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Abbreviations Used in Drawings

aa—anterior adductor muscle	
d—digestive diverticula	od—outer demibranch
e—exhalant siphon	op—outer labial palp
f—foot	ov—ovary
fa—fourth pallial aperture	pa—posterior adductor muscle
i—inhalant siphon	pc—pericardial chamber
id—inner demibranch	pg—pedal gape
ip—inner labial palp	r—rectum
k—kidney	t—testis

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. gracilenta* 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 *Phenacoptygma? 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 (*fide* 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.

Mesorhytis 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 ISELIN 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 (*Mesorhytis*) *costatus* Dall, 1890: 317, pl. 5, fig. 5.

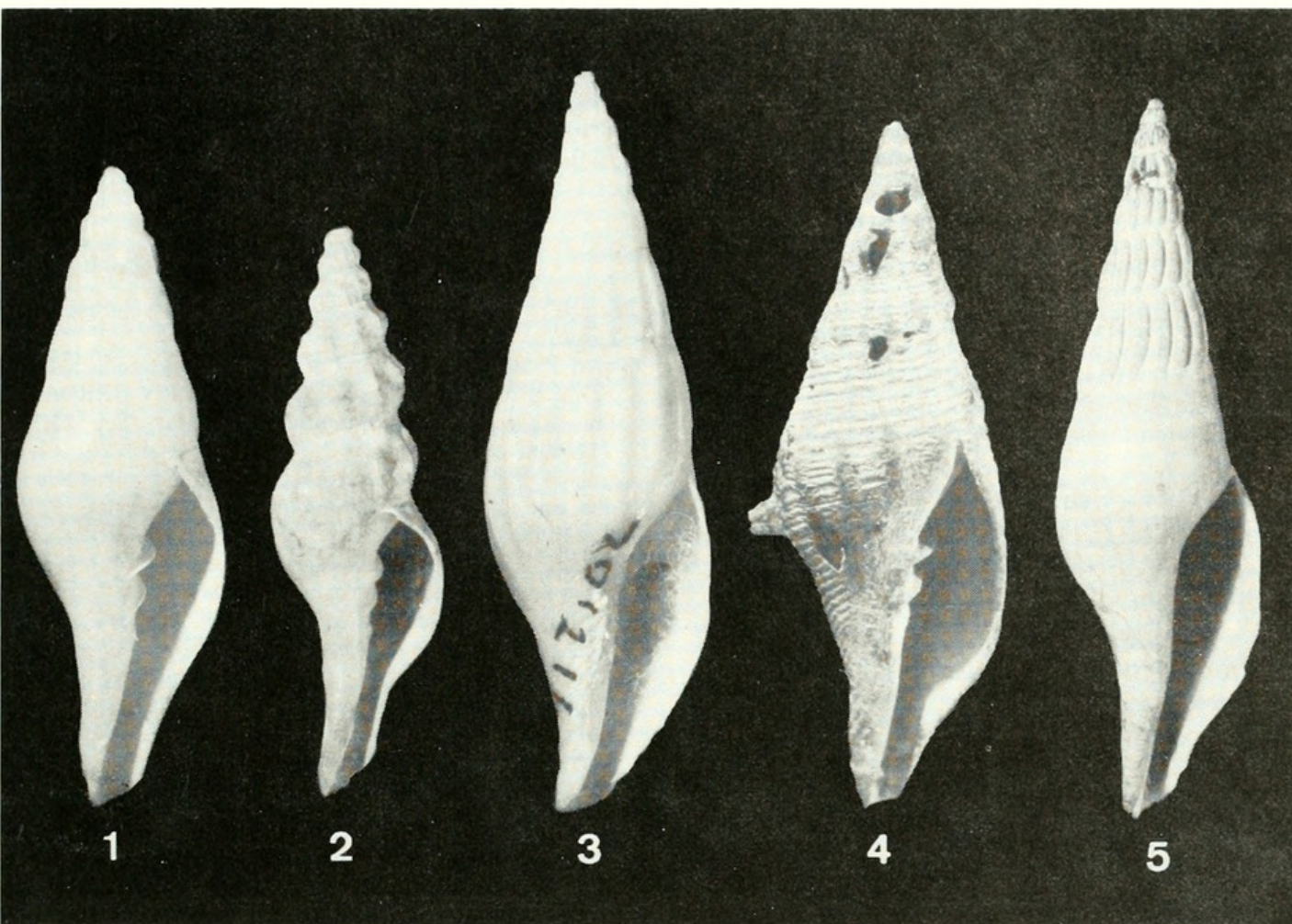
Mesorhytis costatus: Cernohorsky, 1970: 52.—Rehder, 1972: 8.

