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A NEW GENUS OF TURBINELLIDAE (GASTROPODA: PROSOBRANCHIA),
WITH THE DESCRIPTION OF A NEW SPECIES
FROM THE CARIBBEAN SEA

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ABSTRACT

Cyomesus, a new genus, is proposed to receive four species of Turbinellidae previously assigned to *Mesorhytis* Meek, 1876, *Teramachia* Kuroda, 1931, and *Benthovoluta* Kuroda and Habe, 1950. All four species are reviewed, and a new species, *Cyomesus aratiunculus*, is described from near the Virgin Islands.

Investigations of the tropical Atlantic and eastern Pacific deep-sea by the University of Miami have resulted in one of the most extensive collections of tropical deep-sea mollusks in the world. Most of this remarkable assemblage remains to be examined. These collections contain specimens of three of the four western Atlantic species of *Cyomesus*, a previously undescribed genus. Since the species here assigned to *Cyomesus* have been the subject of much nomenclatural confusion, a review of all species is presented. The taxonomic history of the genus is reviewed and the relationships of *Cyomesus* to other genera within the Turbinellidae are briefly discussed.

Specimens on which this paper was based are housed in the Invertebrate Research Collection

of the Rosenstiel School of Marine and Atmospheric Science, University of Miami (RSMAS), designated by the abbreviation UMML, the National Museum of Natural History, Smithsonian Institution (USNM), and the Museum of Comparative Zoology, Harvard University (MCZ).

Family Turbinellidae Swainson, 1840
Subfamily Ptychatractinae Stimpson, 1865
Cyomesus gen. nov.

Mesorhytis: Dall, 1889a: 172; 1889b: 112; 1890: 317. - Johnson, 1934: 127. - Cernohorsky, 1970: 51; 1972: 218. (Non *Mesorhytis* Meek, 1876: 356, 364).
Prodallia Bartsch, 1942: 12 (partim).
Teramachia: Weaver and duPont, 1970: 176 (partim). - Bayer, 1971: 195. - Abbott, 1974: 243. (Non *Teramachia* Kuroda, 1931: 45).

Benthovoluta: Rehder, 1972: 7, 8 (*partim*).—Cernohorsky, 1973: 126 (*partim*).

Type-species—*Fasciolaria (Mesorhytis) Meekiana* Dall, 1889; herein designated.

Gender—Masculine.

Description—Shell fusiform, elongate, of moderate size; spire extended, 40–50% of total shell height. Whorls broadly rounded peripherally, constricted anteriorly; siphonal canal relatively short, broad, slightly reflexed. Sculpture on early whorls of strong axial ribs, usually becoming obsolete on later whorls; spiral sculpture present or absent. Aperture lanceolate, outer lip slightly flared anteriorly in adult. Columella slightly flexed, with 3 high, thin, oblique plaits, posteriormost strongest; parietal wall with very thin glaze. Operculum small, thin, spatulate, slightly curved, with terminal nucleus. Radula triserial; rhachidian multicuspid, with saddle-shaped base; laterals with elongate base and distal, clawlike cusp.

Remarks—The species here assigned to *Cyomesus* have been placed previously in *Mesorhytis* Meek, 1876, *Teramachia* Kuroda, 1931, and/or *Benthovoluta* Kuroda and Habe, 1950. *Teramachia* has usually been accepted as a member of the Volutidae. The uniserial radula of the type-species, *T. tibiaeformis* Kuroda, 1931 (illustrated in Habe, 1952), indicates close relationship with *Calliotectum* Dall, 1890, a volutid (Rehder, 1972; Cernohorsky, 1973). Since Bayer (1971) showed that *Mesorhytis meekiana* Dall, 1889, and *Teramachia chaunax* Bayer, 1971, are turbinellids, *Teramachia* is eliminated as an appropriate genus for the present group.

