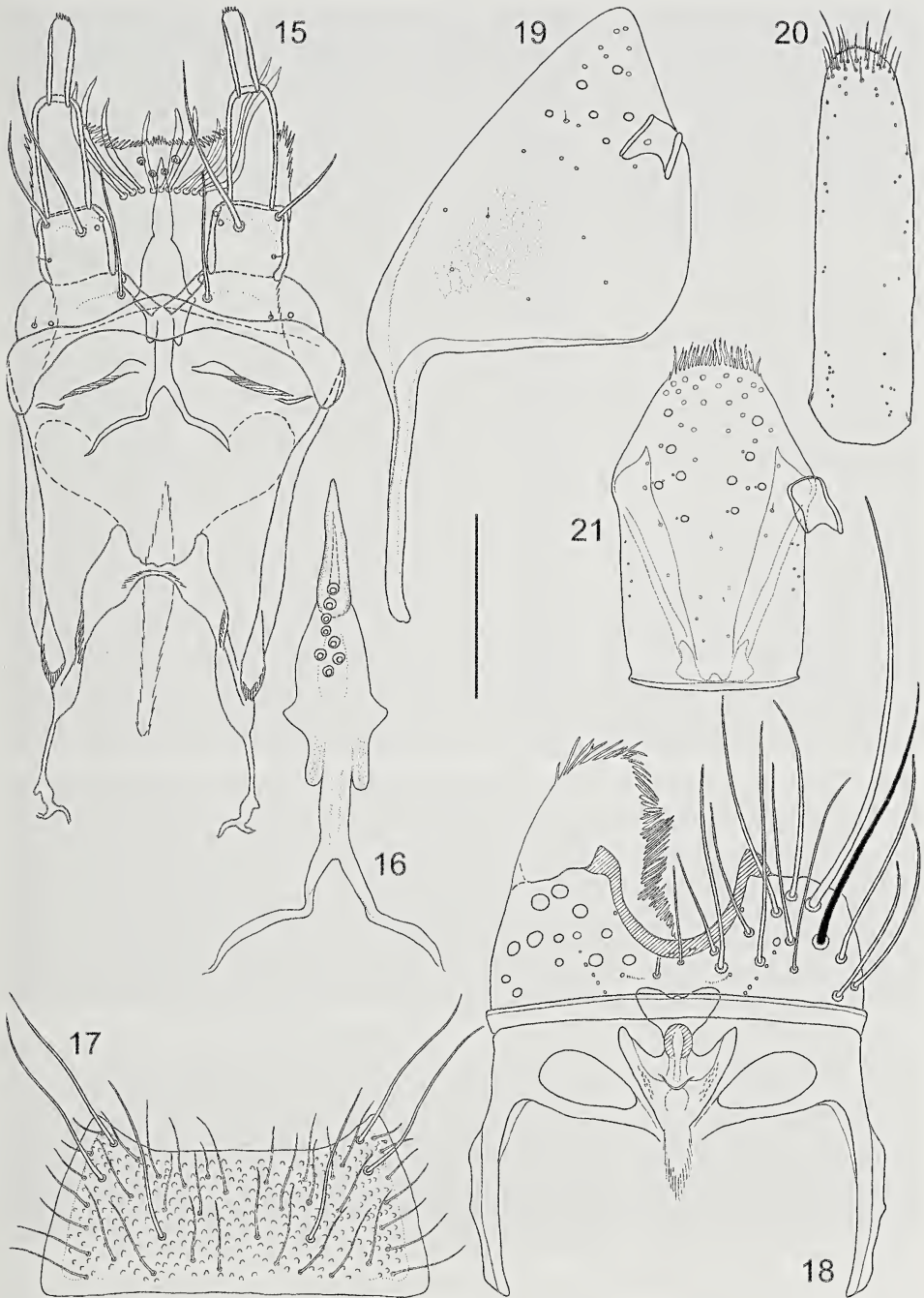
NOMENCLATORIAL NOTE: *P. antillarum* was originally described in *Parosus* and would have had ending '-us' if treated as an adjective, thus it looks like it was deliberately formed as the genitive plural, meaning "of the Antilles", and thus would not change with the gender of the genus it is placed in. In HERMAN (2001) the name is emended as *P. antillarus*, which is therefore an unjustified emendation that should be rejected.

***Parosus bicoloratus* sp. nov.**

Figs 25, 41, 44, 56-59

TYPE MATERIAL: HOLOTYPE (♂), "ECUADOR: Pichincha [Prov.], Nanegalito, 12km S, Bellavista Nature Reserve ca. 2200m, 0°0'54"S, 78°40'56"W, 28 Oct 1999; [leg.] Z. H. Falin (ECUIF99 035), pyrethrum fogging fungusy log" (SEMC). – PARATYPE (1): ECUADOR: Pichincha Prov., old Quito-Santo Domingo road, W Chiriboga [0°16'21"S, 78°43'26"W], 6500-7000', 13.VI.1982, leg. H. Frania, dead vegetation in trees (CNCI, 1).

DESCRIPTION: Forebody and abdomen as in Fig. 44. Measurements (n=2): HW = 0.81 (0.75-0.86); TW = 0.81 (0.76-0.86); PW = 0.77 (0.73-0.80); SW = 0.73 (0.70-0.76); MW = 0.86 (0.82-0.90); AW = 0.72 (0.68-0.76); HL = 0.64 (0.60-0.68); EL = 0.15 (0.14-0.15); FL = 0.12 (0.11-0.12); TL = 0.27 (0.25-0.29); PL = 0.53



FIGS 15-21

(15-18) *Parosus hilaris* Sharp; labium (15), platelike armature in hypopharynx (16), mentum (17), labrum (18). (19-21) *P. unicoloratus* sp. n.; male tergite IX (19), male sternite IX (20), male tergite X (21). Scale bar = 0.06 mm for 16, 0.1 mm for 15, 17, 18, 0.15 mm for 19-21.

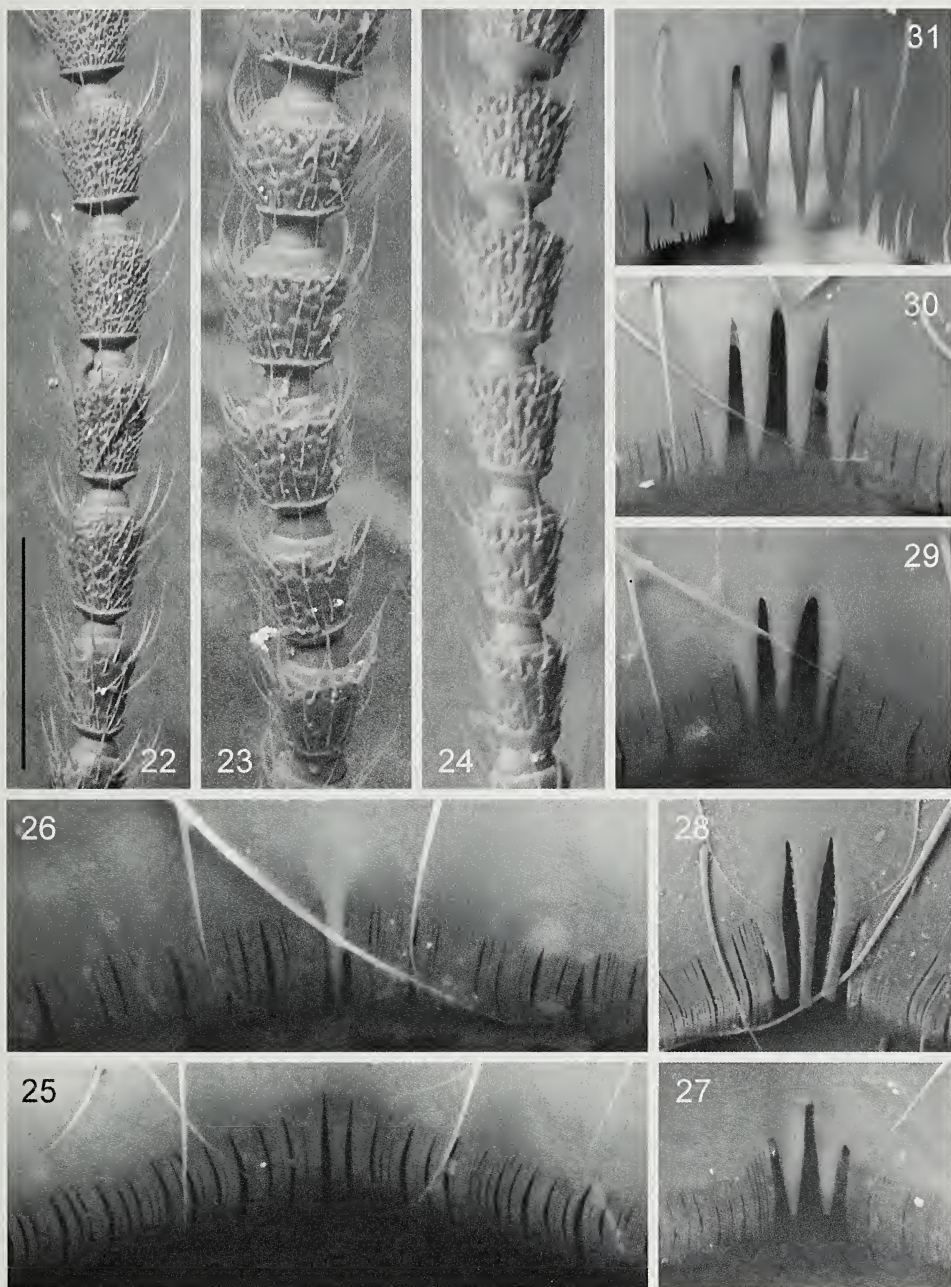
(0.49-0.56); SL = 0.85 (0.78-0.91); SC = 0.83 (0.76-0.89); FB = 2.09 (1.92-2.26); BL = 3.73 (3.54-3.92) mm. Body strikingly 'bicoloured', with red and black parts alternating. Head dark brown to pitch black, pronotum red to medium brown, elytra dark brown. Abdomen red to medium brown, except segments VII-VIII, which are dark brown (also the posterior edge of sternite VI). Legs, mouthparts and antennae reddish medium brown, the antennae slightly darkening around the middle. Pubescence medium short and dense, somewhat longer and sparser on abdomen. Unpunctured areas remarkably separated from punctured ones.

Head and pronotum. Mid-antennal articles about as long as wide (antennomere 6 length:width = 0.072:0.070 mm). Clypeus (Fig. 56) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eye-front to the same from clypeal front = 0.44-0.57. Infraocular ridge (Fig. 59) rather strong (especially anteriorly), ending in a short, shiny keel at the posterior edge of the eye. Temple rather straight anteriorly, most curved in last third (slightly angled). Pronotum (Fig. 57) with maximum width 1.70-1.78x base width, sides gently curved anteriorly, a little bit straight in posterior third, anterior angles rather sharp. Clypeus and supraantennal ridges shiny and unpunctured. Frontoclypeal groove very shallow, reached by umbilicate puncture field of vertex. Posterior half of vertex very shallowly impressed, at middle of vertex a shinier (more sparsely punctured) transversal line. Anterior half of pronotal midline (except a very small area behind the anterior margin) deeply impressed, unpunctured, forms a posteriorly directed arrowhead shape (with scabrous microsculpture in it). Posterior half as a slightly elevated, unpunctured, shiny stripe, along its sides, two longitudinal depressions (running in 3/4 of total length). Laterad, two longitudinally elongate areas a little elevated and a tiny bit shinier. The pronotal sides with a trace of impression around middle. Head with about 34 'longitudinal' puncture lines, pronotum with about 30 'longitudinal' puncture lines, a small area at mid-vertex unpunctured.

Elytra and abdomen. Elytra (Fig. 58) dilating posteriorly, with two small, longitudinal impressions behind scutellum. Medially serrate fringe absent on hind margin of tergite VII (Fig. 25). Head, pronotum and elytra with similarly sized punctures, elytral punctation not umbilicate, interspaces about 4/5-1/1 (or more) of puncture diameters. Bases of tergites (posterior to basal ridges) with fine transversal coriaceous microsculpture, segments almost without punctation. Aedeagus as in Fig. 41.

ETYMOLOGY: The species is named after the peculiar colour pattern of the specimens.

COMPARATIVE NOTES: From the other three similarly sized 'bicoloured' species (*P. hilaris*, *P. rossii*, *P. taliaferroae*) it differs by the dark abdominal segments being VII and VIII (also the posterior edge of sternite VI), whereas in *P. hilaris* and *P. taliaferroae* the dark ones are tergites V-VI (the sternites are not dark!) and *P. rossii* has only an occasional lighter abdominal base but always dark abdominal apex. Such bright and contrasting colours do not occur in the other two cross-striped species, also their shoulders are lighter (similar to the rest of the elytra in *P. bicoloratus*), and their antennae are less elongate. This species differs from *P. hilaris* by the absence of the medially serrate fringe on the hind margin of tergite VII (while *P. taliaferroae* also lacks the fringe).



FIGS 22-31

(22-24) Antennomeres 4-8. *Parosus longicornis* sp. n. (22), *P. longipennis* sp. n. (23), *P. portobelo* sp. n. (24). (25-31) Median part of palisade fringe on tergite VII. *P. bicoloratus* sp. n. (25), *P. taliaferroae* sp. n. (26), *P. campbelli* sp. n. (27), *P. gigantulus* sp. n. (28), *P. unicoloratus* sp. n. (29), *P. longipennis* sp. n. (30), *P. brasilianus* sp. n. (31). Scale bar = 0.05 mm for 25, 26, 30, 0.07 mm for 27, 29, 31, 0.1 mm for 23, 28, 0.12 mm for 24, 0.24 mm for 22.

DISTRIBUTION: The species is known only from Ecuador (Pichincha Prov.).

BIONOMICS: Specimens were collected by pyrethrum fogging of a fungusy log and from dead vegetation in trees.

Parosus brasilianus sp. nov.

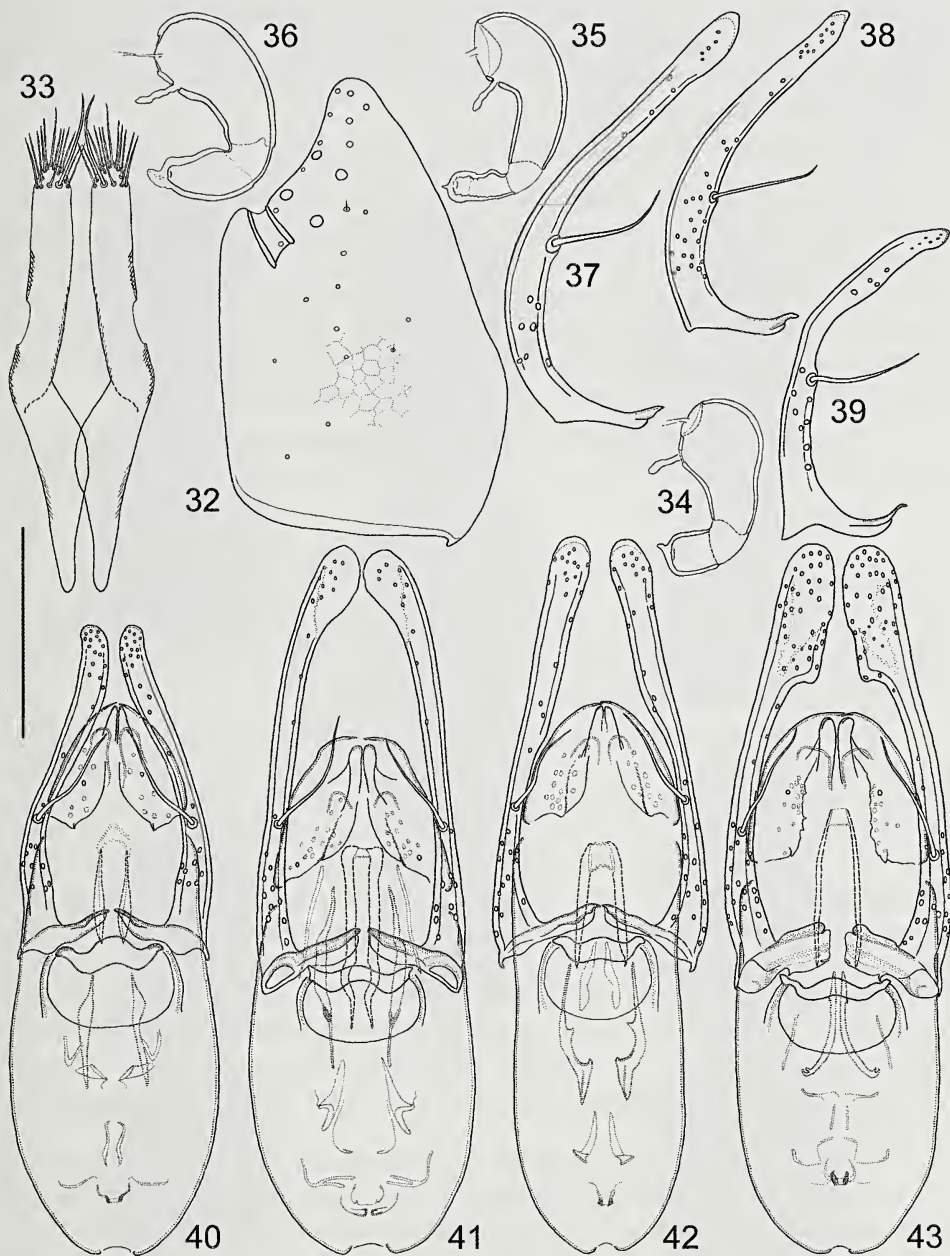
Figs 31, 35, 42, 45, 68-70

TYPE MATERIAL: HOLOTYPE (♂), "BRAZIL: Est. Biol. Boracea [23°38'S, 45°52'W], Salesopolis, SP [= Estado de São Paulo], XII-17-26-1969, [leg.] J. M. & B. A. Campbell" (CNCI). – PARATYPES (3): BRAZIL: Estado de São Paulo, Salesopolis, Estação Biológica de Boracéia, 17-26.XII.1969, leg. J. M. & B. A. Campbell (CNCI, 1♂, 1, MHNG, 1♀).

DESCRIPTION: Forebody as in Fig. 45. Measurements (n=2): HW = 0.59 (0.56-0.63); TW = 0.59 (0.55-0.63); PW = 0.52 (0.49-0.55); SW = 0.56 (0.55-0.56); MW = 0.69 (0.68-0.69); AW = 0.60 (0.59-0.60); HL = 0.43 (0.40-0.46); EL = 0.16 (0.15-0.16); FL = 0.11 (0.11-0.11); TL = 0.14 (0.12-0.15); PL = 0.40 (0.38-0.41); SL = 0.65 (0.64-0.66); SC = 0.63 (0.62-0.64); BL = 2.90 (2.78-3.01); FB = 1.55 (1.48-1.61) mm. Body 'bicoloured' (usually less contrasting than *P. hiliaris*). Head dark brown, supraantennal prominences and front of clypeus much lighter, reddish light or medium brown, mediad of supraantennal prominences two larger black spots near ends of frontoclypeal (= epistomal) sulcus, pronotum reddish light brown (sometimes almost orange), elytra dark brown except shoulder area (well delimited, from scutellum to 2/5 of elytra) lighter (yellow to light brown). Abdomen yellow to light brown, tergites V-VI darkened (medium brown). Legs, mouthparts and antennae yellow to light brown. Pubescence medium short and medium dense, on abdomen longer and a little more sparse.

Head and pronotum. Mid-antennal articles very slightly elongate (antennomere 6 length:width = 0.058:0.052 mm). Clypeus (Fig. 68) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.29-0.44. Infraocular ridge (Fig. 70) strong, continuing in a strong, shiny postocular process and keel at posterior edge of eye. Temple strongly curved, but most strongly in middle (still not angled), eye fitting rather closely in this arch. Pronotum (Fig. 68) with maximum width 1.61-1.64x base width, sides curved all the way, most strongly anteriorly, posteriorly only very slightly, anterior angles rather obtuse. Clypeus and supraantennal ridges almost unpunctured (only a few small punctures), rather shiny. Frontoclypeal groove rather strong and deep, with umbilicate punctures in it. Middle of vertex posteriorly slightly impressed, but in middle of disc a transversal area more elevated. In middle this elevation divided by a bunch of more deeply impressed punctures (forming something like a longitudinal groove towards frontoclypeal impression). Posterior part of pronotal midline as an elevated and shiny stripe, anteriorly continuing into two fine lines enclosing a depressed area filled with scabrous sculpture. Along sides of posterior half two longitudinal impressions, also filled with scabrous sculpture. Pronotal sides with two oblique depressions around middle. Head with 18-22 'longitudinal' puncture lines, pronotum with about 16-18 'longitudinal' puncture lines, punctuation indefinitely loosened mid-vertex, punctures on centre of pronotal disc very obscure.

