



## Revision and phylogeny of *Chelagyrtodes* Szymczakowski (Coleoptera: Leiodidae: Camiarinae: Agyrtodini)

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### Abstract

The formerly monotypic New Zealand leiodid genus *Chelagyrtodes* Szymczakowski (type species *Chelagyrtodes crowsoni* Szymczakowski) is revised to include five new species from the South Island: *C. newtoni* n. sp., *C. rotundus* n. sp., *C. haasti* n. sp., *C. glacicola* n. sp., and *C. davidi* n. sp. Four of these new species lack the unusual tibial dimorphism previously used to diagnose this genus, but can be recognized by the presence of a subapical spine cluster on the interior face of the mandible, procoxal cavities with an anterior carina or bead, and a series of minute, setiferous punctures along the lateral margins of the hypomeron. A key and phylogenetic analysis based on adult morphology is provided for the six species of *Chelagyrtodes*. Natural history and distribution of *Chelagyrtodes* are discussed in the context of phylogenetic data.

**Key words:** Leiodidae, Camiarinae, new species, identification key, New Zealand

### Introduction

The leiodid subfamily Camiarinae is a relatively small group of beetles (26 genera, ~90 species, Newton 1998) restricted to the southern hemisphere and notable for its extraordinary morphological diversity; the breadth of variation in camiarine body form is arguably comparable to that of all other (non-camiarine) leiodids. Seemingly pleiomorphic features of some camiarine species (true and pseudo-ocelli in *Neopelatops* Jeannel, 1936 and *Ragyrtodes* Jeannel, 1936; Leschen & Beutel 2004), agyrtid-like features in *Catopsolius* Sharp, 1886 from New Zealand and *Capnosolius* Seago & Newton, 2009 from Chile suggest that this subfamily occupies an intermediate phylogenetic position between Agyrtidae and Leiodidae; however, recent phylogenetic analyses of DNA data indicate that the camiarines are nested well within Leiodidae, as the sister group to Leiodinae + Cholevinae (Seago, in prep.). Monophyly of Camiarinae is dubious; adequate testing—in particular, the development of morphological character systems for phylogenetic analysis—is impeded by the large number of undescribed genera and species in the subfamily (at least seven “new” genera have been observed), and a paucity of detailed morphological study. Here, the formerly monotypic genus *Chelagyrtodes* Szymczakowski, 1973 (Camiarinae: Agyrtodini) is reviewed, five additional species are described, and its phylogenetic placement and relationships among the species discussed.

*Chelagyrtodes* was based on one species described by Szymczakowski (1973), the generic name alluding to the presence of chelate protibiae in the males (Fig. 2a), a character unique in leiodids. Meanwhile, *Chelagyrtodes*-like specimens in the New Zealand Arthropod Collection (NZAC, Auckland) fall within the generic limits of *Chelagyrtodes* as defined here, but lack the distinctive male protibiae. The species display a grade of ovate to limuloid body morphs (Figs. 1, 4), all sharing a similar compact, wingless body, loss of the lacinial spore-brush diagnostic of *Agyrtodes*-group agyrtodines (see Seago, 2009), and mandibles with a subapical spine cluster unique within the tribe (Fig. 3). Male genitalia (Fig. 5) are fairly diverse in *Chelagyrtodes*, and we discuss the sexually dimorphic characters in the genus, as well as the evolution of other characters (wing loss and body form) in the context of a cladistic analysis of the genus.