Six new deep-water molluscan species (Gastropoda: Epitoniidae, Conoidea) from the Gulf of Mexico

Emilio Fabián GARCIA
115 Oakcrest Dr.
Lafayette, LA 70503
efg2112@louisiana.edu

KEYWORDS. Gastropoda, Epitoniidae, *Cylindriscala*, *Opaliopsis*, Conoidea, *Anticlinura*, protoconch, *Gymnobela*, Gulf of Mexico, deep-water.

ABSTRACT. Six new deep-water gastropod species from the Gulf of Mexico are described and compared with their congeners: two epitoniid species, *Cylindriscala rosenbergi* and *Opaliopsis rabalaisi*, and four conoid species, *Anticlinura atlantica*, *Gymnobela felderi*, *G. fredericqae*, and *G. petiti*. The first preserved protoconch of an *Anticlinura*, and the first Atlantic species assigned to that genus, are pictured and discussed; and the subfamilial placement of *Anticlinura* is suggested.

INTRODUCTION

The deep-water mollusks of the Gulf of Mexico have been a fascinating field of study for malacologists since the steamer "Blake" expedition of 1877. The innovative use of cable for trawling and dredging, made it possible for the "Blake" to collect enormous numbers of molluscs new to science. It would take W. H. Dall from 1878 to 1890 to complete the descriptions and publication of such new material, showing marine biologists the richness of the area. Since then, many other expeditions such as those of the R/ V "Oregon," the R/ V "Silver Bay," the "Gerda," and the Hourglass project of the Marine Laboratory of the Department of Natural Resources of the State of Florida have added to the molluscan richness of the Gulf; however, these latter projects were confined only to the eastern and southeastern regions of the Gulf and other western Atlantic localities.

In 1964 Dr. Helmer Odé began publishing a series of articles in the "Texas Conchologist" on mollusks trawled and dredged off the shores of the northwestern Gulf of Mexico. The material obtained, which was estimated to include some 1500 species in about 20,000 lots (Odé, 1972:47), came from relatively shallow water, to a maximum depth of about 140 m.

In 1994 I was invited by Dr. Darryl L. Felder, Head of the Biology Department at the University of Louisiana at Lafayette, to join him and other colleagues on cruises on board the R/ V "Pelican," a research ship run by LUMCON (Louisiana Universities Marine Consortium). These cruises have been repeated in 1996, 2000, 2001, 2003, and 2004, and have covered the offshore waters of the northern Gulf, from approximately 88°W to 92°30'W, *i. e.*, from Alabama to near the Louisiana-Texas border. Although much of the collecting from these expeditions was done at the same depth range as Odé's material, there were many new discoveries. These findings have been published by García (1996, 1999a, 1999b, 2000, 2002a, 2002b, 2002c) and García & Lee (2002, 2003, 2004).

The species described herein were collected during three different cruises of the R/ V "Pelican." The two epitoniid species, and the *Anticlinura* species, were obtained in the same dredge haul off Mobile, Alabama in 1996, in 400 to 490 m. This is the first time a species of *Anticlinura* has been collected in Atlantic waters, and the first time a specimen belonging to that genus has been collected with an intact protoconch. Two *Gymnobela* species were collected in June, 2003, with a grab box , in 587 to 680 m, in the hydrocarbon cold seep area that exists off the Louisiana coast (see García, 2002c). The third species of *Gymnobela* was collected off Tampa Bay, west Florida, in June, 2004, in 496-509 m.

All of the type material discussed in this article is deposited at The Academy of Natural Sciences of Philadelphia, abbreviated herein as ANSP.

SYSTEMATICS

Superfamily **EPITONIOIDEA**
Family **EPITONIIDAE** S. S. Berry, 1910
Subfamily **EPITONIINAE** Clench & Turner, 1952
Genus ***Cylindriscala*** de Boury, 1909
Type species: *Scala fulgens* de Boury, 1909 (by original designation).

Cylindriscala rosenbergi n. sp.
Figs. 1-3

Type material. Holotype ANSP 412709 length 16.9 mm, width 6.8 mm.

Type locality. Off Mobile, Alabama, 29°05'N, 88°23'W, 400- 490 m.

Material examined. Known only from the holotype.

Distribution. Off Mobile, Alabama, in 400- 490 m (dead).

Description. Holotype 16.9 mm in length, rather thin but solid, attenuate (width/ length ratio 0.40). Protoconch missing. Teleoconch of 8.5 whorls; whorls narrowly shouldered, periphery straight-sided. Suture rather deep, slightly undulating. Axial sculpture of strong rounded costae; 14 or 15 costae on each whorl, slightly wider than interspaces; surface of shell otherwise covered with numerous axial wrinkles. Spiral sculpture of undulating cords of uneven strength, crossing over axial costae; heaviest cords posterior to periphery of whorl. Basal disk well defined (Fig. 3), almost flat, sculptured with inconspicuous axial and spiral wrinkles, almost smooth towards umbilical area, delineated posteriorly by basal ridge; ridge showing suprasuturally on early whorls. Umbilicus closed. Aperture subcircular, outer lip thickened by last axial costa. Shell white.

