

A NEW *STROMBINA* SPECIES
(GASTROPODA: PROSOBRANCHIA) FROM THE
TROPICAL WESTERN ATLANTIC

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Abstract.—*Strombina (Cotonopsis) argentea* is the fourth living *Strombina* species and the first *Cotonopsis* taxon described from the tropical western Atlantic. It has the most northern distribution of any western Atlantic *Strombina* species and occurs in deep water. This species is the largest of the four Atlantic taxa, and morphologically resembles the eastern Pacific *Strombina (Cotonopsis) deroyae* Emerson and D'Attilio, 1969. There is considerable intraspecific variation in axial sculpture. The radula is typically columbellid in form.

While processing material dredged by the National Marine Fisheries ship R/V *Oregon* in deep water near Silver Bank off the north coast of the Dominican Republic, ten specimens of a new, remarkably large *Strombina* species were recognized. Two were live-collected and contained dried animals, allowing examination of the operculum and radula.

The genus *Strombina* was widespread in the Caribbean during the Miocene, but the diversity of this taxon decreased in the Pliocene. Although there are many species living in the eastern Pacific today, only three Recent species were previously known from the western Atlantic, all from the southern Caribbean, and referred to the subgenus *Strombina s.s.* This paper describes a fourth *Strombina* species that is allocated to the subgenus *Cotonopsis* Olsson, a group previously known only from the Neogene of Central America and the Recent eastern Pacific fauna. The presence of a large, distinctive *Strombina* living in deep water to the north of the Greater Antilles and Caribbean Sea adds significant dimension to the composition and distribution of this lineage in the western Atlantic.

Description

Family Columbellidae

Strombina Mörch, 1852

Subgenus *Cotonopsis* Olsson, 1942

Strombina (Cotonopsis) argentea, new species

Figs. 1-2

Shell (Table 1).—Shell large and slender, fusiform, with elongate tapering spire comprising 10 weakly inflated whorls and ranging in length from 30-43 mm. Whorls sculptured with 19-28 weak slightly curved axial ribs extending length of whorl. Some shells nearly smooth but early whorls of teloconch sculptured with distinct axial ribs. Protoconch large, bulbous, smooth, about 1½ whorls. Body whorl large, nearly smooth, round in cross section, slightly angulate at periphery, about one-half shell length. Axial ribs present on anterior of body whorl but fading out near lip. Thick varix just above edge of outer lip. Siphonal constriction of body

