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**New species of Australian Scissurellidae
(Mollusca: Gastropoda: Vetigastropoda)
with remarks on Australian and Indo-Malayan species**

DANIEL L. GEIGER & PATTY JANSEN



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Abstract

Three new species of Scissurellidae from Australia are described: *Incisura auriformis* n. sp., *Scissurella quadrata* n. sp., and *Sci. spinosa* n. sp. They are compared to other species occurring in Australian waters: *I. remota* (Iredale, 1924) [+ *I. vincentiana* (Cotton, 1959)], *I. rosea* (Hedley, 1904), *Sci. cyprina* Cotton & Godfrey, 1938, *Sci. declinans* Watson, 1886, *Sci. evaensis* Bandel, 1998 [+ *Maxwellella unispirata* Bandel, 1998], *Sinezona plicata* (Hedley, 1899), *Sukashitrochus atkinsoni* (Tenison-Woods, 1877), *Suk. indonesicus* Bandel, 1988 [+ *Suk. simplex* Bandel, 1998], *Suk. pulcher* (Petterd, 1884), and *Trogloconcha tessellata* Kase & Kano, 2002. As under-appreciation of intraspecific variability has resulted in the introduction of synonyms, multiple specimens are illustrated here, along with radulae and distributional maps.

Key words: microgastropods, biodiversity, Australasian, tropical, temperate, distribution

Introduction

Scissurellidae (Mollusca: Gastropoda: Vetigastropoda) is a family of basal snails, formerly classified in the archaeogastropod grade, and now placed in Vetigastropoda (Salvini-Plawen & Haszprunar 1987; Haszprunar 1993). Members of the family occur in all oceans, from the shallow intertidal to the abyss, including hydrothermal vents. The monophyly of the family is questionable, as pointed out by Bouchet & Warén (2001), who consider the vent subfamilies Temnocinclinae and Sutilizoninae more closely related to Lepetodrilidae. Recent molecular data (Geiger & Thacker unpubl. data) also suggest that Anatominae and Scissurellinae not to be monophyletic; Scissurellinae is sistergroup to Lepetodrilidae plus Clypeosectidae in a crow clade with Haliotidae, whereas Anatominae is amongst the most basal Vetigastropoda. Despite these new developments with respect to the higher classification of scissurellid lineages, we treat the group here in the traditional sense at the family level.

Approximately 163 Recent species have been described, but the number of undescribed species may be close to twice of its present day known diversity (Geiger 2003). The small size of the species, 0.5–10 mm, has certainly contributed to the poor knowledge of this family. The first species was described by Fleming in 1828 from Europe. Only the advent of scanning electron microscopy (SEM) has permitted to fully investigate these organisms. The more important studies include Yaron's (1983) revision of the Red Sea species, Herbert's (1986) revision of the South African species, McLean's (1989) description of discrete forms from the hydrothermal vent environment, Marshall's (1993) description of slit-less groups, Bandel's (1998) description of new genera and species, Marshall's (2002) description of New Zealand species, Geiger's (2003) phylogenetic assessment of characters used for generic classification, and Geiger & Jansen's (2004) revision of the Australian *Anatoma* and *Thielella* species.