

Six New Species of Gastropods (Fascioliariidae, Conidae, and Conilithidae) from Brazil

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ABSTRACT Six new gastropods, belonging to the families Fascioliariidae, Conidae, and Conilithidae, recently have been discovered within the biogeographical boundaries of the Brazilian Molluscan Province. These include: *Poremskiconus fonsecai* n. sp. and *Poremskiconus smoesi* n. sp. (both Conidae) from the Cearaian Subprovince of northern Brazil; *Jaspidiconus josei* n. sp. (Conilithidae) from the Bahian Subprovince of central Brazil; and *Fusinus damaso* n. sp., *Fusinus mariaodeteae* n. sp. (both Fascioliariidae), and *Lamniconus petestimpsoni* n. sp. (Conidae) from the Paulinian Subprovince of southern Brazil.

KEY WORDS Fascioliariidae, Conidae, Conilithidae, Brazil, *Fusinus*, *Poremskiconus*, *Lamniconus*, *Jaspidiconus*, Brazilian Molluscan Province, Cearaian Subprovince, Bahian Subprovince, Paulinian Subprovince.

INTRODUCTION

Over the past ten years, extensive exploration and collecting along the coasts of Brazil have yielded many new and interesting malacological discoveries (some outlined in Petuch, 2013; Petuch and Myers, 2014; and Petuch and Sargent, 2011). Of the Brazilian coastal regions, three areas and ecosystems remain the least-studied: the coralline algal rhodolith bioherms systems off Maranhao, Piaui, and Ceara States (within the Cearaian Subprovince of northern Brazil); the coral reef systems on the Abrolhos Platform off southern Bahia State (within the Bahian Subprovince of central Brazil); and the wide continental shelf off Sao Paulo, Parana, Santa Catarina, and Rio Grande do Sul States (within the Paulinian Subprovince of southern Brazil). Preliminary ecological research conducted in these three areas has revealed that the biodiversity was much higher than previously thought (Petuch, 2013) and that high

levels of endemism, particularly in the gastropod mollusks, occurred on several of the dominant biotopes.

Working with the local fishermen, the intrepid Brazilian/Portuguese collector, Damaso Monteiro, and the Brazilian collectors and well known shell dealers, Marcus and Jose Coltro, have been able to accumulate a large number of new gastropod taxa from these previously-unexplored areas. All of these new species live in deeper water areas offshore and can only be collected by dredging and trawling or by examining the contents of deep water crab and lobster traps. Through the generous donation of suites of new species by Sr. Monteiro and the Coltro brothers, we have been able to describe six of these new Brazilian taxa, including three new species of Conidae, one new species of Conilithidae, and two new species of Fascioliariidae. These additions to the biodiversity of the marine faunas of Brazil are

described in the following sections. The holotypes of the new species are deposited in the molluscan collections of the Zoological Museum of the University of Sao Paulo, Sao Paulo, Brazil and bear MZSP numbers.

SYSTEMATICS

Class Gastropoda
 Subclass Sorbeoconcha
 Order Prosobranchia
 Infraorder Neogastropoda
 Superfamily Conoidea
 Family Conidae
 Subfamily Puncticulinae
 Genus *Lamniconus* da Motta, 1991

Lamniconus petestimpsoni Petuch and
 Berschauer, new species
 (Figures 1E, F, G & H)

Description: Shell of average size for genus, narrow, elongated, with straight or slightly concave sides; spire proportionally low, with early whorls subpyramidal; juvenile specimens (like individual shown on Figure 1G and 1H) have higher, more elevated spires than do adult specimens, and spire gradually flattens out as individual matures; shoulder sharply-angled, edged with low, broad, rounded carina, producing slightly concave spire whorls; body whorl smooth and glossy, with matte finish and silky texture; anterior end encircled with 12-14 evenly-spaced, low, rounded spiral cords; shell color typically bright reddish-orange, overlaid with one or two wide white or pinkish-white bands, one around mid-body and one anterior of shoulder area; red and white bands overlaid with 18-20 narrow rows of evenly-spaced alternating dark brown and white rectangular spots; spire whorls white or pale orange-white, overlaid with large, evenly-spaced orange-brown crescent-shaped flammules that connect to large dark brown spots and patches along

shoulder carina; some specimens (rarely seen) have the same general color pattern as holotype, but have deep yellow bands instead of typical bright red-orange bands; aperture white or pale violet-white, proportionally narrow, widening toward anterior end; protoconch proportionally large, orange in color, rounded, domelike, composed of 2 whorls.

