Cladistics of the tribe Ectatommini (Hymenoptera: Formicidae): A reappraisal

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The cladistic analysis of ectatommine ants by Lattke (1994) is reanalyzed and discussed. It is argued that Lattke's sample of taxa (in particular his choice of outgroups) is problematic because of the acceptance of unreliable previous analyses of ant subfamilial relationships. Additionally, Lattke's proposed reclassification is inconsistent cladistically. A revised matrix is presented with the addition of three outgroups and twelve characters (19 taxa and 41 characters in total). This matrix yields a single most parsimonious cladogram (L=116; CI=46; RI=61) with Ponerinae paraphyletic with respect to the other poneroid exemplars included (*Apomyrma*, *Cerapachys* and *Cheliomyrmex*). This result illustrates the need for a full taxonomic revision of the poneroid group.

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Introduction

Ectatommini Emery is a cosmopolitan tribe of ponerine ants. A series of studies by Brown (1958; 1960; 1965; 1975) culminated in the recognition of 51 genera in 11 tribes for Ponerinae. Brown (1958) redefined the Ectatommini to include 9 genera: *Acanthoponera* Mayr, *Heteroponera* Mayr, *Rhytidoponera* Mayr, *Paraponera* F.Smith, *Ectatomma* F.Smith, *Aulacopone* Arnoldi, *Gnamptogenys* Roger, *Proceratium* Roger, and *Discothyrea* Roger. This redefinition included recognition of Paraponerini (*Paraponera*) and Proceratini (*Proceratium* + *Discothyrea*) as junior synonyms of Ectatommini.

Recently, Lattke (1994) addressed the validity of Brown's revised Ectatommini applying cladistic techniques for the first time within Ponerinae. He revived Paraponerini and Proceratini from synonymy, redefined Ectatommini to include only 5 genera (*Acanthoponera, Heteroponera, Rhytidoponera, Ectatomma* and *Gnamptogenys*), and considered the position of *Aulacopone* as uncertain due to the lack of evidence (see below). However his analysis is inadequate in terms of his character coding and taxon sampling and his classification does not reflect the groups found on his cladogram.

The main purpose of this paper is to revise Lattke's (1994) analyses and to show that his data provide ambiguous evidence in support of his conclusions. Secondarily, it is argued that a more thorough taxon sampling will be required in order to shed some light on the taxonomic problems posed by the circumscription of Ectatommini and, in general, the tribal classification of Ponerinae.

Taxonomic history of Ponerinae

Lattke's (1994) study suffers from his choice of outgroups. In order to understand this problem a brief taxonomic history of Ponerinae is required. Ponerinae was first erected by Lepeletier de Saint-Fargeau (1835) as a family-group name. The group was simply defined as possessing '[f]emelles armées d'aiguillon. Premier segment de l'abdomen formé d'un seul noeud' (Lepeletier 1835:185). The former character is a synapomorphy for the Aculeata. The latter is a synapomorphy of Formicidae. It was later transformed into a subfamily of Formicidae by Mayr (1862) with two of spelling emendations by other authors. The contents of Ponerinae grew and changed as a result of a century of myrmecological expeditions and the acquisition of new material from previously unknown faunas. At this time, Ponerinae was not diagnosed by any derived characters and a diverse array of unrelated but plesiomorphic ants were placed there, resulting in a highly unnatural taxon.