ISSN 0738-9388

Volume: 56 THE FESTIVUS ISSUE 1

New Gastropods from the Gulf of Mexico (Northwestern Florida, the Yucatan Peninsula, and the Flower Garden Reefs of Texas)

Edward J. Petuch [1] and David P. Berschauer [2]
[1] Department of Geosciences, Florida Atlantic University, Boca Raton, Florida
ecphora3@outlook.com
[2] Collection Associate, Santa Barbara Museum of Natural History
2559 Puesta del Sol, Santa Barbara, California 93105
shellcollection@hotmail.com

ABSTRACT Three new species of gastropods are described from the Gulf of Mexico. These include: *Fasciolaria ixchel* n.sp. (Fasciolariidae) from near Isla Mujeres on the eastern side of the Yucatan Peninsula of Mexico; *Jaspidiconus forticostatus* n.sp. (Conidae) from the Big Bend area of northwestern Florida; and *Jaspidiconus hortusensis* n.sp. (Conidae) from the West Flower Garden Reef southeast of Galveston, Texas. The eastern Yucatan fasciolariid is the newest member of a previously-overlooked complex that contains four closely-related *Fasciolaria s.s.* species that are endemic to the Gulf of Mexico. The two new cones are members of a complex containing ten species of *Jaspidiconus* that are now known to inhabit shallow water areas around the Gulf of Mexico.

KEY WORDS Gastropods, Gulf of Mexico, Big Bend, Florida, West Flower Garden Reef, Flower Garden Reefs, Texas, Isla Mujeres, Yucatan Peninsula, Mexico, Fasciolariidae, Conidae, *Fasciolaria ixchel*, *Jaspidiconus forticostatus*, *Jaspidiconus hortusensis*

INTRODUCTION

While conducting the final research work for our upcoming book on the molluscan faunas of the Gulf of Mexico, we discovered a large number of ecologically-important gastropod taxa had never before been described, leaving a sizeable void in the biodiversity literature. In a recent paper, Petuch & Berschauer (2023) described twelve new species and subspecies, in six different families, from the Gulf of Mexico. Subsequently, we became aware of three more relevant gastropods from other areas within the Gulf, including the deep sand seafloors in the Big Bend area of northwestern Florida (*Jaspidiconus forticostatus* n.sp.), the carbonate environments of the West Flower Garden Reef off Texas (*Jaspidiconus hortusensis* n.sp.), and the deep reef areas off Isla Mujeres, Mexico (*Fasciolaria ixchel* n.sp.). These new taxa are described here and this paper is considered to be supplemental to the previous larger 2023 paper.

SYSTEMATIC SECTION

The holotypes of the three new species described here are deposited in the molluscan collection of the Department of Invertebrate Zoology, Santa Barbara Museum of Natural History, Santa Barbara, California and bear SBMNH catalog numbers.

Class Gastropoda	Cuvier, 1795
Subclass Prosobranchia	Milne-Edwards, 1848
Order Neogastropoda	Wenz, 1938
Superfamily Buccinoidea	Rafinesque, 1815
Family Fasciolariidae	Gray, 1853
Subfamily Fasciolariinae	Gray, 1853
Genus *Fasciolaria*	Lamarck, 1799

ISSN 0738-9388

Fasciolaria ixchel Petuch and Berschauer, new species
(Plate 1, Figures A-D; Plate 2, Figure E)

Description. Shell very large for genus, generally between 175 and 220 mm in length, superficially resembling genotype *Fasciolaria tulipa* in general outline, color pattern, and shell sculpture; fusiform and ovate, with high elevated spire; protoconch large, inflated, smooth, dome-shaped and rounded, consisting of 1½ whorls, gold to light brown in color; shoulders of spire whorls distinctly angled and stepped, subcarinate, especially on first 4 postnuclear whorls; teloconch ornamented with numerous fine vertical cords; subsequent postnuclear whorls ornamented with 10-12 prominent elongated knobs per whorl, producing distinct undulating appearance on shoulder angles crossed by 5 thin spiral cords, producing faint cancellate appearance; sutures of spire whorls strongly indented; body whorl smooth and highly polished, ornamented with 4 to 5 low, prominent rounded cords along subsutural area; suture distinct and sharply incised; siphonal canal proportionally short approximately two-thirds length of spire; body whorl smooth and polished, without raised cords; siphonal canal ornamented with 20-25 large, prominent, rounded cords; shell base color white or cream-white, overlaid with 3 wide bands of amorphous and widely-scattered patches of dark brown, reddish-brown, gold-tan, or grayish-blue; color patches, in turn, overlaid with 25-30 thin, evenly-separated dark chocolate-brown to black spiral bands; smaller, thinner subsidiary bands occasionally present between pair of primary bands; dark brown bands variable in thickness, being thicker in some areas and thinner in other; dark bands terminating in small dark brown denticals at edge of lip forming serrated appearance; aperture narrow and elongated-oval in shape; columella white to pale orange in color, with 2 large, prominent recurved plicae; interior of aperture color varying from white to pale orange; inner edge of lip ornamented with numerous very fine, thread-like ridges.

