Description of *Fusilaria garciai* new genus, new species (Gastropoda: Fasciolariidae: Fasciolariinae) from the western Caribbean Sea

Martin Avery Snyder
Academy of Natural Sciences of Drexel University[1]
Philadelphia, USA
and
Muséum National d'Histoire Naturelle[2]
Paris, FRANCE
martin.snyder@gmail.com

ABSTRACT

A new fasciolariine species is described from the western Caribbean Sea, and assigned to a new genus. Four specimens of this large species were collected from lobster traps set at 200 m depth off Roatán Island, Honduras.

Additional Keywords: Fasciolaria tephrina, Honduras

INTRODUCTION

This paper describes a new fasciolariine species collected by lobster fishermen working from Roatán Island, Honduras. Crabbed shells of the new species were collected in lobster traps set at 200 m depth off Punta Camerón, at roughly 16° N, 84° W. A new genus is proposed for this species. Specimens of *Fasciolaria tephrina* de Souza, 2002, another deepwater fasciolariine, were collected concurrently in traps set in the same area at 500 m, and color forms of this species are discussed.

MATERIALS AND METHODS

The study material was obtained from a fisherman at Roatán Island, Honduras by Dr. Emilio F. García in December, 2012. All four shells were occupied by hermit crabs and collected in lobster traps. Measurements were made with a manual vernier caliper and recorded to the nearest 0.1 mm. Examinations were carried out with a Nikon 70594 stereomicroscope. The abbreviation ANSP is used for the Academy of Natural Sciences of Drexel University of Philadelphia.

[1] Research Associate
[2] Research Associate

SYSTEMATICS

Family Fasciolariidae Gray, 1853
Subfamily Fasciolariinae Gray, 1853

Fusilaria new genus

Type Species: *Fusilaria garciai* new species

Diagnosis: Shell moderately large for subfamily; protoconch large; siphonal process long. Prominent sharp columellar folds; prominent parietal ridge. Continuous and interrupted lirae present on inner side of outer lip.

Description: Adult shell moderately large for subfamily, with large protoconch and high spire. Axial sculpture of low ribs forming nodes on peripheral keel adapical to the axial midpoint of each whorl. Spiral sculpture of numerous low, fine cords. Two or three prominent columellar folds present at entrance to siphonal canal with as many as four weaker folds adapically, not always visible from outside. Siphonal canal somewhat twisted. Parietal ridge prominent with sharp edge. Inner side of outer lip with fine lirae, both continuous and interrupted (beaded).

Remarks: Snyder, Vermeij and Lyons (2012) recognized 14 genera in the subfamily Fasciolariinae. *Fusilaria* differs from all these genera; we discuss in detail those genera with Caribbean members. Three genera, all confined to the southeastern United States, contain only fossil members. *Liochlamys* Dall, 1889 and *Terebraspira* Conrad, 1862 are quite unlike *Fusilaria*, with species differing markedly in general shell morphology, but *Pliculofusus* Snyder, Vermeij and Lyons, 2012 requires comparison because that genus shares several characters with *Fusilaria*. Of the other 11 genera, only four (*Aurantilaria* Snyder, Vermeij and Lyons, 2012; *Cinctura* Hollister, 1957; *Fasciolaria* Lamarck, 1799; and *Triplofusus* Olsson and Harbison, 1953) have Recent members

occurring in the Caribbean, and of these only *Fasciolaria* has an amphi-Caribbean distribution. The other three genera barely satisfy the Caribbean criterion, *Aurantilaria* extending northward only to the southeastern corner and *Cinctura* and *Triplofusus* extending southward only to the northwestern edge of the Caribbean. One additional genus, *Granolaria*, has two living members in the eastern Pacific but has five Caribbean fossil members ranging in age from Early Pliocene to Early Pleistocene. These six genera, their Recent Caribbean members, and differences between each of those genera and *Fusilaria* are as follows:

Aurantilaria Snyder, Vermeij, and Lyons, 2012. Included species: *A. aurantiaca* (Lamarck, 1816). Principally a Brazilian species but ranges northward to the Grenadines with fossil records in Florida and the Dominican Republic. *Fusilaria* differs by having spiral cords neither prominent nor nodular, and by having a sharply edged parietal ridge.

Cinctura Hollister, 1957. Included species: *C. lilium* (Fischer von Waldheim, 1807). Principally found in the western Gulf of Mexico but occurs across the Yucatan Platform as far south as Cancun. *Fusilaria* differs by having axial sculpture on early whorls and body whorl, spiral cords on all whorls except upper part of body whorl, and some beaded lirae on inner side of outer lip. It also has a larger size.

