

## A new *Astyris* species (Gastropoda: Columbellidae) from the Gulf of Mexico, with notes on the genus

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**ABSTRACT.** The genus *Astyris* is discussed. A new species of *Astyris*, collected off Tampa, Florida, is described and compared with its congeners.

### INTRODUCTION

While inspecting lobster traps set in 60 to 65 m of water off Tampa, Florida, Mr. Steve Kern collected a number of specimens of an undescribed columbellid species inhabited by hermit crabs. The lot, composed of 24 specimens, came into the possession of Mr. Frank Frumar, of Kirkwood, Missouri, and was eventually sent to me for study. Although the species at first sight seemed to belong to the genus *Mitrella* Risso, 1826, it more closely resembles species that have been assigned to *Astyris* H. & A. Adams, 1853.

The genus *Astyris* has undergone different interpretations since it was first proposed. Dall (1889: 189) used it as a subgenus of *Columbella*, choosing it from other "superfluous names" to be used "for sundry colored, small, mostly polished little Columbellids which have been scattered through a variety of sections which form phases of a continuous series and cannot be strictly diagnosed"; however, in later years (1927:52) he raised it to a full genus. Some later workers (e.g., Grant & Gale, 1931: 695) considered *Astyris* synonymous with *Mitrella*; and Abbott (1974) and Rios (1985) treated it as a subgenus of *Mitrella*.

When Radwin reviewed the western Atlantic genera and species in Columbellidae, he assigned a number of western Atlantic columbellid taxa to *Astyris*; however, he restrained from making a diagnosis of the genus "because the subgeneric and specific interrelationships in this genus are not sufficiently understood (1978: 331). Radwin's omission was addressed by McLean in McLean & Gosliner (1996) who, indirectly acknowledging the problems stated by Dall and Radwin, chose to give a "tentative" diagnosis for *Astyris*: "Shell small, high-spired, whorls smooth, lacking axial and spiral sculpture, except for spiral incisions on base; aperture narrow, canal short but deeply notched; anal notch lacking; protoconch paucispiral" (1996: 109). However, many species that have been assigned to *Astyris* do have a multispiral protoconch.

In his taxonomic study of the representatives of the family Columbellidae in Brazil, Costa groups *Astyris* with *Mitrella*, as he considers the former to be one of those genera that has been "mal estabelecidos" (2005: 6). He (2005: 252), discusses in particular Dall's early (1870) interpretation of *Astyris*, which includes species from families other than Columbellidae. However, Costa does not seem to be aware of McLean's diagnosis. Since Radwin's and McLean's publications most authors have separated *Astyris* from *Mitrella* [e. g., deMaintenon (1999), Redfern (2001), Espinosa *et al.* (2004), Rosenberg (2005)].

Notwithstanding the limiting paucispiral protoconch included by McLean in his diagnosis of *Astyris*, species assigned to this genus do follow the other characters diagnosed by him. Moreover, *Astyris* have thinner shells than *Mitrella*, a labrum with an inner margin that is either smooth, or has weak denticles, rather than the well-formed, strong denticles of *Mitrella*, and a columellar area which, instead of having a series of denticles, is either smooth or has one or two strong, triangular denticles at the anterior end of the columella. If the columella shows slight indentations at anterior end, they are caused by the spiral cords present on the surface of the anterior canal, which show through the columellar callus. The series of denticles in the inner lip of *Mitrella* are independent of the outer ornamentation of the shell. Species placed in *Mitrella* tend to be larger, and while most *Mitrella* inhabit shallow water, most *Astyris* inhabit deep water.

### Abbreviations

AMNH: The American Museum of Natural History, New York, USA.

ANSP: Academy of Natural Sciences, Philadelphia, Pennsylvania, USA.

BMSM: Bailey-Matthews Shell Museum, Sanibel, Florida, USA.

EFG: author's collection

FF: Frank Frumar collection, Kirkwood, Missouri, USA.

FSBC: Florida Department of Natural Resources, St. Petersburg, Florida, USA.

SBMNH: Santa Barbara Museum of Natural History, California, USA.

USNM: National Museum of Natural History, Smithsonian Institution, Washington, DC, USA.

## SYSTEMATICS

Family COLUMBELLIDAE Swainson, 1840

Genus *Astyris* H. & A. Adams, 1853

Type species: *Astyris rosacea* (Gould, 1840) by subsequent designation [Cossmann, 1901, 4: 238].