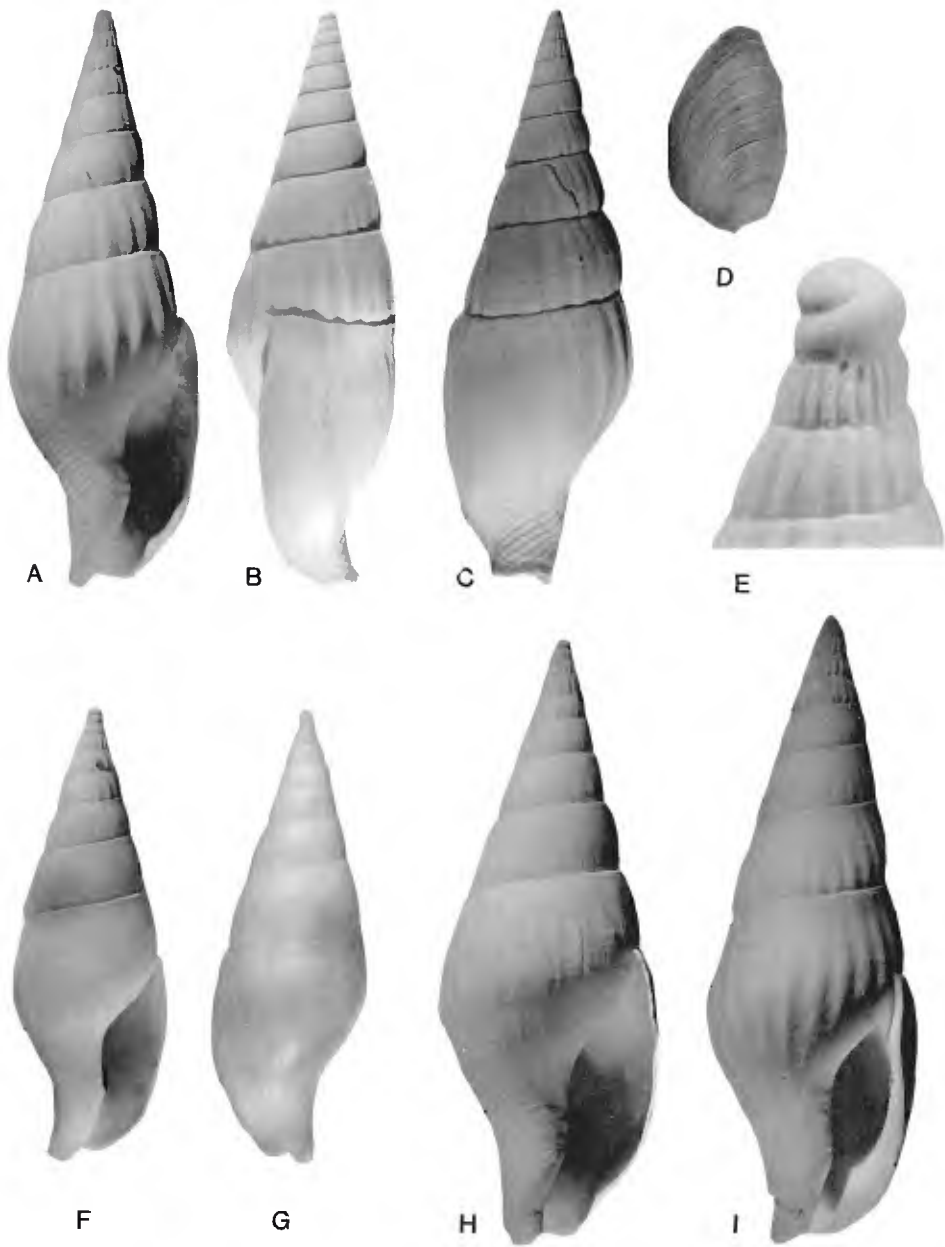


Fig. 1. *Strombina (Cotonopsis) argentea* (all specimens whitened with ammonium chloride to enhance sculptural details—Fig. G is natural; A, B, C. Apertural, side and dorsal views of holotype, USNM 810345, 39 mm; D. Operculum of holotype, 6 mm long; E. Detail of protoconch and sculpture of early whorls, USNM 821851, 22.5 \times ; F. Paratype, showing protoconch, USNM 821851, 31 mm; G. Dorsal view, same as F, but natural to show glossy shell and light tan color pattern; H. Weakly sculptured specimen, paratype USNM 821851, 43 mm; I. Specimen with strong axial sculpture, paratype, USNM 821851, 41 mm.



Fig. 2. Scanning electron micrographs of radula of *Strombina (Cotonopsis) argentea*. Lateral teeth spread back to show weak rachidian teeth. Note large interspaces on radular membrane between rachidian and lateral teeth.

whorl sculptured with fine spiral striae. Suture straight, slightly impressed. Aperture little less than one-half shell length, narrow, lunate, sinuous. Anterior siphonal canal long, curved to left, slightly reflected dorsally. Anal canal short, deeply incised. Parietal area somewhat thickened. Columella concave, sinuous and twisted at canal constriction. Slight columellar wash present. Outer lip smooth with thickened sinus at anal canal and slight posterior extension onto body whorl. Inner lip with tiny denticles and 1 to 2 larger teeth adjacent to anal canal. Denticles not extending into aperture. Shell color white with 2 broad bands of faded, yellowish-tan zigzag markings.

Operculum (Fig. 1, D).—Operculum thin, corneous, lenticular with terminal nucleus at edge.

Radula (Fig. 2, Table 2).—Radular ribbon rachiglossate (1+1+1), typically columbellid in form, narrow, relatively long, little over one-fourth shell length, comprising about 245 rows of teeth. Rachidian tooth a weak, narrow, nearly rectangular plate with rounded dorsal edges, pointed where joined to basal membrane. Wide interspace between rachidian tooth and lateral teeth. Lateral tooth comprising a shaft with peg-like base, 2 hooked cusps at tip, single blunt hook on mid shaft of tooth.

