

NOTES ON THE MOLLUSCAN FAUNA OF THE MONTEZUMA  
FORMATION, COSTA RICA

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Only recently has a paper on the Montezuma Formation (Pliocene-Pleistocene of Costa Rica) published in 1986 come to my attention. This paper is by Teresita Aguilar and Rudolf Fischer, with the Gastropoda being by Aguilar and the Bivalvia by Fischer. As faunal studies of this type are used in various compilations for both spatial and temporal ranges of taxa, the present paper is written to point out incorrect identifications of both genus-group and species-group taxa, particularly in the Cancellariidae as well as some others. The cited identifications incorrectly indicate, for example, that Recent deep-water species from the Galapagos Islands once lived in much shallower water during the Pliocene-Pleistocene. The stratigraphic portion of the paper showing ranges of the species studied should send up a warning flag to the reader, as the taxa listed are an eclectic lot, containing species previously known only as endemics from the Alum Bluff Formation of Florida (Miocene), the Tubará Formation of Colombia (Pliocene), deep-water Recent species from the Galapagos Islands, and other unlikely cohabitants.

My particular interest is in the family Cancellariidae and the relevant species in this study are:

***Cancellaria (Cancellaria) decussata*** Sowerby, 1832. The figured specimen (p. 226, pl. 2, fig. 26) does appear to be a species of *Cancellaria* s.s., although the columellar folds are hidden by matrix so this cannot be determined with certainty. However, it is not *C. (C.) decussata*, which is a Recent species ranging from the Gulf of California to the Galapagos Islands and also known from beds in the Galapagos thought to be Pleistocene in age. *Cancellaria decussata* has much finer sculpture, which appears as beading, unlike the specimen figured which is widely reticulate. Also, the Recent shell is not so constricted behind the siphonal fasciole. This Montezuma specimen cannot be positively identified with any described species but it is very close to, if not the same as, *C. corrosa* Reeve, 1856, a rare species living off western Mexico.

***Cancellaria (Cancellaria) darwini*** Petit, 1970. The specimen illustrated (p. 226, pl. 2, fig. 23) is a juvenile *Cancellaria* s.s., probably *C. albida* Hinds, 1843, of the Recent Panamic-Pacific fauna, but positive identification is not possible from the illustration. It is definitely not *C. darwini* which, although placed in *Cancellaria* s.s. by Keen (1971, p. 647), was stated in its original description to lack the strong columellar folds of *Cancellaria* s.s. and should be placed in some subgenus other than the nominotypical. The Recent species is somewhat littoriniform in outline and the shell is weakly cancellate, not beaded as is the Montezuma specimen.

***Cancellaria (Agatrix) deroyae*** Petit, 1970. The figured specimen (pl. 2, fig. 12) is *C. (C.) urceolata* Hinds, 1843, a Recent species which ranges from the Gulf of California to Ecuador. *Cancellaria deroyae*, now properly placed in the genus *Admetula*, is known only from 170-200 meters off the Galapagos Islands and bears no resemblance to the shell figured.

***Cancellaria (Euclia) codazzii*** Anderson, 1929. This species was described from the Tubará Formation (Pliocene) of Colombia and has been reported from various deposits in Central America. The figured Montezuma specimen (pl. 3, fig. 24) is not *C. codazzii*, which has a tabulate shell without strong nodes at the shoulder and is more constricted anteriorly than the specimen figured. The Montezuma specimen has the general shape and sculpture of *C. cassidiformis* Sowerby, 1832, a shallow-water Recent species ranging from the Gulf of California to Peru and is probably that species.

A fifth member of the Cancellarioidea figured in this paper (pl. 2, fig. 22) is *Tritonoharpa siphonata* (Reeve, 1844), which appears to be correctly identified, although cited as a *Colubraria*, which was the usual placement when the paper was written.

A detailed critique of the identifications of the Montezuma specimens figured in this paper is not being attempted. However, workers are cautioned about citing taxa from this work without examining the taxa closely. Besides the cancellariids

listed above, some obvious errors in identification of other gastropods are:

In the stratigraphic portion of the paper (p. 214) it is pointed out that the genus *Marginella*, although occurring in the Montezuma fauna is not present in the Recent Panamic-Pacific fauna. This statement is based upon a species listed and figured (p. 226, pl. 2, fig. 19) as *Marginella mindiensis* Cossmann, 1913. The figured specimen is not a *Marginella* but is a *Prunum*. The only reference cited is that of Olsson (1922, p. 268), who placed the species in *Marginella*, as had Cossmann originally. No mention is made of Woodring's treatment of this species (1970, p. 332, pl. 51, figs. 10, 11), although his work is cited as a reference. Woodring placed this taxon in the synonymy of *Prunum gatunense* (Brown and Pilsbry, 1911) and referred to a similar unnamed species living off Costa Rica. The Montezuma specimen may be *Prunum gatunense*, but in any case the genus *Marginella* does not occur in the Montezuma Formation as stated.

Plate 2, fig. 8, is labeled as *Distorsio (Rhysena) floridana* (Gardner). The figured specimen is not the Alum Bluff (Miocene) species described by Gardner.

Plate 2, fig. 11, is labeled *Cymatium* cf. *wiegmanni* (Anton) but it is a *Distorsio*, not a *Cymatium*.

Plate 2, figs. 15 and 16, are labeled *Eupleura* sp., but the figures are of a cymatiid.

Plate 2, fig. 17, is said to be *Eupleura lehneri* Jung, which was described from the late Miocene of Trinidad, but the specimen is the Recent eastern Pacific *E. muriciformis* (Broderip, 1833).

Plate 2, fig. 18, is identified as the Gatun Formation species *Typhis* (*Pilsbry-*

*typhis*) *gabbi* (Brown and Pilsbry) but is the Recent eastern Pacific *Haustellotyphis cumingi* (Broderip, 1833).

In addition to the two cancellariids identified as endemic deep-water Galapagos species, a third species is also so treated. It is said to be *Compsodrillia gracilis* McLean and Poorman and is represented (pl. 3, fig. 26) by a badly broken shell lacking its apex, at least one third of its body whorl, and the anterior portion. Because of the presence in the Recent Panamic-Pacific fauna of similar species, the precise identification of this partial specimen should be examined by turrid specialists before admitting this taxon to a shallow to moderate depth Pliocene-Pleistocene fauna in Costa Rica.

#### LITERATURE CITED

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