### *Astyris frumarkernorum* n. sp.

Figs 1-9

**Type material.** Holotype ANSP 418861 length 4.8 mm, width 2mm, 100 mi west of Tampa Bay, west Florida, in 60- 65 m (Figs 1-6); paratype 1 ANSP 418862 (Figs 7-9); paratypes 2 and 3 USNM 1114248; paratype 4 BMSM 15493; paratype 5 SBMNH 83476; paratypes 6- 8 EFG 28302; paratypes 9- 23 Frank Frumar col.

**Type locality.** 27°27'56"N, 84°24'30"W, 186 km west of Tampa Bay, Florida, in 60- 65 m.

**Distribution.** Known only from the type locality.

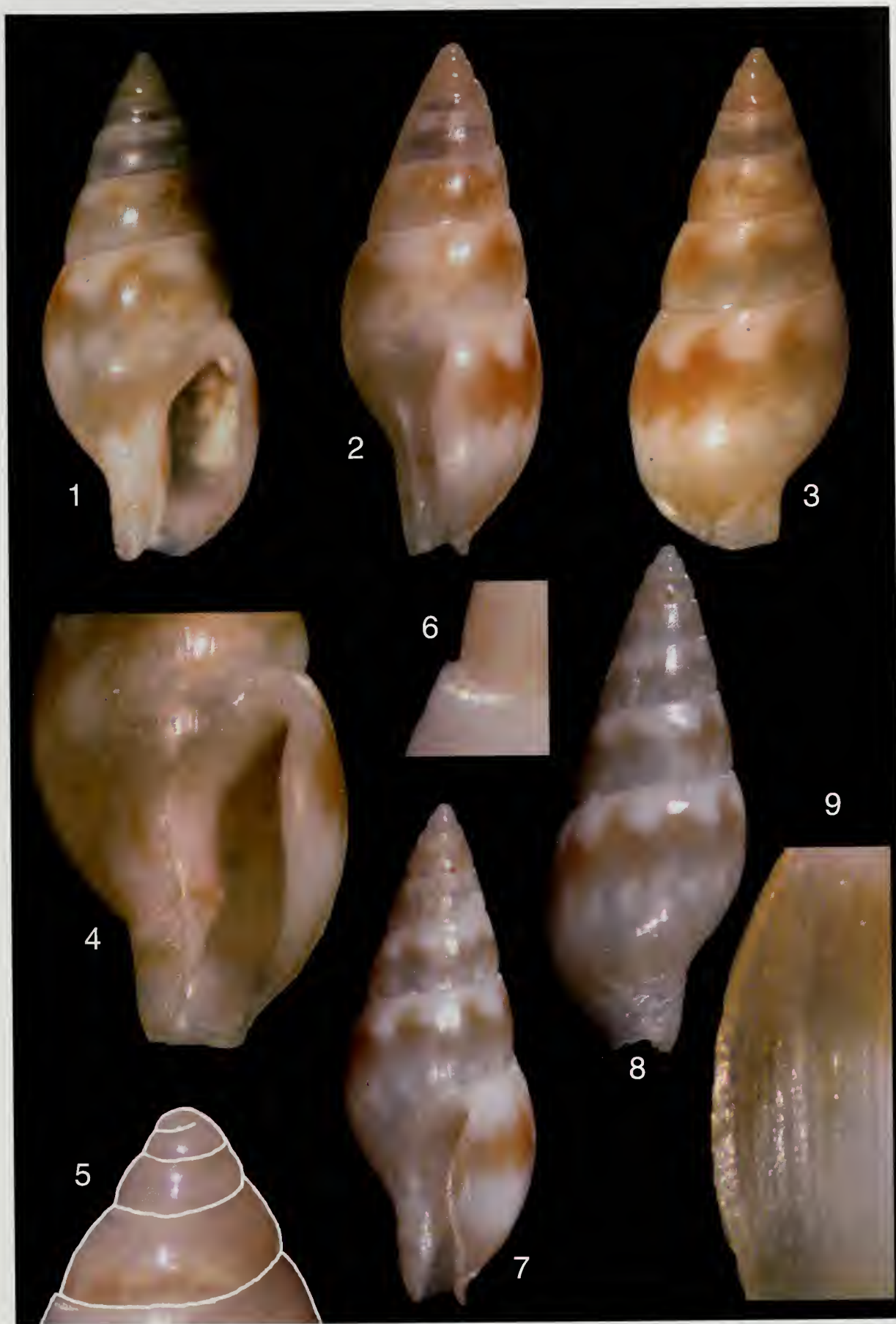
**Description.** Holotype (Figs 1-6) 4.8 mm in length; shell thin but strong, polished, fusiform (width/ length ratio 0.42). Protoconch of about 3 whorls, smooth, white, conical (Fig 5). Transition between protoconch and teleoconch undetectable. Suture distinct, not channeled, made conspicuous by a minute, somewhat grooved shoulder anterior to it (Fig 6). Teleoconch of approximately 4.5 whorls; early whorls developing a slightly indented, almost unnoticeable, subsutural band; shell surface microscopically covered with numerous, strong, compact axial growth marks crossed by less conspicuous, narrower, incised, undulating spiral threads, giving shell surface a corrugated appearance (Fig 9); last whorl with 9 or 10 strong spiral cords on anterior canal (Fig. 4); cords microscopically wrinkled by axial ornamentation. Aperture 2 mm in length, elongate- ovate, distinctly pointed posteriorly but without anal notch; outer lip not thickened, sinuous at shoulder (Figs 2, 6), interiorly edentate; parietal wall smooth, posterior area with thin callus; callus thickening anteriorly,

