

# Two new gastropod species (Neogastropoda: Drilliidae, Turridae) from the western Atlantic Ocean

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## ABSTRACT

Two new deep-water species from the western Atlantic are proposed: *Drillia* (*Clathrodrillia*) *blakensis* and *Hindsiclava rosenstielanus*. *Drillia blakensis* is nearest *Drillia* (*Clathrodrillia*) *petuchi* Tippet, 1995, and *Hindsiclava rosenstielanus* recalls *Hindsiclava polytorta* (Dall, 1881). Animal anatomy, especially foregut anatomy, is described for *H. rosenstielanus*.

*Additional Keywords:* New species, Brazil

## INTRODUCTION

The species proposed here are examples of the richness of the turrid fauna that continues to be discovered in the deep waters of the western Atlantic. Although collected in the 1960s, neither has been previously reported. The type material of *Drillia blakensis* was part of the Bullis collection, secured as by-catch from the R/V OREGON. *Hindsiclava rosenstielanus* was dredged by the University of Miami's R/V PILLSBURY, but was only recently discovered during a review of the previously unsorted portion of the mollusk collection at the University of Miami's Rosenstiel School of Marine and Atmospheric Science. It is evident that further exploration and research will continue to reveal new material.

## MATERIALS AND METHODS

Empty shells and shells with preserved animals were examined. Preserved material was dissected. Radulae were mounted on microscopic slides and stained with Prontosil + CMCP 10. Type specimens were deposited at the National Museum of Natural History and other institutions. The classification used is that proposed by Taylor, Kantor, and Sysoev, 1993, which involved a rearrangement of the traditional classification of the Turridae. Abbreviations are: ANSP, Academy of Natural Sciences, Philadelphia, Pennsylvania; MCZ, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts; UMML, Invertebrate Museum, Rosenstiel School of Marine and Atmospheric Science, University of Miami, Florida; USNM, National Museum of Natural History, Smithsonian Institution, Washington, DC.

## SYSTEMATICS

Drilliidae Olsson, 1964

Genus *Drillia* Gray, 1838

**Type Species:** *Drillia umbilicata* Gray, 1838, by subsequent designation, Gray, 1847.

Subgenus *Clathrodrillia* Dall, 1918

**Type Species:** *Murex gibbosus* Born, 1778, by original designation.

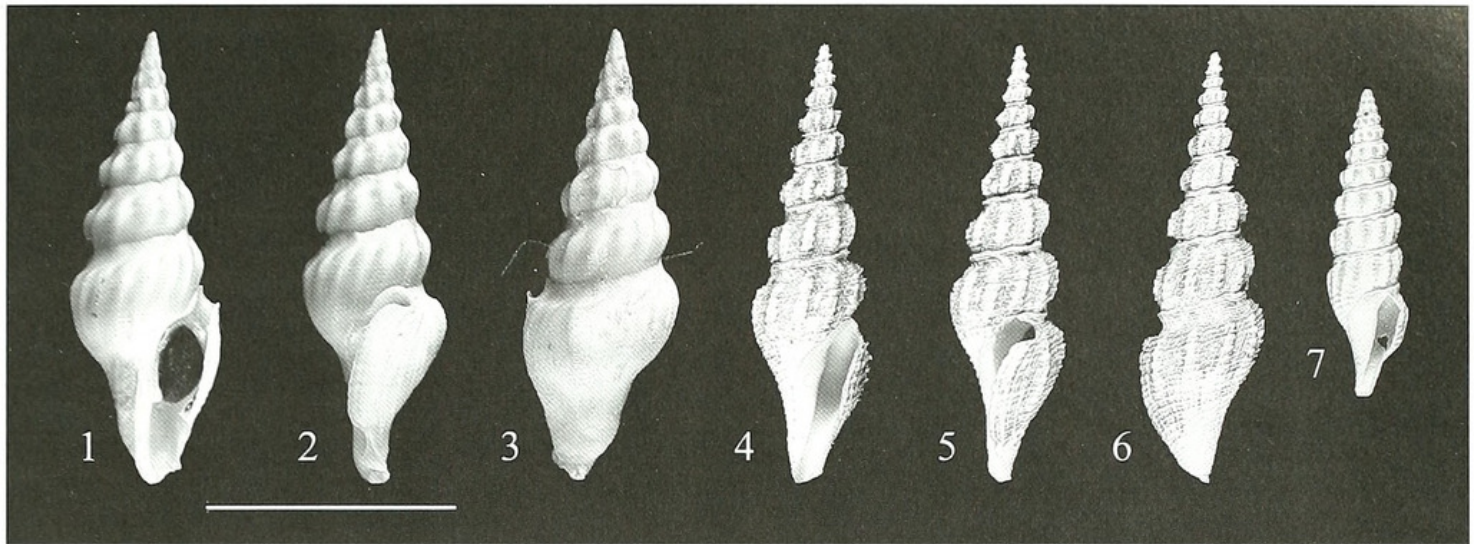
*Drillia* (*Clathrodrillia*) *blakensis* new species  
(Figures 1–3, 8)

? Turridae sp.—Lamy and Pointier, 2001: 22, number 73, list, p. 26, photo.