Fasciolaria Lamarck, 1799. Included species: *F. bullisi* Lyons, 1972; *F. hollisteri* Weisbord, 1962; *F. tephrina* Souza, 2002; *F. tulipa* (Linnaeus, 1758). *Fusilaria* differs by having axial sculpture on early whorls and body whorl, discontinuous or beaded lirae on inner side of outer lip, a prominent sharply edged parietal ridge, and sharp columellar folds.

Granolaria Snyder, Vermeij, and Lyons, 2012. Two Recent species in tropical eastern Pacific but only fossil members in Caribbean region. *Fusilaria* differs by having a high spire, some beaded lirae on inner side of outer lip, and a sharply edged parietal ridge.

Pliculofusus Snyder, Vermeij and Lyons, 2012. Contains only fossil members from the late Oligocene to Pleistocene of the Atlantic sector of the southeastern United States. *Fusilaria* differs by having axial ribs that are not prominent, a relatively much longer canal, a thinner shell, spirally elongate nodes, and two or three rather than four columellar folds.

Triplofusus Olsson and Harbison, 1953. Included species: *Triplofusus giganteus* (Kiener, 1840). Principally southeastern United States and Gulf of Mexico, barely intruding in Caribbean southward to Cozumel; Neogene record of genus at Punta Gavilan, northern Venezuela (Rutsch, 1934). *Fusilaria* differs by having a very thin, lightweight shell, spiral cords that are not prominent, and some beaded lirae on inner side of outer lip.

Etymology: The name is Latinized, combining *Fusinus* and *Fasciolaria*; the gender is feminine.

Remarks: Although the columellar plicae reveal that this new genus is fasciolariine rather than fusinine, the profile of the whorls is reminiscent of the genus *Fusinus* Rafinesque, 1815, and it is this combination of features of two subfamilies that justifies creation of the new genus-level taxon. Two fusinine species that correspond in appearance to *Fusilaria* are *Fusinus galatheae* Powell, 1967 from the Kermadec Islands and *Fusinus genticus* (Iredale, 1936) from New Zealand (and possibly eastern Australia). *Fusinus galatheae* has a similar general appearance, but differs in that the canal is straight, the outer lip is angled at the periphery, and the spiral sculpture is more pronounced, spaced more widely, and proceeds up the neck. *F. genticus* also appears similar but the early axial ribs are more prominent and not suppressed on the first 4–5 teleoconch whorls.

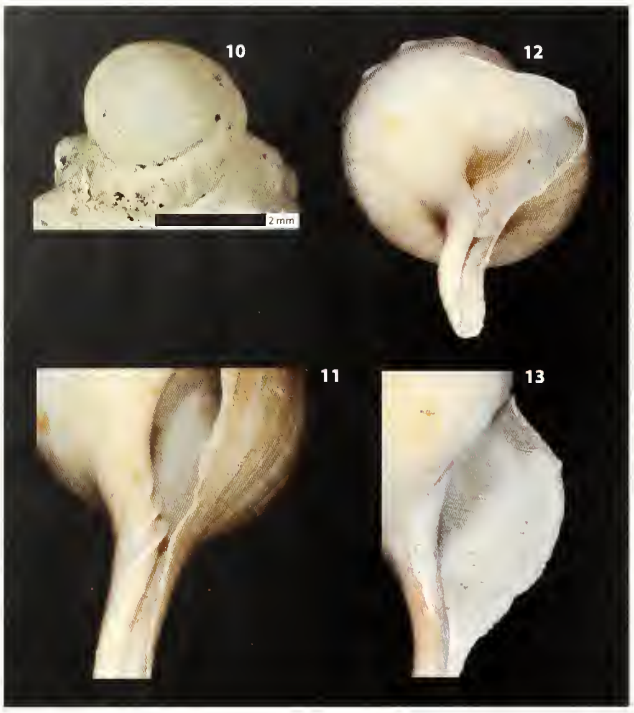
Comparison is also invited by other fasciolariine species, namely *Kilburnia scholvieni* (Strebel, 1911) from South Africa and *Australaria tenuitesta* Snyder, Vermeij and Lyons, 2012. *Kilburnia* has a larger protoconch (up to 5 mm) and short, smooth lirae on the inner side of the outer lip. The entrance fold to the siphonal canal is much more strongly expressed than the two columellar folds.

Australaria differs in several ways, but in others is quite similar. The lirae on the inner side of the outer lip are short and smooth. The most anterior fold of the siphonal canal is much more firmly expressed than the two columellar folds. In the remarks concerning the genus *Australaria* Snyder, Vermeij and Lyons (2012: 53) observed, "Although we cannot unambiguously separate the South African *Kilburnia* from the Australian *Australaria* on shell characters, we provisionally maintain them as distinct genera because of their likely long separate histories." A similar statement is probably appropriate for *Fusilaria* and *Australaria*.

