A species-level supertree for stylophoran echinoderms

The construction of supertrees from smaller, character-based cladograms permits simultaneous inclusion of a large number of taxa in a single analysis, summarizes patterns of relationships from many independent data sources, and highlights areas of conflict to be targeted by character matrix studies. The method is applied for the first time to stylophoran echinoderms (cornutes and mitrates). Published cladistic analyses of this problematic group are used to build a supertree of 77 species. Key areas of stylophoran phylogeny to be addressed by future studies include the systematic placement of several mitrate-like cornutes, the affinities of peltocystidan and lagynocystid mitrates, and the position of such bizarre-looking taxa as Diamphidiocystis and Lobocarpus. A strict consensus of 72,278 equally parsimonious supertree solutions shows cornutes to be paraphyletic relative to mitrates. Lobocarpus is either one of the most derived cornutes or the sister taxon to all mitrates, in agreement with its chimaera-like combination of cornute- and mitrate-like features. Chinianocarpos is basal to peltocystidan rather than to mitrocystitidan mitrates. Nanocarpus, an almost bilaterally symmetrical taxon previously allied to cornutes, is nested within mitrates as sister taxon to mitrocystitids plus anomalocystitids. Diamphidiocystis and Lagynocystis cause loss of phylogenetic resolution among derived mitrocystitids and basal anomalocystitids.

Key words: Echinodermata, Stylophora, Cornuta, Mitrata, source trees, supertree, strict consensus, parsimony.

Marcello Ruta [mruta@midway.uchicago.edu],Department of Organismal Biology and Anatomy, University of Chicago, 1027 East 57th Street, Chicago, IL 60637, USA.