Mesorhytis was erected by Meek (1876) for a fusiform gastropod fossil from the Cretaceous of Missouri. An examination of the type series of *M. gracilentia* Meek, 1876, showed that *Cyomesus* differed in having less prominent axial sculpture, the whorl periphery more anterior, the columella distinctly twisted to the left anteriorly (not straight), and the columellar plaits more lamelliform, with the posterior (not middle) plait most prominent. However, in view of the general similarity of *Mesorhytis* and *Cyomesus*, it is quite possible that *Mesorhytis* is turbinellid rather than fascioliid as it has been regarded by most authors (Meek, 1876; Dall,

1889a, 1889b, 1890; Thiele, 1929; Cernohorsky, 1970, 1972) and may be a precursor of *Benthovoluta* or *Surculina* Dall, 1908.

Benthovoluta was introduced by Kuroda and Habe (1950) for *Phenacopterygma? kiiensis* Kuroda, 1931. Kuroda (1965) and Rehder (1967) showed that *Benthovoluta* was turbinellid in affinity rather than volutid. Rehder (1967) also commented on the relationships of *Metzgeria* Norman, 1879, *Ptychatractus* Stimpson, 1865, and *Surculina* Dall, 1908, grouping them together with *Benthovoluta*. In a subsequent paper, Rehder (1972) discussed "*Teramachia*" *barthelowi* (Bartsch, 1942) and concluded that it should be assigned to *Benthovoluta*. He went on to mention Bayer's (1971) discussion of the Caribbean species *Mesorhytis meekiana*, *M. costatus* Dall, 1890, and *Teramachia chaunax*, and intimated that these species constituted a distinct group of their own, but stopped short of separating them from *Mesorhytis*. Cernohorsky (1973), apparently unaware of Rehder's (1972) paper, independently placed *Teramachia barthelowi* in *Benthovoluta*, but, unlike Rehder, also included *T. chaunax*, *Mesorhytis meekiana*, and *M. costatus*. The relatively large shell with rounded whorls, very long, straight siphonal canal, and low, rounded columellar plaits of *Benthovoluta* distinguish it from *Cyomesus*, and, in my opinion, exclude "*Teramachia*" *barthelowi* from *Benthovoluta*.

I thus include the following genera in the Ptychatractinae in accordance with Rehder (1967) and Cernohorsky (1973) and with the changes involving *Mesorhytis* and *Cyomesus* discussed above: *Ptychatractus* Stimpson, 1865; *Metzgeria* Norman, 1879; *Mesorhytis* Meek, 1876; *Benthovoluta* Kuroda and Habe, 1950; *Surculina* Dall, 1908; *Cyomesus* gen. nov.; and *Ceratoxancus* Kuroda, 1952 (*vide* Cernohorsky, 1973). Although problematical, the following fossil genera might also be considered turbinellid: *Paleofusimitra* Sohl, 1963, *Mitridomus* Sohl, 1963, and *Fusimitra* Conrad, 1855.

Cyomesus meekianus (Dall, 1889)

Fig. 1

Fasciolaria (Mesorhytis) Meekiana Dall, 1889a: 172, pl. 36, fig. 7; 1889b: 112, pl. 36, fig. 7.

Fasciolaria (Mesorhytis) meekiana: Johnson, 1934: 127.—Rehder, 1972: 8.

Mesorhynchis meekiana: Cernohorsky, 1970: 52; 1972: 218.

Teramachia meekiana: Bayer, 1971: 197, figs. 54 (left), 55 D-E.

Benthovoluta meekiana: Cernohorsky, 1973: 127, fig. 2.

Description—See Bayer, 1971.

Lectotype—USNM 86970; herein designated. Length 15.4 mm; width 5.2 mm.

Type-locality—BLAKE sta. 100, off Morro Light, Havana, Cuba, 732 m; herein restricted.

Material examined—BLAKE sta. 100, off Morro Light, Havana, Cuba, 732 m; 1 spec., USNM 86970 (lectotype); 1 spec., USNM 784568 (paralectotype).—BLAKE sta. 16, 23°11'N, 82°23'W, 534 m; 1 spec., MCZ 7243 (paralectotype).—BLAKE sta. 20, 23°02.5'N, 83°11'W, 402 m; 1 spec., MCZ 7242 (paralectotype).—PILLSBURY sta. P-1225, 17°42.5'N, 77°58'W, 457–558 m; 1 spec., UMML 30-8260.