***Fusilaria garciai* new species**
(Figures 1–13)

Description: Shell moderately large for subfamily, elongate, fusiform, with high spire and long siphonal process. Protoconch large, maximum diameter 3 mm, height 2.5–3.0 mm, with two bulbous cream-colored whorls, additional quarter whorl with sharp thin unornamented axial riblets, joining teleoconch smoothly. Teleoconch of 6–7 angulate whorls separated by suture, overlaid by spiral cords at the base of the whorl, with spiral keel connecting 11–12 spirally elongate, axially compressed nodules; with half whorl of wider unornamented ribs, extremely short, rounded axial ribs extending adapically from nodes on later whorls, weakening abapically; fine, very low spiral cords on all early whorls, evanescent on upper part of body whorl, with a few similar cords at end of siphonal process, oblique to process axis; about 19 cords below keel and 18 above on penultimate whorl. Outer lip thin and damaged in all

Figures 1–9. *Fusilaria garciai* new species. **1–3.** Holotype, 161.7 mm, ANSP 450735. **4–6.** Paratype, 183.0 mm, ANSP 450736. **7–9.** Paratype, 119.5 mm, García collection.



Figures 10–13. *Fusilaria garciai* new species. **10.** Protoconch, holotype, ANSP 450735. **11.** Principal columellar folds, holotype, ANSP 450735. **12.** Parietal ridge, holotype, ANSP 450735. **13.** Lirae on inner side of outer lip, paratype, ANSP 450736.

examined material; inner side of outer lip with about 60 lirae, a mix of continuous, discontinuous, and beaded, stopping short of the lip by about 3 mm; abapical lirae stronger and more coarsely beaded. Anterior-most fold to siphonal canal keel-like, with one or two additional similar folds adapical to it. In some specimens as many as four additional weak folds present, some not visible from outside. Shell color ivory with peach overtones; nodes lighter on peripheral keel with light pumpkin splotch on both sides (axially) of node, with pale orange-brown axial color stripes emanating from the nodes adapically and abapically on the body whorl. Operculum and soft parts not available for study.

Type Material: Holotype ANSP 450735, 161.7 mm, in lobster traps, depth 200 m. Paratypes: 183.0 mm, ANSP 450736; 119.5 mm (Emilio García collection), all from lobster traps at type locality.

Type Locality: Off Punta Canerón, Honduras, approximately 16° N, 84° W, depth 200 m.

Other Material Examined: 181.1 mm, same data as holotype (Emilio García collection).

Distribution: Known only from the type locality.

Etymology: The species name honors Emilio F. García of Lafayette, Louisiana. Long a student of the molluscan fauna of the Gulf of Mexico and western Caribbean, he obtained these shells, recognized them as undescribed, and was kind enough to donate the holotype and a paratype to ANSP.

DISCUSSION

Fusilaria garciai new species was collected in traps set at depths of approximately 200 m. Another large fasciolariine, *Fasciolaria tephrina*, was collected in the same area in traps set at 500 m. Although thin, the shell of *F. garciai* is strong. Repaired breaks on the last whorl suggest some sort of predation. *Fasciolaria tephrina* has a fairly wide distribution from Belize to Honduras, Nicaragua, and the northern Colombian Islands southward to San Andrés (see Miloslavich et al.: 14, table S6). It is not unreasonable to speculate that both of these species are representative of a larger widespread deep-water fauna now beginning to be explored. We expect that *Fusilaria garciai* may have a wider range in the western Caribbean than indicated by this material, and it is possible that additional material will be discovered in other parts of the Caribbean at similar depths.

Fasciolaria tephrina apparently occurs in two color forms: finely banded (Figure 14) and splotched (Figure 15). The specimen depicted in Figure 15 was collected in the same area as *Fusilaria garciai*, but in traps set at 500 m. This specimen is a heavier shell than the specimen in Figure 14, and shows signs of predation. It is remarkable that species this large are still being described from the Caribbean.

Figures 14–15. *Fasciolaria tephrina*. **14.** "Banded form," 277 mm, ANSP 450737). **15.** "Splotched form", 224.75 mm, García collection.

ACKNOWLEDGMENTS

Geerat Vermeij (University of California, Davis) read an early version of this paper and offered helpful remarks. Paul Callomon (ANSP) also offered a helpful conversation. Amanda Lawless (ANSP) produced the figures and composed the plates. William G. Lyons of St. Petersburg, Florida and an anonymous reviewer offered careful, insightful and helpful suggestions. Mr. Lyons also generously offered additional pertinent information. Finally, José H. Leal (The Bailey-Matthews Shell Museum, Sanibel) proffered helpful advice.