Type Material: HOLOTYPE- length 46.5 mm, width 23.5 mm, from off Cabo Frio, Rio de Janeiro State, MZSP 131405 (Figure 1E, F); **PARATYPE-** length 25.1 mm, width 11.0 mm, from same locality as the holotype, LACM 3377 (Department of Malacology, Los Angeles County Museum of Natural History, Los Angeles, California; Figure 1G, H); **Other Study Material-** length 51.0 mm, same locality as the holotype, in the research collection of the senior author; length 49.9 mm (yellow color form), same locality as the holotype, in the research collection of the junior author.

Type Locality: Trawled by commercial shrimp boats from 100 m depth, east of Santana Island, Rio de Janeiro State, Brazil.

Distribution: At present, known only from the area extending from Cabo Frio to Rio de Janeiro and the offshore islands of Rio de Janeiro State, Brazil.

Ecology: The new species lives on an organic-rich muddy sand substrate in depths of 80-120 m. Here it lives in association with extensive scallop beds of *Lindapecten tehuelchus* and abundant peneid shrimp.

Etymology: The new Brazilian species is named for Peter G. Stimpson, M.D., of Tennessee; an avid amateur naturalist and malacologist. His friend, Marcus Coltro, kindly donated the type lot so that the new taxon could be named in his honor.

Discussion: Of the eight known species of the southern Brazilian endemic genus *Lamniconus*, *L. petestimpsoni* is most similar to *L. lemniscatus* (Reeve, 1849) (Figure 1A, B). The new species differs from *L. lemniscatus* in being a more cylindrically-shaped shell with a less tapering outline, in consistently having a proportionally higher spire, and in being a much more colorful shell, with a much brighter color pattern composed of intense red-orange bands and very numerous rows of dark brown rectangular spots. The rows of dots on the drabber brown and white *L. lemniscatus* are fewer in number and more widely separated and are proportionally smaller. *Lamniconus petestimpsoni* is also similar to *L. xanthocinctus* (Petuch, 1980) (Figure 1C, D), also from the Cabo Frio region, but differs in being a more cylindrical shell, in having a proportionally lower spire, and in having a different color pattern, composed of wide red bands and numerous dark brown dots and lacking the deep yellow-orange or golden yellow color and poorly-developed spots of its congener (*see* Petuch and Myers, 2014 for an overview of the genus *Lamniconus*).

Genus *Poremskiconus* Petuch, 2013

Poremskiconus fonsecai Petuch and Berschauer,
new species
(Figures 2E, F, G & H)

Description: Shell small for genus, turbinate, wide across shoulder, tapering abruptly to anterior end; shoulder sharply angled, edged with blade-like carina; edge of carina slightly overhangs body whorl; spire elevated, broadly pyramidal, with slightly stepped whorls; body whorl smooth and shiny, sculptured with 10-12 large rounded cords that encircle anterior one-half; body whorl colored solid pale orange (as in holotype), pink, or greenish-yellow, marked with wide band of amorphous white flammules

around mid-body; spire white, marked with widely-scattered radiating flammules, varying in color from pale orange (as in holotype), pinkish-tan, or olive green; protoconch pinkish-orange, proportionally small and acuminate, composed of 2 whorls; aperture narrow, straight, white within interior.

Type Material: **HOLOTYPE**- length 16.6 mm, width 8.6 mm, from off Rio do Fogo, Rio Grande do Norte State, Brazil, MZSP 131313 (Figure 2E & F); **Other Study Material**- length 14 mm, width 7 mm, same locality as the holotype, in the research collection of the senior author; length 12.8 mm, width 6.6 mm, same locality as the holotype, in the research collection of the junior author (Figure 2G & H); length 15.0 mm, width 8.0 mm, same locality as the holotype, in the Thierry Vulliet Collection, Arundel, Queensland, Australia.

Type Locality: Collected under slabs of coralline algae, in 10 m depth off Rio do Fogo, Rio Grande do Norte State, Brazil.

Distribution: *Poremskiconus fonsecai* ranges from Camocim, Ceara State to Rio do Fogo, Rio Grande do Norte State, but may extend westward to Maranhao State.