Remarks—*Cyomesus meekianus* remains a very rare species, known only from the specimens cited above. The range of this species includes the three BLAKE stations along the northwest coast of Cuba and the single PILLSBURY station southwest of Jamaica. The PILLSBURY specimen is the largest known for this species, measuring 26.0 mm in length.

Cyomesus chaunax (Bayer, 1971)

Fig. 3

Teramachia chaunax: Bayer, 1971: 198, figs. 54 (right), 55 B-C.—Rehder, 1972: 8.—Abbott, 1974: 243.

Benthovoluta chaunax: Cernohorsky, 1973: 127.

Description—See Bayer, 1971.

Holotype—USNM 701216. Length 28.1 mm; width 8.9 mm.

Type-locality—R/V JOHN ELLIOTT PILLSBURY sta. P-904, 13°45.5'N, 61°05.7'W, 201–589 m.

Material examined—PILLSBURY sta. P-904, 13°45.5'N, 61°05.7'W, 201–589 m; 1 spec., USNM 701216 (holotype).—COLUMBUS ISE-LIN stations in Tongue of the Ocean, Bahamas: CI-80, 23°54'N, 77°04'W, 1244 m; 1 spec., UMML 30-8261.—CI-79, 23°51'N, 76°51'W, 1289 m; 2 spec., UMML 30-8262.—CI-151, 23°52.2'N, 76°48.5'W, 1315 m; 1 spec., UMML 30-8263.—CI-363, 23°51.6'N, 76°51.9'W, 1324–1315 m; 1 spec., UMML 30-8264.—CI-156, 23°44.4'N, 76°48.3'W, 1334 m; 1 spec., UMML 30-8265.—CI-368, 23°43.2'N,

76°50.5'W, 1352–1342 m; 1 spec., UMML 30-8266.—CI-252, 23°38.5'N, 76°47.8'W, 1322–1332 m; 1 spec., UMML 30-8267.—CI-158, 23°30.7'N, 76°56.8'W, 1317 m; 1 spec., UMML 30-8268.—CI-14, 23°33'N, 77°09'W, 1246 m; 1 spec., UMML 30-8269.—CI-163, 23°31.6'N, 77°08.3'W, 1342 m; 1 spec., UMML 30-8270.—CI-47, 23°42'N, 77°08'W, 1372 m; 1 spec., UMML 30-8271.—CI-54, 23°54'N, 77°13'W, 1298 m; 2 spec., UMML 30-8272.—CI-55, 23°57'N, 77°18'W, 1353 m; 1 spec., UMML 30-8273.—CI-303, 23°54.8'N, 77°18.4'W, 1390–1389 m; 2 spec., UMML 30-8274.—CI-365, 23°51.2'N, 77°16'W, 1372 m; 1 spec., UMML 30-8275.—CI-165, 24°04.7'N, 77°22.3'W, 1426 m; 1 spec., UMML 30-8285.—CI-406, 23°57.3'N, 77°20.8'W, 1408–1399 m; 1 spec., UMML 30-8286.

Remarks—This, the most recently described species of *Cyomesus*, is now the best known. The present material considerably extends the range of the species to the north and west. However, it is recorded from two areas, the Tongue of the Ocean, Bahamas, and St. Lucia, with no material from in between, although U.S. Government and University of Miami ships have made numerous collections within that area. Specimens of *C. chaunax* have not been discovered from any of the other Bahamian deep-water basins, although not all of the material collected from Exuma Sound has been sorted. The TOTO specimens of *C. chaunax* show that the species is rather conservative morphologically. Most of these specimens are somewhat more inflated than the type but not exceedingly so. One specimen is 55 mm long, making *C. chaunax* the largest species of the genus.

Cyomesus costatus (Dall, 1890)

Fig. 2

Fasciolaria (*Mesorhynchis*) *costatus* Dall, 1890: 317, pl. 5, fig. 5.

