

New species of Blaberidae and Ectobiidae (Blattaria) from Brazil

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ABSTRACT. We describe three new species collected from the Reserva Ducke (02°55′-03°01′S, 59°53′-59°59′W), near Manaus, state of Amazonas: one new species was included in Blaberidae (Epilamprinae): *Epilampra manauara* **sp. nov.**, which is similar to *E. sagitta* Rocha e Silva & Aguiar, 1978. It differs from that species in the generally darker coloration and the internal genitalia, which has the right phallomere hooked, developed, wide medially and distended apically, bearing an apical spine-like structure and a median sclerite with a larger prepuccium, rounded and with apex more sclerotized and with better-defined apical crests. Two new species were included in Ectobiidae (Blattellinae): *Chromatonotus amazoninus* **sp. nov.**, which is similar to *Chromatonotus caruaruensis* Lopes & Khouri, 2009 in the parallel brown marks on the pronotum, but differs in the shape of the subgenital plate, the median sclerite with a more-sclerotized tip, left phallomere with angulate apex (90 degrees) and apex curved, right phallomere with basal stem more slender and with apical arms dilated; and *Dasyblatta spiculata* **sp. nov.**, which has an asymmetrical genital plate and the median sclerite shaped as a spine apically, differing from other species of the genus. The specimens were collected in the evening, in leaf litter, from fallen logs, or on branches and foliage. The male genitalia are illustrated and the material studied is deposited in the collection of the Department of Entomology of the Museu Nacional do Rio de Janeiro (MNRJ).

KEY WORDS. Blattellinae; Epilamprinae; litter; taxonomy.

Forest ecosystems such as the Reserva Ducke have structurally complex habitats where cockroaches are highly diverse. These ecosystems offer many niches that are favorable to cockroaches, which live among dead leaves, branches, cracks and spaces on the bark of trees, and in hollow branches and tree trunks (BELL *et al.* 2007). In temperate climates, cockroach populations are not very dense, and for this reason these insects play a secondary role in the biology of temperate soils (EISENBEIS & WICHARD 1985). This is also true for rainforests, where ants, mites and springtails are dominant, and cockroaches are only occasionally observed (FITTKAU & KLINGE 1973). Similarly to most decomposers, cockroaches are so adaptable that their ecological role is not well defined (SCHEU & SETÄLÄ 2002). They are important food sources for many animals (CRESPO & VALVERDE 2008). During the day, specimens are found in litter, on the ground, and at dusk they fly to the understory foliage. In the morning, they return to take refuge in the litter. When they leave the litter on the ground, they usually ascend as high as 0.5 to 3.0 m on trunks and foliage (SCHAL & BELL 1986).

The specimens of Blattaria presented in this paper are included in the Blaberidae, which is the most derived family among the Blattaria, comprising large- and medium species with a high capacity for adaptation (*Epilampra manauara* **sp. nov.**); and in the Ectobiidae, which includes generally small

to medium-sized species (*Chromatonotus amazoninus* **sp. nov.** and *Dasyblatta spiculata* **sp. nov.**).

MATERIAL AND METHODS

Specimens were collected in the dense ombrophilous rainforest of the Reserva Ducke (02°55′-03°01′S, 59°53′-59°59′W) located near the municipality of Manaus, state of Amazonas, Brazil. Due to rapid adjacent urban expansion, areas of fragmentation and degradation can be observed in the southern edge of the reserve and around the edges. This process accelerates the isolation of the Reserva Ducke from other, adjacent areas of continuous forest.

In the laboratory, we detached the apical portion of the abdomen to study the genital plates, using traditional techniques of dissection described in LOPES & OLIVEIRA (2000). After analysis, the plates and genital parts were stored in microtubes containing glycerin, and stored with the exemplar, following a technique developed by GURNEY *et al.* (1964).

The terminology of the genitalia and taxonomic classification follow ROTH (2003).

For the purpose of identification, the material was compared with exemplars in the collection of the Museu Nacional (MNRJ) and with descriptions in the literature. All material

examined in this paper is deposited in the collection of the Department of Entomology at the Museu Nacional of Rio de Janeiro (MNRJ).

TAXONOMY

Epilampra manauara sp. nov.