Ecology: The new species prefers shallow water carbonate sediment environments, preferably 10-20 m depths, where it lives in association with coralline algal rhodolith concretions.

Etymology: Named for Dr. Francisco Fonseca da Silva, of Lisbon, Portugal, a specialist in the Conidae, who, together with Damaso Monteiro, has conducted extensive research along northeastern Brazil.

Discussion: Of the three known *Poremskiconus* species from northern Brazil, *P. fonsecai* most closely resembles *P. mauricioi* (J. Coltro, 2004),

but differs in being a much smaller and less inflated shell, in having a simple color pattern that lacks any brown flammules or patches, and in having a much more sculptured shell, being encircled with large, prominent spiral cords. This sculptural pattern of strong spiral cords on the anterior one-half of the body whorl is seen only on the new species and on its southern congener, *P. abrolhosensis* (Petuch, 1987) from the Abrolhos Archipelago of Bahia State, Brazil.

Poremskiconus smoesi Petuch and Berschauer,
new species
(Figures 2I, J, K & L)

Description: Shell of average size for genus, stocky, truncated, with inflated body whorl; shoulder sharply angled, subcarinate; spire elevated, subpyramidal, with scalariform stepped whorls; body whorl smooth and shiny, sculptured with 8-10 thin, low spiral threads around anterior end; body whorl color white or pale pinkish-white, overlaid with numerous large, amorphous angular brown or reddish-brown flammules, arranged in zebra or zig-zag pattern; zebra flammules interrupted by white mid-body band, which bisects them into two sections; zebra flammules are not solidly-colored, but are composed of darker tan or orange-colored, extremely fine, closely-packed longitudinal lines superimposed upon paler tan or orange base color; spire whorls white, marked with widely-spaced dark orange-brown crescent-shaped flammules; edge of spire flammules intersect with zig-zag flammules of body whorl; early whorls orange; protoconch proportionally large, domed, orange in color, composed of 2 whorls; aperture narrow, white within interior.

Type Material: HOLOTYPE- length 19.9 mm, width 11.1 mm, from off Camocim, Ceara State, Brazil, MZSP 131314 (Figure 2I & J); **Other Study Material-** length 20.0 mm, width 6.0 mm,

same locality as the holotype, in the research collection of the senior author; length 19.1 mm, width 10.7 mm, same locality as the holotype, in the research collection of the junior author (Figure 2K & L).

Type Locality: Taken in crab traps, from 20 m depth on coralline algal nodule (rhodolith) sea floor, off Camocim, Ceara State, Brazil.

Distribution: The new species is known only from the areas offshore of Camocim, Ceara State, Brazil, but may also occur on the offshore Canopus Banks.

Ecology: The new species prefers coralline algal nodule substrates in 20-30 m depths.

Etymology: Named for Dr. Frederic Smoes of Brussels, Belgium, a great admirer of the Conidae and a specialist in conid biodiversity.

Discussion: In size and general shape, *Poremskiconus smoesi* most closely resembles the northern Brazilian *P. mauricioi*, but differs in having straighter, less convex sides, in having a proportionally higher spire with distinctly stepped whorls, and in having a completely different type of color pattern. In *P. mauricioi*, the body whorl is a solid red, orange, yellow, tan, or khaki green color, overlaid with scattered amorphous patches of white and rows of pale brown dashes and dots. In *P. smoesi*, the body whorl is white or pink, overlaid with large tan or orange zig-zag flammules and completely lacks the spiral rows of dashes and dots. Instead, the interiors of the flammules on the new species are composed of closely-packed brown hairlines arranged in a zebra-like pattern. No other species of *Poremskiconus* is known to have this type of longitudinal striping within individual flammules.

Family Conilithidae
 Subfamily Conilithinae
 Genus *Jaspidiconus* Petuch, 2003

Jaspidiconus josei Petuch and Berschauer, new
 species
 (Figures 2A, B, C & D)

Description: Shell of average size for genus, stocky, barrel-shaped, inflated, with slightly convex sides; shoulder sharply-angled, bordered by low, rounded carina; spire elevated, broad and subpyramidal, with slightly stepped whorls; body whorl shiny and polished, encircled with 12-15 deeply-incised spiral sulci around anterior one-half to two-thirds; base body whorl color variable, ranging from pale lavender (most common color), pale blue, pink, or pale tan; base color overlaid with widely-separated pale brown longitudinal flammules and 20-25 spiral rows of closely-packed tiny white dots; spire white with widely scattered radiating brown flammules, which often connect with large brown longitudinal flammules on body whorl; both suture and edge of carina marked with prominent small dark brown spots; aperture proportionally wide and flaring, becoming wider toward anterior end; interior of aperture purple-brown; protoconch pale brown, proportionally large and mammilate, composed of 2 whorls.

