NEW DATA ON THE GENUS ANISOPYGIA SAUSSURE (DICTYOPTERA, BLATTELLIDAE), WITH DESCRIPTION OF TWO NEW SPECIES

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ABSTRACT

Two new species of the genus Anisopygia Saussure, 1893 (A. latisecta sp. n. and A. profundisecta sp. n.) from Mexico are described. The interrelationships of the genera Anisopygia and Ischnoptera Burmeister, 1838 are discussed.

Key words: Anisopygia, Blattellidae, Blattodea, cockroaches, Dictyoptera, Mexico, Neotropical region

INTRODUCTION

Despite many efforts to document the Neotropical cockroaches fauna, many taxa still remain undescribed. This paper describes two new species of the family Blattellidae belonging to the genus Anisopygia Saussure, 1893. Thus, this genus currently contains two species and two new species from Mexico were found in the course of present study.

The small and insufficiently known genus Anisopygia is distributed in Central and South America from Mexico to French Guiana (Princis 1969). It was described as monotypical with the species A. jocosicluna Saussure, 1893 from Guatemala (Saussure 1893, Saussure and Zehntner 1893). A second species, A. decora Hebard, 1927 was described from French Guiana (Hebard 1927). The latter species was described from a series of females and larva (Hebard 1927), the males being unknown until this paper. A third species, A. snodgrassii (McNeil, 1901) described from Galapagos Islands, was transferred from Temnopteryx Brunner von Wattenwyl, 1865 by Hebard (Princis 1969). Later, it was excluded from Anisopygia and transferred to the genus Ischnoptera Burmeister, 1838 (Peck and Roth 1992).

MATERIAL AND METHODS

All the material studied was collected and preserved in 70% ethanol. In order to study the structures of the male genital complex (anal plate, hypandrium and the male genitalia) the apex of the abdomen of specimens was removed and treated with ~ 10% KOH. The structures of the genital complex were stored in microvials filled with 70% ethanol.

The terminology of the male genitalia follows Klass (1997).

All material studied (including type material) is deposited at the Zoological Institute, Russian Academy of Sciences (St.-Petersburg, Russia).
Systematics

Family Blattellidae Karny, 1908
Genus Anisopygia Saussure, 1893

Anisopygia latisecta, sp. nov.
(Figs. 1A–F, 2A–E, 3A–E, 4A–D)

Type material. Holotype (male). Mexico, Chiapas, env. of city Tuxtla Gutierrez, near reserve El Ocote, 600–1000 m, tropical forest, 19–24.05.2006, A. Gorochov, M. Berezin.

Paratypes (1 male, 2 females). Same data as holotype.

