



## A remarkable new genus of carnivorous, sessile bivalves (Mollusca: Anomalodesmata: Poromyidae) with descriptions of two new species

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### Abstract

*Dilemma*, a new genus of sessile septibranch bivalves is described. The new taxon encompasses at least three species, of which two are new: *D. frumarkernorum* new species, from off the Florida Keys, *D. spectralis* new species, from off Vanuatu, and “*Corculum*” *inexpectatum* Crozier, 1966, from off the Three Kings Islands, New Zealand, known only from its shell. The absence of ctenidia and presence of a septum, size and arrangement of siphons and siphonal tentacles, extensive fusion of the mantle margins allocate the new genus within the septibranch bivalves. A siphonal area with 15 tentacles, a large and eversible incurrent siphon, ostial apertures in the septum, and a hermaphroditic reproductive system suggest inclusion in the Poromyidae. The presence of three paired groups of septal ostia in the new genus is a feature shared with poromyids in the genus *Cetoconcha*. Unusual symmetry and form constitute the most striking features of the new genus. There is a strong anteroposterior compression and lateral expansion associated with ca. 30° rotation of the largest dimension (height) in relation to the anteroposterior axis. The shell hinge includes a single tooth and socket on each valve, and an external, but deeply sunken ligament. The two new species, mutually distinguishable by shell and anatomical characters, are known from live-collected specimens found adhering to rocks by means of robust byssus, which indicates attachment for life. The presence of ostracod remains in the digestive tract of one specimen of one of the new species and of a cirrolanid isopod in the stomach of the holotype of the second new species are evidence of predation. Although predation by infaunal and free-living bivalves is known to occur throughout the Anomalodesmata, in particular within the septibranchs, discovery of the new genus reveals an unusual instance of predation by sessile, permanently attached mollusks.

**Key words:** Septibranchia, *Dilemma*, *Cetoconcha*, *Poromya*, deep-sea, bathyal

### Introduction

This study was prompted by the discovery off of the Florida Keys in 2006 of five specimens of a new bivalve species. The most notable feature of that species is the strong compression and lateral expansion in relation to the symmetry and form of a “standard” bivalve. At first glance, the shell shape, outline, and placement of the umbones invited comparisons with the monotypic cardiid *Corculum* Röding, 1798 (e.g., Oliver, 1992; Schneider, 1998). However, more careful examination of shell morphology (e.g., lack of typically complicated heterodont hinge arrangement, sunken and external ligament) and gross anatomy (e.g., lack of ctenidia, siphonal morphology, presence of a septum with septal ostia, hermaphroditic reproductive system) pointed toward allocation of that new species within the septibranch bivalves.

A similar species was collected in the Tasman Sea at 805 m depth and described as *Corculum inexpectatum* by Crozier (1966). Despite some differences in size, shell sculpture, and the lack of soft parts of *C. inexpectatum* for study, general shell morphology and hinge dentition on the left valve suggested that this and the new species from Florida were closely related species.