Remarks. Although the protoconch is missing, I have placed this new species in the genus *Cylindriscala* because of its sculptural affinity to other western Atlantic *Cylindriscala*, particularly *C. tortilis* (Watson, 1883). *Cylindriscala rosenbergi* differs from the latter, and from most other western Atlantic *Cylindriscala*, in its much larger size, fewer numbers of whorls, and wider axial costae. Only *Cylindriscala andrewsi* (Verrill, 1882) has similar costae, but some of its costae are varicoid. Moreover, it reaches only 8 mm in length, and has more convex whorls and a deeper suture.

Cylindriscala rosenbergi may also be confused with *Opaliopsis concava* (Dall, 1889), but the 13.8 mm holotype of the latter has 10 whorls, only 11 flattened axial costae, and a spiral sculpture of very fine threads.

Etymology. Named for Dr. Gary Rosenberg, Curator of the Academy of Natural Sciences of Philadelphia, for his contributions to malacology, and particularly for his work on western Atlantic gastropods.

Subfamily **NYSTIELLINAE** Clench & Turner, 1952.
Genus ***Opaliopsis*** Thiele, 1928
Type species: *Scala elata* Thiele, 1925 (by original designation).

Opaliopsis rabalaisi n. sp.
Figs. 4-7

Type material. Holotype ANSP 412710 length 6.9 mm, width 2.9 mm. 1 paratype ANSP 412711.

Type locality. Off Mobile, Alabama, 29°05'N, 88°23'W, 400- 490 m.

Material examined. Known only from the type material.

Distribution. Off Mobile, Alabama, in 400- 490 m (dead).

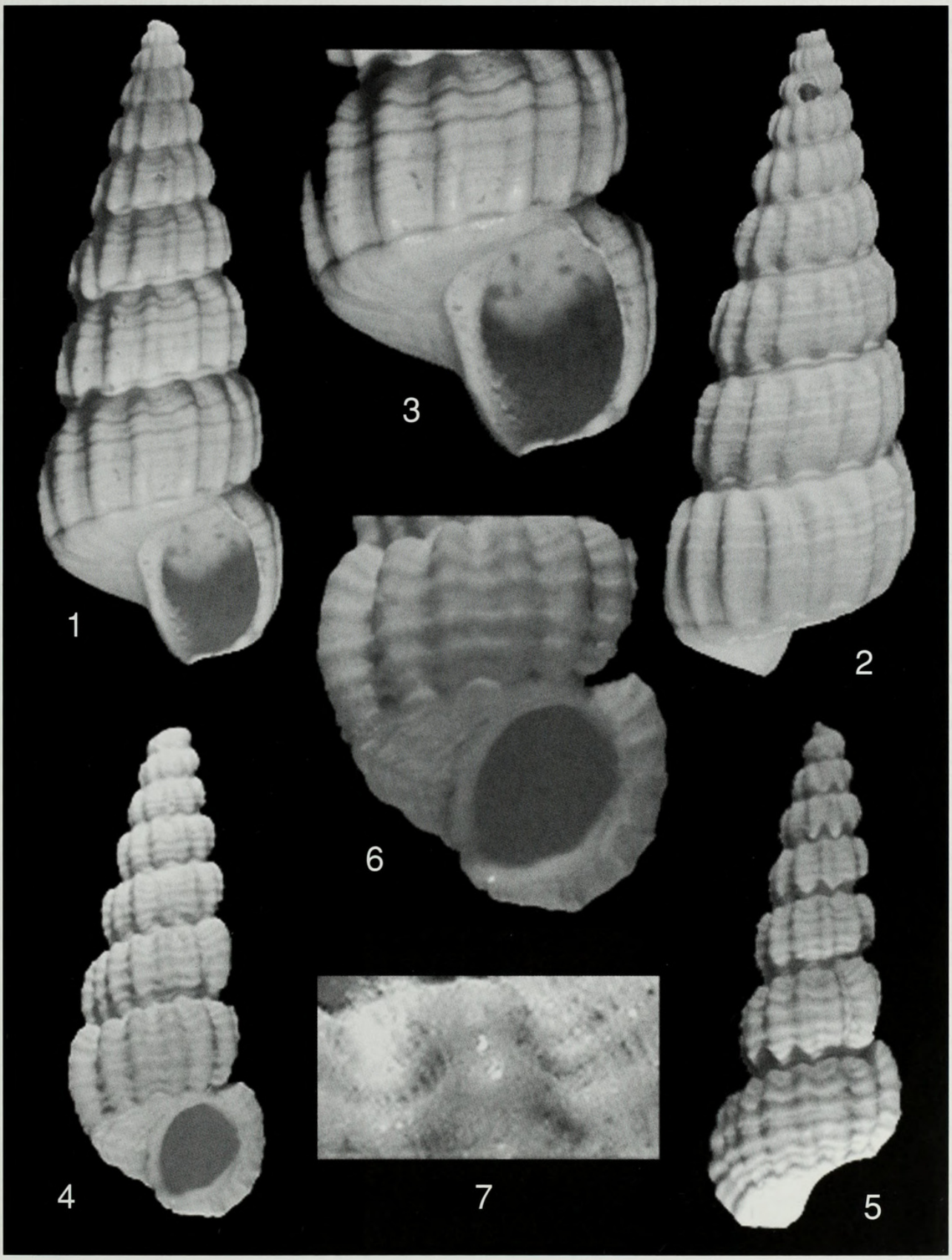
Description. Holotype 6.9 mm in length, solid, turreted (width/ length ratio 0.42). Protoconch missing. Teleoconch of approximately 7 whorls; whorls shouldered, periphery almost straight-sided. Suture deep. Axial sculpture of 11 or12 well-delineated, strong, rather angular costae, costae creating coronation at shoulder; coronation not crossing over suture; some costae becoming varicoid; first varicoid costa appearing on penultimate whorl; last whorl with a varix approximately 180° from labral varix, giving whorl a dorso-ventrally compressed appearance; posterior projection of varices crossing over suture (Fig. 6); numerous microscopic, sharp axial threads covering surface of shell (Fig. 7), except at summit of costae. Spiral sculpture of strong cords; cords creating nodes as they cross over axial costae, wrinkled by axial thread at interspaces, seven on last whorl. Basal disk pronounced (Fig. 6), delineated posteriorly by a heavy, undulating basal ridge; ridge often appearing as presutural cord on earlier whorls; disk sculptured with vestiges of previous axial costae, numerous axial threads, and 5 undulating spiral cords. Umbilicus closed. Aperture sub-circular. Shell white.