Description. Male (holotype). General colour dark reddish brown, antero-lateral margins of pronotum and costal margin of tegmina yellow (Fig. 1B, 4A); partly legs, distal part of anal plate and cerci more light, reddish; coxae, femora and metatarsi partly yellowish; ocellar spots, scapi and partly mouthparts (including lower part of clypeus, thin strip at base of labrum (Fig. 1A, 4B) and three proximal segments of maxillary palps yellow. Surfaces smooth; head with sparse punctuation. Head more or less rounded in shape (Fig. 1A); with distance between eyes about 1.2 times shorter than length of eye; interval between antennal sockets about twice the length of scapus; ratio of 3 distal segments of maxillary palps length (from 3rd to 5th) approximately 1.4 : 1 : 1.6. Pronotum rounded along antero-lateral margins, caudal margin nearly straight (Fig. 1B). Armament of antero-ventral margin of front femur of “type B” (sensu Bey-Bienko 1950, Roth 2003), with 8 spines including 3 apical ones. Hind metatarsus slightly longer than other tarsal segments combined; 1st to 4th segments with double complete row of spines along ventral margin (row of 4th segment very short) and with additional single larger spine on each side of pulvillus; pulvilli small and apical. Tarsal claws simple and symmetrical; arolia small, about one half of claw length. Tegmina shortened, only reaching 2nd abdominal tergite (Fig. 1B, 4A); venation visible, but weakened; only R, some anterior rami of R and CuP well developed. Wings vestigial, completely hidden under tegmina. Abdomen with 7th and 8th tergites specialized (Fig. 1B–D): 7th tergite partially membranous, with pair of lateral round dark spots, and pair of rod-like processes (oblique or longitudinal rods – according to Roth 2001) directed backwards (Fig. 1C), rod-like processes with a few spines on inner side; 8th tergite with medial longitudinal elevation (Fig. 1D). Anal plate (X, ultimate tergite) transverse (Fig. 2A), with caudal margin roundly incised; left lobe ventrad with regular row of dark spines, right lobe ventrad with irregular row of dark spines (Fig. 2C). Paraprocts strongly asymmetrical (Fig. 2C): left paraproct in shape of large and strongly sclerotized plate, right paraproct of more complicated shape, with slender spines and median impression. Cerci elongated, with 11 distinctly separated segments (Fig. 2A); accessorial sclerite of left cercus with medially directed process; accessorial sclerite of right cercus with large curved spine (Fig. 2C). Hypandrium asymmetrical, more or less rectangular in shape (Fig. 2D), with caudal margin weakly sclerotized, interstylar margin very slightly protruded; styles slightly asymmetrical, with minute spines at apex (Fig. 2E).

Male genitalia (Fig. 3A–E). Sclerite L2 single, not separated in apical and basal parts, rod-like (Fig. 3A), with apex obtuse and covered with spinules (Fig. 3B). Sclerite L3 comparatively short and robust, well sclerotized (Fig. 3A, C, D); with groove subapical incision sensu Roth (1970) along anterior surface of hook hla (Fig. 3C). Right phallomere as in Fig. 3E.

Variations. Male (paratype). Yellow border of pronotum and tegmina slightly wider than that of holotype. Distance between eyes about 1.4 times shorter than length of eye; ratio of 3 distal segments of maxillary palps length (from 3rd to 5th) approximately 1.4 : 1 : 1.6. Pronotum rounded along antero-lateral margins, caudal margin nearly straight (Fig. 1B). Armament of antero-ventral margin of front femur of “type B” (sensu Bey-Bienko 1950, Roth 2003), with 8 spines including 3 apical ones. Hind metatarsus slightly longer than other tarsal segments combined; 1st to 4th segments with double complete row of spines along ventral margin (row of 4th segment very short) and with additional single larger spine on each side of pulvillus; pulvilli small and apical. Tarsal claws simple and symmetrical; arolia small, about one half of claw length. Tegmina shortened, only reaching 2nd abdominal tergite (Fig. 1B, 4A); venation visible, but weakened; only R, some anterior rami of R and CuP well developed. Wings vestigial, completely hidden under tegmina. Abdomen with 7th and 8th tergites specialized (Fig. 1B–D): 7th tergite partially membranous, with pair of lateral round dark spots, and pair of rod-like processes (oblique or longitudinal rods – according to Roth 2001) directed backwards (Fig. 1C), rod-like processes with a few spines on inner side; 8th tergite with medial longitudinal elevation (Fig. 1D). Anal plate (X, ultimate tergite) transverse (Fig. 2A), with caudal margin roundly incised; left lobe ventrad with regular row of dark spines, right lobe ventrad with irregular row of dark spines (Fig. 2C). Paraprocts strongly asymmetrical (Fig. 2C): left paraproct in shape of large and strongly sclerotized plate, right paraproct of more complicated shape, with slender spines and median impression. Cerci elongated, with 11 distinctly separated segments (Fig. 2A); accessorial sclerite of left cercus with medially directed process; accessorial sclerite of right cercus with large curved spine (Fig. 2C). Hypandrium asymmetrical, more or less rectangular in shape (Fig. 2D), with caudal margin weakly sclerotized, interstylar margin very slightly protruded; styles slightly asymmetrical, with minute spines at apex (Fig. 2E).

