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# ZOOTAXA

4001

**New species of *Simona* Moulds, 2012 and *Chelapsalta* Moulds, 2012 cicadas  
(Cicadidae: Cicadettinae: Cicadettini) from Australia: comparative morphology,  
songs, behaviour and distributions**

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## Abstract

In 2012, Moulds established the morphologically similar cicada genera *Simona* and *Chelapsalta*, each with one Australian species (*sancta* Distant and *puer* Walker, respectively). In this paper, two new species are described within the genus *Simona* Moulds 2012, *S. erema* sp. nov. and *S. retracta* sp. nov., and one within the genus *Chelapsalta* Moulds 2012, *C. myoporae* sp. nov. The type species of *Simona* (female holotype), *S. sancta* (Distant, 1913), is redescribed based on a contemporary male, nominated a plesiotype, held in the Australian National Insect Collection. *Melampsalta subgulosa* Ashton 1914 is supported as a junior synonym of *S. sancta*. The species within the two genera of *Simona* and *Chelapsalta* are morphologically very similar. *S. erema* occurs widely through the arid regions of inland Australia, extending west from western Queensland through the Northern Territory, to central-western Western Australia, a linear distance of approximately 2200 km. *S. retracta* is known from a single semi-arid locality in southern inland Queensland. *C. myoporae* occurs widely through southeast, central and southwest Queensland, extending southwards into inland and western N.S.W. and southeastern South Australia. It tends to occur most commonly within vegetation associated with seasonal riverine floodplains, and in some areas of poorly drained and clay-rich soils. The calling songs of these three species, together with those of *S. sancta* and *C. puer*, are described. Detailed comparisons made of the songs of *S. erema* and *C. myoporae*, each from three widely separated locations, clearly exhibit structural consistency in their calling songs across their distributions. The *Simona* songs are complex and contain multiple elements; the species are very mobile and wary, and inhabit low dense shrubland. The songs of the two *Chelapsalta* species, both relatively sedentary in behaviour, in contrast consist of relatively uniform chirping and buzzing elements. It is suggested that, although the two genera are morphologically similar, the calling songs, behaviour and habitats do distinguish them, at least as represented by these species documented. MaxEnt modeling of the species climatic envelope for the widely distributed species *Simona erema* suggests an association with summer-peak rainfall and diurnal temperature range. Modeling under estimated conditions of the Last Glacial Maximum (22 ky) suggests the possibility of an even more widespread distribution at that time.

**Key words:** Cicadas, Cicadettini, Australia, *Simona*, *Chelapsalta*, systematic taxonomy, song specificity, song stability, acoustic signalling, arid distributions

## Introduction

Many insect orders in Australia are far from fully documented, and, in the case of the Australian cicada fauna, it is probable that perhaps as many as half of the species remain to be described. In Queensland alone, the estimated number of species is likely to be as many as 450, including many cryptic species. Apart from the traditional collecting and taxonomic description of species, now greatly aided by modern molecular studies, the documentation of the calling songs, based on electronic recordings, is currently widely used as a valuable taxonomic tool. In the field, these provide an efficient means for identifying known species and for recognising new species, species complexes, and possible hybridisation (e.g. Simões *et al.* 2000; Ewart & Popple 2001, 2013a,