Type Material. HOLOTYPE - length 185.0 mm, width 85.4 mm, SBMNH 235862. PARATYPES - same locality as the holotype, 2 specimens in the Petuch Research Collection, lengths 188.0 mm and 197.0 mm; 2 specimens in the Berschauer Research Collection, lengths 175.0 mm and 216.0 mm. These specimens were collected by Kevin Haley in 2023.

Type Locality. Trawled by fishermen from 25 m depth off Isla Mujeres, Quintana Roo State, Yucatan Peninsula, Mexico.

Etymology. Named for the Mayan goddess, Ixchel, for whom Isla Mujeres was a sacred island (statues of Ixchel were the women that the Spanish alluded to in the island's name). Ixchel had multiple attributes, including representing the moon and femininity, but also was the patron deity of childbirth, fertility, and medicine.

Discussion. *Fasciolaria ixchel* n.sp. is the newest member of a previously-overlooked complex that contains three closely-related *Fasciolaria s.s.* species that are endemic to the Gulf of Mexico; a fourth endemic species, *F. bullisi* Lyons, 1972, is substantially different. While superficially similar in appearance, these taxa are readily distinguished by the shape, ornamentation and sculpture of their post-nuclear whorls. The well known *Fasciolaria tulipa* has smooth and gently sloping post-nuclear whorls with a corded postnuclear area, and *F. ixchel* by comparison is strongly ornamented with 10-12 prominent elongated knobs per whorl, crossed by 5 thin spiral cords. The shape, sculpture and ornamentation of *F. ixchel* is closest to *F. bittneri*, which has sharply-angled and shouldered early whorls that are ornamented with distinct rounded knobs, producing coronated postnuclear whorls. These two species (*F. ixchel* and *F. bittneri*) share this

ISSN 0738-9388

characteristic strong early whorl ornamentation with the Calabrian Pleistocene fossil *F. okeechobeensis* Tucker and Wilson, 1932. *Fasciolaria ixchel* differs from *F. bittneri* in that it has more strongly ornamented postnuclear whorls which bear 10-12 prominent elongated knobs per whorl, crossed by 5 thin spiral cords, which produces a faint cancellate appearance, strongly indented spire whorl sutures, and distinctly angled and stepped spire whorls. Additionally, *F. bittneri* has a red protoconch and early whorls, and adult specimens of *F. bittneri* rarely exceed 120 mm in length, whereas *F. ixchel* has a brown protoconch and early whorls and is substantially larger measuring between 175 to 220 mm in length. Close up photographs of the protoconchs and early whorls of the five *Fasciolaria* species in the Gulf of Mexico are shown in Plate 2. These Gulf endemic sibling species all have very different protoconch structures and early whorl sculpture patterns and form a remarkable evolutionary radiation that has only recently been recognized.

Superfamily Conoidea	Fleming, 1822
Family Conidae	Fleming, 1822
Subfamily Conilithinae	Tucker and Tenorio, 2009
Genus *Jaspidiconus*	Petuch, 2004

Jaspidiconus forticostatus Petuch and Berschauer, new species
(Plate 3, Figures A-F)

Description. Shell large for genus, with adult individuals regularly exceeding 25 mm, fusiform, biconic, with elevated, stepped spire; shoulder sharply-angled, bordered by large, prominent carina that slightly overhangs edge of shell; body whorl heavily ornamented with 19-20 very strong, prominent, proportionally-large spiral cords; cords along anterior tip of shell proportionally smaller, becoming larger and better-developed toward posterior; base shell color cream-white overlaid with dense interconnected network of pale reddish-tan elongated flammules and small rectangular patches; edge of shoulder carina marked with row of prominent, evenly-spaced dark reddish-tan spots; spire whorls marked with numerous prominent dark reddish-tan, widely-separated amorphous flammules; aperture proportionally wide, pale yellow within; protoconch proportionally large, bulbous, dark tan in color, composed of 2 whorls.