Figs 1-7

Description. Measurements (mm) holotype male: Total length 27.26; length of pronotum 5.58; width of pronotum 6.87; length of tegmen 23.04; width of tegmen 6.68. Paratype female: Total length 32.12; length of pronotum 6.63; width of pronotum 8.10; length of tegmen 27.38; width of tegmen 7.92.

General coloration brown. Pronotum and tegmina almost entirely covered by dark-brown marks close to one another. Head with vertex, frons and eyes dark-brown; ocelli and clypeus paler (Fig. 1); antennae brown, golden tomentose; pulvilli and ventral area of arolium whitish.

Head. Subtriangular, vertex exposed underneath pronotum in dorsal view; median interocular space 1/2 distance between antennal insertion bases; antennae long and tomentose, reaching tip of abdomen; maxillary palp tomentose, with third, fourth and fifth segments subequal, the latter dilated.

Thorax. Pronotum subtrapezoidal, convex, transverse with lateral flaps deflexed and margins round; base angular and slightly projected (Fig. 2). Legs long and spiny, fore femur with ventrocephalic margin with four sparse robust spines up to median region, followed by a row of fourteen small spines up to apex and two robust apical spines; ventro-caudal margin with four robust and sparse spines, one apical; mid and hind femora with ventral surface bearing four or five robust and sparse spines, one apical; genicular spine present; pulvilli on all tarsomeres; arolia present; claws symmetrical and simple. Tegmen long, reaching beyond apex of cercus, marginal field narrow, short and deflexed; scapular field narrow, venular disposition oblique; discoidal field ample, veins longitudinally arranged; anal field ample and elongate. Wings well developed, apical branches of radial vein not dilated in costal field; apical triangle small; anal field folded as a fan.

Abdomen. Supra-anal plate ample, projected and bilobed apically; cerci long, tapering towards apex (Fig. 3); left phallomere without defined shape, with median sclerotization (Fig. 4); subgenital plate asymmetrical, with styles narrow and straight (Fig. 5). Median sclerite narrow and short, recurved basally, apically with prepuccium bearing median sclerotization lacking a defined shape and with margins with four crests (Fig. 6); right phallomere hooked, developed, wide medially and distended apically, with apical spine-like structure (Fig. 7).

Material examined. Holotype male from BRAZIL, Amazonas: Manaus, (Reserva Ducke, 2°55'49.5"S, 59°58'31.8"W), 30/XI-05/XII/2010, Vitor D. Tarli & V. Linard *leg.* Paratypes male and female with same data as holotype.

Etymology. The species name honors the city where the species was collected.

Remarks. This species is similar to *E. sagitta* Rocha e Silva & Aguiar, 1978, differing in the coloration, which is darker, and in the internal genitalia, which has a median sclerite with a larger prepuccium, round and with apex more sclerotized and with better defined apical crests.

Chromatonotus amazoninus sp. nov.

Figs 8-14

Description. Measurements (mm) holotype male, total length 13.57; length of pronotum 2.74; width of pronotum 3.56; length of tegmina 11.52; width of tegmina 1.12.

General coloration brown. Pronotum hyaline, central disk yellowish with two ample brown lateral marks and two latero-apical dark-brown, almost black marks. Head yellowish, interocular space brown, eyes black (Fig. 8), antennae brown, golden tomentose; legs yellow, pulvilli whitish.