LITERATURE CITED

Conrad, T.A. 1862. Descriptions of new genera, sub-genera and species of Tertiary and Recent shells. Proceedings of the Academy of Natural Sciences of Philadelphia 14(6): 284–291.

Dall, W.H. 1889. Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877–78) and in the Caribbean Sea (1879–80) by the U.S. Coast Survey steamer *Blake*, Lieut.- Commander C.D. Sigsbee, U.S.N. and Commander J.R. Bartlett, U.S.N., commanding. XXIX. Report on the Mollusca. Part II. Gastropoda and Scaphopoda. Bulletin of the Museum of Comparative Zoology 18: 1–492, pls. 10–40. [Reprinted 1967: Kraus Reprint Corporation, New York].

Souza, P.J.S. de. 2002. A new bathyal *Fasciolaria* (Mollusca: Caenogastropoda) from the southwestern Caribbean. Zootaxa 49: 1–7, figs. 1–12.

Fischer von Waldheim, G. 1807. Muséum-Démidoff, ou catalogue systématique et raisonné des curiosités de la nature et de l'art, données à l'Université Impériale de Moscou par son Excellence Monsieur Paul de Démidoff. (mis en ordre systématique et décrit par G. Fischer), Tome Troisième, Végétaux et Animaux. Moscou. ix, 330 pp., 6 pls. [Classe des Mollusques, pp. 102–280].

Gray, J.E. 1853. On the division of ctenobranchous gasteropodus Mollusca into larger groups and families. Annals and Magazine of Natural History, Second Series, 11(62): 124–133, figs. 1–10.

Hollister, S.C., 1957. On the status of *Fasciolaria distans* Lamarck. The Nautilus 70: 73–83.

Iredale, T. 1936. Australian molluscan notes, No. 2. Records of the Australian Museum 19(5): 267–340, pls. 20–24.

Lamarck, [J.B.P.A.]. 1799. Prodrome d'une nouvelle classification des coquilles, comprenant une rédaction appropriée des caractères génériques, et établissement d'un grand nombre de genres nouveaux. Mémoires de la Société d'Histoire Naturelle de Paris 1: 63–91, fold out table, [as "citoyen Lamarck"].

Lamarck, [J.B.P.A]. 1816. Mollusques et polypes divers. In: Bruguière et al., 1791–1827: Tableau encyclopédique et méthodique des trois règnes de la nature. Part 23: 1–16, pls. 391–488, 431 bis, 431 bis*.

Linnaeus, C. 1758. Systema naturae per regna tria naturae: secundum classes, ordines, genera, species, cum characteristibus, differentiis, synonymis, locis Vol. 1 Editio decima, reformata. Holmie: Laurentii Salvii. 824, iii pp.

Lyons, W.G. 1972. A new *Fasciolaria* from the northeastern Gulf of Mexico. The Nautilus 85: 96–99.

Miloslavich, P., J.M. Diaz, E. Klein, J.J. Alvarado, C. Diaz et al. 2010. Marine biodiversity in the Caribbean: regional estimates and distribution patterns. PLoS ONE 5(8): e11916. doi:10:1371/journal.pone.0011916.

Olsson, A.A. and A. Harbison. 1953. Pliocene Mollusca of southern Florida with special reference to those from north Saint Petersburg (with special chapters on Turridae by William G. Fargo and Vitrinellidae and fresh-water mollusks by Henry A. Pilsbry). The Academy of Natural Sciences of Philadelphia Monographs 8: i–v, 1–457, pls. 1–65.

Powell, A.W.B. 1967. Mollusca of the Kermadec Islands, Part 2. Records of the Auckland Institute and Museum 6: 197–200.

Rafinesque, C.S. 1815. Analyse de la nature ou tableau de l'univers et des corps organisés. Palerme. 224 pp. [In: The complete writings of Constantine Smalz Rafinesque on Recent & fossil conchology edited by W.G. Binney and G.W. Tryon. Bailliere Brothers, New York, 1864 Reprinted 1984].

Rutsch, R.F. 1934. Die Gastropoden aus dem Neogen der Punta Gavilan in Nord-Venezuela. Abhandlungen der Schweizerischen Palaeontologischen Gesselschaft 54: 1–88, pls. 1–7, part 1.

Snyder, M.A., G.J. Vermeij, and W.G. Lyons. 2012. The genera and biogeography of Fasciolariinae (Gastropoda). Basteria 76: 31–70, figs. 1–25.

Strebel, H. 1911. Zur Gattung Fasciolaria Lam. Mitteilungen aus dem Naturhistorischen Museum in Hamburg. Beiheft zum Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten 28: 1–58, pls. 1–15 (1912).

Weisbord, N.E. 1962. Late Cenozoic gastropods from northern Venezuela. Bulletins of American Paleontology 42(193): 1–672, pls. 1–48.