Type Material. HOLOTYPE - length 25.8 mm, width 13.5 mm, west of Cedar Key, Florida, SBMNH 235863; PARATYPES - 1 specimen, length 26.7 mm, same locality as the holotype, in the Petuch Research Collection; 2 specimens, lengths 22.7 mm and 20.7 mm, same locality as the holotype, in the Berschauer Research Collection. These specimens were collected by Dr. Marvin and Patricia Glickstein in the 1980s.

Type Locality. Dredged from 50 m depth due west of Cedar Key, Levy County, Florida, in the Florida Big Bend embayment.

Etymology. The taxon is formed as a combination of the Latin “fortus” (“strong”) and “costatus”, meaning “ribbed”. The Strongly-Ribbed Cone.

Discussion. Of the known Gulf of Mexico *Jaspidiconus* species, the new Big Bend cone is similar only to *J. acutimarginatus* (Sowerby II, 1866) from shallow carbonate sand environments in the Lower Florida Keys (Moser Channel to Key West). Although both species are heavily sculptured with strong, prominent spiral cords, those on *J. forticostatus* are finer, thinner, and more numerous (19-20 on *forticostatus* and 14-15 on *acutimarginatus*), while those of *J. acutimarginatus* are proportionally-wider and more flattened. The spire of the new Big Bend cone is also higher, narrower in profile, and distinctly more scalariform. In general, the Florida Keys *J. acutimarginatus* is a smaller, stockier, and

ISSN 0738-9388

heavier shell while its northwestern Florida relative *J. forticostatus* is a larger, more elongated, and delicate shell. *J. forticostatus* was first illustrated as "*Conus jaspideus"* by Louise M. Perry and Jeanne S. Schwengel in their classic 1955 work, *Marine Shells of the Western Coast of Florida*. (Perry & Schwengel, 1955, Plate 54, Figure 257.)

Jaspidiconus hortusensis Petuch and Berschauer, new species
(Plate 4, Figures A-C)

Description. Shell small for genus, measuring between 17 and 22 mm in length, inflated, barrel-shaped, with rounded sides and broadly-pyramidal spire whorls; spire whorls slightly depressed and canaliculate; shoulder sharply-angled, edged with small rounded carina; body whorl shiny and highly polished, ornamented with 18-19 thin, widely-spaced spiral cords; spiral cords of body whorl poorly-developed in posterior half of body whorl, becoming stronger and more prominent on anterior half; base shell color pale salmon-pink, overlaid with 2 wide bands of large, amorphous orange patches, one around shell midbody and other around anterior end of body whorl; spire whorls pale salmon-pink, with widely-scattered large orange flammules; small, pale orange-tan elongated spots present on some spiral cords of body whorl, particularly on anterior half of shell; shoulder carina of body whorl and spire whorls marked with large, prominent evenly-spaced brown dots; protoconch proportionally-large, distinctly mammillate, composed of 2 whorls, bright red-pink in color; aperture proportionally wide, becoming wider toward anterior end, white and pale orange within.

Type Material. HOLOTYPE - length 17.1 mm, width 8.8 mm, West Flower Garden Reef, SBMNH 235864; PARATYPE - length 22.5 mm, in the Biodiversity Research and Teaching Collection (BRTC) of Texas A and M University, College Station, Texas (Plate 4 Figure C). These two dead collected specimens were collected by Dr. Thomas J. Bright by scuba diving on May 24, 1972.

Type Locality. Collected in 25-27 m depth, on carbonate sand, West Flower Garden Reef, 160 km SE of Galveston, Texas (Dr. Thomas J. Bright, collector).

Etymology. Derived from the Latin "hortus" ("garden"), alluding to the new species being found on the Flower Garden Reefs off Texas.