Remarks. The broken paratype measures 7.5 mm and has 5 whorls. The three central spiral cords on the last whorl are darker in coloration. Otherwise, it is similar to the holotype, including the two opposing varices on the last whorl, a character that seems to be diagnostic. The species resembles an *Opalia*; however, it has no intritacalx or spiral pitting on its surface.

Although both specimens of the type material have a missing protoconch, I have placed the new species in the genus *Opaliopsis* because of its close resemblance to two western Atlantic species, *Opaliopsis cania* (Dall, 1927) and *Opaliopsis atlantis* (Clench & Turner, 1952). These two species are strongly sculptured with spiral and axial ornamentation, are strongly coronated, and may have varicoid axial costae and axial thread on interspaces. Moreover, *Opaliopsis atlantis* and an undescribed *Opaliopsis* from the Indo-Pacific, have darker spiral ornamentation, which is presumably the case in fresh specimens of the new species as suggested by the paratype.

Figures 1-7

1-3. *Cylindriscala rosenbergi* n. sp. Off Mobile, Alabama, 29°05'N, 88°23'W, 400- 490 m. Holotype ANSP length 16.9 mm, width 6.8 mm. **4-7**. *Opaliopsis rabalaisi* n. sp. Off Mobile, Alabama, 29°05'N, 88°23'W, 400- 490 m. Holotype ANSP length 6.9 mm, width 2.9 mm.


1
2
3
4
5
6
7

Opaliopsis rabalaisi differs from *O. cania* in having fewer, more quadrate whorls, fewer axial costae, and stronger varices. It differs from *Opaliopsis atlantis* in having fewer whorls, a consistent number of axial costae in all whorls, fewer spiral cords, and a more prominent, proportionately wider basal disk, with only vestiges of previous axial costae crossing over basal cord. The new species may also be confused with *Cylindriscala andrewsi* (Verrill, 1882). However, the turreted shape, straight-sided whorls, varicoid costae, and numerous axial threads separate *Opaliopsis rabalaisi* from the latter.

Etymology. Named for Mr. Steve Rabalais, Assistant Director for Physical facilities and Marine Operations (including the R/V Pelican) at the Louisiana Universities Marine Consortium (LUMCON) Laboratory. I have received from Mr. Rabalais many kind favors which have helped me with my research on the mollusks of the Gulf of Mexico.

Superfamily **CONOIDEA**
Genus ***Gymnobela*** A. E. Verrill, 1884
Type species: *Gymnobela engonia* Verrill, 1884 (Cossmann, 1896, by subsequent designation).

Gymnobela felderi n. sp.
Figs. 8-12

Type material. Holotype ANSP 412713 length 8 mm, width 4.5 mm.

Type locality. Off Louisiana, 27°46.68'N, 91°30.43'W, in 587 m (dead).

Material examined. Known only from the holotype.

Distribution. Off Atchafalaya Bay, Louisiana, in 587 m (dead).