Elytra and abdomen. Elytra (Fig. 69) slightly dilating posteriorly, with two small, roundish, rather deep impressions behind the scutellum. Medially serrate fringe (Fig. 31) present on hind margin of tergite VII. Punctuation on head, pronotum and



FIGS 32-43

(32-34) *Parosus taliaferroae* sp. n.; female tergite IX (32), female genital appendages (33), spermatheca (34). (35-36) Spermathecae. *P. brasiliensis* sp. n. (35), *P. hermani* sp. n. (36). (37-39) Parameres in their lateral views. *P. longipennis* sp. n. (37), *P. major* sp. n. (38), *P. skalitzkyi* Bernhauer (39). (40-43) Aedeagi, frontal views. *P. antillarum* Wendeler (40), *P. bicoloratus* sp. n. (41), *P. brasiliensis* sp. n. (42), *P. campbelli* sp. n. (43). Scale bar = 0.09 mm for 37, 0.1 mm for 39, 40, 42, 0.13 mm for 32, 34-36, 0.14 mm for 33, 41, 43, 0.24 mm for 38.

abdomen with similar sizes, but elytral punctation not umbilicate, interspaces about 1/3-2/3 of puncture diameters. Bases of tergites (posterior to basal ridges) almost without microsculpture, segments with scattered, fine punctures only. Aedeagus as in Fig. 42, spermatheca as in Fig. 35.

ETYMOLOGY: The species is named after the country of the type locality.

COMPARATIVE NOTES: From the other relatively small-sized and 'bicoloured' species (*P. portobelo* and *P. longipennis*) it can be distinguished by the well-developed postocular process (very weak in the other two species). Regarding the similar sized 'unicoloured' species that have similar head shape (strongly developed postocular process), it can be distinguished from *P. newtoni* by the less transverse pronotum anterior (3/5 base width/anterior width as opposed to 4/7 in *P. newtoni*), from *P. skaltzkyi* by the moderately 'bicoloured' body and the strongly punctate elytra.

DISTRIBUTION: The species is known from one locality in Brazil (Estado de São Paulo), and is probably inhabitant of atlantic forest remnants.

BIONOMICS: Unknown.

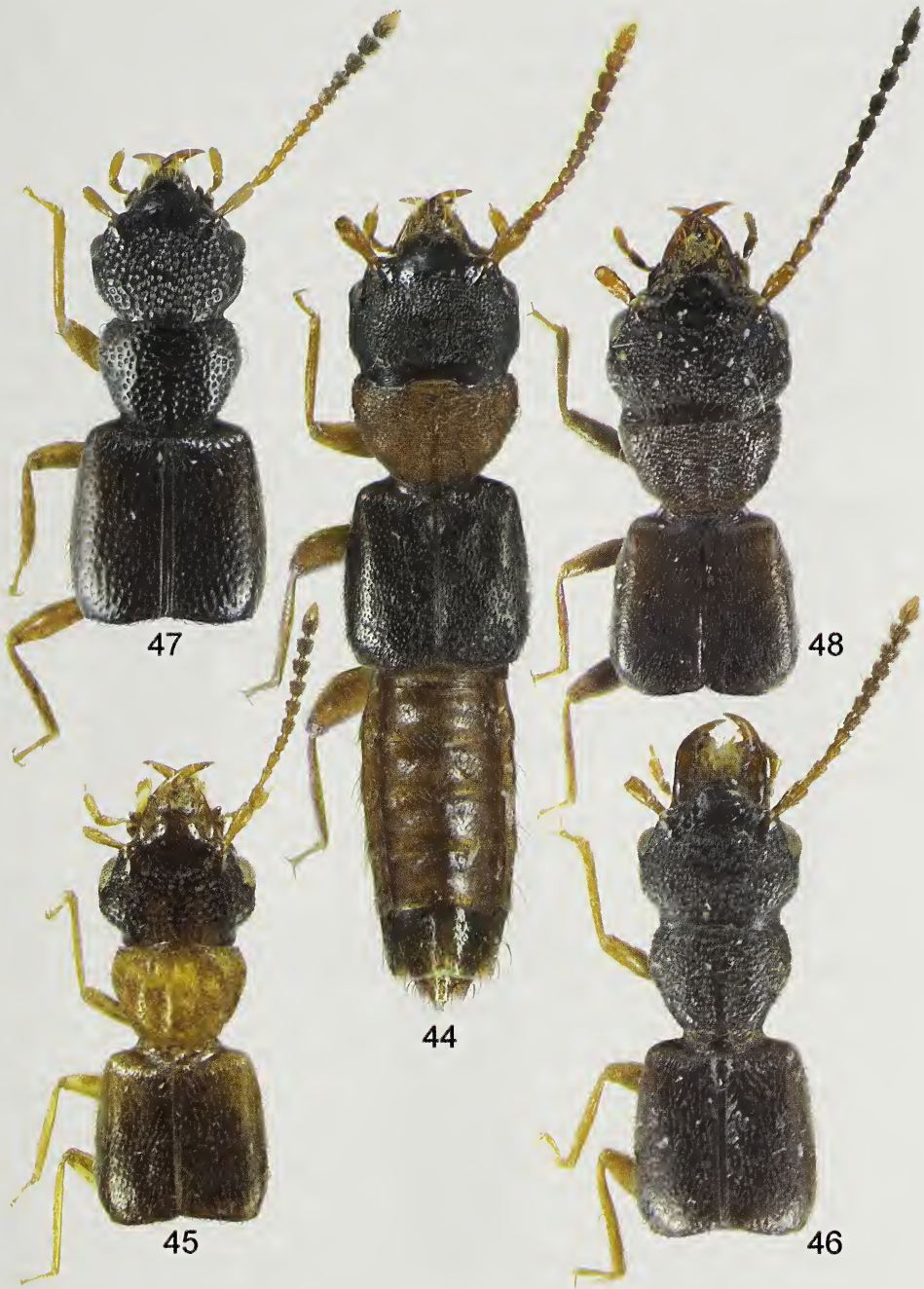
***Parosus campbelli* sp. nov.**

Figs 27, 43, 49, 60-63

TYPE MATERIAL: HOLOTYPE (♂), "ECUADOR, Napo [Prov.], 2km S Oritoyacu, 22km S Baeza [0°39'21"S, 77°49'31"W], 1500m, III.4-5.1976, [leg.] J. M. Campbell" (CNCI). – PARATYPES (5), ECUADOR: Napo Prov., 2km S Oritoyacu, 22km S Baeza, 1500m, 4-5.III.1976, leg. J. M. Campbell (CNCI, 1 ♀, 2, HNHM, 1 MHNG, 1).

DESCRIPTION: Habitus as in Fig. 49. Measurements (n=3): HW = 0.68 (0.67-0.70); TW = 0.66 (0.65-0.68); PW = 0.56 (0.56-0.57); SW = 0.56 (0.55-0.57); MW = 0.67 (0.65-0.69); AW = 0.64 (0.63-0.64); HL = 0.57 (0.55-0.59); EL = 0.13 (0.12-0.13); FL = 0.10 (0.10-0.11); TL = 0.24 (0.23-0.24); PL = 0.52 (0.52-0.53); SL = 0.65 (0.64-0.65); SC = 0.63 (0.63-0.64); FB = 1.85 (1.82-1.86); BL = 3.42 (3.28-3.66) mm. Body predominantly 'unicoloured', but with peculiar reddish pronotum. Head blackish dark brown (only supraantennal prominences appear lighter, reddish), pronotum reddish medium to dark brown. Elytra and abdomen blackish dark brown, indefinite shoulder area and posterior margin of tergites with slight reddish overtone. Legs, mouthparts and antennae medium to dark brown, antennae darkening from middle to penultimate antennomere. Pubescence very scattered but medium short, composed of unusually fine hairs. A rather shiny species, but with some faint indefinite microsculpture, reducing the surface lustre.

Head and pronotum. Mid-antennal articles moderately elongate (antennomere 6 length:width = 0.078:0.062 mm). Clypeus (Fig. 60) basally broad trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.70. Infraocular ridge (Fig. 63) rather strong anteriorly, but vanishing posteriorly, ending in a small shiny tubercle at posterior edge of eye. Temple rather broadly rounded, most curved in middle (but not angled). Pronotum (Fig. 61) with maximum width 1.49-1.60x base width, sides almost evenly rounded anteriorly, straight in posterior half, anterior angles rather obtuse. Clypeal area and supraantennal prominences unpunctured, shiny. Clypeal area poorly delimited, no frontoclypeal groove, only marked by contrastingly punctated areas. Posterior half of vertex very



FIGS 44-48

Forebodies of new *Parosus* species. *P. bicoloratus* sp. n., with abdomen (44), *P. brasilianus* sp. n. (45), *P. colombiensis* sp. n. (46), *P. hermani* sp. n. (47), *P. longicornis* sp. n. (48).

deeply impressed, with some unpunctured spots anterior of (and around) it. Pronotal midline strongly elevated, starting from a flat surface behind anterior margin, shiny, unpunctured. Two strong, bean-shaped longitudinal impressions along posterior 2/3 of midline. Strong depressions on pronotal sides. Head with about 18 'longitudinal' puncture lines, pronotum with about 16 'longitudinal' puncture lines, both with significant interspaces between punctures, head punctation loosened in posterior mid-vertex groove, pronotal punctures similar in size to the ones on head, but less sharp-edged.

Elytra and abdomen. Elytra (Fig. 62) slightly dilating posteriorly, with very shallow longitudinally elongate impressions behind scutellum, extending into a more sculptured stripe along the suture. Medially serrate fringe (Fig. 27) present on hind margin of tergite VII. Elytra with shallow, indistinct punctures, similar in size to the ones on head and pronotum, interspaces about 1/3-3/4 of puncture diameters. Abdominal tergites with a few large punctures and uneven surface on sides and base (posterior to basal ridges). Aedeagus as in Fig. 43.

ETYMOLOGY: The species is named after Dr. J. Milton Campbell, collector of the type series; he not only collected an amazing amount of interesting new species throughout the Neotropics, but also produced a long series of monographic works that provided a major source of inspiration for generations of young taxonomists.

COMPARATIVE NOTES: This species has very large head, deeply impressed posterior vertex, shallowly punctured elytra and a peculiar colouration (light pronotum and dark brown body). These characteristics separate it from all other named species.

DISTRIBUTION: The species is known only from one location in the northern-central part of Ecuador (Napo Prov.) and its absence in other samples could be due to different life habits.

BIONOMICS: Unfortunately, no bionomical information is found on the labels.

Parosus colombiensis sp. nov.

Figs 46, 64-67, 88

TYPE MATERIAL: HOLOTYPE (♂), "COLOM[BIA]: [Departamento del] Magd[alena], 7000', San Lorenzo, 41 km S Sta. Marta [11°06'16"N, 74°04'04"W], V-1-1973, [leg.] Howden & Campbell" (CNCI). — PARATYPE (1), COLOMBIA: Departamento del Magdalena, San Lorenzo, 41km S Santa Marta [2130m], 01.V.1973, leg. Howden & Campbell (MHNG, 1).

OTHER MATERIAL: ECUADOR, Napo, 2km S Oritoyacu, 22 km S Baeza, 1500 m, 4-5.III.1976, leg. J. M. Campbell (CNCI, 1, specimen in bad condition).

DESCRIPTION: Forebody as in Fig. 46. Measurements (n=2): HW = 0.71 (0.69-0.72); TW = 0.69 (0.67-0.70); PW = 0.61 (0.60-0.62); SW = 0.66 (0.65-0.66); MW = 0.78 (0.77-0.78); AW = 0.67 (0.66-0.67); HL = 0.53 (0.52-0.53); EL = 0.15 (0.14-0.15); FL = 0.11 (0.11-0.12); TL = 0.21 (0.21-0.21); PL = 0.47 (0.46-0.47); SL = 0.79 (0.78-0.79); SC = 0.79 (0.78-0.79); FB = 1.92 (1.88-1.95); BL = 3.41 (3.23-3.58) mm. Body 'unicoloured', but appendages contrastingly light coloured. Head and pronotum blackish dark brown (tips of supraantennal prominences appear lighter). Elytra dark brown (poorly delimited shoulder area lighter). Abdomen blackish dark brown (hind margin of tergites somewhat lighter). Legs, mouthparts and antennae yellow to light brown, but antennae slightly darkening from middle to penultimate antennomere. Pubescence rather short and sparse, a little shorter on elytra and longer on abdomen.



FIGS 49-51

Habitus of new *Parosus* species. *P. campbelli* sp. n. (49), *P. gigantulus* sp. n. (50), *P. major* sp. n. (51).

Head and pronotum. Mid-antennal articles about as long as wide (antennomere 6 length:width = 0.069:0.070 mm). Clypeus (Fig. 64) broad trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.65. Infraocular ridge (Fig. 67) rather strong anteriorly, but vanishing posteriorly, ending in a strong and shiny postocular process at posterior edge of eye. Temple rather straight anteriorly, most curved in middle (slightly angled). Pronotum (Fig. 65) with maximum width 1.65-1.67x base width, sides almost evenly rounded anteriorly, straight in posterior half, anterior angles rather sharp. Clypeus and supraantennal prominences unpunctured, shiny. Clypeal area poorly marked by a fine line and border of contrastingly punctured areas behind it. Middle of vertex with a more sparsely punctured, shiny, transversal area. Behind it vertex shallowly impressed. Anterior half of pronotal midline impressed, unpunctured, forms a posteriorly directed arrowhead shape. Posterior half as a slightly elevated, unpunctured, shiny stripe. Along its sides two longitudinal impressions. Pronotal sides with trace of concavity around middle. Head with 22-26 'longitudinal' puncture lines, pronotum with 18-22 'longitudinal' puncture lines, anterior half of mid-vertex with a few punctures, pronotal punctures about the same size as those on head.

Elytra and abdomen. Elytra (Fig. 66) dilating posteriorly, with two small, longitudinal impressions behind scutellum. Medially serrate fringe present on hind margin of tergite VII. Elytral punctation not umbilicate, size similar those on head and pronotum or somewhat smaller, interspaces about 2/3-1/1 of puncture diameters. Basal half of abdominal tergites (posterior to basal ridges) with transversal coriaceous microsculpture, at points scabrous, segments with some small punctures at base. Aedeagus as in Fig. 88.

ETYMOLOGY: The species is named after the country that the holotype comes from.

COMPARATIVE NOTES: A dark 'unicoloured', medium-sized species with flat head, bulging eyes and strongly developed postocular process. Of the 'unicoloured' species in this size range it can be distinguished from *P. hermani* and *P. thayerae*, because these two species have round, dorsally convex heads and their postocular processes are not so strongly developed. Also similar to the slightly smaller *P. antillarum*, where the head punctation is finer, there are more interspaces between punctures.

DISTRIBUTION: The species is known from specimens collected in Colombia and Ecuador, this suggests a wider distribution.

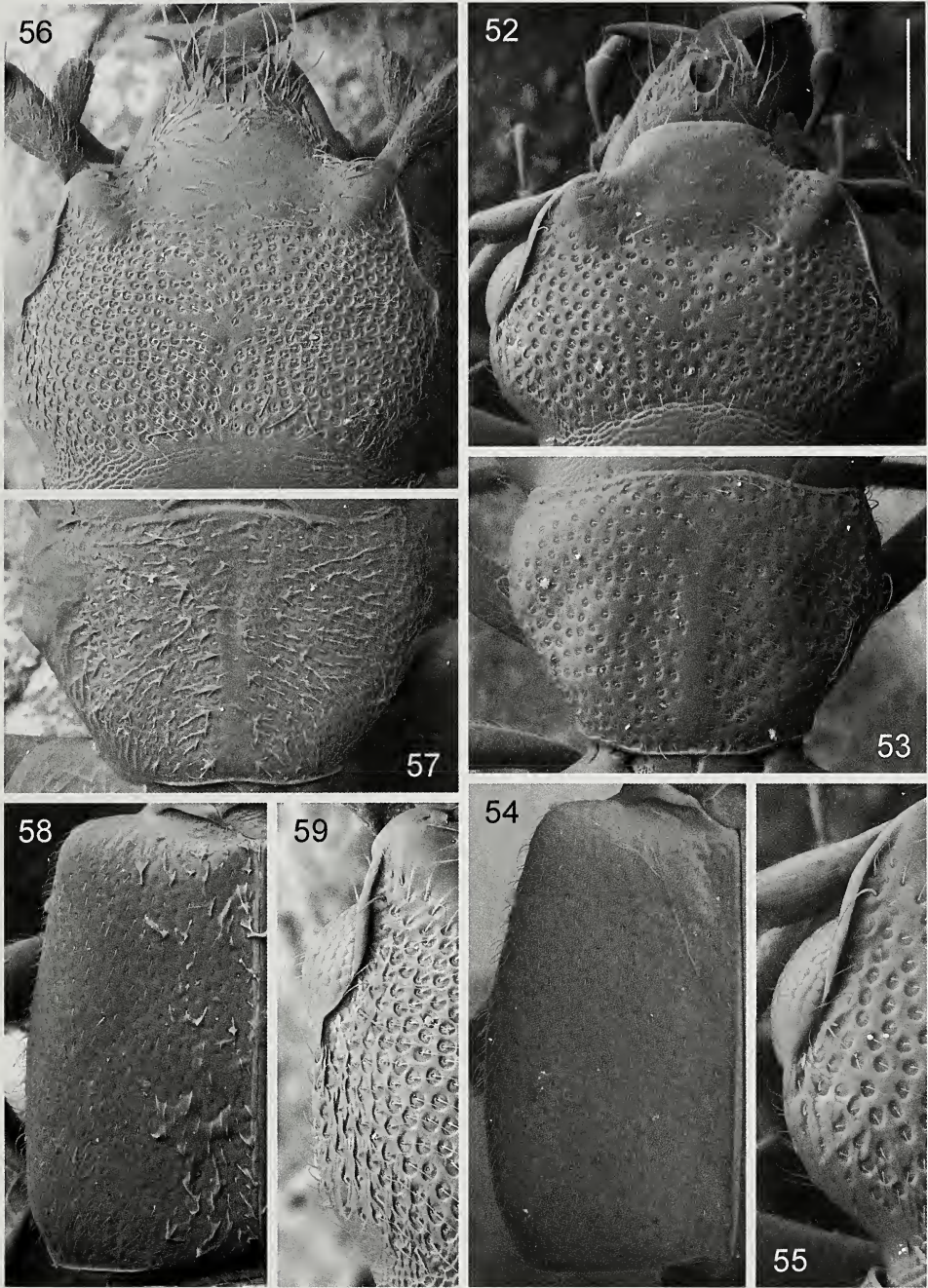
BIONOMICS: None of the specimens are associated with any bionomical information.

***Parosus gigantulus* sp. nov.**

Figs 1-14, 28, 50, 71-73, 89

TYPE MATERIAL: HOLOTYPE (♂), "COLOM[BIA:] [Departamento del] Magd[alena], San Lorenzo, 41km S Sta. Marta [11°06'16"N, 74°04'04"W], V-3-1973, [leg.] Howden & Campbell" (CNCL). - PARATYPES (2), COLOMBIA: Departamento del Magdalena, San Lorenzo, 41km S Santa Marta, 03.V.1973, leg. Howden & Campbell (MHNG, 1♀), same but 06.V.1973 (CNCL, 1♀).

DESCRIPTION: Habitus as in Fig. 50. Measurements (n=2): HW = 1.03 (0.94-1.12); TW = 1.03 (0.91-1.15); PW = 0.96 (0.88-1.04); SW = 0.99 (0.94-1.04); MW =



FIGS 52-59

(52-55) *Parosus antillarum* sp. n.; head (52), pronotum (53), elytron (54), side of head (55). (56-59) *P. bicoloratus* sp. n.; head (56), pronotum (57), elytron (58), side of head (59). All SEM, dorsal views. Scale bar = 0.12 mm for 55, 0.15 mm for 59, 73, 0.4 mm for 52-54, 0.5 mm for 56-58.