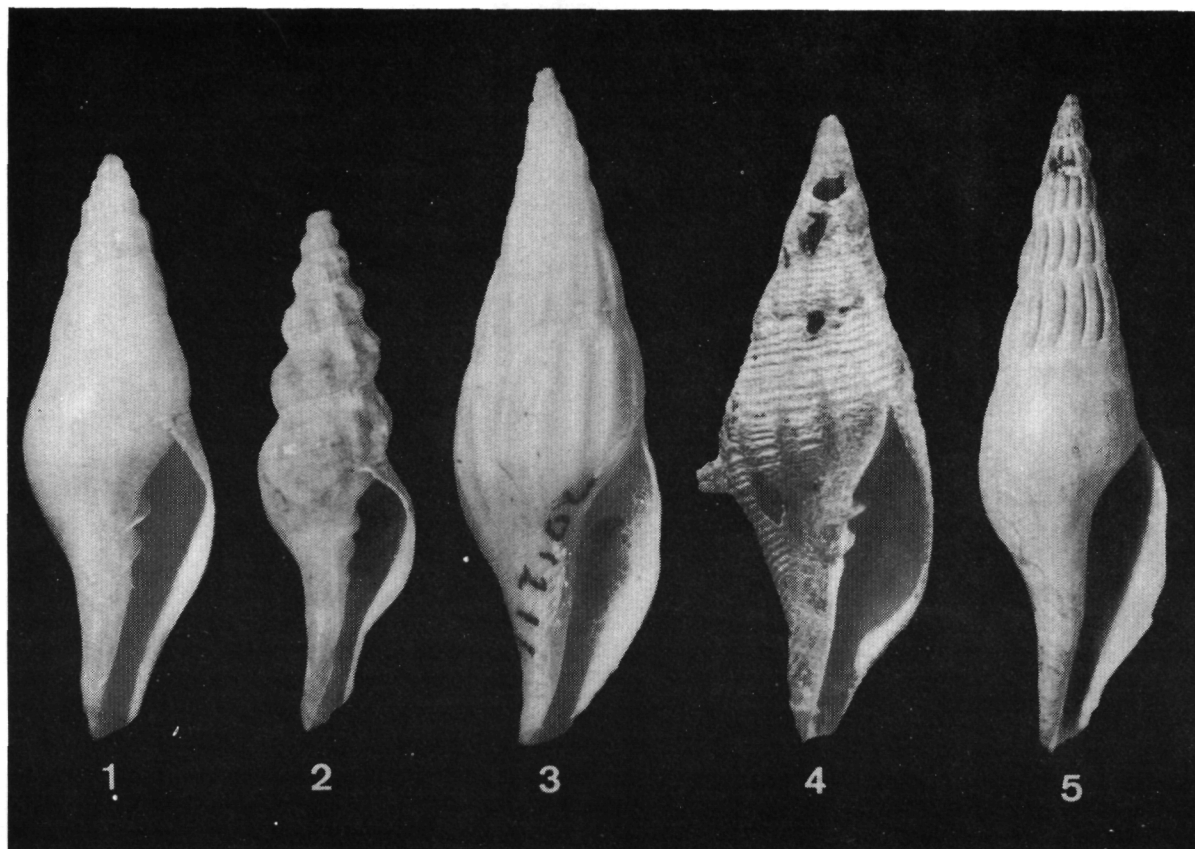
Mesorhynchis costatus: Cernohorsky, 1970: 52.—Rehder, 1972: 8.

Teramachia costatus: Bayer, 1971: 197.—Abbott, 1974: 243.

Benthovoluta costata: Cernohorsky, 1973: 129.

Description—See Dall, 1890.

Holotype—USNM 96507. Length 13.8 mm; width 4.5 mm.



