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Pyrisinellidae, a new family of anascan cheilostome bryozoans

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Abstract

A new family of anascan-grade cheilostome bryozoans, Pyrisinellidae **n. fam.**, is introduced, together with two new genera, *Pyrisinella* **n. gen.** and *Spinisinella* **n. gen.** Containing species previously assigned either to the large, paraphyletic Calloporidae, or Microporidae, pyrisinellids are characterized by having small autozooids with a conspicuous pear-shaped ridge formed by the mural rim and distal rim of the opesia, articulated oral spines, and hyperstomial ovicells recumbent on the distal zooid and indenting its mural rim. Five species of pyrisinellids are described, two of which are new: *Spinisinella zagorseki* **n. gen. et sp.**, from the Cenomanian or Turonian (Upper Cretaceous) of the Czech Republic, and *Setosinella perfluxa* **n. sp.**, from the Langhian (Middle Miocene) of Kalimantan, Indonesia. A Recent species, *Megapora ringens* (Busk), is redescribed and questionably assigned to Pyrisinellidae. Important evolutionary changes within Pyrisinellidae having parallels elsewhere among anascan cheilostomes include: (1) the development of opesiules for passage of the parietal muscles which correlates with a change from a trifoliate to a semielliptical opesia; and (2) the transition from an open spinose ovicell in the oldest species (*Spinisinella zagorseki*) to a conventional ovicell with a solid hood-like oecium that characterizes all other species belonging to the family.

Key words: Bryozoa, Cheilostomata, new taxa, fossil, Recent

Introduction

Calloporidae Norman, 1903 is one of the largest families of bryozoans with respect to generic diversity: D.P. Gordon placed no fewer than 76 genera in this anascan-grade neocheilostome family in his provisional listing of genera for the *Treatise on Invertebrate Paleontology* (http://www.bryozoa.net/treat_family_2011.pdf). The type genus of Calloporidae, *Callopora* Gray, 1848, has: (1) multiserial encrusting colonies; (2) autozooids with extensive ovoidal opesia, a circumopesial ring of articulated spines, a slight frontal wall comprising cryptocystal and gymnocystal elements, pore chambers, and ovicells containing an ectoecial window through which the entoecium is visible; and (3) small avicularia borne generally on the gymnocystal of the autozooids. Other genera placed in Calloporidae, however, differ considerably from *Callopora*. Ryland & Hayward (1977, p. 87) remarked: “The genera assembled in this family are a somewhat heterogeneous group”. More recently, Reverter-Gil *et al.* (2011, p. 13) described Calloporidae as “disproportionately large and a little heterogeneous, with morphological characters that overlap with those of other (including segregate) families”. Indeed, some calloporids are uniserial encrusters, others grow erect, many have an extensive frontal wall composed of gymnocystal and/or cryptocystal components, while some lack spines or have oral spines at the distal end of the autozooid only, a hyperstomial ovicell with a fully calcified ectoecium, and do not develop avicularia or have avicularia varying widely in morphology and location.

While large families can be justified if they are monophyletic, Calloporidae as currently applied is almost certainly paraphyletic. Taking the family as a whole, no unique apomorphies are evident: calloporid characters are either primitive and were inherited from their malacostegan ancestor (e.g. articulated spines and pore chambers), or are advanced relative to malacostegans but shared with other neocheilostome families (e.g. ovicells and avicularia). Calloporidae is the oldest known family of neocheilostomes, first recorded in the Albian stage of the mid-