1.15 (1.08-1.21); AW = 0.91 (0.87-0.95); HL = 0.78 (0.72-0.84); EL = 0.18 (0.17-0.18); FL = 0.15 (0.14-0.15); TL = 0.33 (0.28-0.37); PL = 0.69 (0.62-0.75); SL = 1.07 (1.00-1.14); SC = 1.07 (1.01-1.12); FB = 2.70 (2.55-2.85); BL = 5.23 (4.55-5.90) mm. Body 'unicoloured'. Head blackish dark brown (supraantennal prominences lighter, light brown to orange), pronotum reddish dark brown (sometimes a little lighter than head), elytra and abdomen reddish medium to dark brown (often abdomen darkening towards apex, tergite VII reddish dark brown). Legs, mouthparts and antennae reddish medium brown, apex of antennomere 2 and antennomeres 3-10 are darker). Pubescence rather sparse and rather short, except abdomen, where longer.

Head and pronotum. Mid-antennal articles moderately elongate (antennomere 6 length:width = 0.100:0.090 mm). Clypeus (Fig. 71) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.85-0.88. Infraocular ridge (Fig. 73) strong, running well behind the eye. Temple straight or slightly dilating in anterior 2/5, slightly angled. Pronotum (Fig. 71) with maximum width 1.74x base width, anteriorly sides almost straight, angles sharp. Behind clypeal area with shallow to medium deep concavities on vertex and on pronotal disc (especially before middle of midline). Supraantennal prominences and clypeal area almost totally unpunctured, only a few small and simple punctures. In posterior half of pronotal midline with an unpunctured, shiny stripe (slightly elevated). Head with 28-30 'longitudinal' puncture lines, pronotum with 28-30 'longitudinal' puncture lines, punctation on mid- and anterior vertex loosened, pronotum with somewhat smaller punctures than those on head.

Elytra and abdomen. Elytra (Fig. 72) dilating posteriorly, behind scutellum rather deeply impressed. Medially serrate fringe (Fig. 28) present on hind margin of tergite VII. Elytral punctation not umbilicate, size a tiny bit finer than on head and pronotum, interspaces about 1/3 of puncture diameters. Bases of abdominal tergites (posterior to basal ridges) with transversal coriaceous microsculpture, posteriorly obscured, segments with a few small, scattered punctures. Aedeagus as in Fig. 89.

ETYMOLOGY: The species is named after being the largest known species of the genus.

COMPARATIVE NOTES: From the similarly large 'unicoloured' species (*P. longicornis*, *P. major*, *P. unicoloratus*), it can be distinguished by the moderately elongate antennae, the rather flat head with well noticeable depression at the vertex. Contrary to the most similar *P. unicoloratus* its shoulders are not lighter than the rest of the elytra and the punctation on the head and pronotum is more coarse.

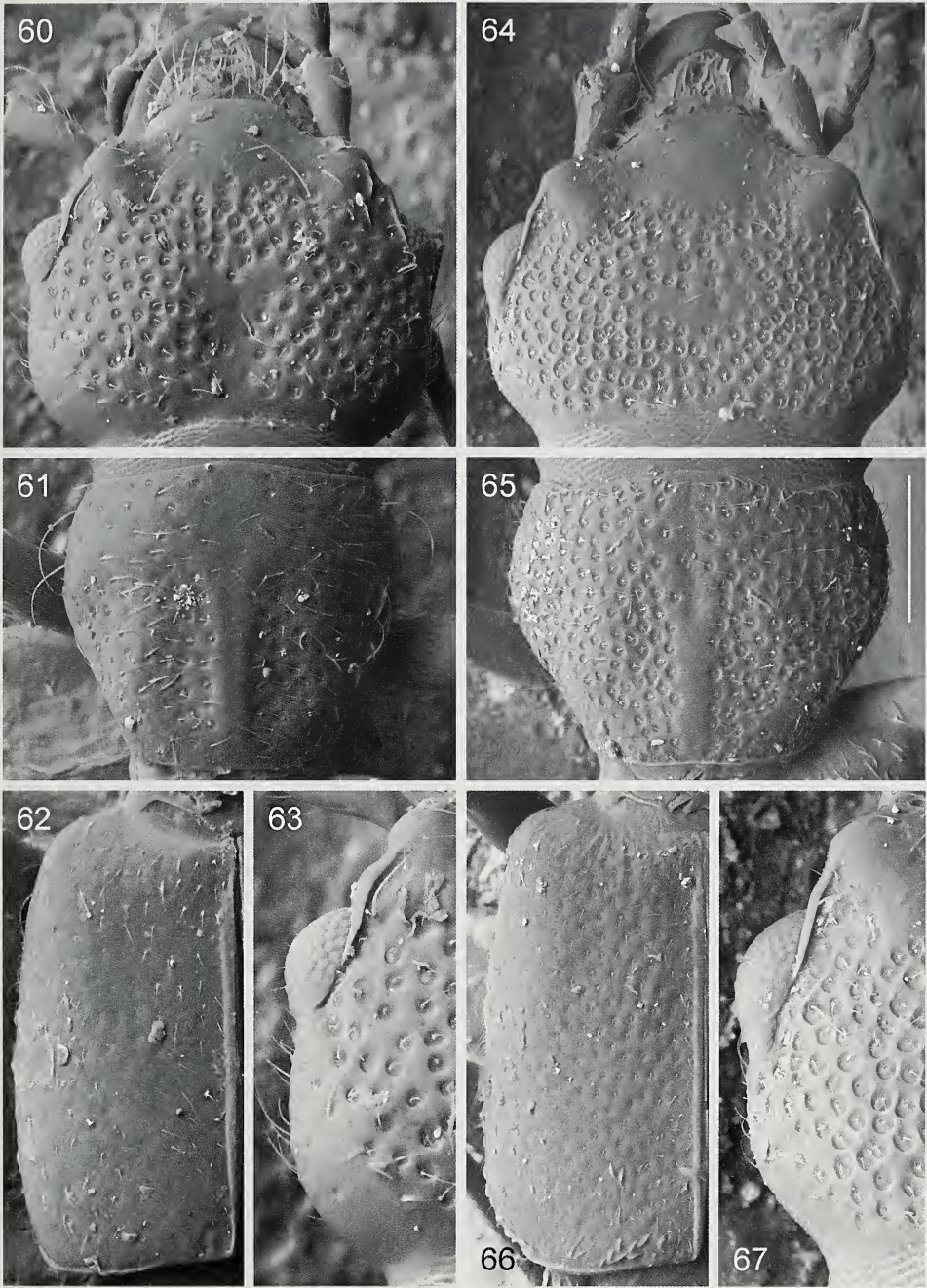
DISTRIBUTION: The species is known only from a single locality in the northern part of Colombia (Dept. Magdalena).

BIONOMICS: No bionomical information is available for the type specimens.

***Parosus hermani* sp. nov.**

Figs 36, 47, 74-77, 90

TYPE MATERIAL: HOLOTYPE (♂), "ECUADOR: Pichincha [Prov.], Las Palmeras, 39km NE Alluriqui[in], old Quito-Sto. Domingo rd. [00°06'27"S, 78°45'10"W], X-21-[19]88, 7100', foliage, [leg.] L. Herman" (AMNH). — PARATYPES (5), ECUADOR: Pichincha Prov., Las Palmeras, old Quito-Santo Domingo road, km. 59, 43km NE Alluriquín [00°01'50"S, 78°44'09"W], 6400', 23.X.1988, leg. L. Herman, foliage (AMNH, 1), Pichincha Prov., 15.1km



FIGS 60-67

(60-63) *Parosus campbelli* sp. n.; head (60), pronotum (61), elytron (62), side of head (63).
 (64-67) *P. colombiensis* sp. n.; head (64), pronotum (65), elytron (66), side of head (67). All
 SEM, dorsal views. Scale bar = 0.15 mm for 63, 67, 0.25 mm for 60-62, 64-66.

NW Nono, 2000m, 0°1'58"S, 78°39'19"W, 24-26.X.1999, leg. Z. H. Falin (ECU1F99 022), ex: flight intercept trap (SEMC, 1 ♀, MHNG, 1 ♀), Cotopaxi, Bosque Integral Otonga, 1.VI.2007, 1975m, ex: Fumigación F1, S 00°25'16.6", W 79°00'20.4", leg. A.C. Proaño, C.&A. Barragán (QCAZ, 1, HNHM, 1).

OTHER MATERIAL: ECUADOR, Pichincha Prov., 15.1km NW Nono, 2000m, 0°1'58"S, 78°39'19"W, 24-26.X.1999, leg. Z. H. Falin (ECU1F99 022), ex: flight intercept trap (SEMC, 1, specimen missing tip of abdomen).

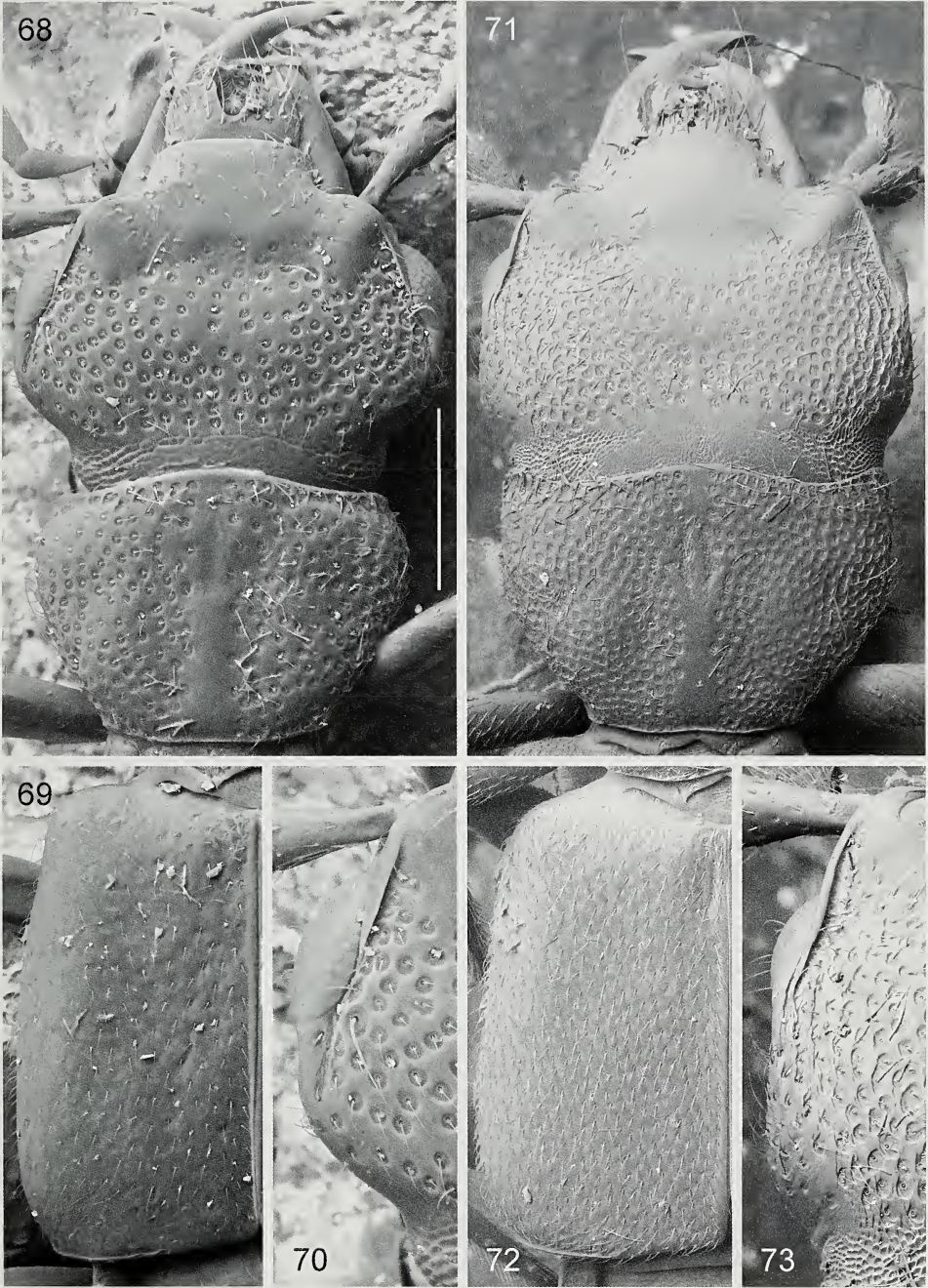
DESCRIPTION: Forebody as in Fig. 47. Measurements (n=6): HW = 0.60 (0.51-0.65); TW = 0.57 (0.49-0.62); PW = 0.53 (0.48-0.56); SW = 0.58 (0.54-0.61); MW = 0.73 (0.65-0.76); AW = 0.64 (0.59-0.70); HL = 0.49 (0.41-0.52); EL = 0.12 (0.10-0.14); FL = 0.10 (0.09-0.12); TL = 0.18 (0.15-0.21); PL = 0.44 (0.41-0.46); SL = 0.70 (0.68-0.73); SC = 0.69 (0.67-0.71); FB = 1.69 (1.59-1.75); BL = 3.08 (2.65-3.45) mm. Body 'unicoloured', but appendages contrastingly light coloured. Head and pronotum blackish dark brown to pitch black (tips of supraantennal prominences lighter). Elytra dark brown (posteriorly darkening, blackish). Abdomen dark brown to pitch black. Legs, mouthparts and antennae yellow to light brown, antennae distinctly darkening from middle to apex, but leaving apex of last antennomere yellow. Pubescence short and sparse, but abdomen with much longer setae. Body surface unusually shiny.

Head and pronotum. Mid-antennal articles moderately elongate (antennomere 6 length:width = 0.070:0.050 mm). Clypeus (Fig. 74) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.60-0.69. Infraocular ridge (Fig. 77) rather fine, combined with some punctures at inner eye border, slightly continuing after posterior edge of eye in a short process/keel. Temple rather broadly rounded, most curved in middle (but not angled). Pronotum (Fig. 75) with maximum width 1.45-1.70x base width, sides almost evenly rounded anteriorly, straight in posterior half, anterior angles slightly obtuse. Clypeal area and supraantennal prominences unpunctured (or clypeus with only a few tiny punctures). Clypeus not delimited by groove, only by contrastingly punctured areas. Shiny, unpunctate part of pronotal midline much longer than usual: occupies posterior 3/4 (or more) of length of pronotum, starting from a flat area not far from anterior edge of pronotum. Pronotal sides with a slight depression after middle. Head with about 16 'longitudinal' puncture lines, pronotum with about 16 'longitudinal' puncture lines, head punctation not loosened, pronotum with similar sized punctures to those on head, some interspaces between punctures on both.

Elytra and abdomen. Elytra (Fig. 76) slightly dilating posteriorly, behind scutellum with longitudinal impressions, latter rather slender, close to suture and extending posteriorly along it. Medially serrate fringe present on hind margin of tergite VII. Elytral punctation not umbilicate, smaller than on head and pronotum, more shallow, interspaces about 1/3-1/2 of puncture diameters. Bases of abdominal tergites (posterior to basal ridges) with uneven surface, segments with scattered, tiny punctures. Aedeagus as in Fig. 90, spermatheca as in Fig. 36.

ETYMOLOGY: The species is named after Dr. Lee Herman of the American Museum of Natural History (New York), collector of part of the type series.

COMPARATIVE NOTES: This is an unusually shiny species with black body. The vertex is convex (not flat or depressed as in most other species) similar to that of *P. thayerae*, but the clypeus is unpunctured.



FIGS 68-73

(68-70) *Parosus brasilianus* sp. n.; head and pronotum (68), elytron (69), side of head (70).
 (71-73) *P. gigantulus* sp. n.; head and pronotum (71), elytron (72), side of head (73). All SEM,
 dorsal views. Scale bar = 0.15 mm for 70, 0.25 mm for 68-69, 73, 0.4 mm for 72, 0.5 mm for 71.

DISTRIBUTION: Currently only known from Ecuador.

BIONOMICS: Specimens were collected from foliage by fogging and by flight intercept traps.

***Parosus hilaris* Sharp, 1887**

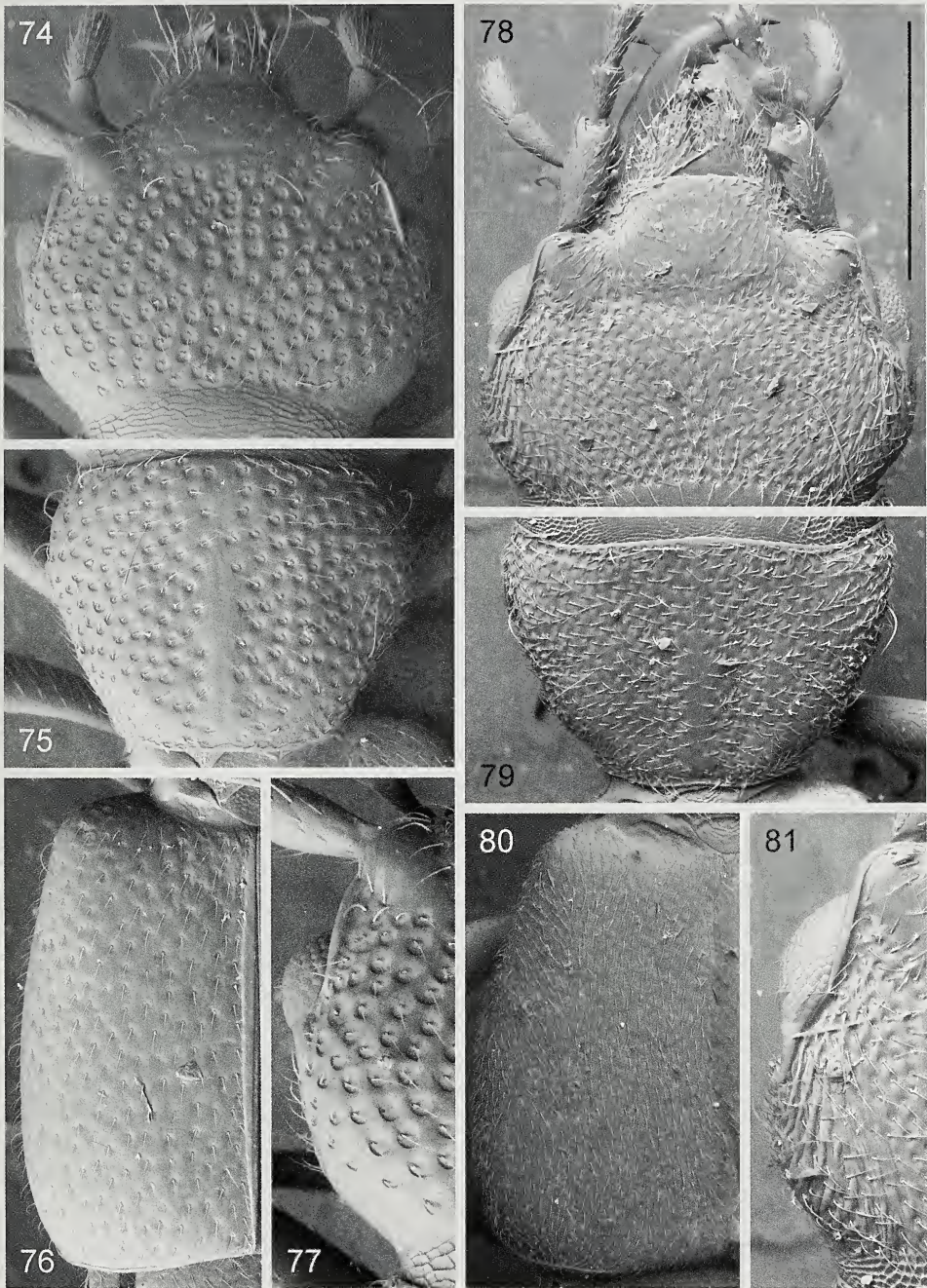
Figs 15-18, 91, 96

Parosus hilaris Sharp, 1887: 704. – Herman, 1970: 400. – Herman, 2001: 1463. – Navarrete-Heredia *et al.*, 2006: 56.