Discussion. This small cone is the only endemic mollusk known from West Flower Garden Reef at this time. In all of the biological surveys undertaken on the Flower Garden Reefs, from the first intensive studies in the 1970s until the current NOAA surveys, this conspicuous bright salmon-pink cone has been incorrectly referred to the taxon *"Conus mindanus* Hwass, 1792". That widespread western Atlantic species (shown here on Plate 4 Figure D) is found throughout the Gulf of Mexico, but differs from the endemic Flower Garden *J. hortusensis* in being a much larger shell with a distinctly more elongated and cylindrical body whorl, in having sharply-edged scalariform spire whorls, and in having straight sides to the body whorl. The new Flower Garden cone, although sharing the pink shell color of *J. mindanus*, has a much more inflated and barrel-shaped shell with distinctly rounded, convex sides, and has a dome-shaped spire profile. The protoconch of *J. hortusensis* is proportionally larger than that of *J. mindanus*, demonstrating that it has direct development and cannot disperse beyond its home reefs. Of the known endemic Gulf of Mexico *Jaspidiconus* species, only *J. fluviamaris* Petuch & Sargent, 2011 from the Floridian Subprovince (Plate 4 Figure E) is similar in size and color. This reef-dwelling species from the Florida Coral Reef Tract differs from its Texan congener in being a more obviously-cylindrical and elongated shell with straight sides and a distinctly stepped spire.

ISSN 0738-9388

ACKNOWLEDGMENTS

We thank the following individuals for their invaluable assistance and support in gathering up specimens for our research: Dr. Mary Wicksten and Heather Prestige, Texas A. and M. University Biodiversity Research and Teaching Collections (BRTC), College Station, Texas, for the loan of the new cone shell from the Flower Garden Reefs; Dr. Douglas Biggs, Texas A. and M. University, College Station, Texas for helping to locate the type lot of *Jaspidiconus hortusensis*; Dr. Marvin and Patricia Glickstein, North Palm Beach, Florida and Linda Glickstein, for the donation of the type lot of *Jaspidiconus forticostatus*; Kevin Haley, Playa del Carmen, Mexico, for the donation of the type lot of *Fasciolaria ixchel*.

LITERATURE CITED

Berschauer, D.P. & E.J. Petuch, 2023. A New *Fasciolaria* (Fasciolariidae: Fasciolariinae) from the Yucatan Peninsula of Mexico. The Festivus 55(3):165-169. http://doi:10.54173/F553165

Perry, L.M., & J.S. Schwengel. 1955. Marine Shells of the Western Coast of Florida. Paleontological Research Institution, Ithica, New York. 318 pp.

Petuch, E.J., & D.P. Berschauer. 2023. A New Deep Water *Fasciolaria* (Fasciolariidae: Fasciolariinae) Tulip Shell from off the Dry Tortugas, Western Florida Keys, Florida. The Festivus 55(2):92-99. http://doi:10.54173/F55292

Petuch, E.J, & D.P. Berschauer. 2023. New Gastropods for the Gulf of Mexico. The Festivus 55(4):249-270. http://doi:10.54173/F554249

Cite as:
Petuch, E.J. & D.P. Berschauer, 2024. New Gastropods from the Gulf of Mexico (Northwestern Florida, the Yucatan Peninsula, and the Flower Garden Reefs of Texas). Festivus 56(1):18-26. http://doi:10.54173/F56118

