

Stylophoran supertrees revisited

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Supertree analysis is a recent exploratory method that involves the simultaneous combination of two or more character-based source trees into a single consensus supertree. This method was recently applied by Ruta to a fossil group of enigmatic Palaeozoic forms, the stylophoran echinoderms. Ruta's supertree suggested that mitrates are polyphyletic and originated from paraphyletic cornutes. Re-examination of Ruta's data matrix strongly suggests that most source trees were based on dubious homologies resulting from theory-laden assumptions (calcichordate model) or superficial similarities (ankyroid scenario). A new supertree analysis was performed using a slightly corrected version of Ruta's original combined matrix; the 70% majority-rule consensus of 24,168 most parsimonious supertrees suggests that mitrates are monophyletic and derived from paraphyletic cornutes. A second new supertree analysis was generated to test the influence of the pruning of three taxa in some calcichordate source trees; the 70% majority-rule consensus of 3,720 shortest supertrees indicates that both cornutes and mitrates are monophyletic and derived from a *Ceratocystis*-like ancestor. The two new supertree analyses demonstrate the dramatic influence of the relative contributions of each initial assumption of plate homologies (and underlying anatomical interpretations), in original source trees, on the final topology of supertrees.

Key words: Echinodermata, Stylophora, Cornuta, Mitrata, Ankyroida, Calcichordata, supertree, Palaeozoic.

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