Type Material: HOLOTYPE- length 20.1 mm, width 10.7 mm, from off Itapoan, Bahia State, Brazil, MZSP 131315 (Figure 2A & B); **Other Study Material-** length 22.0 mm, width 11.0 mm, from same locality as the holotype, in the research collection of the senior author; length 20.7 mm, width 11.0 mm, same locality as the holotype, in the research collection of the junior author (Figure 2C & D).

Type Locality: In carbonate sand and brown algae, 3 m depth off Itapoan, Bahia State, Brazil.

Distribution: The new species is confined to central Bahia State, Brazil, primarily from the shallow beach areas near Itapoan and north of Salvador.

Ecology: *Jaspidiconus josei* prefers open carbonate sand areas, often with abundant *Dictyota* brown algae, in depths of 2-5m.

Etymology: Named for Jose Coltro, of Sao Paulo, Brazil and Miami, Florida, noted authority on the Conidae and Conilithidae of Brazil.

Discussion: Of the known Bahian *Jaspidiconus* species, *J. josei* is most similar to *J. marinae* Petuch and Myers, 2014 in general shell color and color pattern and in having an elevated spire. The new species differs from the Itaparica Island endemic *J. marinae* in being a larger and much more inflated shell with distinctly rounded sides, in having a row of tiny dots around the spire suture, and in having smaller and more numerous dots along the edge of the shoulder carina. *Jaspidiconus josei* is also similar, in both shell color and size, to *J. simonei* Petuch and Myers, 2014 from farther south, in Espirito Santo and Rio de Janeiro States, but differs in being a much more inflated and barrel-shaped shell with rounded sides and in having a row of tiny brown dots around the suture. The new species has often been misidentified as, or confused with, “*Conus mindanus* Hwass, 1792)” by several workers and shell dealers, but that species is a much larger and more brightly-colored shell that is confined to the Carolinian and Caribbean Molluscan Provinces and does not occur in the Brazilian Molluscan Province (see Berschauer, 2015; Petuch, 2013; Petuch and Myers, 2014; and Poremski, 2014 for details on the *Jaspidiconus mindanus* species complex).

Superfamily Buccinoidea
 Family Fascioliariidae
 Subfamily Fusininae
 Genus *Fusinus* Rafinesque, 1815

Fusinus damasoi Petuch and Berschauer, new
 species
 (Figures 3A, B, C & D)

Description: Shell of average size for genus, heavy and thickened, fusiform, with elevated, scalariform spire; body whorl inflated, with sharply-angled shoulder; subsutural areas sloping; shoulder ornamented with 10-12 large, prominent, rounded knobs; shoulder knobs sometimes well-developed and sharply-pointed; body whorl coarsely-sculptured with 18-20 large raised spiral cords; siphonal canal proportionally short, truncated, broad, ornamented with 12-14 large, coarse spiral cords; body whorl-siphonal canal juncture indented, abrupt; shell color cream white or pale whitish-tan, overlaid with extremely numerous, closely-packed, amorphous dark brown longitudinal flammules, arranged in zebra pattern; some shoulder knobs colored dark brown; aperture white, oval in shape, flaring, sculptured with 14-16 large spiral cords; protoconch proportionally large, bulbous, colored orange-tan, and composed of 2 whorls.

Type Material: **HOLOTYPE**- length 69.5 mm, width 28.9 mm, from 45 m off Arraial do Cabo, Rio de Janeiro State, Brazil, MZSP 131311 (Figure 3A & B); **Other Material Studied**- length 68.0 mm, width 29.0 mm, from the same locality as the holotype, in the research collection of the senior author; length 59.4 mm, width 24.7 mm, same locality as the holotype, in the research collection of the junior author (Figure 3C & D).

Type Locality: Dredged from 45 m depth, by commercial shrimpers, off Arraial do Cabo, Cabo Frio region, Rio de Janeiro State, Brazil.