ISSN 0738-9388

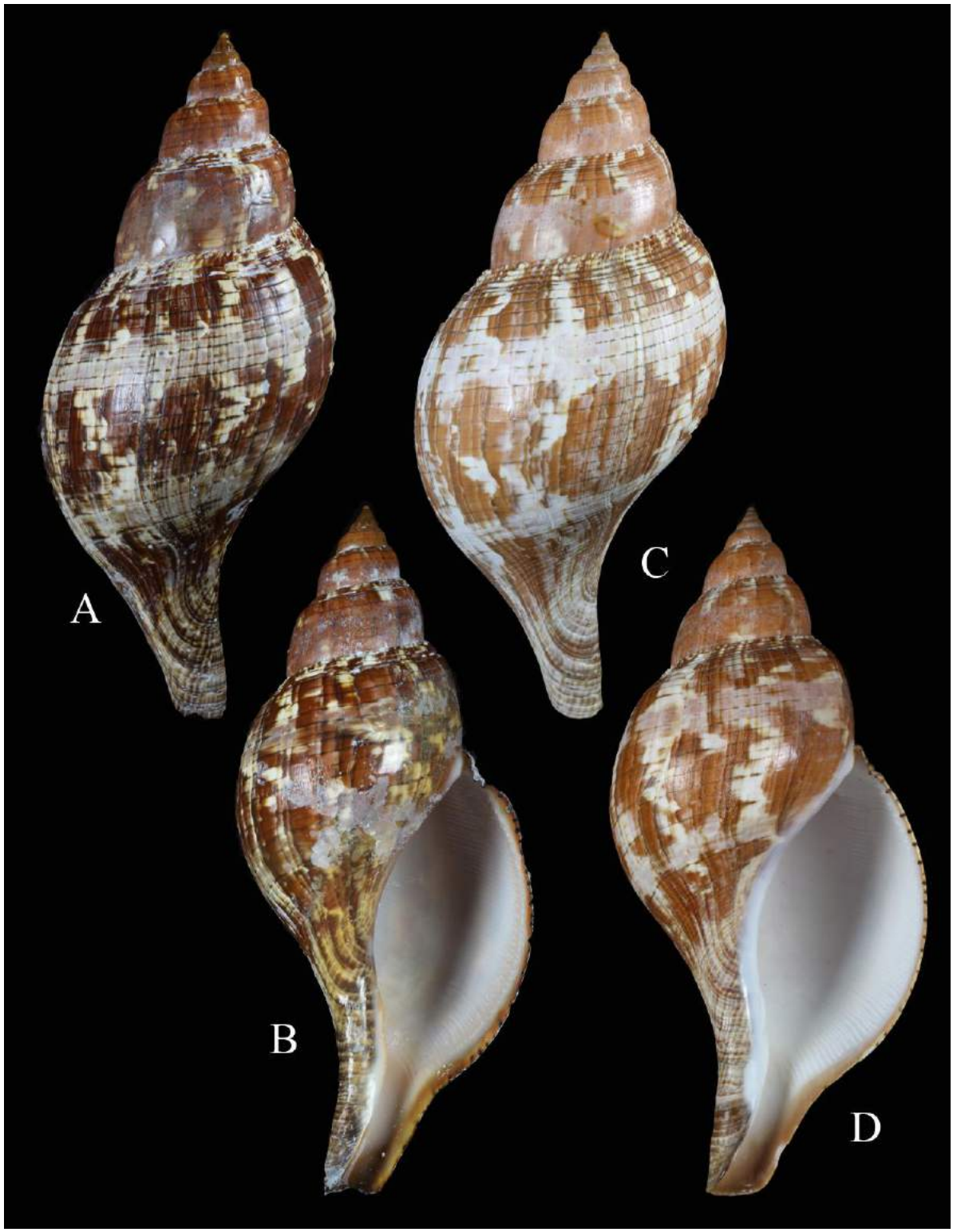

Plate 1. *Fasciolaria ixchel* new species from Isla Mujeres, Yucatan Peninsula, Mexico.
A, B= *Fasciolaria ixchel* Petuch & Berschauer, 2024, holotype, length 185.0 mm; **C, D=** *Fasciolaria ixchel* length 175.0 mm. Both specimens were trawled by fishermen from 25 m depth off Isla Mujeres, Quintana Roo State, Yucatan Peninsula, Mexico.