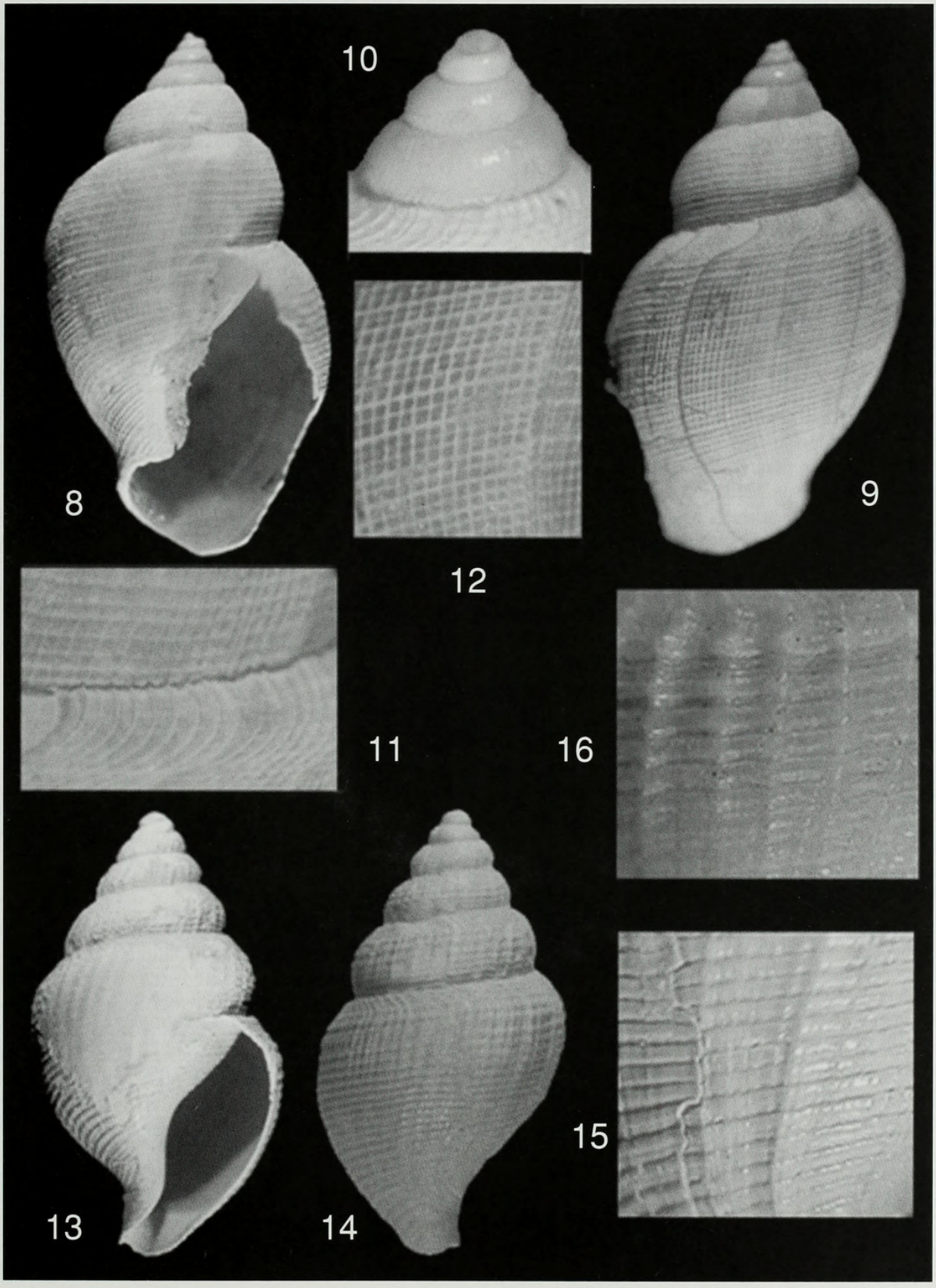
Description. Holotype 8 mm in length, rather thin, fragile, turbinate (width/ length ratio 0.56). Protoconch damaged, of at least three, rapidly increasing, convex whorls (Fig. 10); first whorl presumably minute; surface of protoconch partly decorticated, undamaged surface showing diagonally cancellate sculpture. Teleoconch of about three rapidly increasing, convex, slightly shouldered whorls. Suture narrowly channeled (Fig. 11) . Axial sculpture of numerous thin, evenly spaced threads, sinuous at shoulder, crossing over spiral elements, creating sharp nodes at intersections. Spiral sculpture of numerous narrow, evenly spaced threads, of same value as axial elements, creating an evenly reticulate pattern as both elements intersect (Fig. 12). Aperture damaged, slightly longer than half of the shell length; outer lip thin, a deep turrid notch at posterior end, indicated by contour of axial sculpture at shoulder. Shell white with pale tan blotches.

Remarks. Because of the broken anterior canal of the holotype, I have only tentatively placed the new species in the genus *Gymnobela*. Further discoveries may place the species in another closely related genus. The sharply reticulate pattern of *Gymnobela felderi* is unlike any other western Atlantic *Gymnobela*. It has the general appearance of *Gymnobela blakeana* (Dall, 1889), but the latter has a heavier shoulder, stronger sculptural elements (Fig. 16), and a nodose periphery. The shape of new species resembles a form of the northern Atlantic *Gymnobela aquilarum* (Watson, 1881) (Bouchet & Warén, 1980:54, fig. 122), but the ornamentation is different, and *G. aquilarum* has a protoconch with two keels.
Gymnobela felderi resembles in sculpture *Daphnella eugrammata* Dall, 1902 and *D. reticulosa* Dall, 1889. However, *Daphnella eugrammata* has strong axial elements on early whorls, with spiral elements stronger than axial elements on last whorl; *D. reticulosa* also has strong axial elements on early whorls. Both *Daphnella* species lack the channeled suture of *Gymnobela felderi*, have a more fusiform shell, and a different, narrower protoconch, not rapidly expanding like the new species.