**Description:** Shell of medium-size (to approximately 45 mm), elongate, fusiform, with tall spire and large body whorl measuring about 0.5 shell length. Shell tapering gradually with moderate basal constriction to moderately elongate, open, slightly notched, slightly bent right anterior canal. Protoconch decollated, teleoconch whorls ten. Whorls well-rounded, shoulder sulcus on upper third concave, suture prominent. Sculpture of rounded, regularly spaced axial ribs with equal interspaces, extending from shoulder to following whorl on spire and to base on body whorl. Ribs increase in number with shell growth, seven on early whorls, 12, narrower and closer spaced, on penultimate, ten or 11 on body whorl leading to small varix 0.25 whorl back of lip edge, two or three possibly abortive ribs following varix. Fine spiral threads overall, weaker on sulcus. Aperture parallel-sided with apically directed, U-shaped sinus posteriorly, bordered on body whorl by flat parietal tubercle. Lip sloping roundly forward below sinus, upper edge directed upward, narrowing sinus somewhat, producing spout-like appearance. Stromboid notch distinct. Color dirty-white overall, faint, pale brown peripheral band, blotch of same color on varix and spots preceding tops of axial ribs on later whorls. Operculum (Figure 8) of chestnut color, ovate with roundly pointed anterior end and terminal nucleus.

**Type Material:** Holotype, USNM 900034, 400–450 m, May 1965; three paratypes, USNM 1096708, data same





**Figures 1–7.** Drilliids and turrids. **1–3.** *Drillia* (*Clathrodrillia*) *blakensis* new species, holotype, USNM 900034, 44.8 × 16.0 mm, apertural, lateral, dorsal views. **4–6.** *Hindsiclava rosenstielanus* new species, holotype, USNM 1086746, off Riohacha, off Colombia, 44.5 × 13.6 mm, apertural, lateral, dorsal views. **7.** *Pleurotoma* (*Drillia*) *polytorta* Dall, 1881, holotype, USNM 412171, 32.6 × 9.6 mm, off Cape San Antonio, Cuba. Scale bar = 25 mm.

as for holotype, 45.7 × 16.6 mm, 44.1 × 14.7 mm, 42.5 × 16.0 mm (ex-José and Marcus Coltro collection, ex-author's collection); all dredged by R/V OREGON on type locality.

**Other Material Examined:** one specimen, Dr. Douglas Wolfe collection, 41.2 × 15.5 mm, dredged by R/V OREGON on type locality.

**Type Locality:** Blake Plateau; precise location unknown, data presumably not retained.

**Distribution:** Blake Plateau and possibly off Saba Island, Netherlands Antilles (Lamy and Pointier).

**Discussion:** *Drillia blakensis* is most similar to *Drillia* (*Clathrodrillia*) *petuchi* Tippett, 1995, from which it differs in being narrower, having less robust ribs, finer spirals, a broader, non-tabulate, more sloping sulcus, and fainter color pattern. The author has not seen the shell figured in Lamy and Pointier, stated to be 48 mm in length and from 150 m depth, however it appears from the illustration to be *D. blakensis*, differing in being slightly broader, having a slightly shorter anterior canal and stronger peripheral color banding, features within intraspecific variation limits.

**Etymology:** Named after the Blake Plateau, the type locality.

Turridae H. Adams and A. Adams, 1853 (1838)

Crassispirinae Morrison, 1966

Genus *Hindsiclava* Hertlein and Strong, 1955

**Type Species:** *Clavatula militaris* Hinds, 1843, by original designation.

*Hindsiclava rosenstielanus* new species  
(Figures 4–6, 9, 10)

*Crassispira polytorta* (Dall, 1881): Okutani, 1983: 304, description and figures (apertural and lateral views plus radular teeth).

?Turridae sp.—Lamy and Pointier, 2001: 22, number 71, list and photo.

**Description:** Shell of medium-size (to approximately 48 mm), elongate, fusiform, turreted, with tall spire, body whorl about 0.4 of shell length, whorls rounded below concave shoulder slope, gently constricted at base to moderately long, anterior canal open, notch lacking. Protoconch with 2.5 smooth whorls, tip central, first 1.5 whorls glossy, remainder dull-white, terminating in short portion of whorl with 4–5 axial riblets that quickly enlarge to axial ribs in adult shell. Teleoconch whorls 9–10. Aperture of parallel sides and with moderately deep, U-shaped posterior sinus on shoulder slope. Parietal tubercle absent. Suture distinct, almost channeled, slightly wavy. Subsutural cord of double threads. Axial ribs robust (11–12 on body whorl, 11 on penultimate), extending faintly across sulcus above and to next suture on spire, disappearing on base; interspaces half again as wide. Uniform, regularly spaced spiral threads (5–6 on whorl periphery) cross ribs, producing modest, laterally elongate nodules, then continue forward to anterior canal. Microsculpture of fine spiral threads, including sulcus, irregular in strength and distribution. Notch and varix lacking. Color dirty-white overall, traces of dark periostracum.

