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A review of the ant genus *Adelomyrmex* Emery 1897 (Hymenoptera, Formicidae) in Central America

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Abstract

The taxonomy and natural history of the ant genus *Adelomyrmex* Emery is reviewed for the Central American region. They are small, litter-inhabiting ants most often collected in Berlese and Winkler samples. Although the genus and its relatives have a pantropical distribution, Central American cloud forests are the only places where they are abundant and diverse. Several *Adelomyrmex* species are mountain-top endemics with very restricted ranges, and climate change clearly poses the threat of mountain-top extinction. The 21 Mexican and Central American species are treated in some detail and a key to the 26 mainland New World species is provided. Nine new species are described, eight from Mexico and Central America (*A. anxiocalor* **sp. nov.**, *A. bispeculum* **sp. nov.**, *A. dentivagans* **sp. nov.**, *A. marginodus* **sp. nov.**, *A. metzabok* **sp. nov.**, *A. norteny* **sp. nov.**, *A. paratristani* **sp. nov.**, and *A. quetzal* **sp. nov.**) and one from the oceanic Isla del Coco in the eastern Pacific (*A. coco* **sp. nov.**). New synonymy is proposed for *Adelomyrmex tristani* (Menozzi, 1931) (= *A. brevispinosus* Fernández, 2003, **syn. nov.**).

Key words: biodiversity, taxonomy, new species, Myrmicinae, endemism, montane

Introduction

Adelomyrmex is a genus of small myrmicine ants that are part of the "microgenton" (Menozzi 1931), minute arthropods that inhabit rotting wood and leaf litter. Diagnosis of the genus and higher level systematic placement were addressed most recently by Fernández (2004). Fernández and MacKay (2003) provided a species-level treatment of the *A. laevigatus* group, and Fernández (2003) revised the entire genus, with a key to species. The center of *Adelomyrmex* abundance and diversity is Central America, and a few far-flung species occur in New Guinea, Samoa, Fiji, Tonga, New Caledonia, and Isla del Coco (Fernández 2003, Solomon & Mikheyev 2005, Wetterer 2002). In Fernández's 2003 revision there were two species from southern South America that were later segregated in the genus *Cryptomyrmex* (Fernández 2004). Thus the current geographic range of the genus in the New World is (1) the mainland from northern Mexico to Amazonian Brazil; (2) the Galápagos, where the mainland species *A. myops* is probably recently introduced (Herrera & Longino 2008); and (3) Isla del Coco, a small oceanic island north of the Galápagos, with a highly distinctive endemic species newly described in this report. The genus is unknown from the Caribbean islands. The center of abundance and diversity is the Central American highlands south to western Panama. Elsewhere in the range the genus is always very rare with low local diversity.

Over the past decade quantitative sampling of the leaf litter ant fauna has been carried out from Costa Rica to Chiapas, Mexico, as part of three large-scale biodiversity inventory projects: Arthropods of La Selva (ALAS), Conservation International's Tropical Ecological Assessment and Monitoring project (TEAM), and Leaf Litter Arthropods of MesoAmerica (LLAMA). These quantitative inventories have been augmented by extensive non-quantitative sampling using Berlese and Winkler extraction methods. A much larger specimen base than that available to Fernández (2003) now allows a more thorough assessment of the Central American fauna. The purpose of this study is to review the taxonomy of Central American *Adelomyrmex*.

Biology

In Central America, *Adelomyrmex* occur primarily in mature wet forest habitats, in rotten wood and leaf litter on the forest floor. They are far more abundant in montane cloud forest than in lowland rainforest. In some cloud forest habitats they can occur in nearly 100% of miniWinkler samples (1 m² samples of sifted litter) and dozens of individuals may occur in samples. In lowland rainforest they are rare, occurring in fewer than 10% of miniWinklers, and usually as one or two individuals per sample. Highland species are typically larger as well. Thus in some cloud forests *Adelomyrmex* make up a large proportion of the ant biomass (often sharing that role with another dominant cloud forest myrmicine genus, *Stenammas*; see Branstetter 2009). In contrast, in lowland habitats they are very rare and a minute proportion of the biomass. In South America they are always rare, whether in lowlands or cloud forest (Fernández, pers. comm.).

Foragers are almost never seen. *Adelomyrmex* workers generally have small eyes and presumably forage almost entirely beneath the litter. In baiting transects in cloud forest, *Adelomyrmex* are occasionally encountered, but not in numbers that reflect their abundance in sifted litter samples. Nothing is known of their feeding habits.