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**Catalogue of Recent and fossil taxa
of the family Architectonicidae Gray, 1850
(Mollusca: Gastropoda)**

RÜDIGER BIELER & RICHARD E. PETIT



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Catalogue of Recent and fossil taxa of the family Architectonicidae Gray, 1850 (Mollusca: Gastropoda)

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Abstract

The marine gastropod family Architectonicidae (= Solariidae), commonly known as sundials, comprises about 140 worldwide extant species classified in 11 genera. More than ten times as many names are used in the literature for both Recent and fossil taxa, the latter dating from the Mesozoic (Paleozoic taxa were misinterpreted). Herein we catalog more than 1550 names that have appeared in print at the family-group (10), genus-group (137), and species-group levels (1408). Of the last, nearly 1100 are found to be nomenclatorially available or potentially available.

An Appendix is included in which nomenclatural changes are made and/or commented upon. It is demonstrated that *Solarium maculatum* Link, 1807 was validly introduced and, as *Architectonica maculata* (Link, 1807), becomes the valid name for the species usually cited as *A. picta* (Philippi, 1849). The invalid introduction of *Heliacus messanensis* Bertolaso & Palazzi, 2000 is discussed. The emended spelling of the specific name in the binomen *Solatisonax alleryi* (G. Seguenza, 1876) is shown to be correctly accepted. *Philippia lepida* Bayer, 1942, *Torinia gyrus depressiuscula*

Bayer, 1848, *Solarium subconcolor* von Martens, 1880, *Solarium conulus* Weinkauff, 1868 and *Solarium submoniliferum* d'Orbigny, 1852 were proposed as replacement names for multiple preoccupied names and/or misidentifications. These are here restricted to avoid possible confusion. The history and current status of the similarly spelled and inconsistently used nomina *Fluxiella* and *Fluxinella* (as placed in Architectonicidae and/or Seguenziidae) are discussed.

Key words: Nomenclature, taxonomy, biodiversity, lower Heterogastropoda, Solariidae, marine

Introduction

The marine gastropod family Architectonicidae Gray, 1850 (of which Solariidae Carpenter, 1857 is a synonym) belongs to the “lower heterobranchs,” a still poorly resolved clade or grade that together with the Opisthobranchia and Pulmonata form the Heterobranchia within the Gastropoda. The systematic position, known anatomical characters, and complicated taxonomic history of Architectonicidae have been discussed by Haszprunar (1985, 1988) and Bieler (1988, 1992). Commonly known as “sundials,” members of this group possess discoidal to broadly conical shells. Among the features of their dextrally coiling shells is a strongly pronounced heterostrophy, an abrupt difference in shell growth translation between the larval protoconch and the postlarval teleoconch. In architectonicids this leads to an extreme case of hyperstrophy (termed “anastrophy”) in which the larval shell umbilicus (not its apex) is visible on the apex of the shell, while the actual protoconch apex is pointing toward the umbilicus of the adult shell. Architectonicid opercula share a construction of spirally arranged horny lamellae, with a peg-like process on the body side by which it is anchored to the foot muscle. The group shows various buccal and radular specializations for feeding on hexacorallian coelenterates such as stony corals, sea anemones, and zoanths. In the Recent fauna architectonicids have worldwide distribution, mainly in subtropical and tropical waters. Architectonicids occur at all depths, from the intertidal (e.g., species of *Heliacus*) to abyssal depths (e.g., *Solatisonax*). Today’s distributional limits are approximately 40° N and S for most taxa and seem to be defined by the range of suitable coelenterate prey species. Only a few species, especially of *Basisulcata* and *Philippia*, occur also outside this area, for instance southwest of Ireland (warmed by the Gulf Stream, at 50° and 51° N) and off Tasmania (Bieler 1993).

Recent monographic treatments of the extant fauna (e.g., Bieler 1993) recognize about 140 worldwide species in 11 genera. As will be noted from the following lists, this is a small fraction of the available species-group and genus-group names that have been introduced in this family. Architectonicids have long-lived free-swimming larval stages, and many nominal species that were introduced as “local endemics” were subsequently shown to be members of a widely distributed species (an example is the type species of *Architectonica* itself, which has at least 12 junior synonyms). In addition, many names were introduced for fossil species. Of these, most of the Neogene taxa placed in the