Zootaxa 3946 (1): 001–054
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3946.1.1
http://zoobank.org/urn:lsid:zoobank.org:pub:9B9473BA-7F17-4D63-9E09-1A54DED4E6BC

Studies in Australian Katydids: A Review of the Australian Snub-nosed Sylvan katydids (Tettigoniidae; Pseudophyllinae; Simoderini)

DCF RENTZ, YOU NING SU & NORIHIRO UESHIMA
[DCFR] Adjunct Professor, School of Marine Biological Sciences, James Cook University Smithfield, Queensland, Australia 4870
Email: orthop1@tpg.com.au
[YNS] CSIRO Australian National Insect Collection, National Research Collections Australia, PO Box 1700, Canberra, ACT 2601.
Email: youning.su@csiro.au
[NU] 1435-1 Kubo-cho Matsusaka, Mie 515-004, Japan
Email: nori-ue@ma.mctv.ne.jp

Table of contents

Accepted by H. Song: 23 Feb. 2015; published: 8 Apr. 2015

Abstract

The Australian members of the simoderine katydids are reviewed. The tribe is known from nine genera, five of which occur only in Madagascar, the others are Australian: *Chloracantha* Hebard (*C. lampra*, *C. angularis* sp. nov., *C. garradunga* sp. nov., *C. hilleri* sp. nov.), *Tallebudgeroptera* gen. nov. (*T. spininota* sp. nov.), *Mastigaphoides* Weidner (*M. haffneri*, *M. tuberculatus* sp. nov., *M. vaginalis* sp. nov., *M. lewisensis* sp. nov.), *Narea* Walker (*N. compacta*, *N. elongata*, *N. kungaree* sp. nov.). *Mastighapha* Karsch is synonymised with *Narea*. Descriptions, illustrations, sound recording information and distribution maps are presented for all species.

Key words: Australian Katydids, Simoderini, taxonomy, ecology, behaviour

Introduction

Biogeography and systematics

The tettigoniid tribe Simoderini comprises nine genera only four of which occur in Australia. The others, *Lonchitphyllum* Brunner von Wattenwyl, *Parasimodera* Carl, *Phyrama* Karsch, *Simodera* Karsch and *Wattenwyliella* Carl all occur in Madagascar. No members of the tribe are known from New Guinea or the African continent. The Australian representatives of the Simoderini comprise: *Chloracantha* Hebard, *Mastigaphoides* Weidner, *Narea* Walker and *Tallebudgeroptera* Rentz, Su, Ueshima, gen. nov. *Mastighapha* Karsch is synonymised with *Narea* (see p. 26).

The disjunct distribution of the genera of the simoderini suggests that the group may need additional taxonomic revision. This may be true but the relation of the genera seems genuine. Types of the Madagascan genera can be viewed on the Orthoptera Species File, Eades *et al.* (2014), where the similarities are very apparent. However, it is indeed rare to find plants or animals with such biogeographic affinities. The observations of Harvey and Volschenk (2007) are a rare example and confirmed earlier discoveries that the pseudoscorpions of the family Hyidae are restricted to a few species found in Australasia and Madagascar. These examples indicate Gondwanan origins for these groups.

Australian simoderine katydids (Figs. 1, 2, 6B, 7, 11, 16A–C, 18A, B) are primarily tropical and subtropical in their distribution (see Maps 1–5). They are either arboreal or can be found on understorey shrubbery that borders mesic habitats such as rainforest. They feed solely on vegetation and have not been found to be associated with any particular kind of plant. Such habitats are considered "ancestral" as demonstrated for a variety of plants, Byrne *et al.* (2011). The contraction of such habitats has led to extinction of many elements especially in the rainforest component. This may be the case with the Australian simoderines. One peculiar exception is *Narea*, especially *Narea crassicornis* Karsch, *stat. nov.* (Fig. 11). It and other *Narea* species occur well to the south of the tropical rainforests. *Narea crassicornis* is often terrestrial and is, at times, present in very large numbers, sharing with the stick insect genus *Didymuria* a tendency towards kentromorphic phases but this has not yet been significantly investigated. These species may be indicative of a much more diverse fauna of the Simoderni that has existed in the distant past.

