A revision of the cicadas of the genus *Maua* Distant (Hemiptera, Cicadidae) from Sundaland

J.P. Duffels


Two species are described as new to science: *M. borneensis* sp. n. and *M. palawanensis* sp. n. Two other species proved to be synonyms: *M. ackermanni* Schmidt, 1924 is a junior synonym of *M. quadrituberculata* and *M. dohrni* Schmidt, 1912 is a junior synonym of *M. latilinea*. Three species of *Maua*, two from China and one from the Philippines are not included in this paper. A key for the identification of the Sundaland species of *Maua* is presented.

J.P. Duffels, Zoological Museum (Department of Entomology), University of Amsterdam, Plantage Middenlaan 64, NL-1018 DH Amsterdam, the Netherlands. j.p.duffels@uva.nl

**Introduction**

The genus *Maua* was erected by Distant (1905) for *Cicada quadrituberculata* Signoret, 1847 and *M. affinis* Distant, 1905. The genus is currently placed in the tribe Dundubiini and the subtribe Lep topsaltriina (Duffels & Van der Laan 1985; Moulds 2005). In 1923, Moulton erected the new section *Leptopsaltraria* [sic] for the genera *Leptopsaltria* Stål, 1866, *Maua* Distant, 1905, *Nabalua* Moulton, 1923, *Purana* Stål, 1866 and *Tanna* Distant, 1905. The new section was characterised by the presence of one to three pairs of tubercles on the ventral side of the male abdomen. A revision of *Nabalua* was recently presented by Duffels (2004), and three, presumed monophyletic, groups of the genus *Purana* were revised: the *P. nebulilinea* group (Kos & Gogala 2000), the *P. carmente* group (Schouten & Duffels 2002) and the *P. tigrina* group (Duffels et al. 2007).

In 1963, Metcalf added several genera, with and without abdominal tubercles, to the subtribe; none of these genera are recorded from Sundaland. This paper presents a revision of the genus *Maua* from Sundaland: the Malay Peninsula, Java, Sumatra, Borneo, Palawan and several smaller islands in-between. Two species of *Maua*, *M. borneensis* from Borneo and *M. palawanensis* from Palawan and Balabac are described as new to science, and six species from Sundaland are redescribed: *M. affinis*, *M. albignuta* (Walker, 1857), *M. latilinea* (Walker, 1868), *M. linggana* Moulton, 1923, *M. platygaster* Ashton, 1912, and *M. quadrituberculata*. Two species, *M. ackermanni* Schmidt, 1924 and *M. dohrni* Schmidt, 1912, both described from Sumatra, proved to be junior synonyms of respectively *M. quadrituberculata* and *M. latilinea*. Three species of *Maua*, two from China and one from the Philippines, are not included in this paper. A key for the identification of the Sundaland species of *Maua* is presented.

This study aims to contribute to a better knowledge of cicada biodiversity in Southeast Asia. Basic systematic studies providing illustrations and descriptions of species and keys to genera and species are regarded as a prerequisite for biodiversity studies. Biodiversity studies of cicadas in other tropical areas, such as Sulawesi, New Guinea, and the West Pacific,
have already shown that cicadas can be instrumental in recognizing hot spots of species richness and areas of endemism with unique biota (Duffels & De Boer 1990, De Boer & Duffels 1997).

**Material and methods**

The institutions listed below are the depositories of the material studied. The abbreviations have been used in the lists of material and throughout the text.

- BMNH  Natural History Museum, London (former British Museum (Natural History)), London
- KBIN  Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels
- MNHN  Muséum National d’Histoire Naturelle, Paris
- MNKM  Muzium Negara Malaysia, Kuala Lumpur
- MIZ  Museum and Institute of Zoology, Polish Academy of Sciences, Warszawa
- MZB  Museum Zoologicum Bogoriense, Cibinong
- MZHF  Zoological Museum, Finnish Museum of Natural History, Helsinki
- NHRS  Swedish Museum of Natural History, Stockholm
- PSML  Prirodoslovni Muzej Slovenije, Ljubljana
- RMNH  Nationaal Natuurhistorisch Museum (formerly Rijksmuseum van Natuurlijke Historie), Leiden
- ROM  Royal Ontario Museum, Toronto
- UKM  Pusat Sistematik Serangga, Universiti Kebangsaan Malaysia, Bangi, Malaysia
- UMS  Universiti Malaysia Sabah, Kota Kinabalu
- ZMAN  Zoölogisch Museum, Universiteit van Amsterdam, Amsterdam

Data on the distribution of the species were derived from the author’s ‘Biodiversity Database of the Cicadas of South East Asia and the West Pacific’, and plotted on maps of ADC-Worldmap version 2.0 vol. 4 Southern Asia & Australia with the program MapInfo for Power Mac, version 4.03. The localities and other data from the specimen labels in the database are filed in the program FileMaker Pro 4.0. Geographical information has been retrieved from the following sources: ‘Atlas van Tropisch Nederland’ (Anonymous 1938), ‘Gazetteer Nasional Nama-nama Geografi’ for Indonesia (Anonymous 1978), Nelles Road Atlas Indonesia (Anonymous 1992), The Times Comprehensive Atlas of the World’ (Anonymous 1999) and GEOnet Names Server of the U.S. Defense Mapping Agency (http://www.nima.mil/gns/html/index.html).

The terminology adopted in this paper for external features of the body and the male genitalia follows that of Duffels (Duffels 1977, 1983; Duffels & Turner 2002) and Moulds (2003, 2005).

**Taxonomy**

**Genus Maua**

*Distant* 1905: 61. Type-species by original designation: *Maua quadrituberculata* (Signoret, 1847).


[For further references before 1980 see: Metcalf 1963 and Duffels & Van der Laan 1985].

The species of *Maua* studied have one character in common viz., the broad, more or less parallel-sided male abdomen with about equally wide segments 3 to 4 or 2 to 5. The shape of the male abdomen was traditionally used to separate *Maua* from other genera of the subtribe (Distant 1906; Moulton 1923). The genus *Maua* in its present concept is probably not monophyletic.

**Distribution**

The genus *Maua* is found in China, Thailand, the Philippines and Sundaland (Malay Peninsula, Java, Sumatra, Borneo and Palawan) (Metcalf, 1963; Duffels & van der Laan 1985; Sanborn et al. 2007). The genus is certainly most divers in Borneo (seven species). Four species are probably Borneo endemics: *M. affinis, M. borneensis, M. linggana* and *M. platygaster*. *Maua affinis* seems to be restricted to Palawan and Balabac Island between Borneo and Palawan. *Maua latilinea* is known from Borneo and Sumatra. The two remaining species have a wider distribution: *M. albigutta* is found in the Malay Peninsula and Sumatra, and *M. quadrituberculata* is known from China, Thailand, the Malay Peninsula, Java (?), Sumatra, Borneo and Nias Island.

**Relationships**

Three genera of the subtribe Leptopsaltriina occurring in Sundaland have two pairs of tubercles on the male sternites 3 and 4: *Leptopsaltria, Maua* and *Purana*. *Maua* is distinguished from the other two genera by the broad, more or less parallel-sided male abdomen; in *Purana* and *Leptopsaltria* the male abdomen gradually narrows from segment 2 backwards. The genus *Maua* is divided in two groups that are presumed to be monophyletic: (1) the *M. quadrituberculata* group with a male body length of 31–45.5 mm, comprising: *M. affinis, M. borneensis, M. latilinea, M. palawanensis, M. quadrituberculata*