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Abstracts

Joining the dots: systematics and biogeography of Punctoidea land snails

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The land snail superfamily Punctoidea traditionally included seven families distributed worldwide, to which a possible origin in North America had been assigned. Its classification, however, was unstable and given the difficulty in acquiring and preserving specimens, a molecular phylogeny had never been attempted. Thus, a phylogenetic framework for this superfamily is now being built. Our results so far showed that Punctoidea was polyphyletic, comprising three unrelated groups: the Laurasian Discoidea (containing Oreohelicidae and Discidae); the Gondwanan Punctoidea sensu stricto (Endodontidae, Cystopeltidae, Charopidae and Punctidae); and the Laurasian Helicodiscidae. The Discoidea originated in North America, with the earliest records being from the Late Cretaceous of Canada, and had expanded into Europe by the Late Palaeocene (records from France). In Punctoidea, the most basal branch is the Endodontidae, today restricted to Oceania and eastern Asia and with a poor fossil record. The next branch is a newly recognized family arrangement, the Cystopeltidae; it contains two subfamily-level clades, one Australian and one South American. Charopidae is paraphyletic (it contains Punctidae as its crown group); its earliest branch is the southern African Trachycystinae, followed by the New Zealand Flammoconchinae, the Charopinae, and a series of poorly resolved clades. By the Eocene, Cystopeltidae, Charopidae and Punctidae all occurred together in South America. Punctidae became extinct there, but one branch eventually reached North America and Europe. The early fossil record of these families elsewhere is poor and of difficult classification. Ongoing work is increasing the coverage of Punctoidea, focusing on branches and taxa of particular interest to solve the present issues. The main topics of investigation now are: (1) the relationship between New Zealand, Tasmania and mainland Australia “Charopidae”; (2) the validity of “Charopidae” subfamilies; (3) the number of dispersion events of “Charopidae” to South America; and (4) the diagnosis of South American Cystopeltidae and “Charopidae”, including fossils.