ISSN 0738-9388

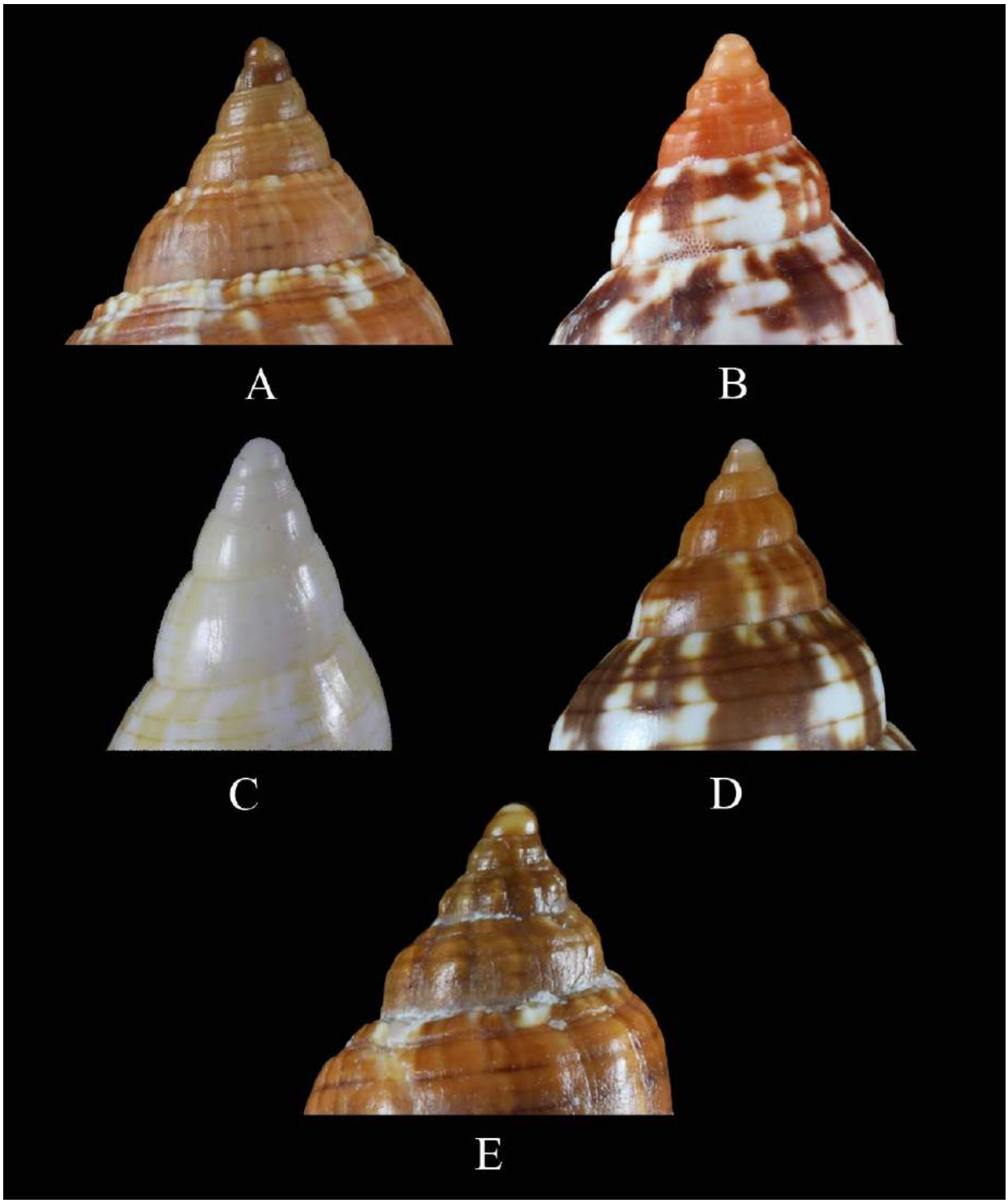

Plate 2. Comparison of the Spires of the Gulf of Mexico *Fasciolaria* species.
A= *Fasciolaria tulipa*, from Turtle Key, Ten Thousand Islands; **B=** *Fasciolaria bittneri*, from the Dry Tortugas; **C=** *Fasciolaria bullisi*, from eastern Yucatan; **D=** *Fasciolaria haleyi*, from off Contoy Light, Yucatan; **E=** *Fasciolaria ixchel*, from Isla Mujeres, Yucatan. These Gulf endemic sibling species all have very different protoconch structures and early whorl sculpture patterns and form a remarkable evolutionary radiation that has only recently been recognized.