Distribution: At present, known only from offshore areas (40-60 m depths) of the Cabo Frio region of northern Rio de Janeiro State. The new species may occur in deep water areas off southern Rio de Janeiro State and Sao Paulo State.

Ecology: *Fusinus damasoi* prefers organic-rich muddy sand sea floors in the deeper waters off the upwelling systems that occur along Cabo Frio. Here, it occurs along with immense scallop beds of *Lindapecten tehuelchus*.

Etymology: Named for Damaso Monteiro of Ceara State, Brazil and Portugal, renowned diver and malacological explorer, who collected the type lot while working with the local fishermen at Cabo Frio.

Discussion: Up to now, only five species of the genus *Fusinus* have been described from the Brazilian coastline. These include: *F. brasiliensis* (Grabau, 1904), which ranges from Ceara State to Espirito Santo State; *F. marmoratus* (Philippi, 1851), which ranges from Sergipe State to Espirito Santo State; *F. strigatus* (Philippi, 1851), which ranges from Sergipe State to southern Bahia State; *F. frenguelli* (Carcelles, 1953), which ranges from Rio de Janeiro State to northern Argentina; and *F. agatha* (Simone and Abbate, 2005), which ranges from Rio Grande do Norte State to Sergipe State. Of these, *F. damasoi* is most similar to *F. brasiliensis*, but differs in being a smaller shell with a more inflated body whorl and more rounded shoulder, in having a proportionally lower and less-exserted spire, in having finer and more numerous spiral cords around the body whorl, and in having a proportionally much shorter and broader

siphonal canal. Although similar in color and color pattern, the broader, stumpier shell form and distinctly shorter siphonal canal immediately differentiates the Cabo Frio *F. damaso* from the more northern, wide-ranging *F. brasiliensis*.

Fusinus mariaodeteae Petuch and Berschauer,
new species
(Figures 3E, F, G & H)

Description: Shell small for genus, thin, delicate, elongated, distinctly fusiform; shoulder completely rounded, with no angulation; body whorl inflated, with rounded sides, ornamented with 12 large, rounded, evenly-spaced spiral cords; faint, thin spiral thread present between each pair of spiral cords; body and spire whorl spiral cords, in turn, overlaid with 13-16 narrow, low, evenly-spaced longitudinal ribs; intersection of spiral cord and longitudinal rib producing low, elongated bead; spire and siphonal canal of approximately same length; siphonal canal straight, sculptured with 18-20 fine, smooth spiral ribs; siphonal canal-body whorl juncture abrupt, highly indented, constricted; body whorl and siphonal canal uniformly pale cream or pale straw color, with interstices between ribs sometimes being slightly darker colored; spire and early whorls darker yellow-cream to pale orange; aperture almost round, pale cream-white within interior, sculptured with 12-14 large ribs; prototconch pale yellow-orange, proportionally very large, bulbous and mammilate, composed of 2 whorls.

Type Material: **HOLOTYPE**- length 43.2 mm, width 16.3 mm, from 100 m depth off Santos, Sao Paulo State, Brazil, MZSP 131312 (Figure 3E & F); **Other Material Studied**- length 37.0 mm, width 14.0 mm, same locality as holotype, in the research collection of the senior author; length 40.9 mm, width 14.9 mm, same locality

as the holotype, in the research collection of the junior author (Figure 3G & H).

Type Locality: Trawled by fishermen from 100 m depth off Santos, Sao Paulo State, Brazil.

Distribution: At present, only known from the deeper water areas off the Sao Paulo State coast, Brazil, but may extend southward to off Rio Grande do Sul State.

Ecology: *Fusinus mariaodeteae* prefers clean sand sea floors, in depths of around 100 m, where it occurs with beds of the scallop *Lindapecten tehuelchus* and large numbers of echinoids and peneid shrimp.

Etymology: Named for Mariaodete Monteiro of Portugal, mother of Damaso Monteiro.