becoming slightly erect (Fig 2), showing faint lirae created by spiral cords underneath callus; a triangular denticle appearing at base of columella (Fig 4); anterior canal relatively wide, short, notched. Shell whitish, semi-translucent; early whorls developing a milky white, uneven, subsutural band and presutural milky- white spots; amorphous, yellowish markings showing at periphery of whorls; colors becoming organized in last three whorls; yellowish color intruding into milky- white areas in sigmoid pattern; a second, weaker yellowish band appearing at base of last whorl; third row of white spots showing on anterior canal.

**Discussion.** The holotype and paratype 1 (Figs 7-9) are the largest in the type series, measuring approximately 4.8 mm. The holotype seems to be a full adult; paratype 1 is slightly sub- adult. All other specimens in the type series, although nearly as large, have very thin lips. It is presumed that there is little variation in coloration in this species, as all of the specimens in the type series have the same color pattern as the holotype and paratype 1. Costa (2005, Plate 19, fig 9) figures a "*Mitrella* sp." collected in the Miami area in 1967 that resembles *A. frumarkernorum*; however, I was unable to inspect the specimens, which are housed at AMNH (No. 245671). *Astyris frumarkernorum* is similar in shape to *A. rosacea* (Gould, 1840), *A. diaphana* (Verrill, 1882), and *A. cabofrioensis* (Costa & Souza, 2001). *A. rosacea*, which inhabits European waters and the northeastern coast of America, is larger, has different markings and more convex whorls. *A. diaphana*, with a geographic distribution from North Carolina to the Gulf of Mexico, has a different protoconch, a larger shell, a varix behind the outer lip, and a pale- straw coloration. It is interesting to note that the sutural area of *A. diaphana* and *A. frumarkernorum* (Fig 6) are almost identical in construction. Dall describes the suture of *A. diaphana* as "distinct but not channeled; on some of the whorls it is accompanied by a fine groove just in advance of it (1889: 191)." *Astyris cabofrioensis* (Costa & Souza, 2001), known only from off Rio de Janeiro, Brazil, is also similar in general coloration; however, it grows to 10 mm, has a dome- like protoconch of 2 whorls, and the inner margin of the external lip has denticles. This species was originally described as a *Mitrella* but its conchological characters seem to be most similar to *Astyris rosacea*, and *A. diaphana*.

## Figures 1- 9

1-9. *Astyris frumarkernorum* n. sp., 100 mi west of Tampa Bay, Florida, in 60- 65 m. 1-6. Holotype ANSP 418861, length 4.8 mm, width 2 mm 7-9. Paratype 1 ANSP 418862, length 4.8mm.





The color pattern of *Astyris frumarkernorum* n. sp. resembles that of some Caribbean forms of *Astyris hmata* (Say, 1826); however, *Astyris hmata* is smaller, has a more convex last whorl, and small denticles inside the outer lip. *Astyris antares* (Costa & Souza, 2001), with a geographical distribution from the Bahama Islands to Brazil, is also smaller, has a globose protoconch with dark markings, a varicose outer lip, small denticles inside the outer lip, and two strong denticles at the anterior end of the columella. *Astyris guantanamoensis* (Faber, 2004), from the Bahamas, grows to only 4.1 mm, has a protoconch of one whorl, different coloration, and is weakly denticulate inside the outer lip. Faber places this species in *Mitrella* but its conchological characters are most similar to those of *Astyris*, particularly *A. perhucida* Dall, 1927, with which it should be compared. Like *Astyris frumarkernorum*, *A. rolani* Espinosa *et al.*, 2004 and *A. angeli* Espinosa *et al.*, 2004, two species dredged off southern Cuba, lack denticles in the inner labrum, but these two species are smaller, very fragile in appearance, and of different coloration.

**Etymology.** Named for Mr. Frank Frumar, of Kirkwood, Missouri, who donated the type material, and Steve Kern, of Key West, Florida, who collected it.

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