Animal.—Preserved, dried animals, when rehydrated, appeared to be unpigmented and had a large foot, and a smooth mantle edge with a muscular, well-developed anterior siphon. Head small, with short tentacles each with a small basal eye. Proboscis pleurembolic, long, containing large buccal mass and long radular ribbon. The poor state of preservation did not allow detailed anatomical studies.

Table 1.—Shell measurements of *Strombina argentea* (all measurements in mm).

Statistic (n = 10)	\bar{x}	SD	Var.	Range
Length	38.83	3.57	11.45	30–43
Width	12.97	1.26	1.42	10.3–14.6
Length of aperture	18.05	1.95	3.43	14–20.6
Width of aperture	5.21	0.58	0.31	4.1–6.2
No. of whorls	10.1	0.32	0.09	10–11

Table 2.—Radular measurements (all measurements in mm).

Character (n = 2)	Radula length	Rows of teeth	Shell length	Shell length Radula length
Mean	10.2	244.8	39.5	4.07

Type-locality.—384–430 m, 20°48'N, 70°46'W, near Silver Bank, 60 miles NE of Luperon, Dominican Republic; NMFS, R/V *Oregon*, Station 5432.

Holotype (Fig. 1, A–B).—USNM 810345; length 39 mm, width 13.1 mm. 9 paratypes, USNM 821851 (for measurements see Table 1).

Etymology.—From the Latin adjective *argenteus*, "silver," in reference to the Silver Bank area, where the specimens were taken.

Remarks

Specimens of this species were dredged in depths of 210–235 fms (384–430 m) in the Silver Bank Passage between Mouchoir Bank and Silver Bank. The shell form and axial sculpture are adapted to a sandy bottom habitat and all dead shells had drill holes indicative of predation by naticid snails. Several shells showed repair marks due to crab attacks. Two specimens were collected alive. Within the rectum of one of these were the remains of a sipunculan worm of the genus *Aspidosiphon*.

The degree of axial sculpture shows considerable intraspecific variation. Some shells are nearly devoid of axial ribs while in others they may be pronounced. Axial sculpture is strongest on the early, post-nuclear whorls and on the penultimate and body whorls, and is most pronounced on the anterior portion of each whorl, adjacent to the suture. When axial ribbing is strong, the suture appears wavy.

Among the Recent Panamic fauna, *Strombina deroyae* Emerson and d'Attilio, 1969, from the Galapagos, assigned by Keen (1971) to *Cotonopsis*, is morphologically close to the western Atlantic *Strombina argentea* although the color pattern of the latter is weaker. *Strombina argentea* also resembles *Strombina fusinoidea* Dall, 1916, in general form, but that taxon is a *Strombina* s.s., and differs accordingly.

Strombina argentea has a shell remarkably convergent with that of *Cyomesus chaunax* (Bayer, 1971), a totally unrelated turbinellid species. The latter differs chiefly in having strong columellar plications.

Strombina is not a common taxon in the Recent Caribbean fauna. Olsson and Harbison (1953:230) pointed out that *Strombina* is characteristically Panamic in the Recent fauna, but in the Miocene and Pliocene it was well represented in an extended Caribbean province by a number of species. It also occurred in north Florida (Petuch 1982:304). Petuch (1980:86) noted that there are only three living species in the western Atlantic, while Keen (1971) recorded 25 species living in the eastern Pacific. Weisbord (1962:327–328) listed about 25 fossil species from the Caribbean and as many as 40 species are named from Neogene deposits in tropical America (Woodring 1964:252). J. and W. Gibson-Smith (1974), in an extensive overview of this group in the Caribbean, estimated about 60 fossil taxa occurred in that province during Miocene and Pliocene times.

Three subgenera of *Strombina* have been proposed: *Strombina* s.s., *Cotonopsis* Olsson, 1942, and *Sincola* Olsson and Harbison, 1953. Although most western Atlantic living and fossil species are allocated to *Strombina* s.s., J. and W. Gibson-Smith (1974:51) pointed out several Caribbean fossil taxa which do not fit the limits of these subgenera and suggested that the entire group was in need of revision.