TYPE MATERIAL EXAMINED: LECTOTYPE (♂, here designated), “*Parosus hilaris*; D. S.; V. de Chiriquí [8°44'N, 82°28'W] 2500; –4000ft. Champion. [written on the cardboard on which the specimen is glued] \ Sp. figured. \ V. de Chiriquí; 2-3000ft.; Champion. \ B. C. A. Col. I. 2.; *Parosus*; *hilaris*; Sharp. \ Lectotypus; *Parosus*; *hilaris* Sharp; des. Makranczy, 2000 \ *Parosus*; *hilaris* Sharp; det. Makranczy, 2000” (BMNH). – PARALECTOTYPE (1), same data as lectotype (BMNH, 1).

OTHER MATERIAL: COSTA RICA, Guanacaste Prov., East end of Lake Arenal [10°28'N, 84°48'W], 570m, 20.V.1993, leg. J.S. & A.K. Ashe (#030), ex. roadside slash (SEMC, 1), Cartago Prov., Turrialba, [Lago del] Catie [9°53'23"N, 83°39'16"W], 16-20.V.1979, leg. J. M. & B. A. Campbell (CNCI, 1), Cartago/[San José] Prov., 23.3km NE San José [10°09'27"N, 83°56'43"W], 440m, 17.V.1993, leg. J.S. & A.K. Ashe (#014), ex: old treefall litter (SEMC, 1 ♂), San José Prov., km. 117 Pan-Am. Hwy 19 km N San Isidro, 1800m, 9°28'0"N, 83°42'20"W, 20-25.VI.1997, leg. S. & J. Peck (CR1P97 023), ex: flight intercept trap (SEMC, 1), Limón Prov., Guápiles [10°12'N, 83°48'W] (Kliefoth), VIII.1941 (coll. Bierig, FMNH, 1), Puntarenas Prov., Monte Verde [10°17'57"N, 84°48'03"W], 1550m, 26.V.1989, leg. J. Ashe, R. Brooks, R. Leshen, ex: beating (SEMC, 1), Puntarenas Prov., Península de Osa, Fundación Neotróp.[ica] 10km W Rincon, 8°42'30"N, 83°31'30"W, 20m, 23.VI.1997, leg. R. Anderson (CR1A97 029a), ex: berlese forest litter (SEMC, 1), Puntarenas Prov., Península de Osa, Rancho Quemado [8°41'40"N, 83°33'49"W], 200m, 12.III.1994, leg. A. Marín, malaise [trap] (SEMC, 1), Heredia Prov., La Selva Biological Research Station, 3km S Puerto Viejo, 10°25'0"N, 84°0'0"W, 80m, 2-15.VI.1996, leg. R. Hanley (CR1H96 016), ex: flight intercept trap (SEMC, 2), Heredia Prov., La Selva Biol. Res. Sta., 3.2km SE Puerto Viejo [10°25'45"N, 83°58'52"W], 100m, 3.III.1992, leg. W. Bell, ex: flight intercept trap (SEMC, 2), Heredia Prov., La Selva Biol. Res. Sta., 3.2km SE Puerto Viejo, 100m, 17.II.1992, leg. W. Bell, ex: flight intercept trap (SEMC, 1), same but 19.II.1992 (SEMC, 1); same but 17.III.1992 (HNHM, Imp), Heredia Prov., La Selva Biological Research Station, near Puerto Viejo de Sarapiquí [10°25'53"N, 84°00'20"W, 50m], 18.II.1985, leg. L. Herman (#2113), ex: epiphytic humus (AMNH, 1 ♂, 1), same but leg. L. Herman (#2109), ex: stream side leaf litter (AMNH, 1), same but leg. L. Herman (#2116), ex: debris at node of palm frond (AMNH, 1). – PANAMA, Chiriquí Prov., La Fortuna, "Hydro. Trail" 08°42'N, 82°14'W, 1150m, 23.V-9.VI.1995, leg. J. Ashe, R. Brooks (#156), ex: flight intercept trap (SEMC, 1), Panamá Prov., Old Plantation rd., 6.9km S Gamboa, 09°05'N, 79°40'W, 80m, 4-7.VI.1995, leg. [J.S.] Ashe & [R.] Brooks (#137), ex: flight intercept trap (SEMC, 1), Canal Zone, Barro Colorado Island [09°09'N, 79°51'W], 16.I.1959, leg. H. Dybas, ex: fermented fibrous log & at light (FMNH, 1), Cocle Prov., El Valle [de Antón] (trail to Las Minas) [08°35'N, 80°09'W], 2400-2600ft, 23.II.1959, leg. H.S. Dybas (FMNH, 1). – VENEZUELA, E[sta]do. Aragua, Rancho Grande (15km N Maracay) [10°21.5'N, 67°35.5'W], 1500m, 21.II.1971, leg. S. Peck (CNCI, 1).

REDESCRIPTION: Measurements (n=2): HW = 0.73 (0.70-0.76); TW = 0.74 (0.71-0.77); PW = 0.71 (0.68-0.74); SW = 0.66 (0.65-0.66); MW = 0.78 (0.77-0.78); AW = 0.66 (0.63-0.68); HL = 0.60 (0.58-0.61); EL = 0.16 (0.15-0.16); FL = 0.10 (0.10-0.10); TL = 0.26 (0.26-0.26); PL = 0.49 (0.47-0.50); SL = 0.69 (0.68-0.69); SC = 0.67 (0.66-0.67); FB = 2.03 (1.86-2.19); BL = 3.84 (3.41-4.27) mm. Body 'bicoloured'. Head dark brown to blackish (clypeal region and supraantennal prominences much lighter, reddish light or medium brown), mediad of supraantennal prominences two larger black spots near ends of frontoclypeal (= epistomal) sulcus, pronotum reddish



FIGS 74-81

(74-77) *Parosus hermani* sp. n.; head (74), pronotum (75), elytron (76), side of head (77). (78-81) *P. longicornis* sp. n.; head (78), pronotum (79), elytron (80), side of head (81). All SEM, dorsal views. Scale bar = 0.25 mm for 77, 0.35 mm for 81, 73, 0.4 mm for 74-76, 0.5 mm for 78-80.

light brown (sometimes almost orange), elytra dark brown except shoulder area (unusually well delimited, from scutellum to 3/5 of elytra) lighter (yellow to light brown). Abdomen yellow to light brown, tergites V-VI darkened (medium brown). Legs, mouthparts and antennae yellow to light brown. Pubescence medium short and medium dense, much shorter and more dense on elytra, longer and much sparser on abdomen.

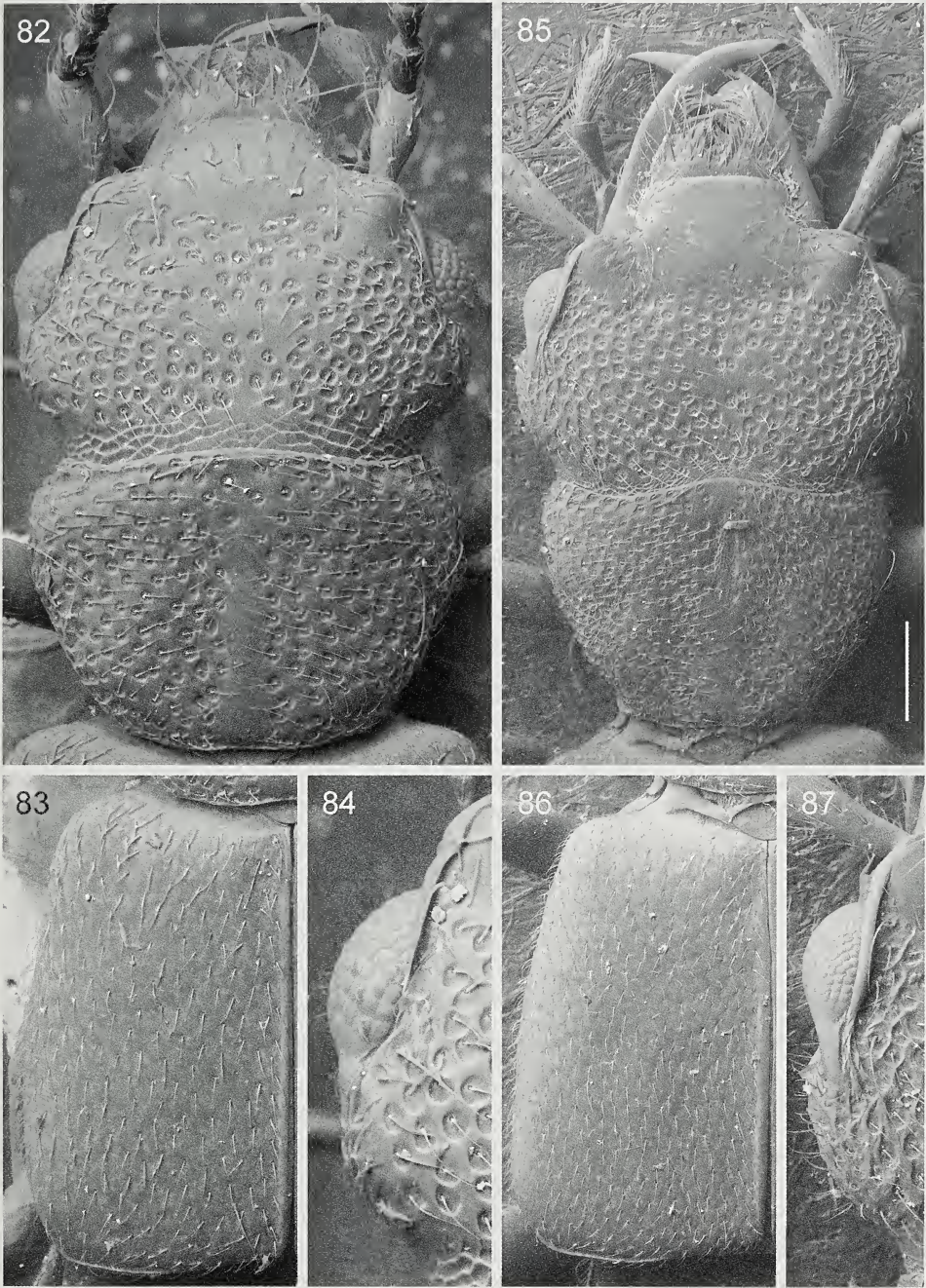
Head and pronotum. Mid-antennal articles about as long as wide (antennomere 6 length:width = 0.068:0.070 mm). Clypeus trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.50-0.55. Infraocular ridge (Fig. 96) strong, ending in an elevated triangular part of a shiny postocular area and longer, posteriorly vanishing keel after posterior edge of eye. Temple almost straight (slightly dilating) long after eye, but rather angled at posterior 1/4 or just strongly curved in posterior half, eye strongly bulging. Pronotum with maximum width 1.72-1.82x base width, sides curved all the way, most strongly anteriorly, anterior angles sharp. Clypeus and supraantennal ridges almost unpunctured, shiny (only a few tiny, scattered punctures). Clypeal area poorly marked by an extremely shallow frontoclypeal groove, with umbilicate punctures reaching this area. Vertex slightly depressed along an indistinct longitudinal midline, middle of vertex sometimes more shiny (more sparse punctation, may even be slightly elevated), base of midline with occasionally deeper depression. Pronotal midline appears as (acute-angled) V-shaped shiny elevation, lines becoming finer and vanish anteriorly (between them microsculpture), not reaching anterior edge. Laterad two longitudinally elongate impressions, with two elevated shiny spots at their outer middle. Pronotal sides have slight impressions around the middle. Head with 20-26 'longitudinal' puncture lines, pronotum with 22-24 'longitudinal' puncture lines, pronotal punctures same sized compared to those on head, mid- and anterior vertex with loosened punctation.

Elytra and abdomen. Elytra slightly dilating posteriorly, with two small, slightly elongate, rather deep impressions behind scutellum. Medially serrate fringe present on hind margin of tergite VII. Elytral punctures not umbilicate and a tiny bit smaller than those on pronotum, interspaces about 1/3-2/3 (or more) of puncture diameters. Bases of tergites (posterior to basal ridges) a little scabrous on first few visible segments, otherwise almost unsculptured and with occasional small punctures only. Aedeagus as in Fig. 91.

COMPARATIVE NOTES: This species is extremely similar to *P. taliaferroae*, can only be distinguished by the presence of the medially serrate fringe on the hind margin of tergite VII. A more distantly similar species is *P. bicoloratus*, which, however, has more elongate antennae, differently positioned dark stripe on the abdomen (see details at *P. bicoloratus*) and also lacks the medially serrate fringe on the hind margin of tergite VII. *P. rossii* is a similarly sized 'bicoloured' species, but with an always dark abdominal apex (abdominal base occasionally lighter).

DISTRIBUTION: The species is so far known from Costa Rica, Panama and Venezuela.

BIONOMICS: Collected mostly from treefall litter and various plant debris, by beating or with flight intercept traps.



FIGS 82-87

(82-84) *Parosus longipennis* sp. n.; head and pronotum (82), elytron (83), side of head (84).
 (85-87) *P. major* sp. n.; head and pronotum (85), elytron (86), side of head (87). All SEM, dorsal views. Scale bar = 0.06 mm for 84, 0.1 mm for 82, 83, 0.16 mm for 87, 0.25 mm for 85-86.

Parosus longicornis sp. nov.

Figs 22, 48, 78-81, 92

TYPE MATERIAL: HOLOTYPE (♂), "PERU: Junín [Dept.]: San Emiliano de Cachingareni, approx. 55km SE Satipo [11°38'S, 74°18'W], 1000m, May 20-21,1972, [leg.] R. T. & J. C. Schuh" (AMNH).

DESCRIPTION: Forebody as in Fig. 48. Measurements (n=1): HW = 0.90; TW = 0.93; PW = 0.81; SW = 0.73; MW = 0.86; AW = 0.76; HL = 0.67; EL = 0.17; FL = 0.14; TL = 0.29; PL = 0.52; SL = 0.88; SC = 0.84; FB = 2.20; BL = 4.00 mm. Body 'unicoloured'. Head and pronotum blackish dark brown (only supraantennal prominences lighter brown), elytra blackish dark brown except shoulder area (not delimited) lighter, darkening towards apex. Abdomen dark brown, darkening towards apex. Legs, mouthparts and antennae medium brown, basal antennomeres lighter (first light brown). Pubescence medium sparse and on elytra rather short, on other body parts longer.

Head and pronotum. Mid-antennal articles elongate (antennomere 6 length: width = 0.130:0.080 mm), tip of antennomeres conical. Clypeus (Fig. 78) basally broad trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.57. Infraocular ridge (Fig. 81) rather strong, ends in a small, shiny, triangular postocular process. Temple slightly dilating posteriorly, rounded. Pronotum (Fig. 79) with maximum width 1.86x base width, sides very weakly rounded (both anteriorly and posteriorly), anterior angles appearing sharp (dorsal view). Clypeal area covered by somewhat smaller, simple punctures, with large, shiny interspaces. Vertex extremely shallowly impressed. Posterior half of pronotal midline shiny and slightly elevated, with two impressed areas at its sides. At sides of pronotum with two slight concavities around middle. Supraantennal prominences shiny, without punctation. Head with about 30 'longitudinal' puncture lines, pronotum with about 26 'longitudinal' puncture lines, top of head without loosening of punctures, pronotal puncture sizes similar to those on head.

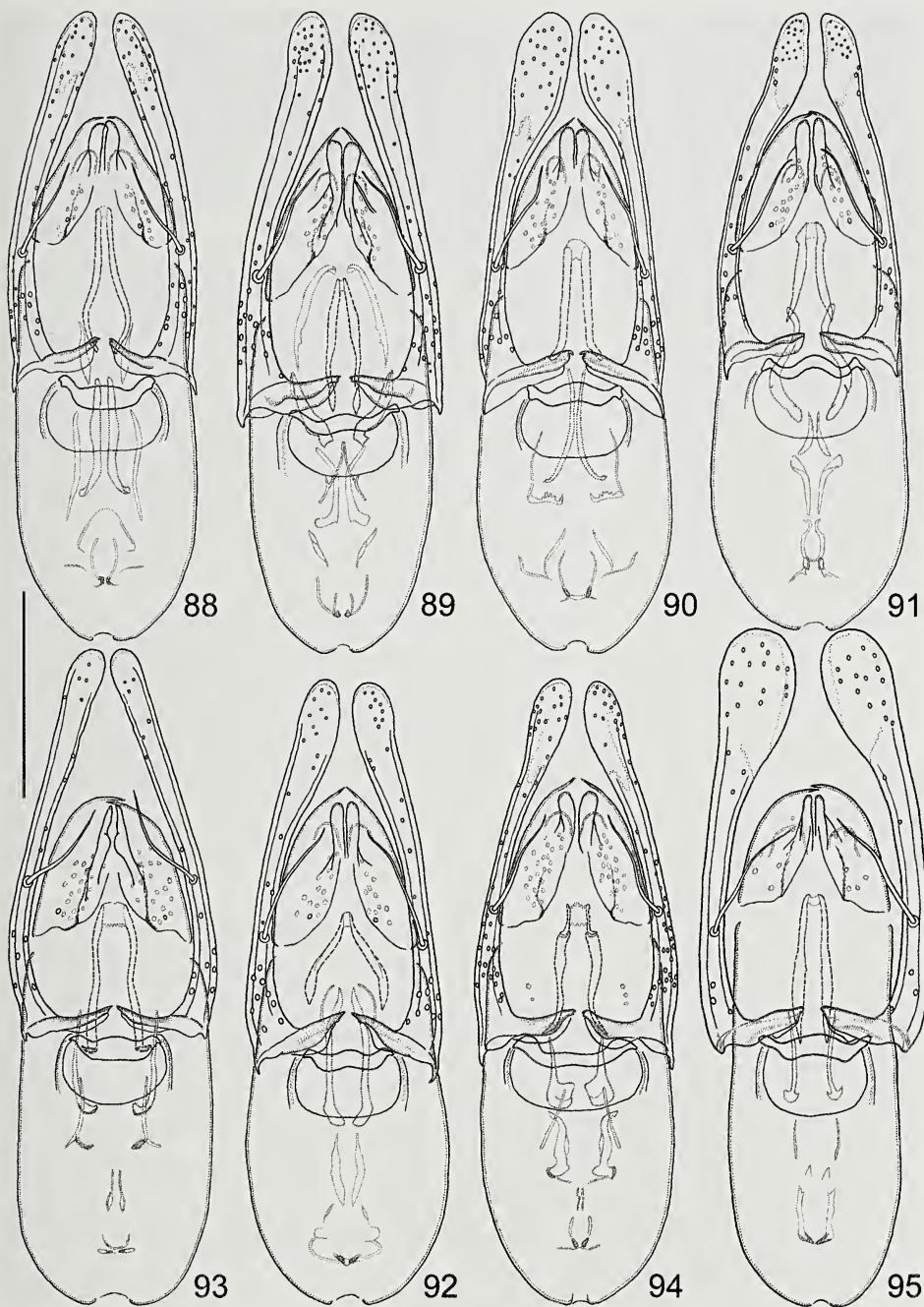
Elytra and abdomen. Elytra (Fig. 80) slightly dilating posteriorly, impressions behind scutellum rather shallow and longitudinally elongate. Medially serrate fringe present on hind margin of tergite VII. Elytral punctation not umbilicate, much finer than on head and pronotum, interspaces about 1/3-2/3 of puncture diameters. Bases of abdominal tergites (posterior to basal ridges) without apparent microsculpture, segments with more apparent punctation, small, not so scattered punctures. Aedeagus as in Fig. 92.

ETYMOLOGY: The species is named after its peculiarly long antennae.

COMPARATIVE NOTES: From the other similarly large 'unicoloured' species (*P. major*, *P. gigantulus*, *P. unicoloratus*) it differs not only by its very elongate antennae, but also by a distinctly punctured clypeus (the other species sometimes have a few tiny, scattered punctures, too).

DISTRIBUTION: The species is known from only one specimen, from Junín Dept. in the central part of Peru.

BIONOMICS: Unknown.



FIGS 88-95

Aedeagi, frontal views. *P. colombiensis* sp. n. (88), *P. gigantulus* sp. n. (89), *P. hermani* sp. n. (90), *P. hilaris* Sharp (91), *P. longicornis* sp. n. (92), *P. longipennis* sp. n. (93), *P. major* sp. n. (94), *P. minutus* sp. n. (95). Scale bar = 0.08 mm for 95, 0.09 mm for 93, 0.13 mm for 88, 90-92, 0.15 mm for 89, 0.2 mm for 94.

Parosus longipennis sp. nov.

