Buchbesprechung

BOLTON, BARRY, 2003: Synopsis and classification of the Formicidae. Memoirs of the American Entomological Institute, Gainesville, Florida, 71: 1–370. $ 95.00 + shipping & handling $10.00 [Economy (surface) letter-post].

This thickly written and information rich compendium appears precisely when its author retires. It crowns, in this way, the end of an active professional life entirely devoted to ant taxonomy.
A "systematic list of higher taxa" including all supraspecific names referred to the Formicidae and a key to the extant subfamilies are followed by the two most important parts of the work where morphology and the nomenclature derived from it are treated separately.
The first voluminous part, "Taxonomy and Systematics" (pages 14–76), is the one containing the major novelties. A list of all suprageneric ant taxa (more precisely, those considered as such by Bolton) accompanied by individual competent diagnoses appears particularly valuable since it is supported by description of one or more synapomorphies per taxon. The aspect destined to amaze both, cursory readers of the book and students of ants, is the recognition of six new subfamilies, all referred to previously known taxa, plus the emendation of the Amblyoponinae, a group of ants whose subfamilial rank was almost universally denied since its original proposal by Forel (1893).
An informed reader will notice that Bolton's Synopsis recognizes most of the subfamilies proposed over half a century ago in a repeatedly blamed book by Clark (1951), except the only one universally accepted today, the Prionomyrmecinae (senior synonym of Nothomyrmeciinae). Clark's (1951) subfamilial classification was severely criticized by Brown (1954: 22) who stated: "such immoderate and arbitrary subfamily revisions as Clark's are not likely to gain the support of many myrmecologists". Curiously enough, Bolton also refers to Brown (1954) as "this famous paper [that] marked the beginning of modern investigations on ant classification and phylogeny".
The one given above, however, is an anecdotal approach to ant subfamilial claissification. A credible approach should be based on a genus-level phylogeny to avoid subjective judgments on taxonomic rank. Valid subfamilies, in it, should appear as sister taxa of other, universally recognized subfamilies.
Bolton's approach is inspired by Hennig's phylogenetic systematics but lacks the support of a phylogenetic tree. Although there is little doubt about the monophyly of most of the categories that he recognizes, lack of phylogenetic reconstruction renders Bolton's "synapomorphies" questionable because the character-state(s) of the closest relatives and of the common hypothetical ancestor is not traced and remains unknown. I consider this to be the major methodological drawback of this work independently of the fact that future research may prove that one or all of the supraspecific taxa recognised in the book receive appropriate rank. Obviously, even universally recognized monophyly is not a synonym of subfamilial (neither tribal) rank for a taxon: a synapomorphy-based phylogenetic tree is urgently needed to test Bolton's intuitive classificatory design. Some of the synapomorphies used to define higher taxa are unexplained resurrections or interpretations of characters already demonstrated to be wrong; for instance, most synapomorphies for Bolton's "subfamily Aneuretinae" were already shown to be inconsistent by Baroni Urbani et al. (1992: 313). Notice that Bolton is co-author of that same paper where those mistakes were corrected. To make another example, one of the synapomorphies of the family Formicidae (p. 15) is correctly stated to be "Antennae geniculate between long scape and funiculus". But the subfamily Armaniidae exhibits characters that are "entirely plesiomorphic with respect to all other subfamilies of Formicidae" (p. 73) and the Sphecomyrminae have (also correctly) "scape short" (p. 74) and hence should be excluded from the Formicidae according to Bolton's own definition. This latter case continues a tradition of mystic and of literature proliferation about the systematic position of *Sphecomyrma*, an issue that should be out of fashion today. *Sphecomyrma*'s fame was originally drawn from its supposed role as ancestor of part or of all contemporary ants, a hypothesis silently but universally abandoned today. Even the interest in it as the oldest fossil ant has been lost in the meanwhile, due to the subsequent proliferation of coeval and older, equally ant-like fossils (listed by Bolton at p. 290; see also Nel et al. 2004). A few morphological nomenclatorial oddities remain; the most common one is probably the term "helcium", a term introduced by Bolton himself. The same structure is called presclerites in all other insects.
The second, voluminous part of the book (pages 77–266) is the "Synopsis of Classification". This part differs essentially from Bolton's 1995 Catalogue of Ants by the phylogenetic arrangement of the supraspecific taxa, instead of alphabetical, by the addition of a long, interesting nomenclatorial history where changes of rank and of hierarchic attribution are reported, plus by several literature references

that appeared after completion of the Catalogue and even including papers still in press whilst I am writing. The author's knowledge and competence are not in question. Surprisingly missing are some citations of papers expressing views different from those of the book (e. g. Baroni Urbani 1995 [on *Diplorhoptrum*]; Rust & Andersen 1999 [on the antiquity of Formicidae]; Poinar et al. 2000 [on *Sphecomyrma*]). These omissions are unlikely to be explained by inaccuracy or ignorance. Other papers benefited from a different treatment. For instance, Grimaldi et al. (1997) are duly cited for re-transferring *Sphecomyrma* within the Formicidae, but their cladistic placement of *Adetomyrma* outside the Ponerinae is ignored.

Four appendices, on adjustments on genus rank, aspects of morphology, synopsis of plesiomorphies, and appearance in fossil record conclude the work. Appendix 2 (aspects of morphology) gives a list of castes, number of antennal joints, palp segments, masticatory teeth, meso- and meta-tibial spurs for the ant genera. This list could have easily benefited from the citation of the species on which the count was made.

The book as a whole remains a precious source of information destined to be useful to generations of future students. Its value (and the author's scientific personality) would have resulted much less diminished by critically mentioning or even by accepting results contrasting with the author's ideas rather than by trying to conceal them. Opening the way to the suspicion of bias will force serious scientists to verify what appears to be taken for granted in the book.

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