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## ***Chimaerocyon* gen. nov., a morphologically aberrant myrmecophilous genus of water scavenger beetle (Coleoptera: Hydrophilidae: Sphaeridiinae)**

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### **Abstract**

A new hydrophilid genus *Chimaerocyon* **gen. nov.** containing two species, *C. shimadai* **sp. nov.** (Malaysia: Pahang) and *C. sumatranus* **sp. nov.** (Indonesia: Sumatra), is described. Specimens of *C. shimadai* were collected from brood cells in a nest of *Pheidole singaporensis* Özdikmen, 2010. The biology of *C. sumatranus* remains unknown. A molecular phylogeny based on four genes (*cox1*, *cox2*, *18S* and *28S*) supports the placement of the genus as deeply nested within the *Cerocyon*-group of the tribe Megasternini. This position is supported by the subdistal position of the median spur in the hind wing (unique to Megasternini) and the presence of sucking disc on male maxilla (unique for Megasternini+Sphaeridiini). The remaining external morphology differs substantially from other representatives of Megasternini. The hypothesis that the aberrant morphology of *Chimaerocyon* **gen. nov.** is a consequence of myrmecophily is discussed.

**Key words:** Sphaeridiinae, Megasternini, multigene phylogeny, Bayesian analysis, inquilines

### **Introduction**

The beetle family Hydrophilidae (the water scavenger beetles) contains ca. 2900 species (Short & Fikáček 2011) of which the majority are found in various aquatic habitats. However, nearly a third of the known species are terrestrial, in all cases belonging to clades that are deeply nested within aquatic groups (Short & Fikáček 2013). They are most frequently found in leaf litter in various kinds of forests or in excrement of herbivorous mammals. Only a handful of species are known to be associated with ants. Spangler (1962) described an *Oosternum* species inhabiting the refuse piles of *Atta mexicana* (see also Márquez-Luna & Navarrete-Heredia 1995), and Fikáček & Short (2010) demonstrated that the genus *Sacosternum* is associated with ecitonine army ants. A few species of the genera *Paromicrus*, *Australocyon* and *Pachysternum* (all belonging to the subfamily Sphaeridiinae) have been collected in association with various ant species and are awaiting description (Fikáček *et al.*, in prep.). None of them exhibit apparent morphological adaptations parallel to those known in other beetle myrmecophiles (see e.g. Kistner 1982; Hölldobler & Wilson 1990; McIver & Stonedahl 1993), even though at least some morphological autapomorphies of *Sacosternum* have been hypothesized as possible defensive structures (Fikáček & Short 2010). The surprising recent discovery of a morphologically unusual hydrophilid from the brood cells of *Pheidole singaporensis* Özdikmen represents the first known myrmecophilous hydrophilid for which tribal and generic placement remained unclear even after initial morphological study. The combined analysis of molecular and morphological data revealed that, despite its unusual morphology not matching any known group of the Hydrophilidae, it is a representative of the tribe Megasternini, which is the largest, but morphologically rather uniform, clade of terrestrial hydrophilids. The results of our studies are summarized here, along with a discussion on the limits of the use of morphological characters for systematics of myrmecophilous insects.