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**A radiation of hydrobiid snails in the caves and streams at Precipitous Bluff,
southwest Tasmania, Australia
(Mollusca: Caenogastropoda: Rissoidae: Hydrobiidae *s.l.*)**

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Abstract

A radiation of hydrobiid snails is described from caves at Precipitous Bluff, southern Tasmania. The radiation (10 species) comprises two closely related genera; *Pseudotricula*, endemic to the Precipitous Bluff caves, and *Nanocochlea* found in these caves and surface streams and seepages, but also known from elsewhere in southern Tasmania. Two Precipitous Bluff species of *Nanocochlea* inhabit streams outside the caves, while one is found within the caves; all three are new. Seven species of *Pseudotricula* are described, six being new. Up to five species, one *Nanocochlea* and four *Pseudotricula*, are found in single stream habitats characterised by diverse sediment and slow to moderate flows. One *Pseudotricula* species is found in a swifter, larger stream with cobbles and gravel and another on smooth limestone surfaces in fast flowing water and water falls. A cladistic analysis (based on morphology) confirmed the monophyly of *Pseudotricula*, but the monophyly of *Nanocochlea* is less robust.

Key words: karst, *Nanocochlea*, *Pseudotricula*, cladistics, anatomy, stygobite

Introduction

Endemism in cave faunas is well known with some well documented examples of speciation in northern hemisphere karst areas (overviews in Culver & Holsinger 1992; Wilkens *et al.* 2000). Radiations of hydrobiid and hydrobiid-like snails in karst and other groundwater environments have been described from other parts of the world e.g., New Zealand (Climo 1974), North America (e.g., Hershler & Longley 1986) and Europe (e.g., Giusti & Pezzoli 1977, 1981; Radoman 1983). However, only one obligate groundwater-dwelling species (stygobite) has been previously described from Australia, *Pseudotricula eberhardi* Ponder, 1992 from Precipitous Bluff, southwest Tasmania. One of us (SE) recollected from several caves within this karst area in 1991 and 1994 and found a number of additional species that are described herein. Samples were also collected by Arthur Clarke in 1988.

Recent molecular studies (Wilke *et al.*, 2001) have shown that Hydrobiidae, as widely used, may not be monophyletic. In this paper the family name Hydrobiidae is used in the broad sense because the systematics of the family-group taxa involved require further studies before they are resolved.

The Precipitous Bluff caves and karst

Precipitous Bluff is located near the south coast of Tasmania in a remote and inaccessible part of the Tasmanian Wilderness World Heritage Area (Fig. 1). The area remains essentially undisturbed by human activities except for occasional visits by bushwalkers and cavers. The area lies within the perhumid precipitation effectiveness province of Gentilli (1972). The nearest meteorological station is at Hastings located 25 km