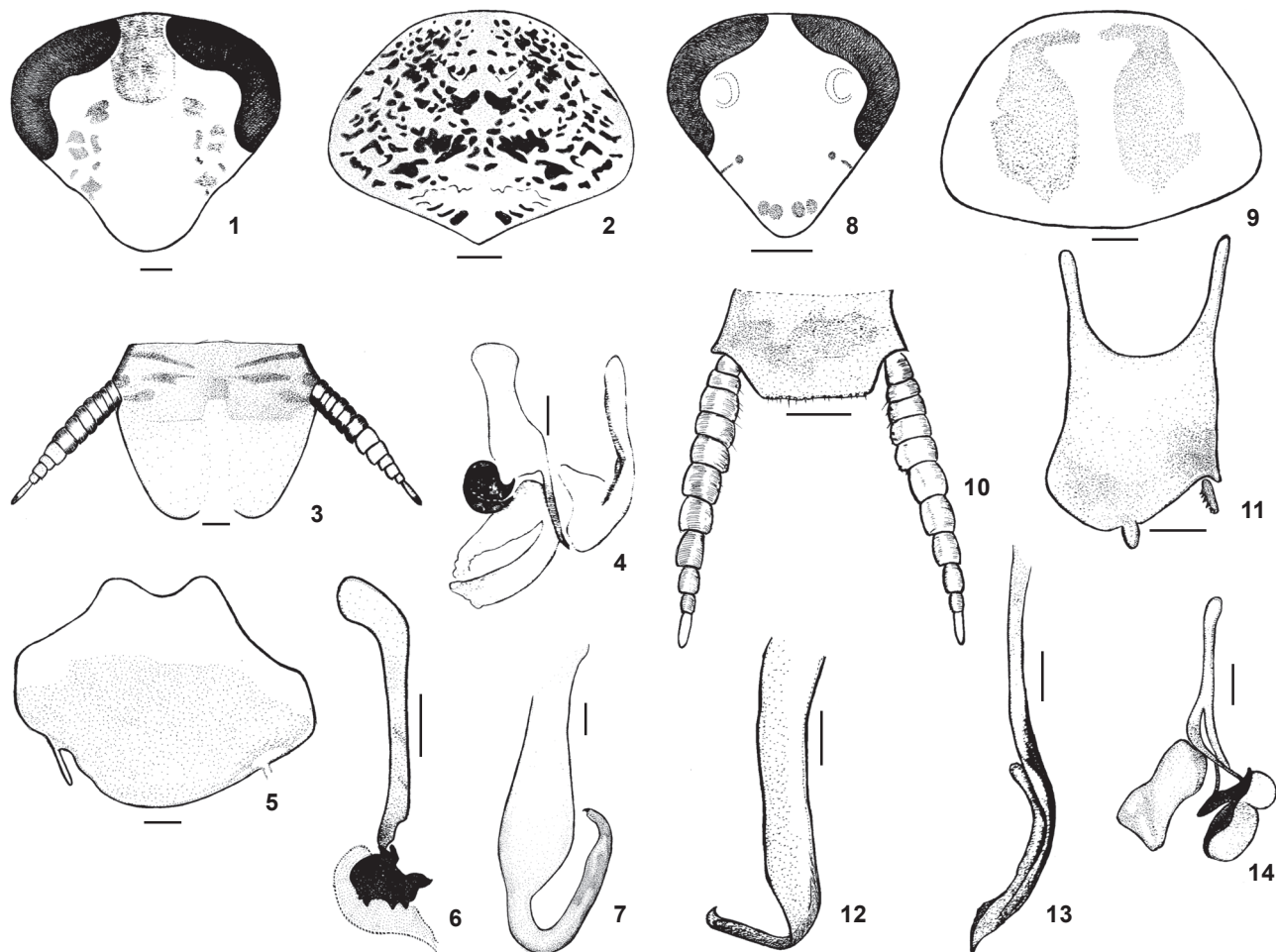
Head. Subtriangular, vertex exposed underneath pronotum in dorsal view, interocular space narrow, about 1/4 length between antennae (measured from base to base); antennae long and tomentose, longer than tip of abdomen; frons projected; palps tomentose, maxillary palp with third, fourth and fifth segments subequal; fifth dilated.

Thorax. Pronotum subtriangular, convex, lateral flaps deflexed with round margins; central disk with a pair of sulci diverging from base to latero-apical portion; surface of pronotum sparsely tomentose (Fig. 9). Legs long and spiny; ventrocephalic margin of fore femur with four robust spines and larger spines up to median region, two shorter spines half length anterior spines, followed by row of ten-twelve small spines up to apex, plus three apical spines (Type B3); ventro-caudal margin with five sparse spines, one median, three on apical 1/3, one apical; mid and hind femora with five-six spines, one apical; similar condition on both ventral surfaces; genicular spines present on mid and hind femora; pulvilli and arolia present, small. Claws symmetrical and simple. Tegmina reaching beyond apex of cerci; marginal field short and narrow; scapular field long, venular disposition oblique; discoidal field with longitudinal venular disposition and anal field with six or more axillary veins. Wings with costal field, apices of branches of radial veins slightly dilated; apical triangle large and folded above wing, anal field folded as a fan.