ISSN 0738-9388

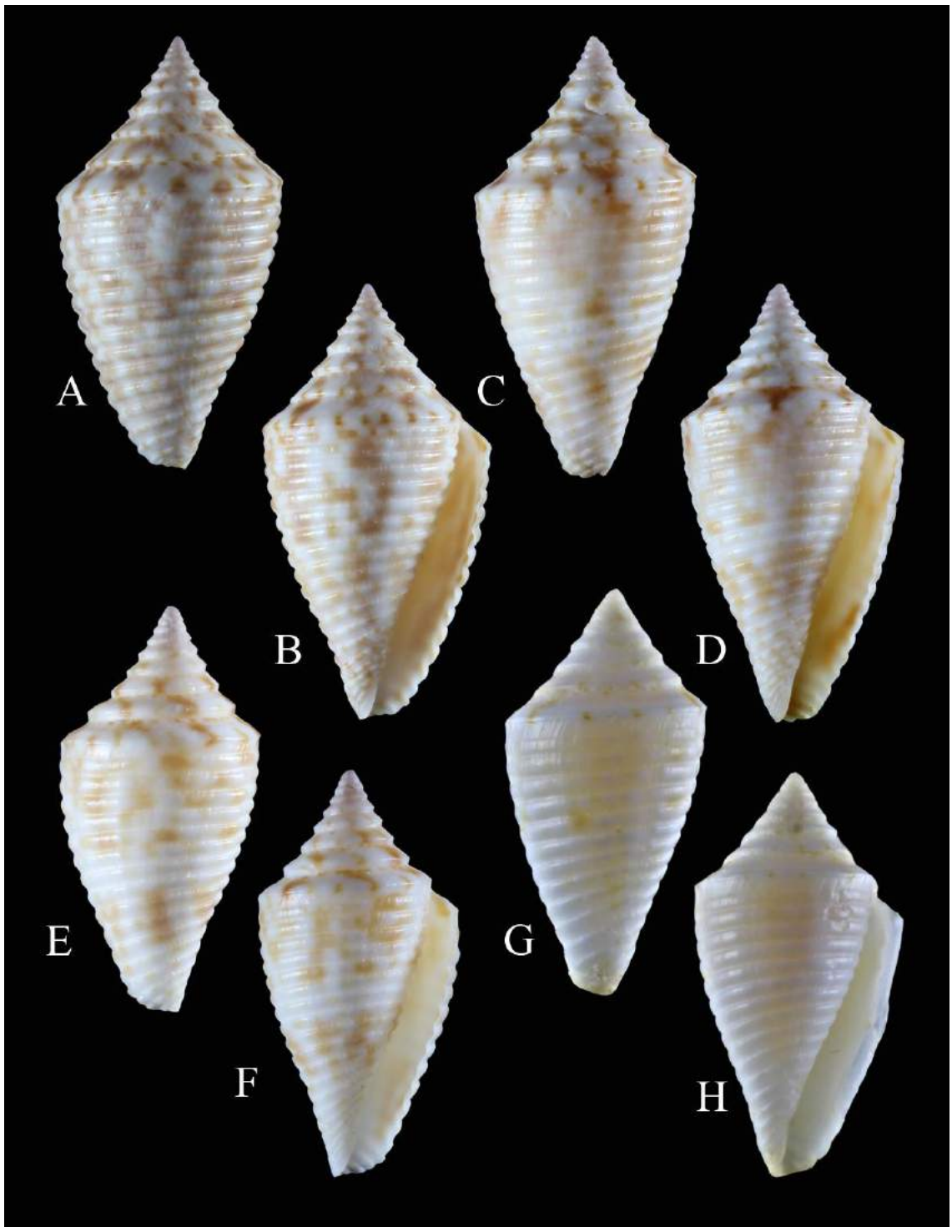

Plate 3. *Jaspidiconus forticostatus* new species from the Big Bend of northwestern Florida.
A, B= *Jaspidiconus forticostatus* Petuch & Berschauer, 2024, holotype, length 25.8 mm; **C, D=** *Jaspidiconus forticostatus* length 26.7 mm; **E, F=** *Jaspidiconus forticostatus* length 22.7 mm (all three specimens were dredged from 50 m depth due west of Cedar Key, Levy County, Florida, in the Florida Big Bend embayment); **G, H=** *Jaspidiconus acutimarginatus* (Sowerby II, 1866), length 19.0 mm, Stock Island, Florida Keys, for comparison with *J. forticostatus.*