Female (paratypes). Comparatively larger than male (Fig. 1F). Pattern of colouration similar to that of male, but general colour more dark, upper part of body nearly black (Fig. 4C, D); yellow parts more distinct. Head with distance between eyes about 1.1 times shorter than length of eye; interval between antennal sockets about 2.2 times the length of scapus; ratio of 3 distal segments of maxillary palpi length (from 3rd to 5th) approximately 1.2 : 1 : 1.4. Anal plate transverse, caudally rounded (Fig. 1F).

Measurements (mm). Length: head of male 2–2.1 (2), female 2.3–2.4; pronotum of male 2.2 (2.2), female 2.5–2.6; tegmen of male 2.6–2.9 (2.6), female 2.9–3.1. Width: head of male 1.8–1.9 (1.9), female 2.1; pronotum of male 3.4–3.5 (3.5), female 4.2. Measurements in parentheses are those of holotype.
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Fig. 1. *Anisopygia* sp., external morphology: A–F – *A. latisecta* sp. n. (A–D – holotype, male; E, F – paratype, female); G–I – *A. profundisecta* sp. n. (holotype, male). Head in frontal view (A, E, G); body outline from above (B, F, H); 7th abdominal tergite from above (C); 8th abdominal tergite from above (D); 7th and 8th abdominal tergites from above (I). Dotted line shows outlines of parts with light colouration (A, B, E–H), dotted area shows membranous parts (C, I). Scale bar (mm): a belong to Figs. A, C–E, G, I; scale bar b belong to Figs. B, F, H.
Fig. 2. Anisopygia sp., male abdominal apex structures: A–E – A. latisecta sp. n. (A, C–E – holotype; B – paratype); F–I – A. profundisecta sp. n. (holotype); J – A. jocosicluna Sauss. Abdominal apex from above (A, F, J); outline of anal plate (B); abdominal apex from below, hypandrium and genitalia removed (C, G); hypandrium from below (D, H); styles from below (E, I). Dotted area shows membranous parts. Scale bar (mm): a belong to Figs. A, B, D, F, H; scale bar b belong to Figs. C, G; scale bar c belong to Figs. E, I; Fig. J is out of scale. Fig. J from Saussure and Zehntner (1893).
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Fig. 3. Male genitalia: A–E – *Anisopygia latisecta* sp. n. (holotype); F–J – *A. profundisecta* sp. n. (holotype); K – *Blattella germanica* L. Hypandrium and genitalia from above (A, F); apex of sclerite L2 (B, G); sclerite L3 (C, D, H, I); right phallosome from above (E, J, K). Figs. A, F show hla sclerite in protracted state. Dotted area shows membranous parts (A, B, E–H, J, K). Scale bar (mm): a belong to Figs. A, F; scale bar b belong to Figs. B–E, G–J; Fig. K is out of scale.
**Comparison.** The new species is readily differs from *A. jocosicluna* and *A. profundisecta* sp. n. in the shape of anal plate (compare Figs. 2A, B and F, J), which is distinctly less incised. From *A. decora* the new species differs in the much more developed tegmina of female (Fig. 1F), which is reduced to wing-scales (lateral tegminal pads) in *A. decora*.

*A. latisecta* sp. n. could be classified as belonging to the subgroup A of *darlingtoni*-species group of the genus *Ischnoptera* (sensu Roth 2001). From single species of this subgroup – *I. lingeiforma* Roth, 2001 the new species is readily differs in less incised anal plate and the shape of hypandrium.

**Anisopygia profundisecta**, sp. nov.
(Figs. 1G–I, 2F–I, 3F–J, 4E, F)

**Type material.** Holotype (male). Mexico, Chiapas, 130 km WN of city Tapachula, vill. Ejido Las Golondrinas (reserve El Triunfo), 800–1000 m, 13–17.05.2006, A. Gorochov, M. Berezin.