Figs 23, 30, 37, 82-84, 93, 129

TYPE MATERIAL: HOLOTYPE (δ), "BOLIVIA: Cochabamba [Dept.], Cochabamba, 124 km E Yungas, (Cochabamba - Villa Tunari rd.), 17°3'54"S, 65°38'43"W, 730m, 1-6.Feb.1999, [leg.] R. Hanley (BOL1H99 029), ex: flight intercept trap" (SEMC). - PARATYPES (4), PERU, Cuzco Dept., Consuelo, Manu rd., km. 165 [13°02'S, 71°30'W], 7.X.1982, leg. L. E. Watrous and G. Mazurek (FMHD #82-349), beating dead branches (FMNH, 1 δ , MHNG, 1), same but 9-10.X.1982, leg. L. E. Watrous and G. Mazurek (FMHD #82-414), flight intercept trap (FMNH, 1), same but 12.X.1982, leg. L. E. Watrous and G. Mazurek (FMHD #82-374), ex rotten palm (FMNH, 1).

DESCRIPTION: Forebody as in Fig. 129. Measurements (n=3): HW = 0.49 (0.46-0.52); TW = 0.48 (0.44-0.52); PW = 0.44 (0.42-0.47); SW = 0.46 (0.44-0.48); MW = 0.57 (0.52-0.60); AW = 0.50 (0.49-0.51); HL = 0.35 (0.33-0.38); EL = 0.12 (0.115-0.125); FL = 0.10 (0.10-0.10); TL = 0.12 (0.10-0.14); PL = 0.34 (0.32-0.35); SL = 0.53 (0.50-0.55); SC = 0.51 (0.48-0.53); FB = 1.29 (1.22-1.35); BL = 2.46 (2.32-2.57) mm. Body 'bicoloured'. Head dark brown (only supraantennal prominences appear lighter), pronotum yellowish light brown, elytra medium to dark brown except a semi-triangular part at shoulders (from scutellum to 2/5 of outer edge) being yellow to light brown, with apex appearing darker, abdomen light brown (except terminal segments a tiny bit darker). Legs, mouthparts and antennae yellow to light brown. Pubescence rather sparse and rather short, except abdomen, where longer.

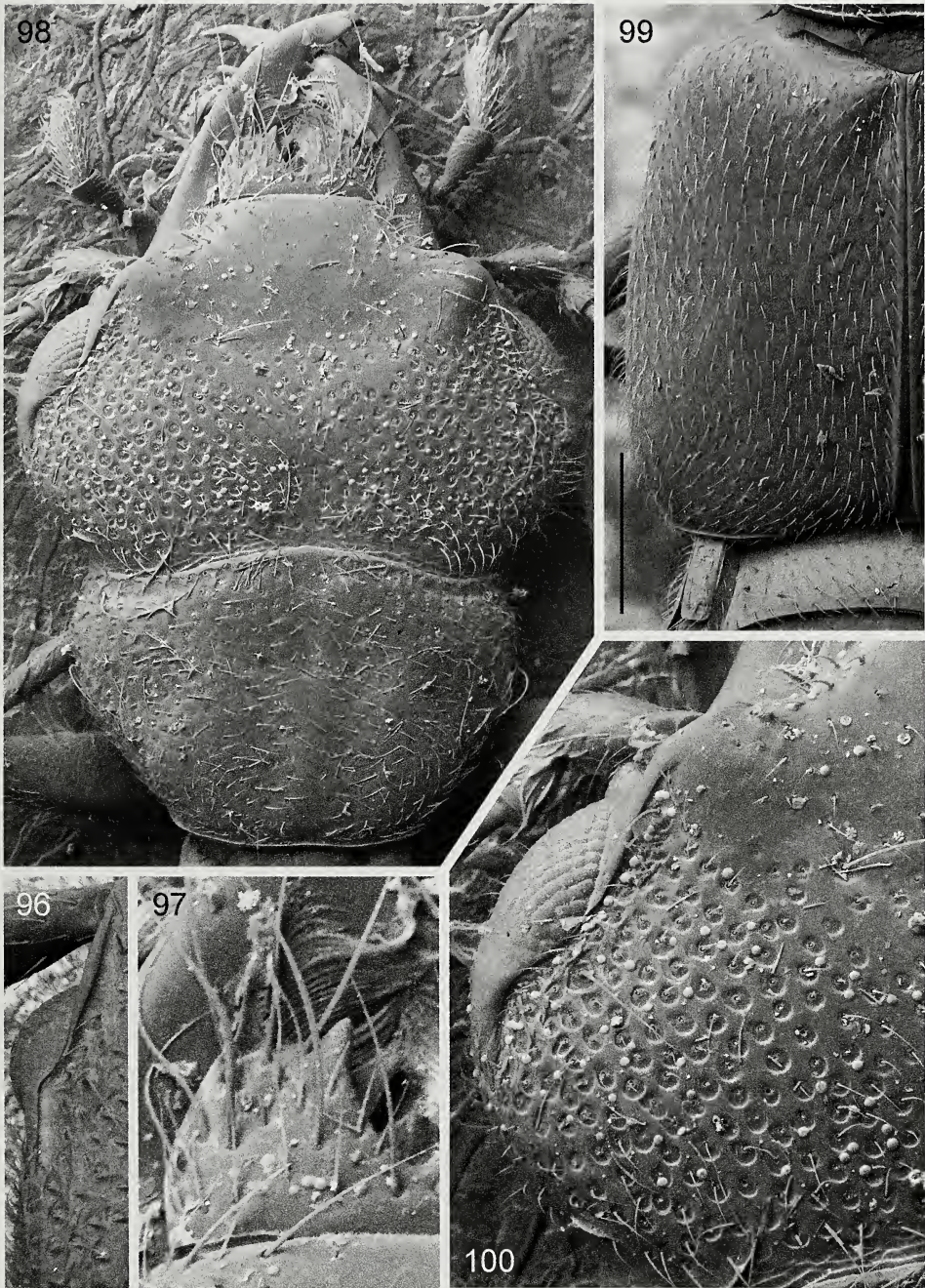
Head and pronotum. Mid-antennal articles moderately elongate (antennomere 6 length:width = 0.045:0.040 mm). Clypeus (Fig. 82) basally broad trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.42-0.50. Infraocular ridge (Fig. 84) fine, not running behind the posterior margin of the eye. Temple fully rounded to slightly angled. Pronotum (Fig. 82) with maximum width 1.68x base width, anteriorly sides rounded, angles obtuse. Behind clypeal area with a shallow, transversal impression, on pronotal disc with one in anterior 1/4 of pronotal midline and one surrounding hind half of midline. Clypeal area and supraantennal prominences without punctation, albeit with some tiny, regular punctures. Posterior half of pronotal midline as an unpunctured, shiny stripe (slightly elevated). Head with 18-20 'longitudinal' puncture lines, pronotum with about 28 'longitudinal' puncture lines, on mid-vertex punctation somewhat loosened, on pronotum puncture sizes same as on head.

Elytra and abdomen. Elytra (Fig. 83) dilating posteriorly, behind scutellum with very shallow impressions. Medially serrate fringe (Fig. 30) present on hind margin of tergite VII. Elytral punctation not umbilicate, size similar to that on head and pronotum, interspaces about 1/3 of puncture diameters. On bases of abdominal tergites (posterior to basal ridges) transversal coriaceous microsculpture, segments with a few small, scattered punctures. Aedeagus as in Fig. 93.

ETYMOLOGY: The species is named after the unusually elongate parameres of the aedeagus in this species.

COMPARATIVE NOTES: From the similarly 'bicoloured' and small-sized species (*P. portobelo* and *P. brasilianus*) it can be distinguished by the bulging eyes and yellowish shoulders. *P. minutus* is significantly smaller.

DISTRIBUTION: The species is known from Peru (Cuzco Dept.) and Bolivia (Cochabamba Dept.).



FIGS 96-100

(96) *P. hiliaris* Sharp; infraocular ridge. (97-100) *Parosus newtoni* sp. n.; left lobe of labrum (97), head and pronotum (98), elytron (99), side of head (100). All SEM, dorsal views. Scale bar = 0.08 mm for 95, 0.13 mm for 93, 0.22 mm for 88, 90-92, 0.25 mm for 89.

BIONOMICS: Specimens were collected by beating dead branches and from rotten palm.

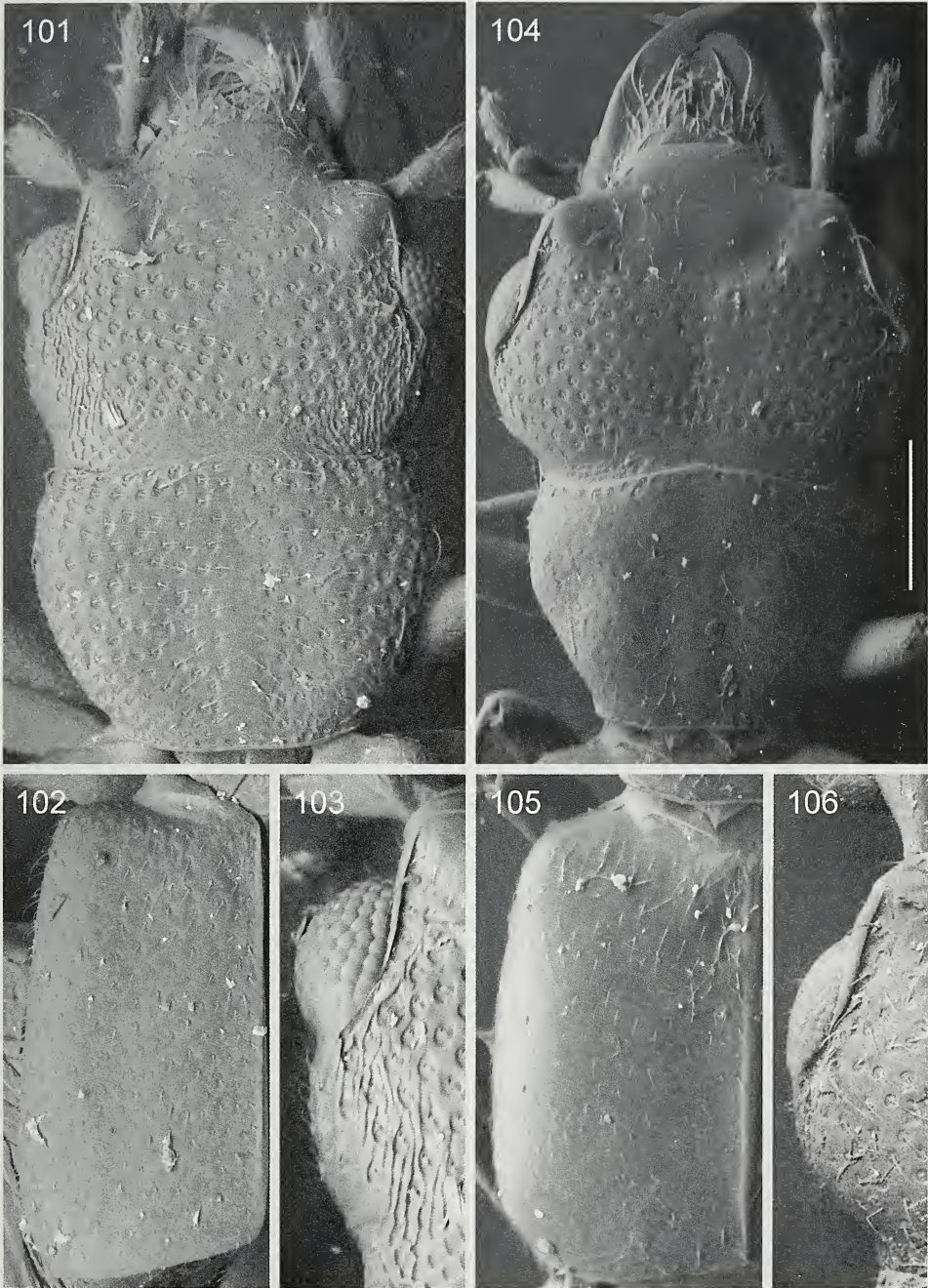
Parosus major sp. nov.

Figs 38, 51, 85-87, 94

TYPE MATERIAL: HOLOTYPE (♂), "PERU: Cuzco Dept., Pillahuata, Manu rd., km. 128 [13°09.5'S, 71°35.5'W], 25-IX-1982, [leg.] L. E. Watrous & G. Mazurek (FMHD #82-291), leaf litter" (FMNH). – PARATYPES (72), PERU: Cuzco Dept., Pillahuata, Manu rd., km. 128, 16.IX.1982, leg. L. E. Watrous & G. Mazurek (FMHD #82-241), ex litter under grass clumps (SMNS, 1), same but leg. L. E. Watrous & G. Mazurek (FMHD #82-233) (FMNH, 1), same but 18.IX.1982, leg. L. E. Watrous & G. Mazurek (FMHD #82-256), ex litter in dry streambed (NHMW, 1), same but 19.IX.1982, leg. L. E. Watrous & G. Mazurek (FMHD #82-262), ex leaf litter near falls (USNM, 1), same but leg. L. E. Watrous & G. Mazurek (FMHD #82-264), ex leaf litter after rain (CNCI, 1), same but 20.IX.1982, leg. L. E. Watrous & G. Mazurek (FMHD #82-266), ex litter in mossy forest (AMNH, 1), same but leg. L. E. Watrous & G. Mazurek (FMHD #82-269), ex litter in mossy forest (HNHM, 1), same but 22.IX.1982, leg. L. E. Watrous & G. Mazurek, Laboulbeniales n. 3154 Walter Rossi, from FMNH via Gy. Makranczy, Sep. 2007 (FMNH, 1), same but 27.IX.1982, leg. L. E. Watrous & G. Mazurek (FMHD #82-310), ex litter in runoff in mossy forest (HNHM, 1). – BOLIVIA, La Paz Prov., 9.2km E Chulumani, 16°20'59"S, 67°30'18"W, 2100m, 19-21.I.2001, leg. J.S. Ashe, R.S. Hanley (BOLIAH01 036), ex: flight intercept trap (SEMC, 1), same but 2200m, leg. J.S. Ashe, R.S. Hanley (BOLIAH01 038), ex: flight intercept trap (SEMC, 1), Dept. Cochabamba, Prov. Carrasco, Serrania de Siberia, Chuya Khocha [17°45'19"S, 64°47'20"W], 2300m, 2.IX.1990, leg. P. Parrillo (Field Museum, No. 122), cloud forest, in bromeliad sp. 3 (FMNH, 4), same but 29.VIII.1990, leg. P. Parrillo (No. 085, FMHD #90-187), cloud forest, bromeliad sp. 1 (FMNH, 5), same but 31.VIII.1990, leg. P. Parrillo (No. 106, FMHD #90-196), cloud forest, bromeliad sp. 1 (FMNH, 6, HNHM, 1♂), same but 2.IX.1990, leg. P. Parrillo (No. 120, FMHD #90-197), cloud forest, bromeliad sp. 1 (FMNH, 4), same but leg. M. Ledezma (No. 119, FMHD #90-251), cloud forest, bromeliad sp. 1 (FMNH, 8, MHNG, 1♀), same but 3.IX.1990, leg. P. Parrillo (No. 125, FMHD #90-199), cloud forest, bromeliad sp. 1 (FMNH, 3), same but leg. P. Parrillo (No. 126, FMHD #90-200), cloud forest, bromeliad sp. 1 (FMNH, 7), same but leg. M. Ledezma (No. 131, FMHD #90-204), cloud forest, bromeliad sp. 3 (FMNH, 3), same but leg. M. Ledezma (No. 132, FMHD #90-205), cloud forest, bromeliad sp. 3 (FMNH, 4, HNHM, 1), same but leg. M. Ledezma (No. 136, FMHD #90-254), cloud forest, bromeliad sp. 3 (FMNH, 2, MHNG, 1), same but 4.IX.1990, leg. M. Ledezma (No. 138, FMHD #90-207), cloud forest, bromeliad sp. 3 (FMNH, 6, BMNH, 2, ZMHB, 1, ISNB, 1), Santa Cruz Prov., Comarapa, 32.8km NW Yungas de Siberia, 17°49'24" S, 64°42'26" W, 27.I.1999, leg. R. Anderson (BOLIA99 001), ex: litter berlese (SEMC, 1).

DESCRIPTION: Habitus as in Fig. 51. Measurements (n=10): HW = 1.02 (0.94-1.10); TW = 1.06 (0.95-1.17); PW = 0.97 (0.85-1.07); SW = 0.93 (0.86-0.97); MW = 1.13 (1.06-1.20); AW = 0.93 (0.82-1.01); HL = 0.80 (0.72-0.85); EL = 0.19 (0.17-0.21); FL = 0.13 (0.12-0.14); TL = 0.34 (0.28-0.38); PL = 0.70 (0.62-0.77); SL = 1.03 (0.99-1.09); SC = 1.01 (0.97-1.06); FB = 2.63 (2.46-2.79); BL = 4.66 (4.24-5.01) mm. Body 'unicoloured', but with strikingly (uniformly) reddish elytra. Head and pronotum blackish dark brown to pitch black (supraantennal prominences appear a little lighter), elytra uniformly reddish medium brown, abdomen dark brown, with slight reddish overtone and sometimes lightening tergal apices. Legs, mouthparts and antennae strongly reddish medium brown, latter distinctly darkening from middle to penultimate antennomere. Pubescence medium short and sparse, shorter on elytra. A rather shiny species (unpunctured areas not so sharply separated from punctured ones).

Head and pronotum. Mid-antennal articles about as long as wide (antennomere 6 length:width = 0.106:0.108 mm). Clypeus (Fig. 85) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front



FIGS 101-106

(101-103) *Parosus minutus* sp. n.; head and pronotum (101), elytron (102), side of head (103).
 (104-106) *P. skalitzkyi* sp. n.; head and pronotum (104), elytron (105), side of head (106). All SEM, dorsal views. Scale bar = 0.08 mm for 103, 0.15 mm for 101,102, 0.17 mm for 106, 0.2 mm for 105, 0.25 mm for 104.

= 0.39. Infraocular ridge (Fig. 87) rather strong, ending at a strong and shiny postocular process at posterior edge of eye. Temple rather straight anteriorly, most curved after middle (slightly angled). Pronotum (Fig. 85) with maximum width 1.73-1.74x base width, sides almost evenly arched, but in anterior 1/5 more strongly, anterior angles sharp. Clypeus and supraantennal prominences unpunctured, shiny. Frontoclypeal groove shallow, reached by the umbilicate puncture field of vertex. In hind part of vertex with a rather deeply impressed area (at its anterior parts punctation more sparse). Anterior half of pronotal midline (except a small area behind anterior margin) deeply impressed, unpunctured, forming a posteriorly directed arrowhead shape with scabrous microsculpture in it. Posterior half being a slightly elevated, unpunctured, shiny stripe with two longitudinal depressions along its sides. Laterad, two spots rather elevated and shinier. Pronotal sides with some impression around middle. Head with 22-24 'longitudinal' puncture lines, very rough punctation, on mid-vertex more sparse, pronotum with 22-26 'longitudinal' puncture lines, smaller punctures compared to those on head, lateral elevations with loosened punctation.

Elytra and abdomen. Elytra (Fig. 86) dilating posteriorly, with two small, longitudinal impressions behind scutellum. Medially serrate fringe present on hind margin of tergite VII. Elytral punctation not umbilicate, punctures smaller than those on pronotum, interspaces about 2/5-3/4 of puncture diameters. Bases of abdominal tergites (posterior to basal ridges) with very fine transversal coriaceous microsculpture, segments almost without punctation. Aedeagus as in Fig. 94.

ETYMOLOGY: The species is named after its unusually large size.

COMPARATIVE NOTES: From the similarly large 'unicoloured' species (*P. longicornis*, *P. unicoloratus*, *P. gigantulus*), this one is easily distinguished by the elytra being uniformly lighter (reddish-brownish) than the head and pronotum. It has moderately elongate antennae, a large but on the vertex mostly convex head. Amongst the mentioned species this has the most coarse punctation on the head, which remains dense (mostly) on the anterior vertex, too.

DISTRIBUTION: The species is known from the highest southern ranges of the Cordilleras (in Peru and Bolivia).