Etymology. Named for Dr. Darryl L. Felder, Head of the Biology Department at the University of Louisiana at Lafayette. Dr. Felder has placed at my disposal the facilities of the Department, without which present and past investigations could not have been possible.

Figures 8-16

8-12. *Gymnobela felderi* n. sp. Off Louisiana, 27°46.68'N, 91°30.43'W, in 587 m. Holotype ANSP length 8 mm, width 4.5 mm. **13-15**. *Gymnobela frederiqae* n. sp Off Louisiana, 27°43.4'N, 91°16.74'W, in 640- 680 m. Holotype ANSP length 10.5 mm, width 5.7 mm. **16**. *Gymnobela blakeana* (Dall, 1889)(close-up of sculpture). Off Louisiana, 27°43.4'N, 91°16.74'W- In 640-680 m. E. F. García coll. # 24440.


10
8
9
12
11
16
13
14
15

Gymnobela fredericqae n. sp.
Figs. 13-15

Type material. Holotype ANSP 412714 length 10.5 mm, width 5.7 mm.

Type locality. Off Louisiana, 27°43.4'N, 91°16.74'W, in 640- 680 m (dead).

Material examined. Known only from the holotype.

Distribution. Off Atchafalaya Bay, Louisiana, in 640-680 m (dead).

Description. Holotype 10.5 mm in length, thin but strong, turbinate (width/ length ratio 0.54). Protoconch eroded. Teleoconch of about 5.5 convex whorls. Suture narrowly channeled. Axial sculpture of numerous thin, sharp threads, narrower than interspaces, stronger at sutural area, creating corrugations, diminishing in number, and of uneven strength, anterior to periphery of whorls. Spiral elements stronger than axial elements; three or four thin cords near sutural area; cords becoming stronger and more widely spaced at shoulder area; flat, approximately three times as wide as interspaces, below shoulders, creating small nodes as they cross over the stronger of the axial elements, wrinkled by the weaker axial elements (Fig. 15), becoming smoother and obliquely positioned on dorsal surface of anterior canal. Aperture relatively narrow, approximately one half length of shell; outer lip thin, a wide, relatively shallow turrid notch indicated by contour of axial threads on shoulder; columella strongly recurved; anterior canal wide, short, ventrally twisted to the left. Shell white.

Remarks. The shouldered whorls and weakly reticulated pattern of the new species resemble that of *Gymnobela blakeana* (Dall, 1889), a species that has recently been found near the type locality of the new species (García & Lee, 2004). However, *G. blakeana* has a less rounded shoulder; its axial sculpture is more pronounced, creating strong nodes at shoulder; and the spiral elements are rounded, not flat, and are as wide as the interspaces (Fig. 16). The northern Atlantic *Gymnobela engonia* (Verrill, 1884) is larger, has more conspicuous, nodose shouldered whorls, and a straight anterior canal.

Etymology. Named for Dr. Suzanne Fredericq, a colleague at the University of Louisiana at Lafayette. Dr. Fredericq has made available to me the photographic resources of her laboratory, without which present and past investigations could not have been accomplished.

Gymnobela petiti n. sp.
Figs. 17-19

Type material. Holotype ANSP 412715 length 10.5 mm, width 4.2 mm.

Type locality. West of Dry Tortugas, Florida, 24°35.29'N, 83°41.86'W, in 496-509 m.

Material examined. Known only from the holotype.

Distribution. West of Dry Tortugas, Florida, in 496-509 m (dead).

Description. Holotype 10.5 mm in length, solid, fusiform (width/ length ratio 0.40). Protoconch (Fig. 19) conical, glassy, amber, of about 3.25 whorls; first whorl rounded, spirally threaded, with weaker axial elements that create minute pustules as they cross over spiral threads; subsequent whorls becoming increasingly shouldered, with stronger, arcuate axial elements on shoulders, diagonally cancellate below periphery; protoconch termination indicated by a conspicuous deep, wide sinus, a change in coloration from amber to milky-white, and a change in ornamentation. Teleoconch of 5.5 shouldered whorls. Suture incised. Axial sculpture of 11 or 12 angular costae; costae stronger at periphery, creating elongated nodes, evanescing at shoulder area, where they are substituted by numerous arcuate axial threads. Spiral sculpture of strong, even, rounded cords anterior to periphery, evanescing at shoulder area; cords as wide as inter-spaces,, increasing in number from 2 at beginning of first whorl to 6 on penultimate whorl, covering surface of last whorl from periphery to end of anterior canal. Aperture narrow, elongated, slightly less than 1/2 of shell length; outer lip broken, labial sinus wide and relatively shallow, indicated by the arcuate axial growth lines on shoulder; anterior canal wide, short. Shell chalky-white.

