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Revision of the Australian species of Anatomidae (Mollusca: Gastropoda: Vetigastropoda)

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Abstract

The Australian members of the vetigastropod family Anatomidae are revised and two new species are described. The family has thus far been treated as a subfamily of Scissurellidae, but recent molecular evidence (Geiger & Thacker, unpubl. data) indicates that Scissurellinae plus Anatominae

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is not monophyletic, and full family rank is warranted for a group containing the genera *Anatoma* and *Thieleella*. Seven species from Australia belonging in Anatomidae are discussed and illustrated by SEM: *Anatoma aupouria* (Powell, 1937) mainly from New Zealand, though with some Australian records; *A. australis* (Hedley, 1903), *A. funiculata* n. sp., *An turbinata* (A. Adams, 1862), which has been misidentified in the past as the South African *A. agulhasensis* (Thiele, 1925), *A. tobeyoides* n. sp., *Thieleella equatoria* (Hedley, 1899) with a second known specimen, and *T. gunteri* (Cotton & Godfrey, 1933). Other species that have been (erroneously) indicated from Australia are discussed. A neotype is designated for *A. agulhasensis* from South Africa for taxon stabilization.

Key words: microgastropods, classification, nomenclature, South Pacific, tropical, temperate

Introduction

The higher classification of Vetigastropoda ("Archaeogastropoda" partim) is still in flux. Although some families are well-known and clearly diagnosed (Haliotidae, Pleurotomariidae, Peltospiridae, Neomphalidae), others are of uncertain membership and phylogenetic placement (Lepetodrilidae, Clypeosectidae, Trochoidea, Scissurellidae). Scissurellidae sensu lato occurs in all oceans, from the shallow intertidal to the abyss, including hydrothermal vents, and has been segregated into six subfamilies: Scissurellinae Gray, 1847, Anatominae McLean, 1989, Temnocinclinae McLean, 1989, Sutilizoninae McLean, 1989, Larocheinae Finlay, 1927, and Depressizoninae Geiger, 2003. Diagnoses for the subfamilies were recently provided (Geiger, 2003). The family is traditionally diagnosed by their minute size of 1–6 mm, a slit or foramen and associated selenizone found in the shell (missing in Larocheinae), and a rhipidoglossate radula with a serrated rachidian tooth. These characters have questionable value for diagnosing a clade. Size in itself is a poor character. The slit or foramen plus selenizone in the shell is a general character in many Recent Vetigastropoda (Pleurotomariidae, Clypeosectidae, Fissurellidae: Emarginulinae, Haliotidae), as well as in some extinct groups (e.g. Bellerophontoidea: McLean, 1984; Wagner, 2002). The serrated rachidian is common to all vetigastropods of small size, including juveniles of larger forms (Warén, 1990; Dinamani & McRae, 1986). It suggests a peramorphic alteration of the radula in large bodied forms, and consequently, the serrated rachidian in Scissurellidae sensu lato can be interpreted as a shared primitive condition in all vetigastropods. In summary, none of the suggested diagnostic characters are unique for the family.

The monophyly of the family is questionable, as pointed out by Warén & Bouchet (2001), who consider the vent subfamilies Temnocinclinae and Sutilizoninae more closely related to Lepetodrilidae. Schwarzpaul (2002), on the other hand, found Temnocinclinae and Sutilizoninae more closely related to Fissurelloidea (Fissurellidae and Clypeosectidae) than to Lepetodrilidae using morphological data on a larger array of hydrothermal vent "archaeogastropods". Recent molecular data (Histone 3, partial Cytochrome oxidase sub-