ISSN 0738-9388

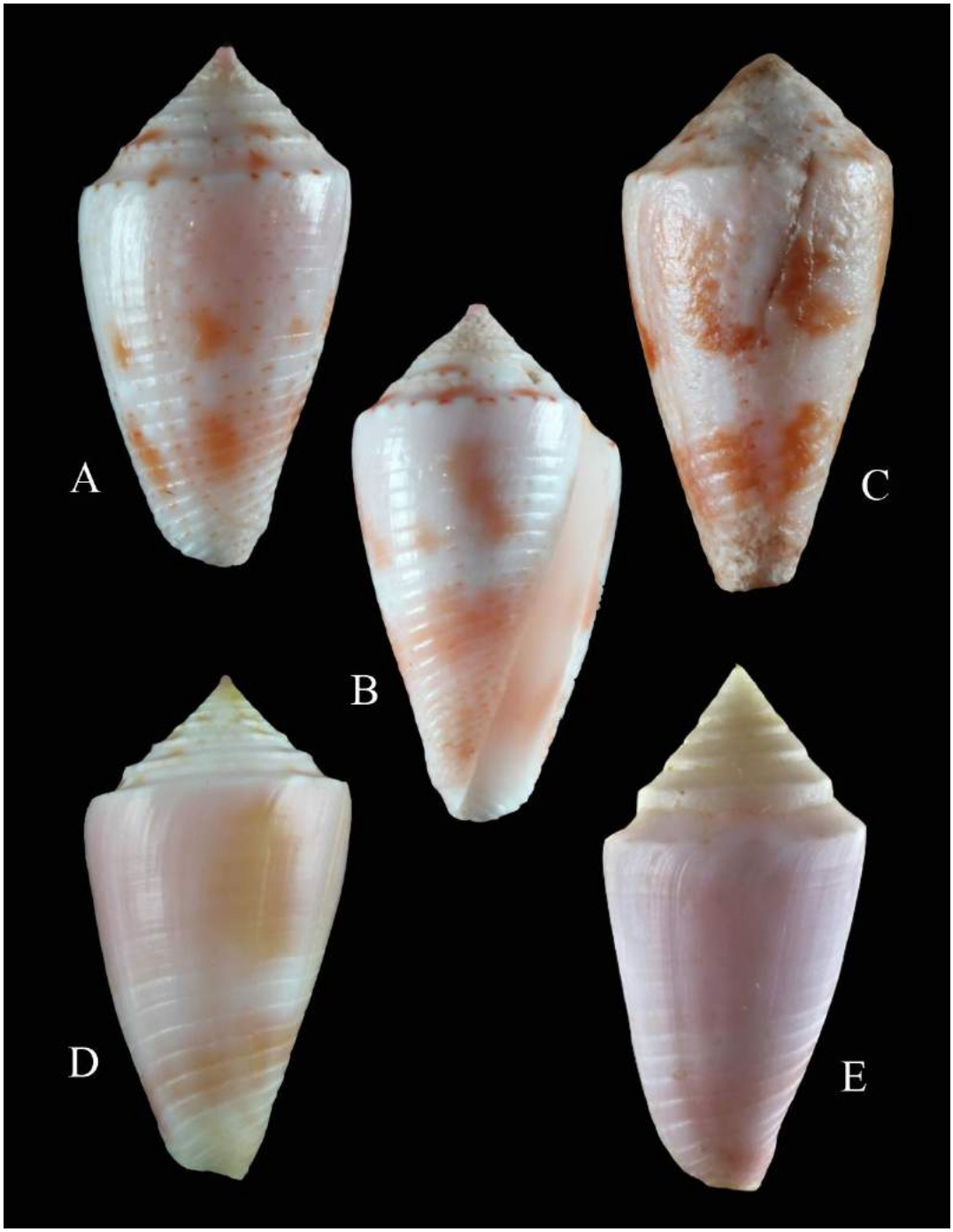

Plate 4. *Jaspidiconus hortusensis* new species from the West Flower Garden Reef off Texas.
A, B= *Jaspidiconus hortusensis* Petuch & Berschauer, 2024, holotype length 17.1 mm; **C=** *Jaspidiconus hortusensis* paratype, length 22.5 mm (in the Biodiversity Research and Teaching Collection (BRTC), Texas A and M University). Both specimens were collected in 25-27 m depth, on carbonate sand, West Flower Garden Reef, 160 km SE of Galveston, Texas (Dr. Thomas J. Bright, collector). This small cone is the only endemic mollusk known from West Flower Garden Reef and is the only *Jaspidiconus* species known from the Texan Subprovince; **D=** *Jaspidiconus mindanus* (Hwass, 1792), length 35.0 mm, Martinique, French West Indies, for comparison with *J. hortusensis*; **E=** *Jaspidiconus fluviamaris* Petuch and Sargent, 2011, length 16.0 mm, off Garden Island, Dry Tortugas, Florida Keys, for comparison with *J. hortusensis*.