Discussion

A. *Gnamptogenys*

Figure 1 shows the single most parsimonious tree produced the characters and assumptions in Appendix 1 (Tree Length 24; Consistency Index 0.71; Homoplasy Index 0.29). The analysis suggests four species groups among the 15 species examined. Within these groups, some species have nearly identical sting apparatuses, varying slightly in such size-related characters as length of sting and numbers of sensilla. In the list that follows, those species with nearly identical apparatuses are underlined.

Group 1: *triangularis-bispinosa*. Synapomorphies: a) lancet valves small, b) sting apex dorsoventrally compressed.

Synapomorphies of groups 2, 3, and 4: a) Spiracular plate longer than wide, rectangular to oval, b) postincision of oblong plate absent, fulcral arm short, subtriangular, c) sting shaft flanges present.

Group 2: *tortuolosa-horni-tornata-annulata-sulcata*. Synapomorphies: a) triangular plate with diagonal ridge, b) sting hemocoel in side view extends over 15-25% of the valve chamber.

Synapomorphies of groups 3 and 4: a) spiracular plate oval, b) sting shaft with apical flanges large enough to see clearly in ventral view.

Group 3: *brunnea*-nr. *strigata-porcata-moelleri-gracilis*. Synapomorphies: a) no obvious median lobe on posterior arm of oblong plate (a reversal from median lobe present in all other species), b) basal segment of gonostylus without long setae (independently evolved from group 1 according to this dendrogram).

Group 4: *continua-mordax-interrupta*. Synapomorphies: a) median lobe of oblong plate posterior arm down-curved, b) sting hemocoel limited to sting shaft (reversal from extending above valve chamber in all other species).

Characters 1, 4, and 7 have derived states that could result from sting reduction and therefore could be convergent in different groups, but all groups defined by the derived states of these characters are also defined by other characters as well.

This analysis was completed without reference to Lattke's (1991a) classification based on external anatomy. The following similarities were found: 1) group 1 species are all members of Lattke's *rastrata* group, 2) group 3 species are all members of his *striatula* group, 3) group 4 species are all members of the *mordax* subgroup within the *mordax* group, 4) three species in group 2 (*tortuolosa*, *tornata*, *sulcata*) are members of Lattke's *tornata* group, the first two being sister species. Differences are: 1) Lattke's *mordax* group contains all group 4 species plus group 2 members *horni* and *annulata*, and 2) relationships among species in my group 3 and Lattke's *striatula* group are different. In short, there is substantial concurrence between the two classifications.

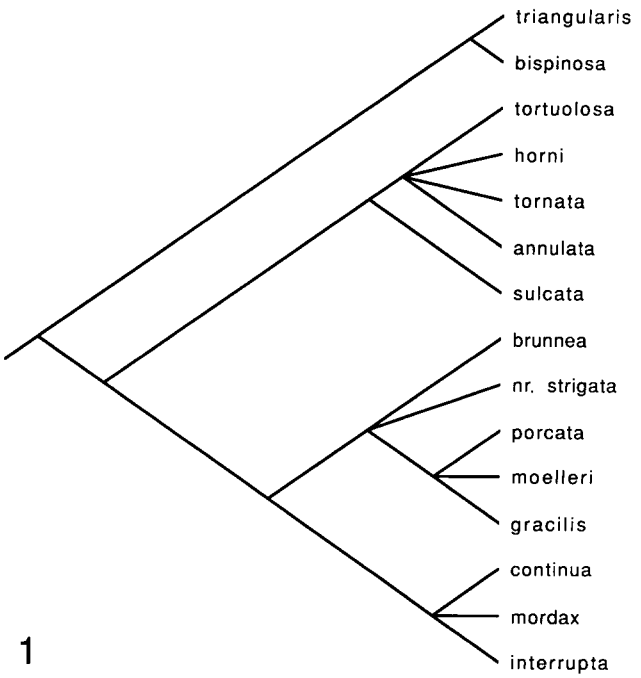

Figure 1. Shortest cladogram for 15 species of *Gnamptogenys*, based on the sting apparatus.

The results also concur with aspects of Emery's (1911, pp. 35-46) classification, which was also not consulted in advance: 1) Members of Emery's erstwhile subgenera *Parectatomma* and *Poneracantha* (*triangularis* and *bispinosa*, respectively), also separate out from all other species in my analysis. 2) All species that would be placed in Emery's genus *Holcoponera* are the five species in group 3. 3) groups 2 and 4 only contain species that would be placed in Emery's subgenus *Gnamptogenys*. However, the monophyly in my analysis of group 3 (Emery's genus *Holcoponera*) with groups 2 and 4 (Emery's subgenus *Gnamptogenys*)