FIGS. 1-5. 1, *Cyomesus meekianus* (Dall, 1889). Lectotype, USNM 86970, 15.4 mm. 2, *Cyomesus costatus* (Dall, 1890). Holotype, USNM 96507, 13.8 mm. 3, *Cyomesus chaunax* (Bayer, 1971). Holotype, USNM 701216, 28.1 mm. 4, *Cyomesus aratiunculus* sp. nov. Holotype, USNM 784594, 29.0 mm. 5, *Cyomesus barthelowi* (Bartsch, 1942). Holotype, USNM 238444, 27.5 mm.

Type-locality—ALBATROSS sta. 2751, 16°54'N, 63°12'W, 1256 m.

Material examined—See Holotype (only known specimen).

Remarks—Of the four Caribbean species of *Cyomesus*, *C. costatus* is the most uncharacteristic. However, its strongly convex whorls are similar to the early whorls of *C. meekianus*, and its other characteristics are so similar to the other *Cyomesus* species that I have little doubt *C. costatus* belongs in this group.

***Cyomesus aratiunculus* sp. nov.**

Fig. 4

Description—Shell elongately fusiform, strong, coarsely sculptured. Apical whorls lost, 6½ whorls remaining. Whorls with low, weak

axial folds evident only from above to just below periphery, separated from each other by somewhat wider interspaces. Numerous (41 on last whorl) irregular, crowded, unequal spiral threads covering whorls from suture to tip of anterior canal. Suture indistinct. Aperture narrowly lanceolate; outer lip simple; columella twisted to left anteriorly, with 3 oblique, lamelliform plicae, increasing in size from anterior to posterior; parietal wall without callus. Animal unknown.

Holotype—USNM 784594. Length 29.0 mm; width 9.3 mm.

Type-locality—R/V JOHN ELLIOTT PILLSBURY sta. P-984, 18°26.4'N, 63°12.6'W, 430 m.

Material examined—See Holotype (only known specimen).

Remarks—In general shape and size, *Cyomesus aratiunculus* is extremely similar to *C. chaunax* and *C. meekianus*. The axial folds restricted to the periphery and the persistent spiral sculpture immediately distinguish *C. aratiunculus* from the other species.

Cyomesus barthelowi (Bartsch, 1942)

Fig. 5

Prodallia barthelowi Bartsch, 1942: 12, pl. 2, fig. 2.

Teramachia barthelowi: Weaver and duPont, 1970: 177, pl. 75, figs. C, D.—Bayer, 1971: 196–198.

"Teramachia" barthelowi: Rehder, 1972: 7.

Benthovoluta barthelowi: Rehder, 1972: 8.—Cernohorsky, 1973: 127.

Description—See Bartsch, 1942; Weaver and duPont, 1970.

Holotype—USNM 238444. Length 27.5 mm; width 8.0 mm.

Type-locality—ALBATROSS sta. 5425, off Cagayan Island, Sulu Sea, Philippines, 905 m.

Material examined—See Holotype (only known specimen).

Remarks—I am placing this species in *Cyomesus*. However, the unique axial sculpture of deeply incised grooves, presence of two instead of three columellar plicae, and geographic isolation from the Caribbean species may indicate a need for a separate subgenus to accommodate *C. barthelowi*. Soft parts of *C. barthelowi* must be examined before a satisfactory solution can be reached.