Systematics and Taxonomic History

Two tribes of the large, primarily tropical subfamily Pseudophyllinae have been recorded from Australia. The Phyllomimini consist of a single genus, *Acauloplacella* Karny which has species in New Guinea, Indonesia and Fiji as well as Australia (see Rentz *et al.* 2010). Phyllomimine katydids are easily recognised by the odd production of the humeral margin of the tegmen which is produced forward covering much of the lateral pronotal lobe when the individual is at rest. The mesosternum is broad and flat and bears a transverse ridge across the anterior margin. In addition the mesopleura bear a small tubercle on the episternum. We have dealt with *Acauloplacella* in the recent past, Rentz *et al*. (2010). The purpose of this study is to correct some taxonomic errors and properly associate and define the known simoderine species.

Acknowledgements

We thank the curators and collection managers of the collections from which we have borrowed specimens. In addition we thank J. and S. Hasenpusch, Ken Walker, Buck Richardson, Sigfrid Ingrisch, Chris Lambkin, Roger Farrow, Geoff Monteith, Rita Romaniuk, Penny Gullan, Peter Cranston, Mark Harvey, Darren Crayn, Gary Wilson and Max Moulds for suggestions and discussion on various aspects of this study. The Orthoptera Species File, cited below, is extremely helpful, especially when types and their labels are illustrated. S Louise Anemaat, State Library of New South Wales, provided access to the Frontispiece and Dr D. Mabberley engaged in discussion regarding the determination of the locality of the plant based on the identity of the insects in that illustration. Thanks to Dr S. Ingrisch and Dr M. Horak who read a late version of the manuscript and offered helpful suggestions.

References

Byrne, M., Stean, D.A., Joseph, L., Yeates, D.K., Jordan, G.J., Crayn, D., Aplin, K., Cantrill, D.J., Cook, L.G., Crisp, M.D., Keogh, J.S., Melville, J., Moritz, C., Porch, N., Kale Sniderman, J.M., Sunnucks, P. & Weston, P. (2011) Decline of a biome: evolution, contraction, fragmentation, extinction and invasion of the Australian mesic zone biota. *Journal of Biogeography*, Synthesis, 1–21.

Cigliano, M.M. & Eades, D. (2010) New technologies challenge the future of Taxonomy in Orthoptera. *Journal of Orthoptera Research,* 19 (1), 15–18.

Eades, D.C., Otte, D., Cigliano, M.M. & Braun, H. (2014) Orthoptera Species File. Version 5.0/5.0. Available from: http://Orthoptera.SpeciesFile.org (Accessed 1 Apr. 2015)

Harvey, M.S. & Volschenk. (2007) Systematics of the Gondwanan pseudoscorpion family Hyidae (Pseudoscorpiones: Neobisioidea: New data and a revised phylogenetic hypothesis. *Invertebrate Systematics*, 2007, 21, 365–406.

Hebard, M. (1922) Studies in Malayan, Melanesian and Australian Tettigoniidae (Orthoptera). *Proceedings of the Academy of Natural Sciences of Philadelphia* , 74, 121–299.

Henderson, A., Henderson, D. & Sinclair, J. (2008) *Bugs Alive! A guide to keeping Australian invertebrates.* Museum of Victoria. 200 pp.

Hewitt, G. M. (1979) *Animal Cytogenetics, 3 Insecta 1.* Orthoptera. Borntraeger, Berlin. 170 pp.

Willemse, C. (1961) Tettigonioidea of the Papuan subregion (Orthoptera). *Pacific Insects,* 3, 93–116.

Rentz, D.C.F., Su, Y.N. & Ueshima, N. (2005) Studies in Australian Tettigoniidae: Australian Tettigoniidae. The genus *Phricta* Redtenbacher (Orthoptera: Tettigoniidae; Pseudophyllinae; Phrictini). *Transactions of the American Entomological Society*, 131, 131–158.

Rentz, D.C.F., Su, Y.N. & Ueshima, N. (2010) Studies in Australian Tettigoniidae: Australian Pseudophylline katydids (Tettigoniidae; Pseudophyllinae; Phyllomimini). *Zootaxa*, 2566, 1–20.

Weidner, H. (1965) Neue und bemerkenswerte Tettigoniidae aus der Sammlung des Zoologischen Museums Hamburg (Ensifera*). Entomologische Mitteilungen aus dem Zoologischen Museum Hamburg,* 3, 95–92.