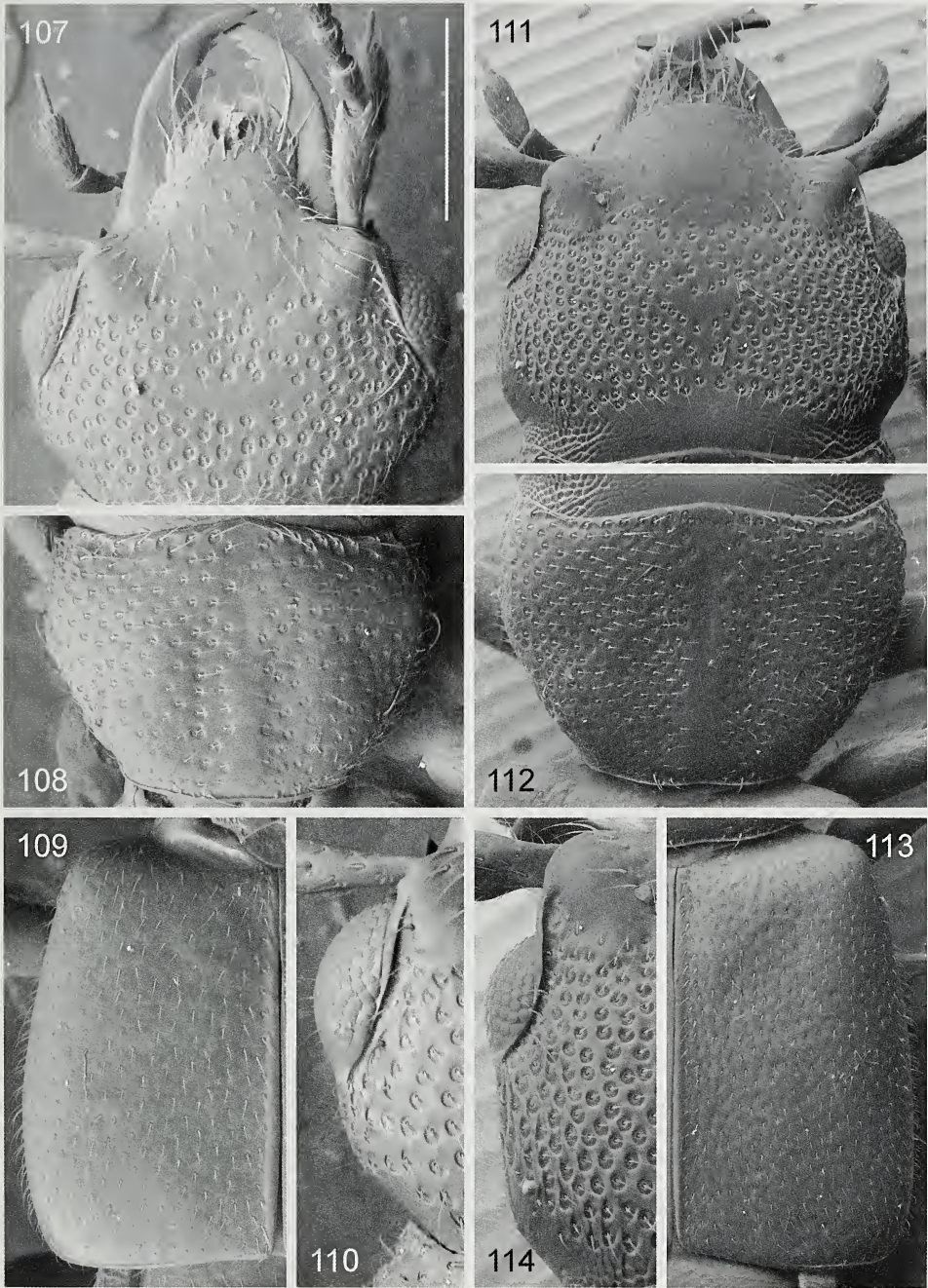
BIONOMICS: Specimens were collected from different types of (leaf) litter in cloud forest by Berlese sampling and other methods.

***Parosus minutus* sp. nov.**

Figs 95, 101-103, 135

TYPE MATERIAL: HOLOTYPE (♂), "PANAMA, [Prov.] Panama, Cerro Azul [9°10'01"N, 79°24'54"W], ca. 2000', Feb. 21.1976, [leg.] A. Newton, wet debris, small forest stream" (FMNH). - PARATYPE (1), PANAMA: Prov. Panama, Cerro Campana, 3200' [8°41'15"N, 79°55'19"W], 14-23.II.1976, leg. A. Newton, berlese - cloud forest leaf litter (FMNH, 1).

DESCRIPTION: Habitus as in Fig. 135. Measurements (n=2): HW = 0.41 (0.39-0.42); TW = 0.39 (0.38-0.40); PW = 0.38 (0.37-0.39); SW = 0.39 (0.38-0.39); MW = 0.47 (0.46-0.47); AW = 0.41 (0.39-0.43); HL = 0.31 (0.30-0.31); EL = 0.10 (0.10-0.10); FL = 0.09 (0.08-0.09); TL = 0.11 (0.10-0.12); PL = 0.29 (0.28-0.29); SL = 0.45 (0.43-0.47); SC = 0.44 (0.41-0.46); FB = 1.08 (1.05-1.11); BL = 2.06 (2.00-2.12) mm. Body predominantly 'unicoloured', but with light elytra. Head blackish dark brown



FIGS 107-114

(107-110) *Parosus portobelo* sp. n.; head (107), pronotum (108), elytron (109), side of head (110). (111-114) *P. rossii* sp. n.; head (111), pronotum (112), elytron (113), side of head (114). All SEM, dorsal views. Scale bar = 0.16 mm for 110, 0.2 mm for 114, 0.25 mm for 107-109, 0.35 mm for 111-113.

(supraantennal prominences appear much lighter, yellowish), pronotum dark brown, elytra light brown except scutellar area to shoulders darker (poorly delimited). Abdomen dark brown (with the posterior margin of tergites somewhat lighter). Legs, mouthparts and antennae yellow to light brown with the middle darkened (medium brown) until the penultimate antennomere. Pubescence rather short and relatively sparse (this being by far the smallest species), with longer setae on the abdomen. Rather shiny species, punctured areas not separating sharply.

Head and pronotum. Mid-antennal articles about as long as wide (antennomere 6 length:width = 0.046:0.045 mm). Clypeus (Fig. 101) broad trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.50-0.64. Infraocular ridge (Fig. 103) fine, ending in a very short keel at posterior edge of eye. Temple almost evenly curved, but most curved in the middle. Pronotum (Fig. 101) with maximum width 1.58-1.66x base width, sides convex, curved all the way, but most in anterior third, anterior angles rather sharp. Clypeus and supraantennal ridges almost unpunctured, shiny. Clypeal area poorly delimited, frontoclypeal groove almost absent, marked only as a border between unpunctured and punctured areas. Vertex not visibly impressed, but in middle a spot more sparsely punctured, shiny and a little elevated. Posterior part of pronotal midline an elevated and shiny stripe. Around it disc slightly depressed, especially at anterior part of midline which stands out as unpunctured. Pronotal sides with impressions around the middle. Head with 16-20 'longitudinal' puncture lines, pronotum with 16-18 'longitudinal' puncture lines, anterior vertex more loosely punctured.

Elytra and abdomen. Elytra (Fig. 102) dilating posteriorly, with two small, longitudinal, rather deep impressions behind scutellum. Medially serrate fringe present on hind margin of tergite VII. Head, pronotum and elytra with similarly sized punctures, but elytral punctation not umbilicate, interspaces about 1/3-2/3 of puncture diameters. Bases of tergites (posterior to basal ridges) (also) without microsculpture, segments with tiny, scattered punctures. Aedeagus as in Fig. 95.

ETYMOLOGY: The specific epithet refers to this taxon being by far the smallest species.

COMPARATIVE NOTES: Easy to distinguish from all other known *Parosus* by its small size alone.

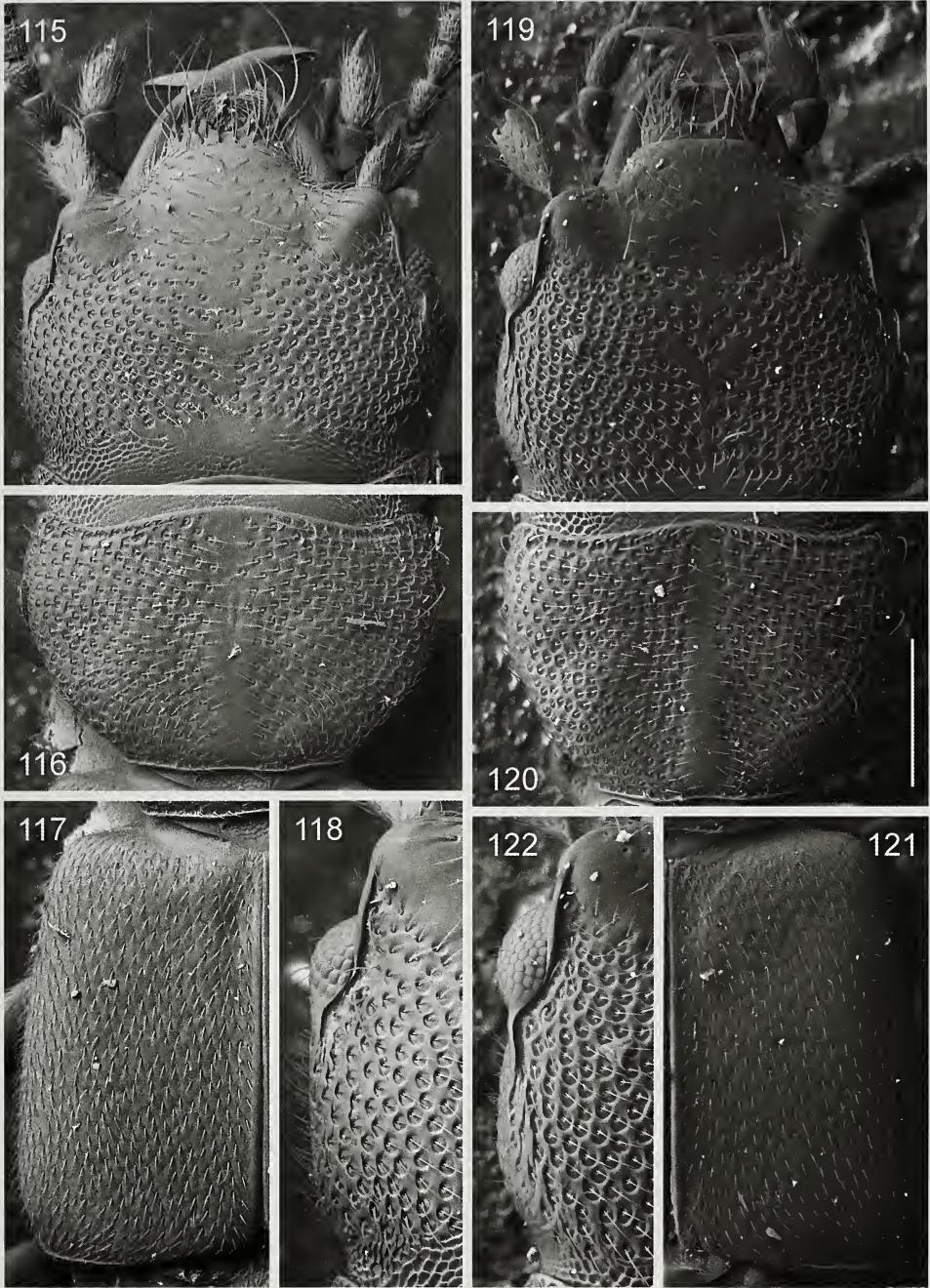
DISTRIBUTION: The species is known only from a pair of specimens collected in Panama (Prov. Panama) at different localities. These being the only ones in their respective samples suggest rarity.

BIONOMICS: Collected from wet debris near a small forest stream, also by Berlese sampling of leaf litter in a cloud forest.

Parosus newtoni sp. nov.

Figs 97-100, 132, 138

TYPE MATERIAL: HOLOTYPE (♂), "PANAMA, [Prov.] Bocas del Toro, Fortuna / Chiriquí Grande road, 8°47'N, 82°11'W, 800m, 14-16.VII.1987, [leg.] D. M. Olson (#566), premontane rain forest, sifting litter, Field Museum N. H., David M. Olson, Staphylinidae species #73" (FMNH). — PARATYPES (4), PANAMA, Prov. Bocas del Toro, Fortuna / Chiriquí Grande road, 1050m, 8°47'N, 82°12'W, 12-14.VII.1987, leg. D. M. Olson (#523), premontane rain forest, sifting litter, Field Museum N. H., David M. Olson, Staphylinidae species #73 (FMNH, 1,



FIGS 115-122

(115-118) *Parosus simplex* sp. n.; head (115), pronotum (116), elytron (117), side of head (118).
 (119-122) *P. taliaferroae* sp. n.; head (119), pronotum (120), elytron (121), side of head (122).
 All SEM, dorsal views. Scale bar = 0.15 mm for 118, 122, 0.23 mm for 119-121, 0.25 mm for 115-117.

MHNG, 1), [Prov. Panamá,] Cerro Campana [8°41'15"N, 79°55'19"W], 6.VII.1974, leg. C.W. & L. O'Brien (FSCA, 1), [Prov. Panamá,] Cerro Campana, 01.VIII.1970, leg. J. M. Campbell (CNCI, 1).

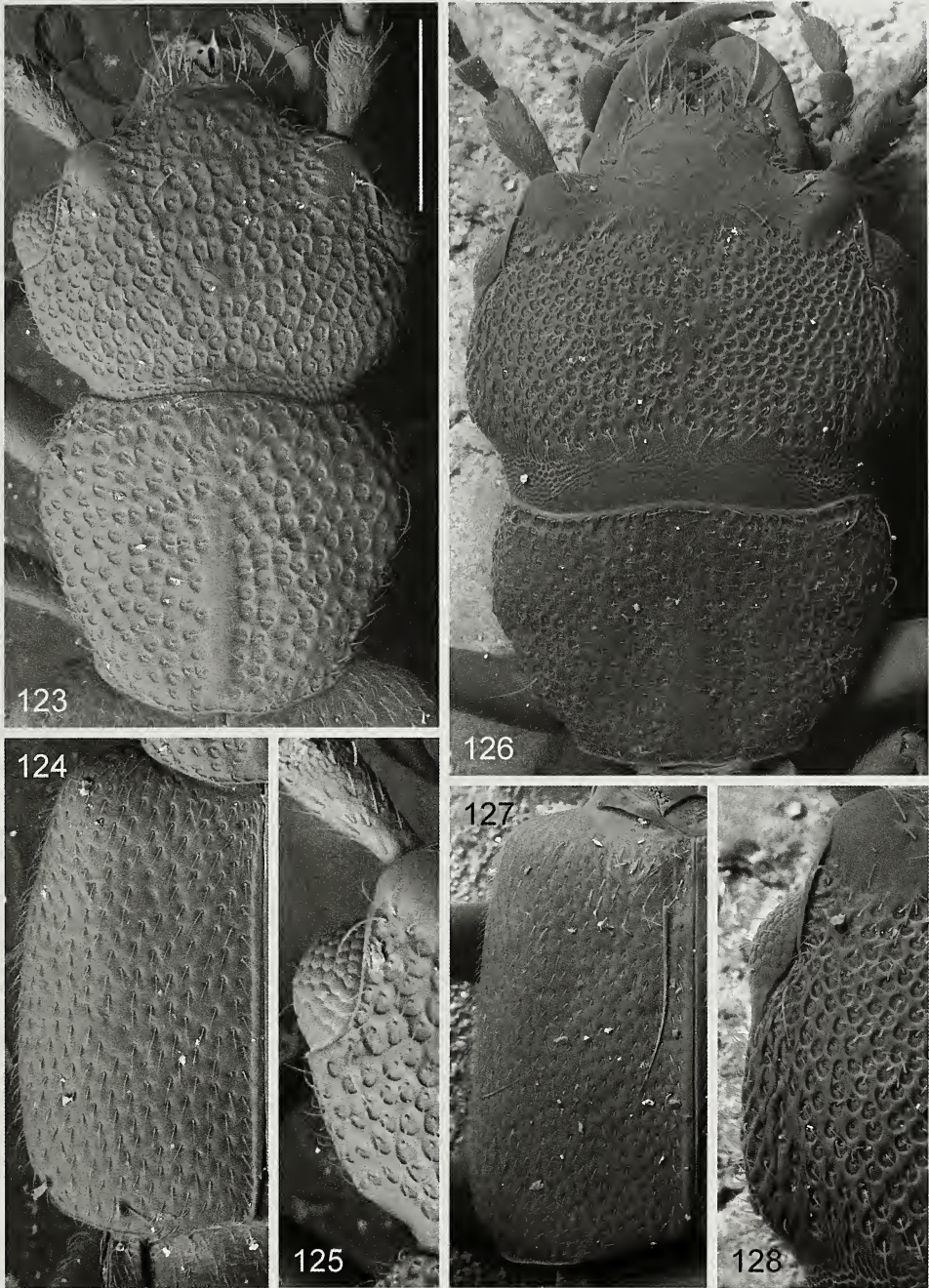
DESCRIPTION: Forebody as in Fig. 132. Measurements (n=5): HW = 0.78 (0.74-0.84); TW = 0.80 (0.75-0.86); PW = 0.65 (0.62-0.69); SW = 0.63 (0.59-0.67); MW = 0.78 (0.75-0.84); AW = 0.63 (0.61-0.66); HL = 0.55 (0.50-0.59); EL = N/A; FL = 0.13 (0.12-0.14); TL = 0.25 (0.24-0.27); PL = 0.46 (0.44-0.48); SL = 0.68 (0.64-0.71); SC = 0.66 (0.62-0.69); FB = 1.78 (1.71-1.86); BL = 3.07 (2.97-3.30) mm. [Holotype teneral, so colour description is based on paratype from Cerro Campana (deposited in CNCI)]. Body 'bicoloured'. Head reddish dark brown (front of clypeal region and supraantennal prominences appear much lighter, yellowish, infraocular ridge blackish), pronotum yellow to light brown, elytra medium brown except shoulder area (not delimited) lighter, darkening towards apex. Abdomen yellow to light brown, darkening towards apex. Legs, mouthparts and antennae yellow to light brown. Pubescence rather sparse with very fine hairs, abdomen with longer setation.

Head and pronotum. Mid-antennal articles moderately elongate (antennomere 6 length:width = 0.074:0.060 mm). Clypeus (Fig. 98) basally broad trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.40-0.53. Infraocular ridge (Fig. 100) fine, in an angle continuing into a triangular postocular process. Temple fully and very broadly curved, outline of eye fitting perfectly into this arch. Pronotum (Fig. 98) with maximum width 1.85x base width (anterior part very transverse), anteriorly sides weakly rounded, anterior angles appear sharp (dorsal view). Behind clypeal area with a shallow, transversal, slightly V-shaped impression, on posterior part of vertex a rather deep concavity. On pronotal disc anterior 1/4 of the midline longitudinally impressed, similar longitudinal (parallel) impressions from anterior 1/4 along posterior half of midline, not so shiny, but elevated. Obtuse concavities from sides of disc to sides of whole pronotum, slightly posteriorly directed. Clypeal area and supraantennal prominences without punctation, shiny. Posterior half of pronotal midline elevated, but only parts of it rather shiny. Head with 30-32 'longitudinal' puncture lines, pronotum with about 24 'longitudinal' puncture lines, loosened punctation on anterior vertex, pronotum with somewhat smaller punctures than on head.

Elytra and abdomen. Elytra (Fig. 99) dilating posteriorly, impressions behind scutellum rather deep. Medially serrate fringe present on hind margin of tergite VII. Elytral punctation not umbilicate, a little finer than on head, interspaces about 3/4-1 of puncture diameters. Bases of tergites (posterior to basal ridges) without apparent microsculpture, segments with small, very scattered punctures. Aedeagus as in Fig. 138.

ETYMOLOGY: The species is named in honor of Dr. Alfred Newton of the Field Museum of Natural History (Chicago) who made an especially important contribution to the systematics of Oxytelinae.

COMPARATIVE NOTES: This species has a unique eye formation: the postocular process is so strongly developed that it forms a perfect arch with the eyes and the temples. Similar (but no so perfect) arch can be found in *P. brasilianus* (with much less



FIGS 123-128

(123-125) *Parosus thayerae* sp. n.; head and pronotum (123), elytron (124), side of head (125).
 (126-128) *P. unicoloratus* sp. n.; head and pronotum (126), elytron (127), side of head (128). All SEM, dorsal views. Scale bar = 0.15 mm for 125, 0.25 mm for 123, 124, 128, 0.4 mm for 126, 127.

transverse pronotum anterior, see details under *P. brasilianus*) and *P. skalitzkyi* (a 'uni-coloured' species with tiny, scattered punctures on the elytra).

