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On cockroaches of the subfamily Epilamprinae (Dictyoptera: Blaberidae) from South India and Sri Lanka, with descriptions of new taxa

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Abstract

The new genus *Indoapterolampra*, **gen. nov.** and two new species (*I. rugosiuscula* **sp. nov.** and *Morphna lucida* **sp. nov.**) are described. *Rhabdoblatta praecipua* (Walker, 1868) is removed from the synonymy with '*Polyzosteria*' *terranea* Walker, 1868. The latter species is considered Epilamprinae gen. sp. The lectotype of *Phoraspis* (*Thorax*) *porcellana* Saussure, 1862 is designated. A key for the genera of Epilamprinae from South India and Sri Lanka is provided. Detailed morphological descriptions of the studied taxa are given. The structure of the male genitalia of *I. rugosiuscula* **sp. nov.**, *M. lucida* **sp. nov.**, *M. plana* (Brunner von Wattenwyl, 1865), *M. decolyi* (Bolivar, 1897) and *R. praecipua* and that of the female genital complex of *M. decolyi*, *P. (T.) porcellana* and *Phlebonotus anomalus* (Saussure, 1863) are described for the first time. Some aspects of the cockroach evolution are briefly discussed.

Key words: evolution, morphology, new taxa, paedomorphosis, synonymy

Introduction

The cockroach fauna of South India and Sri Lanka is of great interest not only due to its richness, but also because it is likely to represent a possible link between the Gondwanan and Laurasian faunas.

The present research began with a study of the limited but very interesting cockroach material collected by P.S. Nathan from South India which is deposited at the Manchester Museum of the University of Manchester (UK). Later, additional material was obtained from Muséum d'Histoire naturelle de la Ville de Genève (Switzerland) and the Natural History Museum, London (UK). Surprisingly, the cockroach fauna of so important and interesting region remains insufficiently studied. There are no adequate descriptions for many taxa that would yet contain reliable data on the key characters useful for phylogenetic reconstructions. There is no doubt that many new taxa from India and Sri Lanka await descriptions in the future.

The present paper attempts to clarify the fauna of the subfamily Epilamprinae Brunner von Wattenwyl, 1865 of the region at hand.

Material and methods

The author follows the methods described in Anisyutkin *et al.* (2013).

The studied specimens were dried and pinned. In order to study structures of the male and female genitalic complexes (anal plate, hypandrium, genital plate and the genitalia), the specimens were softened and the apical parts of their abdomens were removed and treated with ca. 10% KOH. The dissected genitalia have been preserved in microvials (in 70% ethanol or in glycerine). During the course of research, some specimens were transferred to 70% ethanol.

Temporary preparations were made in dishes with paraffin bottoms. Illustrations and photos were made by means of a Leica MZ 16 stereo microscope; a further examination and drawings were made by means of a MBS-10

Discussion

The similarity of the genus *Indoapterolampra*, **gen. nov.** with the genera such as *Morphna*, *Rhabdoblatta*, *Anisolampra* and *Placoblatta* in the conformation of the male genitalia is doubtless (Anisyutkin 1999, 2000, 2003). The representatives of *Indoapterolampra*, **gen. nov.**, *Placoblatta* and the females of *Anisolampra* are similar to cockroach larvae in their somatic morphology: i.e., the reduction of tegmina and wings, the more or less rounded head with comparatively smaller eyes, the semicircular pronotum and usually uneven (strongly punctate or sculptured) surfaces. In my opinion, such character complexes are most likely to have evolved as a result of a retardational paedomorphosis (retrogenesis) (*sensu* Iordansky 2005). This mode of evolution was early mentioned in the family Blattidae (Anisyutkin *et al.* 2013) and seems to be common in cockroaches.

The most peculiar character of *Morphna decolyi* is the shortened, quadrate and heavily sclerotized tegmina and vestigial wings (Figs. 11, J, 6B). This condition contrasts with the normal appearance of *Morphna* representatives having the completely developed tegmina and wings surpassing the abdominal apex (Shelford 1910; Anisyutkin & Gorochov 2001). The structure of the male genitalia and tarsi of *M. decolyi* is usual for the genus. The reduction of tegmina and wings may indicate a shift to a more reclusive lifestyle. This assumption is supported by the presence of weakly thickened anterior tibiae (Figs. 6C, 7E) that seems to be an adaptation for digging. Unfortunately, there are no data on the lifestyle of these cockroaches.

The genera *Thorax* and *Phlebonotus* are closely related. The conformation of their male genitalia is very similar: "the genitalia of *T. porcellana*, *P. anomalus* and *P. pallens* are virtually indistinguishable from one another" (Roth 1972, p. 204). In my opinion, there is a unique character to distinguish these genera: viz., the heavily sclerotized and convex tegmina in *T. porcellana* (compare Fig. 14A–D and Fig. 14E).

Contrary to *Thorax porcellana* and *Phlebonotus pallens*, the males of *P. anomalus* are characterized by the shortened tegmina not reaching the abdominal apex and by the comparatively wide, ovoid body (Roth 1972, fig. 159). This complex of characters is similar to that of the female of *T. porcellana*. This seems to be an example of feminization.

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