Remarks. The new species is unlike any other *Gymnobela* known to inhabit the Gulf of Mexico. It is similar in general shape and sculpture to three north Atlantic *Gymnobela*: *G. agassizi* (Verrill & Smith, 1880), *G. frielei* (Verrill, 1885), and *G. engonia* Verrill, 1884. *Gymnobela agassizi* may reach a size four times as large as the new species, has a red-spotted columella, and irregular spiral sculpture. *Gymnobela frielei* reaches 30 mm in length, and is proportionately wider . *Gymnobela engonia* may grow to 21.3 mm (Bouchet & Warén, 1980:54, fig. 123), is proportionately wider, and has a more concave shoulder.

Etymology. Named for Mr. Richard E. Petit, of North Myrtle Beach, South Carolina, for his many contributions to malacology, particularly Cancellariidae, and

for his unwavering willingness to help me with my work in every situation.

Genus ***Anticlinura*** Thiele, 1934 (as subgenus of *Pleurotomella*)
(*Clinuropsis* Thiele, 1929 [*non* Vincent, 1913])
Type species: *Clinura monochorda* Dall, 1908 (by original designation).

Anticlinura atlantica n. sp.
Figs. 20-23

Type material. Holotype ANSP 412712 length 7.1 mm, width 3.3 mm.

Type locality. Off Mobile, Alabama, 29°05'N, 88°23' W, in 400- 490 m.

Material examined. Known only from the holotype.

Distribution. Off Mobile, Alabama, in 400- 490 m (dead).

Description. Holotype 7.1 mm in length, rather thin but strong, biconic (width/ length ratio 0.46). Protoconch (Fig. 22) ivory, glassy, of 3 whorls, narrowly conical; first whorl rounded, spirally corded, with weaker, uneven, axial elements; later whorls increasingly shouldered, becoming axially ribbed on shoulder, diagonally cancellate below periphery; third whorl developing two sharp spiral cords nearing termination of whorl Transition from protoconch to teleoconch inconspicuous; last portion of third whorl progressively loosing its glassy appearance and its diagonally cancellate sculpture. Teleoconch of almost 5 whorls, with strong, sloping shoulders; early whorls sharply carinated at about anterior 1/3 of whorls; last whorl carinate at periphery; surface of teleoconch whorls showing granules under SEM (Fig. 23). Suture incised, undulated by axial elements. Axial sculpture of numerous arcuate threads at sutural area; wide, low costae developing soon after; 9 such ribs on first whorl, increasing to 13 on last whorl; costae as wide as inter-spaces, diminishing in strength in later whorls, remaining strong at periphery; surface of shell covered with numerous inconspicuous axial threads, stronger at shoulder, creating wrinkles at suture. Spiral sculpture of two sharp cords at beginning of first teleoconch whorl, an uninterrupted continuation of spiral sculpture of protoconch; posterior spiral cord quickly diminishing in strength; anterior cord increasing in strength, forming a strong carina on later whorls, creating sharp, laterally compressed triangular nodes as it crosses over axial costae; numerous secondary spiral cords, tending to alternate in size, covering surface of shell; anterior sutural cord widest, flat. Aperture elongated, about 1/2 of shell length; outer lip damaged, thin, angled at periphery, earlier shoulder sculpture suggesting lack of a sinus; anterior canal rather long, wide. Shell ivory; anterior sutural cord lighter in color.

Remarks. The genus *Anticlinura* has been represented until now by four Panamic Province species. All of the specimens known lack a protoconch. Dall (1908:292) tentatively placed the species *monochorda* (Fig. 24) in *Clinura*, a genus comprised of fossil species, and later placed in the subfamily Thatcheriinae (Powell, 1966:140). Thiele (1929: 371) considered it generically different, and eventually erected the taxon *Anticlinura*, as a subgenus of *Pleurotomella*, to accommodate Dall's species. Powell (1966:132) followed Thiele.
Keen considered *Anticlinura* (1971: 714) to be in the subfamily Turriculinae, reaching the conclusion that the species belonging to *Anticlinura* had the closests affinity to *Marshallena* Allan, 1926, a genus placed by Powell (1969) in that subfamily. Skoglund, citing Cernohorsky (1972), placed *Anticlinura* in Cochlespirinae (2002:174). Cernohorsky considered the family Turriculinae to be preoccupied.
The diagonally cancellate sinusigerid protoconch, and the biconic shape of the shell place *Anticlinura* close to the raphitomid genus *Pleurotomella,* as Thiele had suggested. Although he and Powell treated *Anticlinura* as a subgenus of *Pleurotomella*, the apparent lack of a sinus of *Anticlinura*, and its sharply carinated whorls, seem to be sufficient justification to treat this taxon as a full genus.
The taxonomic value of the granules on the surface of the teleoconch whorls of *Anticlinura atlantica* is unclear, as this character is shared by other turrids presently assigned to different genera, such as *Taranis borealis* Bouchet & Warén, 1980 and *Oenopta tenuicostata* (G. O. Sars, 1878).
Anticlinura atlantica n. sp. is the first *Anticlinura* species to be found outside the Panamic Province. The single specimen is also the first *Anticlinura* to be found with an intact protoconch. Of the four known *Anticlinura* species, *A. atlantica* can only be confused with the type species, *A. monochorda* (Dall, 1908) (Fig. 24), from which it differs by having a smaller, narrower shell (width/ length ratios 0.46 *vs.* 0.57), and fewer, wider, weaker axial costae.
Recently, two specimens of another *Anticlinura* species were dredged by the R/ V Pelican in the Gulf of Campeche, southern Gulf of Mexico.
Recently, more specimens belonging in *Anticlinura* have come to light. They were dredged by the R/V Pelican in the Gulf of Campeche, southern Gulf of Mexico.