DISTRIBUTION: The species is known only from Panama (Prov. Bocas del Toro and Prov. Panamá).

BIONOMICS: Specimens were collected by sifting litter in premontane rain forest.

***Parosus portobelo* sp. nov.**

Figs 24, 107-110, 136, 139

TYPE MATERIAL: HOLOTYPE (♂), "[PANAMA:] [Colon Prov.,] PortoBello [=Portobelo, 9°33'N, 79°39'W], Pan Mar 4? [19]11, [leg.] E. A Schwarz" (AMNH). – PARATYPES (12), PANAMA: Colon Prov., Portobelo, 26.II.1911, leg. E. A Schwarz, (AMNH, 1), same but 12.III.1911, leg. E. A Schwarz, (AMNH, 1), Coclé Prov., 7.2km NE El Copé, 730m, 08°37' N, 80°35' W, 20.V-7.VI.1995, leg. J. Ashe, R. Brooks (#140), ex: flight intercept trap (SEMC, 1). – COSTA RICA, Puntarenas Prov., Península de Osa, 7km W Rincón, Est.[ación] F.[undación] N.[Neotrópica] Aguas Buenas [8°41'N, 83°30'W], 50m, 21-25.VI.1997, leg. S. & J. Peck (CR1P97 025), flight intercept trap (SEMC, 1), Heredia Prov., La Selva Biol. Res. Sta., 3.2km SE Puerto Viejo [de Sarapiquí] [10°25'45"N, 83°58'52"W], 100m, 19.II.1992. leg. W. Bell, flight intercept trap (SEMC, 1), Heredia Prov.: La Selva Biol. Station nr. Puerto Viejo de Sarapiquí [10°25'53"N, 84°00'20"W, 50m], 18.II.1985, leg. L. Herman (#2111), beating trees and shrubs (AMNH, 1), same but leg. L. Herman (#2120), beating trees and shrubs (AMNH, 2), same but leg. L. Herman (#2123), at the shore of a stream (AMNH, 1), Heredia Prov.: La Selva Biol. Station nr. Puerto Viejo de Sarapiquí, 18.II.1985, leg. L. Herman (#2124), beating trees and shrubs (AMNH, 2, MHNG, 1).

DESCRIPTION: Habitus as in Fig. 136. Measurements (n=5): HW = 0.58 (0.54-0.62); TW = 0.55 (0.52-0.60); PW = 0.51 (0.49-0.56); SW = 0.51 (0.48-0.56); MW = 0.61 (0.58-0.66); AW = 0.56 (0.54-0.57); HL = 0.41 (0.39-0.44); EL = 0.14 (0.14-0.15); FL = 0.12 (0.12-0.13); TL = 0.13 (0.12-0.15); PL = 0.39 (0.35-0.42); SL = 0.56 (0.54-0.61); SC = 0.54 (0.52-0.59); FB = 1.42 (1.34-1.53); BL = 2.55 (2.31-2.83) mm. Body 'bicoloured'. Head reddish medium to dark brown (supraantennal prominences appear lighter, almost orange, front of clypeal region medium brown to orange, infraocular ridge dark brown, mediad of supraantennal prominences with two little darker spots). Pronotum orange to light brown, elytra medium to dark brown except shoulder sometimes lighter, darkening towards apex. Abdomen light brown, gradually darkening towards apex (tergites VII-VIII dark brown). Legs, mouthparts and antennae light brown. Pubescence short and rather sparse, but more dense on elytra and much longer on abdomen.

Head and pronotum. Mid-antennal articles about as long as wide (antennomere 6 length:width = 0.050:0.049 mm). Clypeus (Fig. 107) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.28-0.33. Infraocular ridge (Fig. 110) fine but well visible, ending in a small, shiny postocular process and short keel behind posterior edge of the eye. Temple curved, most strongly in the middle, with eye more or less bulging. Pronotum (Fig. 108) with maximum width 1.72-1.78x base width, sides strongly but evenly curved in the anterior half, straight (or almost so) posteriorly, anterior angles sharp. Clypeus and supra-antennal ridges almost unpunctured, shiny. Frontoclypeal groove well visible, medium deep, reached by the umbilicate punctation. Middle of vertex slightly elevated with more sparse punctation (consequently more shiny), posteriorly and anteriorly slightly



FIGS 129-134

Forebodies of new *Parosus* species. *P. longipennis* sp. n. (129), *P. simplex* sp. n. (130), *P. taliaferroae* sp. n. (131), *P. newtoni* sp. n. (132), *P. thayerae* sp. n. (133), *P. unicoloratus* sp. n. (134).

depressed, latter continued into the shallow frontoclypeal transversal depression. Posterior pronotal midline a shiny, elevated, unpunctured stripe, anterior and along its two sides with longitudinal depressions. Pronotal sides with impressions around the middle. Head with 20-22 'longitudinal' puncture lines, pronotum with 20-22 'longitudinal' puncture lines, a loosened transversal area mid-vertex.

Elytra and abdomen. Elytra (Fig. 109) slightly dilating posteriorly, with two small, roundish impressions behind scutellum. Medially serrate fringe present on hind margin of tergite VII. Head, pronotum and elytra with roughly the same sized punctures, but elytral punctation not umbilicate, interspaces about 1/3-2/3 of puncture diameters. Bases of tergites (posterior to basal ridges) almost without any micro-sculpture, segments with a few small, scattered punctures. Aedeagus as in Fig. 139.

ETYMOLOGY: The specific epithet is the locality of the holotype, noun in apposition.

COMPARATIVE NOTES: Of the similarly 'bicoloured' and small-sized species (*P. longipennis* and *P. brasilianus*) it can be distinguished by the combination of the bulging eyes and elongate antennae (*P. longipennis* has stouter antennae, while the eyes of *P. brasilianus* are not so much bulging).

DISTRIBUTION: The species is known from two pairs of localities in Costa Rica and in Panama, respectively.

BIONOMICS: The known specimens were either beaten from branches or captured in flight intercept traps. The single exemplar from a streambank must be a chance occurrence.

***Parosus rossii* sp. nov.**

Figs 111-114, 137, 140

TYPE MATERIAL: HOLOTYPE (♂), "ECUADOR, Cotopaxi [Prov.], Bosque Integral Otonga, 15-Sep-2007, 1961m, Ex: Fumigación F6, S 00°25' 16.5", W 079°00' 09", leg. A.C. Proaño, C.&A. Barragán" (CNCI). – PARATYPES (99), same data as holotype (HNHM, 27, AMNH, 2, FSCA, 2, ISNB, 1♂, 3, NHMW, 2, SEMC, 4, USNM, 2, ZMHB, 4, CNCI, 5, QCAZ, 6, ICNC, 1), Cotopaxi Prov., Bosque Integral Otonga, 1.VI.2007, 1975m, ex: Fumigación F1, S 00°25' 16.6", W 79°00' 20.4", leg. A.C. Proaño, C.&A. Barragán, (HNHM, 17, AMNH, 2, BMNH, 1♂, 1, MNHP, 2, SMNS, 4, USNM, 2, MHNG, 2, QCAZ, 4), Cotopaxi Prov., Canton Sigchos, Las Pampas, Bosque Integral Otonga, 2.VI.2007, leg. C. Proaño & A. Barragán, Laboulbeniales n. 3152 and 3153 Walter Rossi (FMNH, 2), Cotopaxi Prov., Canton Sigchos, Las Pampas, Bosque Integral Otonga, 15.IX.2007, leg. C. Proaño & A. Barragán, Laboulbeniales n. 3378 Walter Rossi (FMNH, 2).

DESCRIPTION: Habitus as in Fig. 137. Measurements (n=7): HW = 0.71 (0.65-0.76); TW = 0.71 (0.65-0.76); PW = 0.67 (0.62-0.72); SW = 0.66 (0.62-0.70); MW = 0.82 (0.77-0.87); AW = 0.64 (0.61-0.68); HL = 0.56 (0.50-0.60); EL = 0.14 (0.12-0.15); FL = 0.11 (0.10-0.11); TL = 0.23 (0.21-0.25); PL = 0.47 (0.42-0.50); SL = 0.74 (0.71-0.77); SC = 0.73 (0.70-0.76); FB = 1.82 (1.67-1.94); BL = 3.24 (2.73-3.72) mm. Body 'bicoloured', but with medium brown elytra. Head very dark brown to black (supra-antennal prominences only slightly lighter), pronotum strongly reddish medium brown, elytra uniformly dark brown to blackish with gently reddish overtone, abdominal base in varying extent orangeish till tergite V with posterior parts, rest of abdomen dark brown. Legs, mouthparts and antennae reddish medium brown the exception of the



FIGS 135-137

Habitus of new *Parosus* species. *P. minutus* sp. n. (135), *P. portobelo* sp. n. (136), *P. rossii* sp. n. (137).

bases of antennomeres very slightly darker. Pubescence medium short and medium dense equally on the forebody, except frons, where slightly longer and sparse, abdomen with much longer and more sparse setae.

Head and pronotum. Mid-antennal articles about as long as wide (antennomere 6 length:width = 0.068:0.068 mm). Clypeus (Fig. 111) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.41-0.45. Infraocular ridge (Fig. 114) conspicuous but rather fine, weakly continues in a short keel after the posterior edge of the eye. Temple rather straight, most curved at the posterior 2/3 (and there appear as rather angled), eye strongly bulging. Pronotum (Fig. 112) with maximum width 1.84 base width, sides curved mostly in the anterior half, but turning into the almost straight posterior half in an unbroken arch; anterior pronotal angles rather sharp. Clypeus and supraantennal ridges very shiny, with a few small, scattered punctures only, contrasting to the mostly strongly punctate vertex. Clypeus very slightly elevated, frontoclypeal groove almost indistinct, only appear as borderline to the more strongly punctured area. Posterior half of vertex very gently impressed, with a rather slight longitudinal loosening of the punctation. Posterior part of pronotal midline an elevated and shiny stripe, anteriorly continuing into a longitudinal depression with some scabrous sculpture. Along sides of midline the pronotal disc gently but broadly depressed (on both sides). Head with 28-30 'longitudinal' puncture lines, pronotum with 26-30 'longitudinal' puncture lines, on pronotum very slightly smaller punctures compared to those on head, punctation loosened in the triangle of the supraantennal prominences and the mid-vertex.

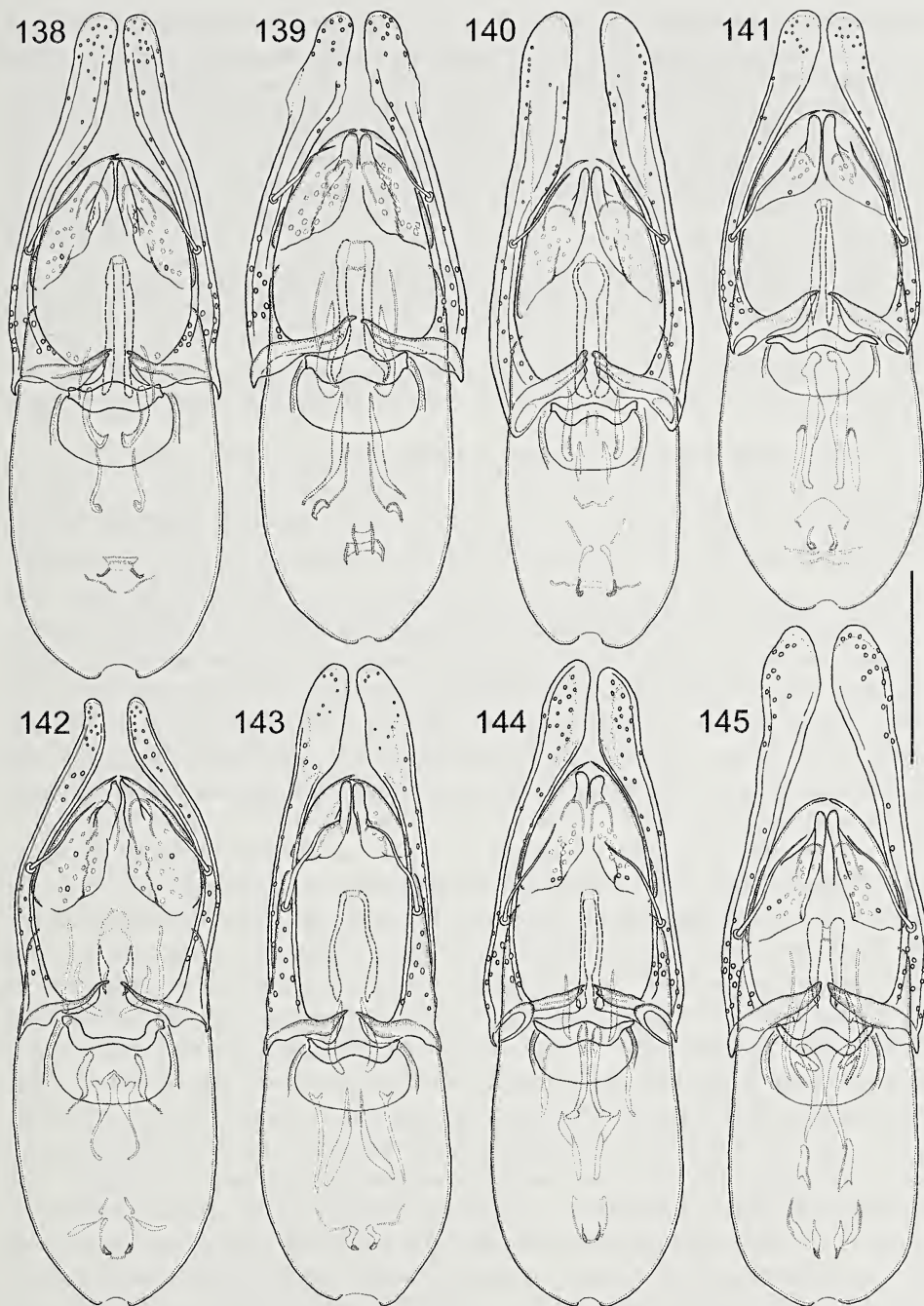
Elytra and abdomen. Elytra (Fig. 113) slightly dilating posteriorly, with two small, elongate impressions behind scutellum, scabrous sculptured. Medially serrate fringe present on hind margin of tergite VII. Elytral punctation not umbilicate, same size as on pronotum, interspaces about 1/3-1/2 of puncture diameters. Bases of tergites (posterior to basal ridges) with fine transversal coriaceous microsculpture, segments with medium fine, scattered punctures. Aedeagus as in Fig. 140.

ETYMOLOGY: The species is named after Dr. Walter Rossi, who while studying Laboulbeniales (Fungi) in Central and South America, collected very valuable material of *Parosus* that greatly added to the knowledge of the genus. This is the species referred to as *Parosus* sp. nov. in Rossi (2010), in the description of *Dimorphomyces carolinae* Rossi, 2010, a parasitic fungus.

COMPARATIVE NOTES: Of the similarly large and 'bicoloured' species (*P. hilaris*, *P. taliaferroae*, *P. bicoloratus*) this species can be distinguished by not having a delimited dark cross-stripe across the abdomen (as opposed to *P. hilaris* and *P. taliaferroae*) but possessing a medially serrate fringe on the hind margin of tergite VII with digitiform processes (lacked by *P. taliaferroae* and *P. bicoloratus*).

DISTRIBUTION: The species is known only from the type locality in Ecuador (Cotopaxi Prov.).

BIONOMICS: All the known material was collected by fogging with insecticide.



FIGS 138-145

Aedeagi, frontal views. *P. newtoni* sp. n. (138), *P. portobelo* sp. n. (139), *P. rossii* sp. n. (140), *P. simplex* sp. n. (141), *P. skalitzkyi* Bernhauer (142), *P. taliaferroae* sp. n. (143), *P. thayerae* sp. n. (144), *P. unicoloratus* sp. n. (145). Scale bar = 0.09 mm for 139, 0.10 mm for 138, 142, 144, 0.12 mm for 141, 144, 0.13 mm for 140, 145.

Parosus simplex sp. nov.

Figs 115-118, 130, 141

TYPE MATERIAL: HOLOTYPE (♂), "PERU, Cuzco Dept., Consuelo, Manu rd., km. 165 [13°02'S, 71°30'W, 1050m], 1.X.1982, [leg.] L. E. Watrous & G. Mazurek (FMHD #82-318), ex litter under rotten palm" (FMNH). – PARATYPES (10), PERU, Cuzco Dept., Consuelo, Manu rd., km. 165, 1.X.1982, leg. L. E. Watrous and G. Mazurek (FMHD #82-315), ex litter at rotten logs (FMNH, 1), same but leg. L. E. Watrous and G. Mazurek (FMHD #82-318), ex litter under rotten palm (FMNH, 1), same but 4.X.1982, leg. L. E. Watrous and G. Mazurek (FMHD #82-336), ex rotten palm (FMNH, 1♂, 1), same but 5.X.1982, leg. L. E. Watrous and G. Mazurek (FMHD #82-343), ex rotten palm (FMNH, 1, MHNG, 1♂), same but 6.X.1982, leg. L. E. Watrous and G. Mazurek (FMHD #82-348), ex litter under rotten palm (FMNH, 2), same but 12.X.1982, leg. L. E. Watrous and G. Mazurek (FMHD #82-377), ex litter under rotten palm (FMNH, 1♂), same but 14.X.1982, leg. L. E. Watrous and G. Mazurek (FMHD #82-384), ex leaf litter & mushrooms (CNCI, 1♂).

OTHER MATERIAL: PERU, Cuzco Dept., Consuelo, Manu rd., km. 165, 4.X.1982, leg. L. E. Watrous & G. Mazurek (FMHD #82-336), ex rotten palm (FMNH, 1, specimen missing tip of abdomen).

DESCRIPTION: Forebody as in Fig. 130. Measurements (n=6): HW = 0.66 (0.59-0.72); TW = 0.65 (0.57-0.71); PW = 0.65 (0.59-0.70); SW = 0.59 (0.53-0.65); MW = 0.71 (0.67-0.75); AW = 0.59 (0.57-0.63); HL = 0.50 (0.45-0.55); EL = 0.12 (0.11-0.13); FL = 0.09 (0.09-0.10); TL = 0.21 (0.17-0.24); PL = 0.44 (0.40-0.46); SL = 0.65 (0.61-0.69); SC = 0.63 (0.59-0.67); FB = 1.66 (1.52-1.78); BL = 2.95 (2.71-3.16) mm. Body strongly reddish. Head and pronotum medium to dark brown (area of infraocular ridges and two medially situated spots at supraantennal prominences blackish). Elytra medium to dark brown (slightly and indefinitely darkening posteriorly), shoulder areas often lighter, orangeish. Abdomen medium to light brown (apex not conspicuously darkened), first few visible tergites often lighter, yellowish. Legs, mouthparts and antennae medium to light brown. Pubescence rather short and sparse, a little shorter and more dense on elytra.

Head and pronotum. Mid-antennal articles moderately transversal (antennomere 6 length:width = 0.053:0.065 mm). Clypeus (Fig. 115) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.60-0.81. Infraocular ridge (Fig. 118) fine, slightly continuing after posterior edge of eye in short keel. Temple broadly rounded, first half almost straight, more curved posteriorly. Pronotum (Fig. 116) with maximum width 1.81x base width, sides almost evenly rounded (convex) all the length, no straight parts, but anteriorly sometimes little more curved, anterior angles appearing sharp (in dorsal view). Shiny, almost unpunctured clypeus, not delimited (frontoclypeal groove absent, only marked by a trace of a sometimes blackish line). Supraantennal prominences shiny, unpunctured. Posterior half of vertex shallowly impressed. First half of pronotal disc shallowly impressed along midline, this impression spreading to posterior half, around a slightly elevated, shiny, unpunctured stripe in posterior half of midline. Pronotal side with a slight trace of depression around the middle. Head with 24-26 'longitudinal' puncture lines, pronotum with 24-26 'longitudinal' puncture lines, head punctation loosened on mid- and anterior vertex, on pronotum a tiny bit larger punctures than those on head.