The three living Caribbean species, *Strombina pumilio* (Reeve, 1859), *S. caboblanquensis* Weisbord, 1962, and *S. francisiae* J. and W. Gibson-Smith, 1974, are all assigned to *Strombina* s.s. None of these taxa bears any resemblance to the much larger *Strombina argentea*, which falls within the limits of the subgenus *Cotonopsis*. *Cotonopsis* differs from *Strombina* s.s. in lacking a thickening or hump on the back of the body whorl, by the circular section of the body whorl, a less thickened lip that is not strongly denticulate within, and in the more strongly recurved anterior canal. *Cotonopsis* was originally based on two fossil species in the Tertiary beds of the Burica Peninsula, Panama. Keen (1971) has assigned four living eastern Pacific species to *Cotonopsis*. The subgenus *Cotonopsis* was previously unrecorded in the Recent or fossil fauna from the western Atlantic. A review of the Caribbean fossils depicted in the literature revealed nothing similar to *Strombina argentea*; moreover, none of the fossils from the Dominican Republic shown by Maury (1917, pl. 15) and Pilsbry (1921) or those of Jamaica (Woodring 1928) are similar to this species. Exclusive of *S. argentea*, all Recent and most fossil species from the western Atlantic belong to *Strombina* s.s. The type-species of *Cotonopsis*, *Strombina panacostaricensis* Olsson, 1942, has axial ribs on each whorl and the spiral striae on the body whorl constriction seen in *S. argentea*, but lacks the long twisted anterior canal of the latter.

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Literature Cited

- Bayer, F. M. 1971. New and unusual mollusks collected by R/V John Elliott Pillsbury and R/V Gerda in the tropical western Atlantic.—*Bulletin of Marine Science* 21(1):111–236.
- Emerson, W. K., and A. D'Attilio. 1969. A new species of *Strombina* from the Galapagos Islands.—*Veliger* 11(3):195–197, pl. 39.
- Gibson-Smith, J., and W. Gibson-Smith. 1974. The genus *Strombina* (Mollusca: Gastropoda) in Venezuela, with descriptions of a new Recent and some fossil species.—*Boletín Informativo, Asociación Venezolana de Geología, Minería y Petróleo* 17(4,5,6):49–70, pls. 1–4.
- Keen, M. A. 1971. Sea shells of tropical west America, 2nd Ed. Stanford, 1064 pp., 22 pls.
- Maury, C. J. 1917. Santo Domingo type sections and fossils.—*Bulletins of American Paleontology* 5(29):1–249, 39 pls.
- Olsson, A. A., and A. Harbison. 1953. Pliocene mollusca of southern Florida.—*The Academy of Natural Sciences of Philadelphia, Monograph No. 8*, 456 pp., 65 pls.
- Petuch, E. J. 1980. A reanalysis of Neogene Caribbean provinciality with reference to the discovery of a relict Caenogastropod fauna off northern South America. Unpublished Ph.D. Dissertation, University of Miami, 163 pp.

- . 1982. Geographical heterochrony: contemporaneous coexistence of Neogene and Recent molluscan faunas in the Americas.—*Palaeogeography, Palaeoclimatology, Palaeoecology* 37: 277–312.
- Pilsbry, H. A. 1921. A review of W. M. Gabb's Tertiary Mollusca of Santo Domingo.—*Proceedings of the Philadelphia Academy of Natural Sciences* 73(2):305–428, pls. 16–47.
- Weisbord, N. E. 1962. Late Cenozoic gastropods from northern Venezuela.—*Bulletins of American Paleontology* 42(193):1–672, 48 pls.
- Woodring, W. P. 1928. Miocene mollusks from Bowden Jamaica. Part 2. Gastropods and discussion of results.—*Carnegie Institution of Washington*, No. 385: vii + 564 pp., 39 pls.
- . 1964. Geology and paleontology of Canal Zone and adjoining parts of Panama. Description of Tertiary mollusks (Gastropods: Columbelloidea to Volutidae).—U.S. Geological Survey Professional Paper 306-C:241–297, pls. 39–47.

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