Etymology. Named *atlantica* to emphasize its distinctive geographical uniqueness within the genus *Anticlinura.*

ACKNOWLEDGMENTS

My thanks to Dr. Emily Vokes, Professor Emerita, Tulane University, for reading the manuscript and suggesting changes that have improved its quality. Part of the material is based upon work supported by the National Science Foundation under Grant No. 0315995.

REFERENCES

Bouchet, P. & Warén, A. 1980. Revision of the northeast Atlantic bathyal and abyssal Turridae (Mollusca, Gastropoda). *The Journal of Molluscan Studies*, Supplement 8: 1-119.

Cernohorsky, W. O.1972. Comments on the authorship of some subfamilial names in the Turridae. *The Veliger* 17 (2): 127-128.

Clench, W. J. & Turner, R. D. 1952. The genera *Epitonium* (II), *Depressiscala*, *Cylindriscala*, *Nystiella* and *Solutiscala* in the western Atlantic. *Johnsonia* 2 (31): 289-356.

Dall, W. H. 1890. Scientific results of explorations by the U. S. Fish Commission Steamer Albatross. No. VII.--Preliminary report on the collection of Mollusca and Brachiopoda obtained in 1887-'88. *Proceedings of the United States National Museum* 12 (773): 219-362.

Dall, W. H. 1908. Report on the dredging off the west coast of Central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried by the U. S. Fish Commission steamer "Albatross," during 1891, Liut. Commander Z. L. Tanner U. S. N., commanding. The Mollusca and the Brachiopoda. *Bulletin of the Museum of Comparative Zoology at Harvard College* 43 (6): 285-487.

García, E.F. 1996. Frustrations and extensions: Problematic and ignored species and redefinition of two geographical boundaries- Part II. *American Conchologist* 24 (1): 3-5.

García, E. F. 1999a. New molluscan records for the northwestern Gulf of Mexico. *American Conchologist* 27 (2): 27-28.

García, E. F. 1999b. Three new gastropod species from the New World. *Apex* 14 (3-4): 59-65.

García, E. F. 2000. Surprising new molluscan records for Louisiana and the northwestern Gulf of Mexico. *American Conchologist* 28 (3): 5-6.

García, E. F. 2002a. More discoveries from a collecting expedition off the Louisiana Coast *American Conchologist* 30 (1): 6-7, 10.

García, E. F. 2002b. And yet more discoveries from a collecting expedition off the Louisiana coast. *American Conchologist* 30 (2): 25.

García, E. F. 2002c. Unexpected molluscan finds from the hydrocarbon vents off the Louisiana coast. *American Conchologist* 30 (4): 28.

García, E. F. & Lee, H. G. 2002. Report on Louisiana species found in the offshore Louisiana waters, including many extensions of known range and unnamed species. *American Conchologist* 30 (4): 10-13.

García, E. F. & Lee, H. G. 2003. Report on Louisiana species found in the offshore Louisiana waters, including many extensions of known range and unnamed species II. *American Malacologist* 31 (1): 26-29.

García, E. F. & Lee, H. G. 2004. Report on the malacofauna of offshore Louisiana waters- including many range extensions and unnamed species. III. *American Conchologist* 32 (3): 21-24.

Keen, M. A. 1971. *Sea shells of tropical west America. Marine mollusks from Baja California to Peru,* 2nd ed. Stanford University Press, Stanford, California. i-xiv + 1064 pp.

Locard, A. 1897. *Mollusques Testacés, tome premier. Expéditions Scientifiques du Travailleur et du Talisman.* Masson, Paris. vi + 516.

Odé, H. 1972. A survey of the molluscan fauna of the northwest Gulf of Mexico - Preliminary report. *Texas Conchologist* 9 (2): 46-47.

Powell. A. W. B. 1966. The molluscan families Speoghtidae and Turridae. An evaluation of the valid taxa, both recent and fossil, with lists of characteristic species. *Bulletin of the Auckland Institute and Museum* No. 5. Unity Press Ltd., Auckland, New Zealand, 184 pp.