Elytra and abdomen. Elytra (Fig. 117) slightly dilating posteriorly, behind scutellum distinct but not too deep impressions. Medially serrate fringe absent on hind

margin of tergite VII. Elytral punctation not umbilicate, punctures similar in size to the ones on head, interspaces about 1/2 of puncture diameters. Bases of tergites (posterior to basal ridges) without apparent microsculpture, segments with a few tiny, very scattered punctures. Aedeagus as in Fig. 141.

ETYMOLOGY: The species is named after its lack of contrasting colours and other peculiar traits, including absence of the very characteristic medially serrate fringe on the posterior edge of tergite VII.

COMPARATIVE NOTES: Being a 'unicoloured' species with rather light (reddish-brownish) body colour and one of only four that misses the medially serrate fringe on the hind margin of tergite VII, this species is easy to recognize.

DISTRIBUTION: The species is so far known from a single location in the southern part of Peru (Cuzco Dept.).

BIONOMICS: Specimens were collected from (rotten) litter under palm trees.

Parosus skalitzkyi Bernhauer, 1905

Figs 39, 104-106, 142

Parosus skalitzkyi Bernhauer, 1905: 12. – Blackwelder, 1943: 103. – Herman, 1970: 400. – Herman, 2001: 1464.

TYPE MATERIAL EXAMINED: LECTOTYPE (♂, here designated), “♂ \ [Antilles,] Grand Etang [12°06'13"N, 61°41'53"W]; (Windward side) 1900 ft; Grenada, W. I.; H. H. Smith. \ skalitzkyi m. \ det. Bernhauer \ Dr. M. Bernhauer; 4.12 donavit 1936 \ ex coll.; Scheerpeltz \ Cotypus; Parosus; skalitzkyi; Bernhauer \ skalitzkyi Bernh. \ Lectotypus; Parosus; skalitzkyi Bernhauer; des. Makranczy, 2000 \ Parosus; skalitzkyi Bernhauer; det. Makranczy, 2000” (NHMW). – **PARALECTOTYPES** (3), same data as lectotype (NHMW, 1), “[Antilles,] Leeward side; St. Vincent [13°16'N, 61°13'W], W. I.; H. H. Smith.; 20. \ c. Eppelsh.; Steind. d. \ skalitzkyi m.; det. Bernhauer \ Co.; Typus \ Paralectotypus; Parosus; skalitzkyi Bernhauer; des. Makranczy, 2000 \ Parosus; skalitzkyi Bernhauer; det. Makranczy, 2000” (FMNH, 1), (NHMW, 1).

OTHER MATERIAL: none.

REDESCRIPTION: Measurements (n=1): HW = 0.70; TW = 0.68; PW = 0.55; SW = 0.57; MW = 0.66; AW = 0.58; HL = 0.49; EL = 0.16; FL = 0.125; TL = 0.19; PL = 0.42; SL = 0.61; SC = 0.58; FB = 1.59; BL = 2.86 mm. Body 'unicoloured'. Head, pronotum, elytra and abdomen reddish dark brown, only clypeal area, supraantennal prominences, pronotum, shoulder area and posterior margins of tergites a tiny bit lighter. Legs, mouthparts and antennae medium brown, with first three antennomeres rather yellowish and from middle of fourth antennomere darkened (medium to dark brown) to base of last antennomere. Pubescence medium short and rather sparse. Quite shiny species, punctured areas not separating sharply.

Head and pronotum. Mid-antennal articles about as long as wide (antennomere 6 length:width = 0.054:0.055 mm). Clypeus (Fig. 104) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.53-0.55. Infraocular ridge (Fig. 106) stronger anteriorly, finer posteriorly, ending in a short keel at posterior edge of eye. Temple very evenly curved, but eye bulging a little from this arch. Pronotum (Fig. 104) with maximum width 1.57-1.67x base width, sides curved in anterior half, straight posteriorly, anterior angles slightly sharp (strongly curved sides near the angle). Clypeus and supraantennal ridges unpunctured, shiny. Frontoclypeal groove strong, rather deep, posteriorly continuing in (sometimes

furrow-like) longitudinal depression dividing vertex into two halves. Pronotal midline anteriorly with a flat, sparsely punctured area and continuing posteriorly from middle as shiny, unpunctured stripe. On both sides of it two longitudinal impressions, all a little steplike broken in the middle (step sometimes continuing laterally in impressions on sides of pronotal disc). Laterad of posterior midline, outside longitudinal impressions with two elevated areas. Pronotal sides impressed around middle. Head with 18-22 'longitudinal' puncture lines, well-defined umbilicate punctures, punctuation somewhat sparser on mid- and anterior vertex. Pronotum with about 18 poorly defined 'longitudinal' puncture lines (better visible at longitudinal elevations), with punctures of uneven sizes, usually smaller than those on head.

Elytra and abdomen. Elytra (Fig. 105) slightly dilating posteriorly, with two small, longitudinal, rather deep impressions behind scutellum. Medially serrate fringe present on hind margin of tergite VII. Elytra with only tiny and very scattered punctures, surface covered by microsculpture: cobweb-like fine scratches. Abdominal segments have no apparent microsculpture, only tiny punctures. Aedeagus as in Fig. 142.

COMPARATIVE NOTES: Compared to *P. antillarum*, the other species living in the Lesser Antilles, it has larger, less bulging eyes, furrow divides the vertex into two halves and the elytra is strongly punctured. Compared to the two other similar sized species that have similar eye formation (strong postocular processes), from *P. newtoni* and *P. brasiliensis* it can be distinguished by the 'unicoloured' body and the characteristic tiny, scattered punctures of the elytra.

DISTRIBUTION: The species is known from the Lesser Antilles (only the type material).

BIONOMICS: Unknown.

NOTE: Since the lectotype looks rather different from the other known specimens, and is the only male in the type series, it seems safer to base the description and the measurements on this specimen only. In lack of other male specimens, it is impossible to know about the range of intraspecific variation.

***Parosus taliaferroae* sp. nov.**

Figs 26, 32-34, 119-122, 131, 143

TYPE MATERIAL: HOLOTYPE (♂), "PANAMA, Coclé Prov., El Copé, Atlantic Slope, 08°37'N, 80°35'W, 730m, 19-20 Nov.1994, [leg.] D. Windsor, C. Edwards, ex: flight intercept trap" (SEMC). – PARATYPES (8), PANAMA, Bocas d. Toro Prov., Fortuna/Chiriquí Grande road, 8°47'N, 82°11'W, 800m, 14-16.VII.1987, leg. D.M. Olson, premontane rain forest, sifting litter (FMNH, 1♀, CNCI, 1♀), Chiriquí Prov., La Fortuna, "Hydro. Trail" 08°42'N, 82°14'W, 1150m, 23.V.-9.VI.1995, leg. J. Ashe, R. Brooks (#156), ex: flight intercept trap (SEMC, 1♀), Chiriquí Prov., La Fortuna, "Cont. Divide Trail", 08°46'N, 82°12'W, 1150m, 9.VI.1995, leg. J. Ashe, R. Brooks (#159), ex: rotten elephant ear leaves (SEMC, 1♀), Coclé Prov., 7.2km NE El Copé, 08°37'N, 80°35'W, 730m, 20.V.-7.VI.1995, leg. J. Ashe, W. Brooks (#140), ex: flight intercept trap (SEMC, 2♀, MHNG, 1♀), Coclé Prov., 7.0km N El Valle, 08°36'N, 80°07'W, 810m, 19.V.1995, leg. J. & A. Ashe (#023), ex: Heliconia flowers (SEMC, 1♀).

DESCRIPTION: Forebody as in Fig. 131. Measurements (n=2): HW = 0.68 (0.65-0.70); TW = 0.69 (0.66-0.71); PW = 0.66 (0.63-0.68); SW = 0.61 (0.57-0.65); MW = 0.72 (0.70-0.73); AW = 0.63 (0.60-0.66); HL = 0.55 (0.51-0.59); EL = 0.15 (0.13-0.17);

FL = 0.12 (0.10-0.13); TL = 0.25 (0.24-0.25); PL = 0.45 (0.43-0.46); SL = 0.67 (0.63-0.71); SC = 0.65 (0.60-0.69); FB = 1.74 (1.64-1.84); BL = 3.21 (2.87-3.54) mm. Body 'bicoloured' (usually less bright, less contrasting than *P. hilaris*). Head dark brown, supraantennal prominences and front of clypeus appear much lighter, reddish light or medium brown, mediad of supraantennal prominences two larger black spots near ends of frontoclypeal (= epistomal) sulcus, pronotum reddish light brown (sometimes almost orange), elytra dark brown except shoulder area (well delimited, from scutellum to 2/5 of elytra) lighter (yellow to light brown). Abdomen yellow to light brown, tergites V-VI darkened (medium brown). Legs, mouthparts and antennae yellow to light brown. Pubescence medium short (elytra shortest) and rather dense (especially head and to lesser extent pronotum), longer and more sparse on abdomen.

Head and pronotum. Mid-antennal articles about as long as wide (antennomere 6 length:width = 0.062:0.060 mm). Clypeus (Fig. 119) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.50-0.55. Infraocular ridge (Fig. 122) strong, ending in an elevated triangular part of a smaller, shiny postocular stripe and a posteriorly vanishing keel after posterior edge of eye. Temple almost straight (slightly dilating) long after eye, but rather angled at posterior 1/4 or just strongly curved in posterior half, eye strongly bulging. Pronotum (Fig. 120) with maximum width 1.85-1.97x base width, sides curved all the way, most strongly anteriorly, anterior angles sharp. Clypeus and supraantennal ridges almost unpunctured, shiny (only a few tiny, scattered punctures). Vertex slightly depressed along an indistinct longitudinal midline, middle of vertex sometimes more shiny (more sparse punctation, confluent interspaces) V- or arrowhead-shaped. Pronotal midline as a V-shaped shiny elevation, lines becoming finer and vanishing anteriorly (between them microsculpture), not reaching anterior edge. Laterad two longitudinally elongate impressions, with two elevated shiny spots at their outer middle. Pronotal sides with slight impressions around the middle. Head with 26-28 'longitudinal' puncture lines, pronotum with about 24 'longitudinal' puncture lines, punctation indefinitely loosened around midline of (head) disc, pronotum with similar puncture sizes as those on head.

Elytra and abdomen. Elytra (Fig. 121) slightly dilating posteriorly, with two small, slightly elongate, rather deep impressions behind scutellum. Medially serrate fringe absent on hind margin of tergite VII (Fig. 26). Elytral punctation not umbilicate, puncture sizes almost same as on pronotum, or a little smaller, interspaces about 2/3-1/2 of puncture diameters. Almost no visible microsculpture on bases of abdominal tergites (posterior to basal ridges), segments with a few small, scattered punctures only. Aedeagus as in Fig. 143, spermatheca as in Fig. 34.

ETYMOLOGY: The species is named in honor of Sara Taliaferro, an illustrator with the Snow Entomological Museum at the time of my starting as a PhD student there, this is also to acknowledge the contribution she made to my scientific career.

COMPARATIVE NOTES: Most similar to *P. hilaris*, but lacks the medially serrate fringe on the hind margin of tergite VII. The punctation of the head and pronotum is slightly more dense than in *P. hilaris*. From the more distantly similar *P. bicoloratus* (which also lacks the medially serrate fringe on the hind margin of tergite VII) it can

be distinguished by the differently positioned abdominal darkening (see details under *P. bicoloratus*) and less elongate antennae. From *P. rossii* it can be separated by a light abdominal apex (*P. rossii* has dark apex) as well as the absence of the medially serrate fringe on the hind margin of tergite VII in *P. rossii*.

DISTRIBUTION: The species is so far known from a series of specimens collected in Panama.

BIONOMICS: Specimens were gathered primarily by sifting leaf litter but also by flight intercept traps and from various decaying and other vegetable materials.

***Parosus thayerae* sp. nov.**

Figs 123-125, 133, 144

TYPE MATERIAL: HOLOTYPE (♂), "PERU, Huánuco Dept., N side Cerro Carpish, 2400 m, vic. Chinchao, site 670 [9°40'07"S, 76°04'00"W], 9-15.I.1983, [leg.] A. Newton & M. Thayer, cloud forest, window trap" (FMNH). — PARATYPES (3), PERU, Huánuco Dept., N side Cerro Carpish, vic. Chinchao, 2400m, site 670, 9-15.I.1983, leg. A. Newton & M. Thayer, cloud forest, window trap (MHNG, 1♀), Huánuco Dept., N side Cerro Carpish, vic. Chinchao, 2420m, site 675 [9°40'09"S, 76°04'00"W], 12-15.I.1983, leg. A. Newton & M. Thayer, cloud forest, window trap (FMNH, 1♂), Huánuco Dept., Cordillera Azul, 39 km NE Tingo María, trap site 672 [8°57'37"S, 75°55'41"W], 1700m, 11-14.I.1983, leg. A. Newton & M. Thayer, montane rain-forest, window trap (FMNH, 1♀).

DESCRIPTION: Forebody as in Fig. 133. Measurements (n=3): HW = 0.50 (0.47-0.53); TW = 0.47 (0.42-0.50); PW = 0.46 (0.43-0.48); SW = 0.54 (0.50-0.57); MW = 0.68 (0.66-0.69); AW = 0.56 (0.52-0.60); HL = 0.36 (0.34-0.38); EL = 0.12 (0.12-0.12); FL = 0.10 (0.09-0.10); TL = 0.12 (0.11-0.14); PL = 0.42 (0.40-0.44); SL = 0.68 (0.64-0.71); SC = 0.67 (0.62-0.70); FB = 1.52 (1.44-1.59); BL = 2.65 (2.61-2.68) mm. Body 'unicoloured'. Head and pronotum dark brown, only supraantennal prominences and (sometimes) posterior half of pronotal midline a tiny bit lighter. Elytra and abdomen medium to dark brown (outer half of elytra and posterior half of abdominal tergites perhaps lighter). Legs, mouthparts and antennae not differing from rest of body in colouration, medium to dark brown. Pubescence rather short and sparse everywhere, no difference between body parts.

Head and pronotum. Mid-antennal articles moderately elongate (antennomere 6 length:width = 0.060:0.050 mm). Clypeus (Fig. 123) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.51-0.57. Infraocular ridge (Fig. 125) fine, not continuing behind posterior edge of eye. Temple broadly rounded, more strongly posteriorly, almost straight anteriorly. Pronotum (Fig. 123) with maximum width 1.47x base width, sides rounded anteriorly, straight or even a little convex in posterior half, anterior angles appear very obtuse, rounded (in dorsal view). Head with only supraantennal ridges shiny and unpunctured. Sometimes with a small shiny spot in middle of vertex. Posterior half of pronotal midline strongly elevated, shiny, unpunctured. Pronotal sides rather even, without impression anteriorly. Head with about 18 'longitudinal' puncture lines, pronotum with 16-18 'longitudinal' puncture lines, head punctation a tiny bit loosened on mid-vertex, pronotum with somewhat larger punctures than those on head.

Elytra and abdomen. Elytra (Fig. 124) slightly dilating posteriorly, behind scutellum very shallowly impressed. Medially serrate fringe absent on hind margin of tergite VII. Elytral punctation not umbilicate, punctures are similar in size to those on

head, interspaces about 1/3-1/5 of puncture diameters. Bases of tergites (posterior to basal ridges) with scabrous microsculpture, surface of tergites uneven with indistinct (tiny) punctures. Aedeagus as in Fig. 144.

ETYMOLOGY: The species is named after Dr. Margaret K. Thayer, curator of Staphylinidae in Field Museum of Natural History (Chicago) and collector of the type series.

COMPARATIVE NOTES: This is a species of very characteristic look and is also one of the four species that miss the medially serrate fringe on the hind margin of tergite VII. The clypeus is punctured the same way as the rest of the dorsal surface of the head, unique amongst all the named species. The head is round and dorsally convex, its surface and that of the pronotum is almost totally occupied by the punctures, therefore the appearance is very dull.

DISTRIBUTION: The species is so far known from a smaller set of specimens from Peru (Huánuco Dept.).

BIONOMICS: Collected by window trap in montane rainforest and cloud forest.

Parosus unicoloratus sp. nov.

Figs 19-21, 29, 126-128, 134, 145

TYPE MATERIAL: HOLOTYPE (♂), "BRAZIL, Est. Biol. Boracea [23°38'S, 45°52'W], Salesopolis, SP [= Estado de São Paulo], XII-17-26-1969, [leg.] J. M. & B. A. Campbell" (CNCI). - PARATYPE (1), BRAZIL, Estado de São Paulo, Salesopolis, Estação Biológica de Boracéia, 17-26.XII.1969, leg. J. M. & B. A. Campbell (MHNG, 1 ♀).

DESCRIPTION: Forebody as in Fig. 134. Measurements (n=2): HW = 0.91 (0.90-0.91); TW = 0.91 (0.89-0.93); PW = 0.82 (0.80-0.83); SW = 0.79 (0.77-0.81); MW = 0.96 (0.95-0.96); AW = 0.78 (0.76-0.80); HL = 0.72 (0.71-0.72); EL = 0.16 (0.15-0.16); FL = 0.13 (0.12-0.13); TL = 0.31 (0.30-0.32); PL = 0.57 (0.56-0.58); SL = 0.92 (0.91-0.93); SC = 0.91 (0.90-0.91); FB = 2.39 (2.35-2.43); BL = 4.34 (4.27-4.41) mm. Body 'unicoloured'. Head, pronotum and elytra reddish medium brown (clypeal region, supraantennal prominences, pronotum and the shoulder area appear somewhat lighter), mediad supraantennal prominences with two little darker spots. Infraocular ridges dark brown. Abdomen medium to light brown, posterior margins of tergites lighter, yellowish. Legs, mouthparts and antennae medium brown. Pubescence short and medium dense, on abdomen much longer and somewhat more sparse.

Head and pronotum. Mid-antennal articles very slightly elongate (antennomere 6 length:width = 0.088:0.082 mm). Clypeus (Fig. 126) trapezoid, ratio of longitudinal distance of supraantennal prominence tip from eyefront to the same from clypeal front = 0.50-0.54. Infraocular ridge (Fig. 128) strong, continuing in an anteriorly strong but posteriorly vanishing keel long behind posterior edge of eye. Temple staying almost straight (slightly dilating) long behind eye, but curving inwards at posterior 1/3-1/4, occasionally rather angled, eye strongly bulging. Pronotum (Fig. 126) with maximum width 1.71-1.76x base width, sides curved all the way, most strongly anteriorly, posteriorly only slightly, anterior angles sharp. Clypeus and supraantennal ridges almost unpunctate (only a few small punctures), shiny. Frontoclypeal impression only slightly visible, apparent as a fine arcuate line between unpunctate clypeus and punctate vertex. Vertex a little elevated in anterior half of midline, apparent as a shinier

spot with confluent puncture interspaces. Middle of vertex posteriorly slightly impressed. Posterior part of pronotal midline as an elevated and shiny stripe. An area anterior to and two longitudinal stripes along the posterior midline impressed, with more sparse punctation mixed with scabrous microsculpture in them. Pronotal sides with two slight oblique depressions around middle. Head with 32-34 'longitudinal' puncture lines, pronotum with 22-24 'longitudinal' puncture lines, from anterior vertex to middle a small area loosely punctured.

Elytra and abdomen. Elytra (Fig. 127) slightly dilating posteriorly, with two small, elongate impressions behind scutellum and anterior half of elytral disc also with extremely gentle oblique depressions. Medially serrate fringe (Fig. 29) present on hind margin of tergite VII. Punctation similarly sized on head, pronotum and elytra, but elytral punctation not umbilicate, interspaces about 1/3-1/2 of puncture diameters. Bases of tergites (posterior to basal ridges) very finely microsculptured (transversal coriaceous), segments with very fine, scattered punctation. Aedeagus as in Fig. 145.

ETYMOLOGY: The name refers to the uniformly (light) coloured body of the known specimens.

COMPARATIVE NOTES: Of the similarly large 'unicoloured' species (*P. longicornis*, *P. major*, *P. gigantulus*), this one is easily distinguished by the lighter (reddish-brownish) body colour. It has moderately elongate antennae, a rather flat head with slight depression at the vertex. Contrary to the most similar *P. gigantulus*, it has much finer punctation on the head and pronotum and a brownish body colour with lighter shoulders.

DISTRIBUTION: The species is known from one locality in Brazil (Estado de São Paulo), and is probably inhabitant of atlantic forest remnants.

BIONOMICS: Unknown.

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