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.

ACKNOWLEDGMENTS

I am grateful to Dr. Joseph Rosewater of the USNM for his cooperation during my visits to the museum, for making photographs of some types, and loaning specimens without which this paper could not have been completed. I thank Mr. Fred Collier for loaning the syntypes of *Mesorhytis gracilenta* contained in the paleontological collections of the USNM. Dr. Gilbert L. Voss provided access to the collections of RSMAS, University of Miami. Some of the specimens contained within these collections were obtained during the University of Miami-Deep Sea Biology Program under the direction of Drs. Voss and F. M. Bayer. This paper constitutes Contribution 135 of that program. Cruises of R/V COLUMBUS ISELIN to the Tongue of the Ocean, Bahamas, were supported

by National Science Foundation Grant OCE-73-06639-A02, Dr. C. Richard Robins, Principal Investigator. W. G. Lyons and D. K. Camp kindly commented on this paper, and Sally D. Kaicher provided the photographs.

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REMARKS ON *MURICODRUPA* IREDALE, 1918 (MURICIDAE: THAIDINAE), WITH THE DESCRIPTION OF A NEW SPECIES

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ABSTRACT

Muricodrupa jacobsoni, a new species known only from Melanesian populations (Bismarck Archipelago, Solomon and Fiji Islands), is described and dedicated to the late M. K. Jacobson. Radular and opercular figures are provided for *Muricodrupa fenestrata* (Blainville, 1832), and *M. funiculus* (Wood, 1828). A lectotype of *Murex margariticola* Broderip is selected and illustrated, and considered to be a junior synonym of *Cronia fiscella* (Gmelin, 1791).

The classification of the numerous species-group taxa with *Morula*-like shell characters has long presented problems to students of muricean gastropods. The thaidid genus *Morula* Schumacher, 1817, remains a genus-group receptacle for numerous, small, non-spinose forms with denticulate apertures without regard for the limitations dictated by the characters of the type species, *Drupa uva* Röding, 1798 (cf. Radwin and D'Attilio, 1972). Recent investigations on the radulae of various moruloid species, including those of Arakawa, 1962, 1965; Cernohorsky, 1969; Emerson, 1968, Emerson and Cernohorsky, 1973; Radwin and D'Attilio, 1971, 1972; Wu, 1965, 1968, and others, have advanced the morphological knowledge of these rachiglossate gastropods. The basic familial and subfamilial classification of the Muricea, however, remains in a state of

flux. Some workers largely ignore the radular characters and rely mostly on shell morphology for defining familial-level groups. Such is the case for the thaidid taxa. Some workers separate the Thaididae from the Muricidae, while others recognize subfamilial rank within the Muricidae for the thaidine taxa (see summary by Cernohorsky, 1969, p. 293).

The new species described below belongs to a small group of Indo-Pacific taxa characterized by shells possessing deeply pitted, squarish interspaces formed by the junction of the axial and spiral ribs. In the absence of knowledge on its radular morphology, the present species is tentatively referred to the genus *Muricodrupa* Iredale, 1918, for which the radular dentition of the type species is described and illustrated.

We name this new species in the cherished memory of a longtime friend and valued col-



1981. "A new genus of Turbinellidae (Gastropoda: Prosobranchia), with the description of a new species from the Caribbean Sea." *The Nautilus* 95, 72–77.

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