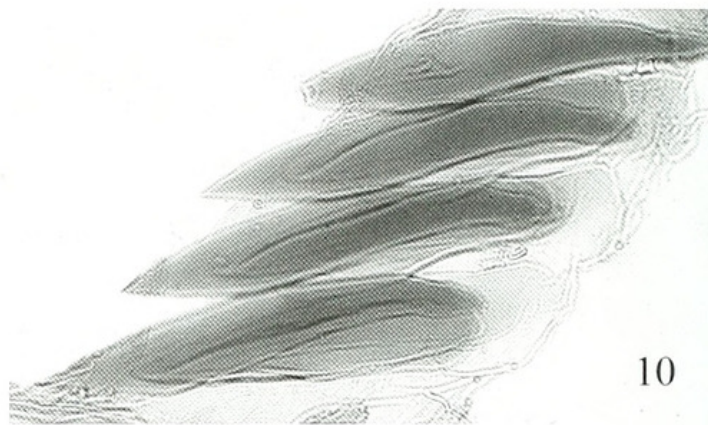
**Gross Anatomy:** Animal white, foot with upturned propodium, operculum located posteriorly on foot. Head bearing two tentacles, each with eye dorsally on an expansion midway from base. Penis behind right tentacle, reflected back under mantle. Respiratory siphon on left, bearing a fold, mantle edge extending across head, with moderate anal sinus on right. Gills and os-





**Figures 8, 9.** Opercula, inner (left) and outer (right) views. **8.** *Drillia (Clathrodrillia) blakensis*, 7.5 mm length. **9.** *Hindsiclava rosenstielanus*, 11 mm length. Scale bar = 5 mm.

phrarium visible through mantle. Rectum on right. Puckered rhynchostome between and slightly below tentacles. Rhynchostomal sphincter present. Rhynchocoel with strong linear folds internally. Rhynchodeal wall circularly folded due to retraction. Proboscis long, circularly folded along its length in preserved animal due to contraction, linear folds posteriorly. Large buccal mass and cavity posterior to rhynchodeum. No sphincter seen at beginning of esophagus. Large, highly coiled poison gland and bulb in body cavity. Right and left salivary glands present. Radular ribbon ventral and posterior to



**Figure 10.** *Hindsiclava rosenstielanus*, radula, teeth are 300  $\mu$ m length.

buccal mass. Gland ducts and radular ribbon enter at beginning of esophagus ventrally and posteriorly to buccal mass. Incomplete radula with approximately 40 pairs of wishbone marginal teeth (Figure 10) measuring approximately 300  $\mu$ m. Operculum (Figure 9) medium amber, ovate with flat proximal side, rounded peripheral side, ends rather sharply rounded, terminal nucleus at anterior end.

**Type Material:** Holotype, USNM 1086746, west of Riohacha, off Colombia, 11°32' N 073°23' W, 549 m, R/V Pillsbury 781, 30 July 1968, 3 m, otter trawl, ex-UMML 30.10788; paratypes (ex-UMML): one specimen, USNM 1107006; one specimen, MCZ 359135; one specimen, ANSP 416320; seven specimens UMML 30.10788, four with animal preserved, three shells only. All from type locality.

**Other Material Examined:** USNM 902064, three specimens, off Cartagena, Colombia, (ex-José and Marcus Coltro collection, ex-author's collection); *Pleurotoma (Drillia) polytorta* Dall, 1881, USNM 412171, holotype.

**Type Locality:** West of Riohacha, off Colombia.

**Discussion:** *Hindsiclava rosenstielanus* is most similar to *Hindsiclava polytorta* (Dall, 1881) (Figure 7) reported from off Cuba. *Hindsiclava rosenstielanus* differs by its wider sulcus, doubled subsutural cord, fewer ribs (e.g., nine on sixth spire whorl versus 12 on equivalent whorl of *polytorta*), presence of fine secondary spiral threads overall, and absence of parietal tubercle. The specimen reported by Okutani, measuring 58  $\times$  19 mm, from 328–470 m off Surinam, appears to be this species despite the larger size and the radular teeth which are dissimilar at the location of their basal attachment (drawings appear stylized). The specimen reported by Lamy and Pointier (2001) from 450 m off Point Noire, Guadeloupe, is 63 mm in length and, appears to be this species, again despite its larger size, and also despite the geographic distance of Guadeloupe from the type locality of *rosenstielanus*. The specimens in USNM 902064 are identical with the type material except that the axial ribs are slightly broader.



**Etymology:** The species is named for the Rosenstiel School of Marine and Atmospheric Science, University of Miami, from which the material was obtained.

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