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A revision of the Annulariidae of Central America (Gastropoda: Littorinoidea)

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Abstract

Twenty annulariid taxa are reviewed from Central America, including three new species and one new genus. One species is regarded as an *incertae sedis* and two as mislabeled lots of Cuban origin. Many species are highly endemic. Although not speciose, Central America has a high diversity of conchological forms and may represent the ancestral source of annulariids in general.

Key words: Annulariidae, Central America, new species, new genus

Introduction

Until the appearance of Fischer & Crosse's (1888–1890) "Études sur les mollusques terrestres et fluviatiles de Mexique et de Guatemala," information on the terrestrial malacology of Central America was largely scattered across numerous papers, books, and journals. In 1961 Solem synthesized the information available and published a watershed preliminary review of the Annulariidae of the region. Although he commented that "considerable museum material has accumulated since the summaries of Fischer & Crosse… ." he nevertheless had relatively few samples to study. This review relies on the extensive collections at the Florida Museum of Natural History, largely the work of curator Fred Thompson's numerous field trips to Central America from the 1960s on. Over 9,000 specimens in nearly 400 lots were examined for this review. Solem (1961) recognized 17 taxa; three of these are here considered either *incertae sedis* or mislabeled specimens and are removed from the Central American fauna. Three new species are described, one is restored, bringing the total to 18.

With only 18 species known from all of Central America, this region is very depauperate when compared to much smaller regions such as Jamaica, Cuba, or Hispaniola, but more diverse than all of South America (only six recognized taxa). Certainly some of this scarcity of diversity is due to the inaccessibility and danger associated with some regions. But considering the known species, a general distributional pattern emerges. Nearly every species is endemic to a particular region, be it a lowland river valley, a single mountain range, or a cave system, all associated with limestone deposits. Species do not occur in granitic mountain ranges or open lowlands lacking calcareous outcrops. For example, no species are known from the extensive, Pacific-facing Sierra Madre del Sur, which is largely metamorphic. The result is a patchwork distribution with large areas devoid of species. But despite the endemic nature of these taxa, many Central American species inhabit a greater areal extent than any other annulariid.

Although México has the greatest number of species they are packed into the Yucatán Peninsula and states bordering the Isthmus of Tehuantepec—no species occur north of México City. In general the Yucatán Peninsula is the most speciose area for annulariids in Central America. To the south diversity declines dramatically. Only two species are known from mainland Honduras, only one each from Panamá and Nicaragua, and no species have been recorded from El Salvador or Costa Rica.

Despite the low number of species, the annulariid fauna displays a great diversity in conchological form. Species occur that are uncannily reminiscent of taxa from Jamaica, Cuba, and Hispaniola. Watters (2006) suggested that the annulariids in general may have been derived from proto-Central American ancestors. Regions such as Jamaica and the Tiburon Peninsula of Hispaniola were once connected to proto-Central American and were tectonically rafted to their present positions, taking their flora and fauna with them (Rosen, 1975). The species seen in Central America seem to fit that scenario.

In his review of the Central American annulariids, Solem (1961) used *Choanopoma*, *Choanopomops*, *Chondropoma*, *Tudora*, and *Tudorata*. Thompson (2011) largely followed Solem, assigning most of the Central American species to *Choanopomops*. *Choanopoma* is a junior synonym of *Annularia* Schumacher, 1817 (see Watters, 2006, for the tortuous history of this name), which is endemic to Jamaica and should not be used for Central American species. Watters (2006) limited *Choanopomops* to its type species, *Cyclostoma largillierti* Pfeiffer, 1846 (and synonymous *C. grateloupi* Pfeiffer, 1852) based on unique conchological characteristics. *Tudora* Gray, 1850, and the synonymous *Tudorata* Baker, 1924, are endemic to the Netherlands Antilles. None of the species reviewed here are referable to *Chondropoma*. Thus, with the exception of *Choanopomops*, none of the generic names used by Solem or Thompson apply here.

The island of San Andrés, technically part of Colombia but 230 km east of Nicaragua, is not included in this

Comparison with other species. This species resembles no other Central American annulariid.

Remarks. The NHMUK specimen, collected by Dyson, does not closely match Pfeiffer's 1854 figures. In addition, the specimen is accompanied by an operculum, but in the original description it is clear that Pfeiffer did not have a specimen with an operculum.

Thompson (2011) suggested that this species was actually *Parachondria canescens* (Pfeiffer, 1852), a Cuban species, that had been introduced. Examination of the UMMZ specimen indicates that it is probably *Diplopoma arangiana* (Pfeiffer, 1857) from eastern Cuba, and is probably a mislabeled specimen. (If so, *Chondropoma turritum* Pfeiffer, 1852, would be the earliest name for that species.)

Nevertheless, related Cuban species have turned up in some far flung places. *Parachondria canescens* occurs at Nassau, Bahamas, which Bartsch (1946) named subspecies *nassauense*, while admitting that it had possibly been introduced. It also occurs near Freetown, Eleuthera, Bahamas (Watters, unpubl.). The Hispaniolan species *Parachondria salleanus* (Pfeiffer, 1850) occurs on Sombrero Island in the British Virgin Islands (Watters, in press). All of these places experience a great deal of human traffic (Sombrero Island was mined for guano and was visited on a regular basis by ships and workers, Nassau and Eleuthera are popular destinations). These records undoubtedly are anthropogenic introductions but it is suspicious that they all involve two related species.

Original description (translated here from Latin). "Shell nearly perforate, turreted, truncate, with elevated spiral lines and regular longitudinal ribs, white, banded with interrupted red lines; suture rather deep, with crowded denticulations; remaining 6 whorls slightly convex, regularly increasing, last rounded, base with strong spiral lirae; aperture vertical, oval, brown inside; peristome double: inner continuous, a little expanded, outer with top expanded angulate, right margin slightly expanded, columella and left cut.—Operculum?" 16 mm.

Etymology. L. *turritus*—turreted.

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