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A taxonomic study of the beetle cockroaches (*Diploptera* Saussure) from China, with notes on the genus and species worldwide (Blattodea: Blaberidae: Diplopterinae)

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Abstract

Four taxa of beetle cockroaches (*Diploptera* Saussure, 1864) from South China are described and illustrated, *viz.*, two new species *D. elliptica* sp. n. and *D. naevus* sp. n., one new subspecies *D. nigrescens guani* subsp. n. and one widespread known species *D. punctata* (Eschscholtz, 1822). The genus and known species from around the world are discussed based on types and other specimens. *D. pulchra* Anisyutkin, 2007 is now regarded as a junior synonym of *D. bicolor* Hanitsch, 1925. Whether the populations of *D. punctata* represent or not different species needs to be studied in the future. A key, a distribution map, and photos of species are provided.

Key words: *D. elliptica*, *D. naevus*, *D. nigrescens guani*, *D. punctata*, revision, new species, new synonym, distribution, key

Introduction

Diploptera—the only genus currently in the blaberid subfamily Diplopterinae, was originally proposed by Saussure (1864a) as a subgenus within the ectobiid genus *Prosoplecta*, and was subsequently elevated to a genus by Saussure (1864b). This genus was originally included in Diplopteridae-/inae and this view was supported by Walker (1868; 1869) and Handlirsch (1925); since Princis (1950) it gained general acceptance. Before then, *Diploptera* was also placed in Oxyhaloidae-/inae by some authors such as Brunner von Wattenwyl (1893; but not 1865), Kirby (1904), Hebard (1922), Hanitsch (1925) and Bruijning (1947; 1948).

Diploptera cockroaches are unique in Blaberidae and can be easily recognized by the sclerotized tegmina and the double-folded wings (“di-plo-ptera”), which closely resemble those of Coleoptera (Serville 1839; Saussure 1864b; Brunner von Wattenwyl 1865). Therefore they are called beetle cockroaches (Fullaway *et al.* 1972). In addition, some of the specific epithets refer to Coleoptera families, *e.g.*, *dytiscoides*—Dytiscidae, *silpha*—Silphidae (see Serville 1839 and Saussure 1864a, respectively).

The only species initially in this genus, *D. silpha* (Saussure, 1864) (preceded by *D. punctata* (Eschscholtz, 1822)), is well-known as a pest of Pinaceae in Hawaii (Hebard 1922; Fullaway *et al.* 1972) and is actually used as a model species for studies on endocrinology contributed by the fact that it is the only viviparous cockroach species within our knowledge (Marchal *et al.* 2013). Taxonomic studies have mostly focused on this common species, *i.e.*, the genitalia of *D. punctata* were studied by Hagan (1941), McKittrick (1964), Roth (1973) and Anisyutkin (2002), whilst those of other species remain undescribed, except for the males of *D. minor* (Brunner von Wattenwyl, 1865) and *D. pulchra* Anisyutkin, 2007. The former was described in comparison with *D. punctata* by Roth (1973), and the latter was described and illustrated in detail when proposed by Anisyutkin (2007). Nevertheless, it is still likely to confuse the species in *Diploptera* since early descriptions of them were mainly about size and color pattern.

Bruijning (1947; 1948) in his works about the Malay cockroaches provided many localities of *Diploptera* from not only Malay, he recorded four out of five known species, *i.e.*, only *D. nigrescens* Shiraki, 1931 was not