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LITERATURE CITED

- Abbott, R. T. 1974. *American Seashells*. 2nd Ed. Van Nostrand Reinhold Co., New York, 663 pp.
- Bartsch, P. 1942. Some deep-sea Philippine volutids. *The Nautilus* 56(1):9–13.
- Bayer, F. M. 1971. New and unusual mollusks collected by R/V JOHN ELLIOTT PILLSBURY and R/V GERDA in the tropical western Atlantic. *Bull. Mar. Sci.* 21(1): 111–236.
- Cernohorsky, W. O. 1970. Systematics of the families Mitridae and Volutomitridae (Mollusca: Gastropoda). *Bull. Auckl. Inst. Mus.* 8:1–190.
- . 1972. A taxonomic evaluation of recent and fossil non-mitrid species proposed in the family Mitridae (Gastropoda: Mollusca). *Rec. Auckl. Inst. Mus.* 9:125–194.
- . 1973. The taxonomy of *Benthovoluta hilgendorfi* (von Martens) and allied turbinellid genera (Mollusca: Volutacea). *Rec. Auckl. Inst. Mus.* 10:123–131.
- Conrad, T. A. 1855. Observations on the Eocene deposit of Jackson, Mississippi, with descriptions of thirty-four new species of shells and corals. *Proc. Acad. Nat. Sci. Phila.* 7(7):257–263.
- Dall, W. H. 1889a. Reports on the Mollusca. Part II. Gastropoda and Scaphopoda. Reports on the results of dredging . . . in the Gulf of Mexico (1877–78) and the Caribbean Sea (1878–80), by the U.S. Coast Survey steamer "Blake" . . . *Bull. Mus. Comp. Zool., Harv.* 18:1–492.
- . 1889b. A preliminary catalogue of the shell-bearing marine mollusks and brachiopods of the southeastern coast of the United States. *Bull. U. S. Natl. Mus.* 37:1–221.
- . 1890. Preliminary report on the collection of Mollusca and Brachiopoda obtained in 1887–88. Scientific results of explorations by the U.S. Fish Commission steamer "Albatross". No. VII. *Proc. U. S. Natl. Mus.* 12:219–362.
- . 1908. The Mollusca and the Brachiopoda. Reports on the scientific results of the expedition to the eastern tropical Pacific . . . by the U.S. Fish Commission steamer "Albatross" . . . *Bull. Mus. Comp. Zool., Harv.* 43:205–487.
- Habe, T. 1952. Pholadomyidae, Clavagellidae, Pandoridae, Juliidae and Condyllocardiidae in Japan. In: T. Kuroda (ed.), *Illustrated Catalogue of Japanese Shells*, 1(18): 121–132.
- Johnson, C. W. 1934. List of marine Mollusca of the Atlantic coast from Labrador to Texas. *Proc. Bost. Soc. Nat. Hist.* 40:1–204.
- Kuroda, T. 1931. Two new species of Volutacea. *Venus* 3(1):45–49.
- . 1952. On an interesting new genus of gastropod Mollusca from the sea of Kii Peninsula. *Publ. Seto Mar. Biol. Lab.* 2(2):69–71.

- _____. 1965. On the generic position of *Benthovoluta* (Gastropoda). *Venus* 24(1):50-52.
- Kuroda, T. and T. Habe. 1950. Volutidae in Japan. In: T. Kuroda (ed.), *Illustrated Catalogue of Japanese Shells* 1(5):31-38.
- Meek, F. B. 1876. A report on the invertebrate Cretaceous and Tertiary fossils of the Upper Missouri Country. *Rep. U. S. Geol. Surv. Terr.* 9: lxiv + 629.
- Norman, A. M. 1879. The Mollusca of the fjords near Bergen. *Journ. Conchyl.* 2:8-77.
- Rehder, H. A. 1967. A new genus and two new species in the families Volutidae and Turbinellidae (Mollusca: Gastropoda) from the western Pacific. *Pac. Sci.* 21(2):182-187.
- _____. 1972. Some notes on the genus *Teramachia* (Volutidae: Calliotectinae). *Veliger* 15(1):7-10.
- Sohl, N. F. 1963. New gastropod genera from the late Upper Cretaceous of the east Gulf Coastal Plain. *Journ. Paleont.* 37(4):747-757.
- Stimpson, W. 1865. On certain genera and families of zoophagous gasteropods. *Amer. Journ. Conch.* 1:55-64.
- Swainson, W. 1840. *A Treatise on Malacology; or the natural classification of Shells and Shellfish. VIII.* London, viii + 419 pp.
- Thiele, J. 1929. *Handbuch der systematischen Weichtierkunde. Teil 1.* Gustav Fischer, Jena, pp. 1-376.
- Weaver, C. S. and J. E. duPont. 1970. *Living volutes. A monograph of the Recent Volutidae of the World.* Del. Mus. Nat. Hist., *Monogr.* 1: xv + 375 pp.