**Description.** Male (holotype). Similar to *A. latisecta* sp. n., differing from it in the following features. General colour more light, tegmina, thorax from below and legs yellowish (Fig. 4E, F). Head (Fig. 1G) with distance between eyes about 1.2 times shorter than length of eye; interval between antennal sockets about 1.9 times length of scapus; ratio of 3 distal segments of maxillary palps length (from 3rd to 5th) approximately 1.2 : 1 : 1.4. Caudal margin of pronotum slightly more protruded caudally (Fig. 1H). Antero-ventral margin of front femur with 7 spines including 3 apical ones. Hind legs absent in holotype. Tegmina developed more, reaching 4th abdominal tergite (Fig. 1H); venation clearly visible. Wings developed, with clearly visible venation; slightly shorter then tegmina. Abdomen with 7th and 8th tergites specialized (Fig. 1J); 7th tergite with comparatively small, membranous spot medially, dark spots absent; rod-like processes slightly shorter than those of *A. latisecta* sp. n. Anal plate (X, ultimate tergite) deeply divided into 2 lobes (Fig. 2F); left lobe ventrad with 6, right lobe with 4 small dark spines (Fig. 2G). Paraprocts strongly asymmetrical (Fig. 2G): left paraproct strongly sclerotized, plate-like; right paraproct partially membranous, with slender spines. Cerci of 11 (Fig. 2F) and 6 segments respectively (right, 6-segments cercus evidently abnormal); accessorial sclerite of left cercus comparatively small, with single denticle; accessorial sclerite of right cer-

**DISCUSSION**

It was noted as a diagnostic feature of the genus *Anisopygia* the peculiar structure of anal plate: “This remarkable genus may be known by the irregular anal segment, which has the dorsal plate...
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[anal plate – L.A.] very deeply divided into two large irregular lobes." (Saussure and Zehntner 1893, p. 49). Later Roth (2001) includes in the *darlingtoni*-species group of the genus *Ischnoptera* a number of species, which are characterized with: “Supra-anal plate [anal plate – L.A.] strongly asymmetrical, deeply excised or excavated forming 2 dissimilar lobes or processes” (ibid., p. 521). Some of these species (*I. linguiforma*, *I.

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**Fig. 4.** *Anisopygia* sp., General view. A–D – *Anisopygia latisecta* sp. n. (A–B – holotype, male; C, D – paratype, female); E, F – *A. profundisecta* sp. n. (holotype). General view from above (A, C, E); general view from below (B, D, F). See text for measurements of the specimens.
chichicastenanga, I. zacualtipana Roth, 2001) are evidently closely related to representatives of Anisopygia. Consequently, if we adopt the genus Ischnoptera sensu Roth (2001, 2002), then Anisopygia is a junior synonym of it.

However, the present author considers that the synonymy of Anisopygia with Ischnoptera premature. The genus Ischnoptera is a very large and diverse group, with many of the contained subgroups considerably different from anisopygia-like species. The type species of Ischnoptera, I. morio Burmeister, 1838, is insufficiently studied, but the anal plate is dissimilar to the anisopygia-like species (Hebard 1916).

If the monophyly of the group characterized with anisopygia-like type anal plate is proven and other synapomorphies found, that the generic status of Anisopygia will be confirmed. In this case, the darlington-species group of Ischnoptera must be transferred to Anisopygia.

To clarify this problem a phylogenetic analysis of the genera Ischnoptera, Anisopygia and other closely related genera must be conducted.

The taxonomic position of genera Ischnoptera and Anisopygia in the family Blattellidae are also unresolved. The characteristically displaced sclerites R2 and R1S (“cleft sclerite” – according to Roth 2003) are common feature for group united genera Blattella Caudell, 1903 (Fig. 3K), Paroblatta Hebard, 1917 (Klass 1997), Ischnoptera (Roth 2001, 2002) and Anisopygia (Fig. 3E, J). If it is not a homoplasy, this feature could be to characterize a clade of blattelid cockroaches.

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REFERENCES


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