Abdomen. Supra-anal plate enlarged with apical surface straight between cerci, cerci long tapering towards apex (Fig. 10). Subgenital plate asymmetrical; styles differentiated and asymmetrical (Fig. 11); left phallomere hooked with median-apical cleft and tapered apically (Fig. 12); median sclerite tapered apically (Fig. 13); right phallomere tapered with sclerotized structure medially (Fig. 14).

Material examined. Holotype male, BRAZIL, Amazonas: Manaus (Reserva Ducke, 2°55'49.5"S, 59°58'31.8"W, 24-27/V/2011), Vitor D. Tarli & V. Linardi *leg.* Paratype male, data similar to holotype.

Etymology. The species name honors the state where the species was collected.



Figures 1-14. (1-7) *Epilampra manauara* sp. nov., holotype male: (1) head, ventral view; (2) pronotum, dorsal view; (3) supra anal plate, dorsal view; (4) left phallomere, dorsal view; (5) subgenital plate, ventral view; (6) median sclerite dorsal view; (7) right phallomere, dorsal view. (8-14) *Chromatonotus amazoninus* sp. nov., holotype male: (8) head, ventral view; (9) pronotum, dorsal view; (10) supra anal plate, dorsal view; (11) subgenital plate, ventral view; (12) left phallomere, dorsal view; (13) median sclerite dorsal view; (14) right phallomere, dorsal view. Scale bars: 1, 3, 5, 8-11 = 0.5 mm; 2 = 1.0 mm; 4, 6, 7, 12-14 = 0.2 mm.

Remarks. This species is similar to *Chromatonotus caruaruensis* Lopes & Khouri, 2009, in the coloration of the pronotum with parallel brown marks. It differs in the shape of the subgenital plate, median sclerite with tip more sclerotized tip; left phallomere with angulae apex (90 degrees) and apex curved; right phallomere with basal stem more slender and with apical arms dilated.

Dasyblatta spiculata sp. nov.