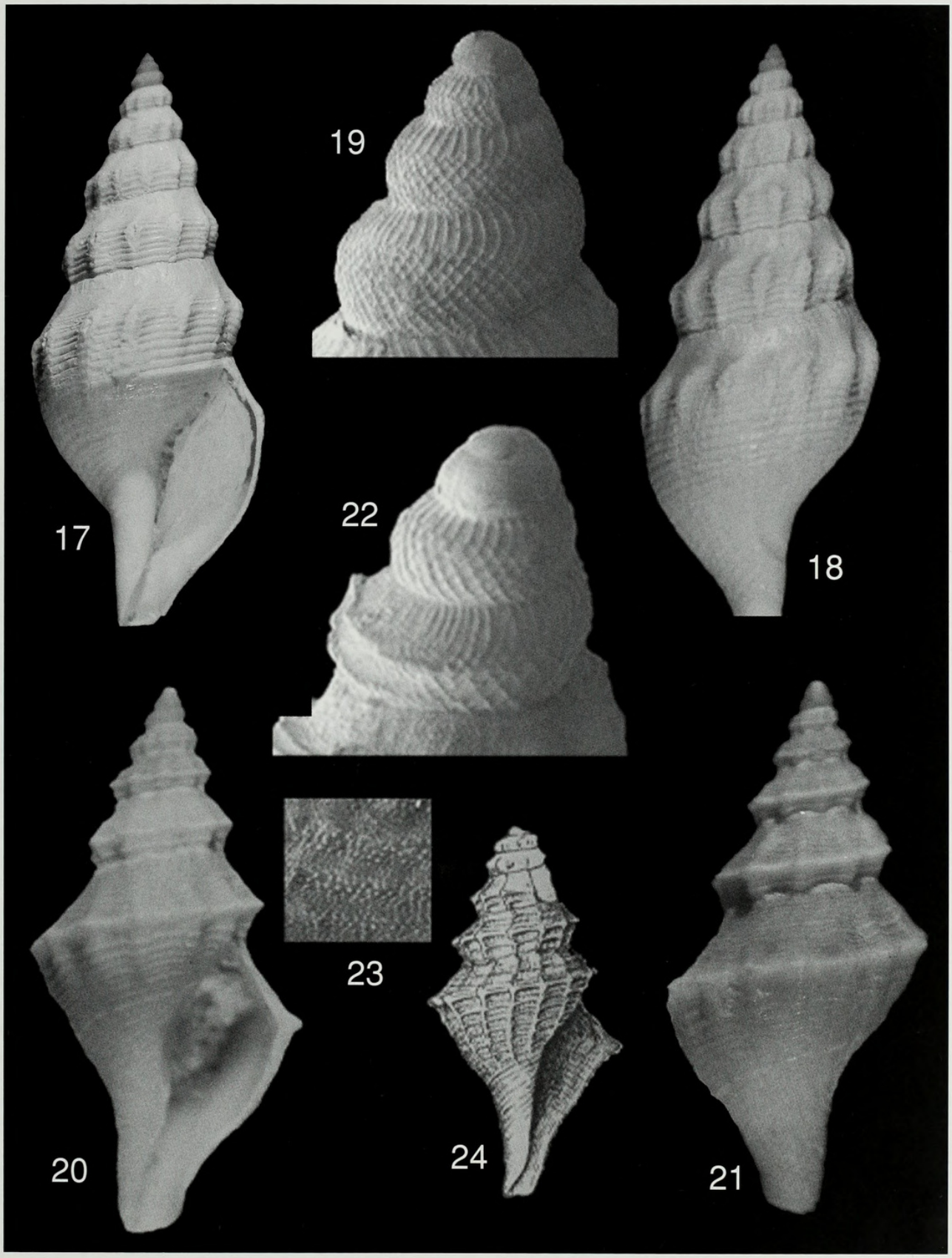
Powell, A. W. B. 1969. The family Turridae in the Indo-Pacific. Pt. 2. The subfamily Turriculinae. *Indo- Pacific Mollusca* 2 (10): 203-416.

Skoglund, C. 2002. Panamic Province molluscan literature. Additions and changes from 1971 through 2001. III Gastropoda. *The Festivus* 33 (Supplement), 286 pp.

Thiele, J. 1934. *Handbuch der Systematischen Weichtierkunde.* Jena: Gustav Fischer; Bd. II, Teil III, pp. 779-1023.

Figures 17-24

17-19. *Gymnobela petiti* n. sp. Off Tampa Bay, Florida, 24°35.29'N, 83°41.86'W- Dredged in 496-509 m. Holotype ANSP length 10.5 mm, width 4.2 mm. **20-23**. *Anticlinura atlantica* n. sp. Off Mobile, Alabama, 29°05'N, 88°23' W, in 400- 490 m. Holotype ANSP length 7.1 mm, width 3.3 mm. **24**. *Anticlinura monochroa* (Dall, 1908). Figure of holotype; length 11.5 mm, width 6.5 mm.


19
17
22
18
23
20
24
21