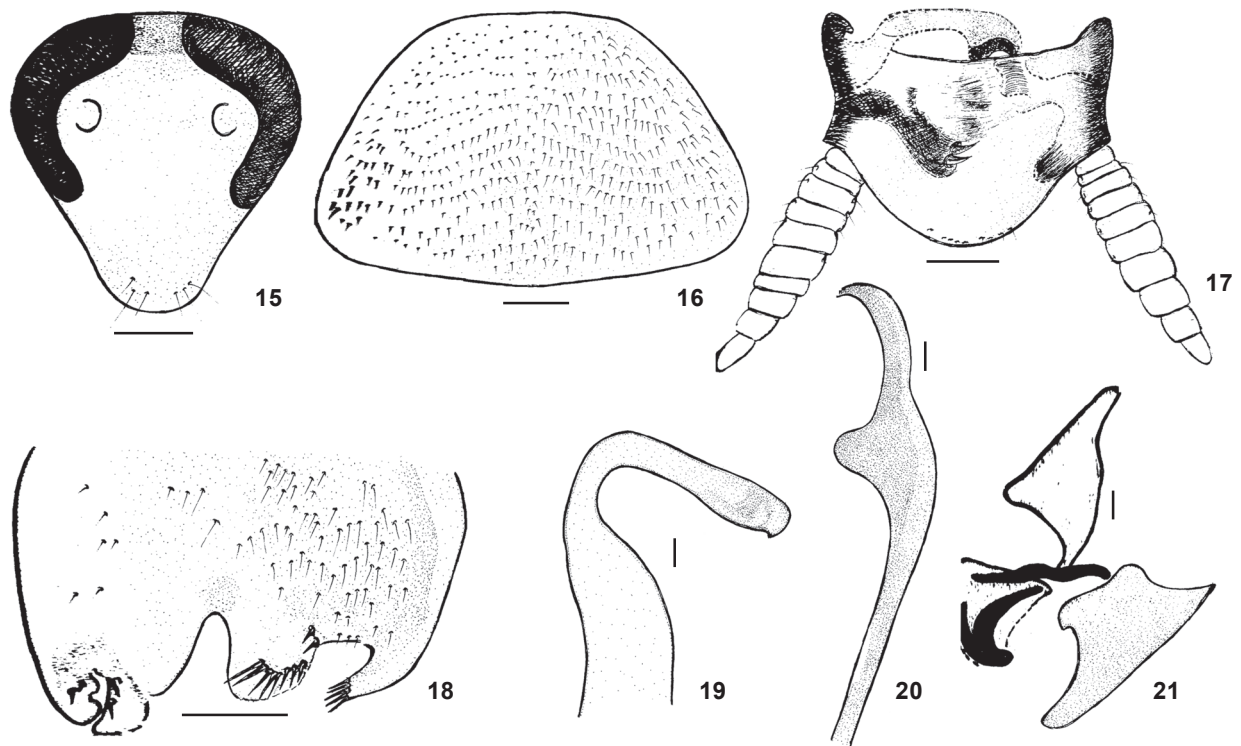
Figs 15-21

Description. Measurement (mm) Holotype male length 15.03; length of pronotum: 2.47; width of pronotum 3.25; length of tegmina 11.75; width of Tegmina 2.97.

General coloration light brown and hyaline. Head brown, eyes black. (Fig. 15). Pronotum, antennae, tegmina and legs light brown, golden tomentose; pulvilli whitish.

Head. Subtriangular, vertex exposed underneath pronotum in dorsal view; interocular space narrow, about 1/4 distance between antennal insertion bases; frons salient, slightly projected; ocelli deflected with respect to frons; antennae long, tomentose reaching beyond tip of cerci, maxillary palp tomentose.

Thorax. Pronotum subtriangular, tomentose, lateral flaps deflexed with round margins, central disk with two sulci diverging from base toward latero-apical region (Fig. 16); legs spiny. Femur with ventro cephalic margin bearing four robust and sparse spines from base up to a median region, followed



Figures. 15-21. *Dasyblatta spiculata* sp. nov., holotype male: (15) head, ventral view; (16) pronotum, dorsal view; (17) supra anal plate, dorsal view; (18) subgenital plate, ventral view; (19) left phallomere, dorsal view; (20) median sclerite dorsal view; (21) right phallomere, dorsal view. Scale bars: 15-18 = 0.5 mm, 19-21 = 0.1 mm.

by row of fifteen small spines towards tip, three robust apical spines (Type B3); postero-caudal margin with sparse ciliform spines and two robust spines, one apical and one near apex; mid and hind femora with five robust and sparse spines, one apical, laid out similarly on ventral margin of both; genicular spine present; pulvilli present on all tarsal segments; claws symmetrical and simple; arolia small. Tegmen reaching beyond tip of cerci; marginal field short and narrow; scapular field narrow with oblique veins; discoidal field weakly irradiated, branches near sutural margin oblique; anal field ample with six axillary veins. Wings with apical branches of radial vein not dilated in costal field and apical triangle ample, conspicuous and curved dorsally, tube-shaped; anal field ample and folded as a fan.

Abdomen. Supra-anal plate ciliated apically, projected between cerci; paraproct conspicuous; cerci widened tapering towards apex (Fig. 17); subgenital plate asymmetrical, ciliated, shape not defined, with latero-apical and medio apical spines more developed (Fig. 18); left phallomere hooked, with conspicuous notch (Fig. 19); median sclerite tapered at base with conspicuous median notch and apex tapering, sickle shaped and shaped as a spine apically (Fig. 20); right phallomere with medial sclerotized structure (Fig. 21).

Material examined. Holotype male from BRAZIL, Amazonas:

Manaus (Reserva Ducke, 2°55'49.5"S, 59°58'31.8"W, 30/XI-05/XII/2010, active night collecting, primary forest), V.D. Tarli & V. Linard leg.

Etymology. The species name refers to the apical configuration of the median sclerite and the presence of many spines on the subgenital plate.

Remarks. The asymmetrical configuration of the genital plate of this species and the median sclerite shaped as a spine apically are unique to this species.

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