Discussion: Of the known Brazilian *Fusinus* species, *F. mariaodeteae* is similar only to *F. frenguelli*. Both species have very rounded shoulders and a sculpture pattern of intersecting strong spiral cords and narrow longitudinal ribs and both are colored a pale cream-white of pale yellow. The new Sao Paulo species differs, however, in being a much smaller, stockier, and less elongated species with a proportionately lower spire and much shorter siphonal canal. The spiral cords on *F. frenguelli* are also much larger and more pronounced, and have more numerous smaller cords and threads between each set of main ribs. The larger *F. frenguelli* also prefers shallow water, normally being collected in 20-50 m depths, while *F. mariaodeteae* is a more offshore animal, preferring depths of 100-150 m.

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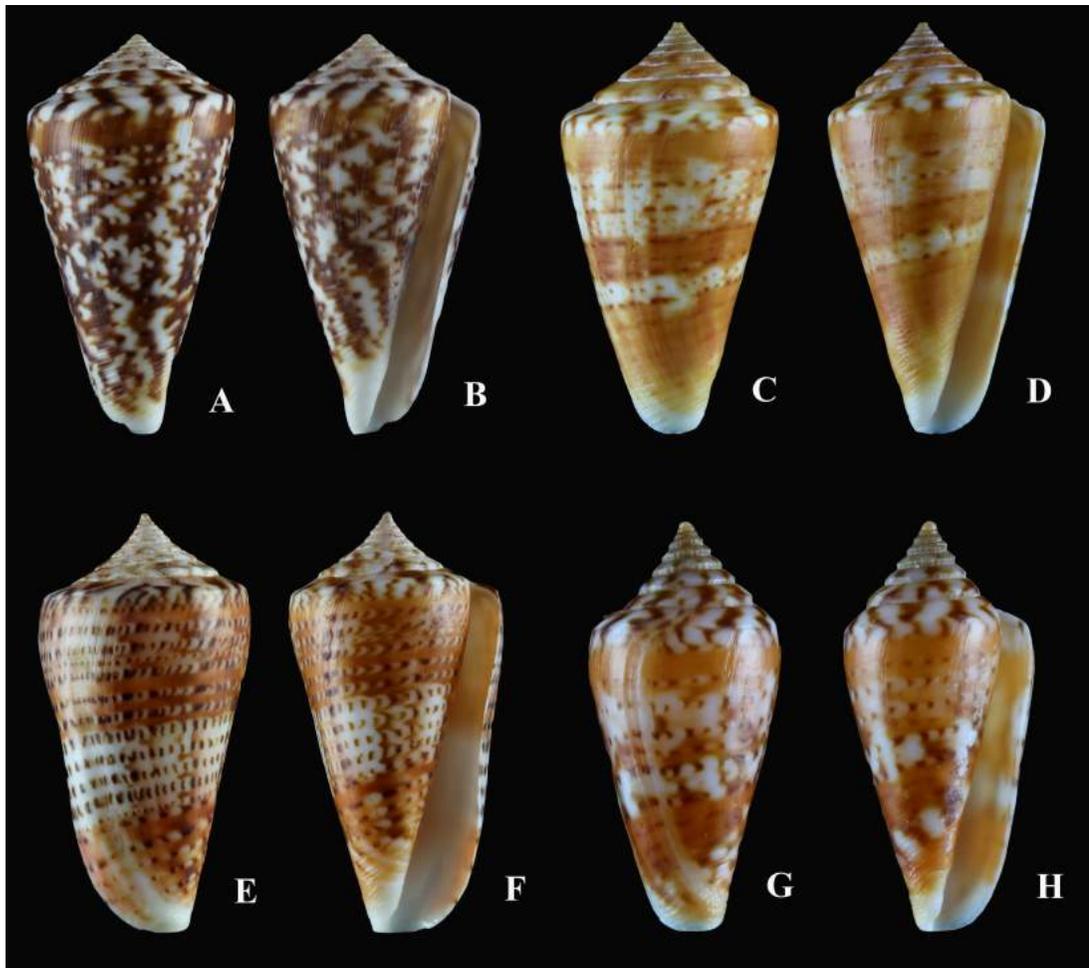


Figure 1. A new *Lanniconus* species from Brazil. Images: **A, B** = *Lanniconus lemniscatus* (Reeve, 1849) 44.9 mm in length. **C, D** = *L. xanthocinctus* (Petuch, 1980) 41.5 mm in length. **E, F** = *L. petestimpsoni* new species. Holotype, MZSP 131405, length 46.5 mm. **G, H** = *L. petestimpsoni* new species. Paratype, LACM 3377, length 25.1 mm.

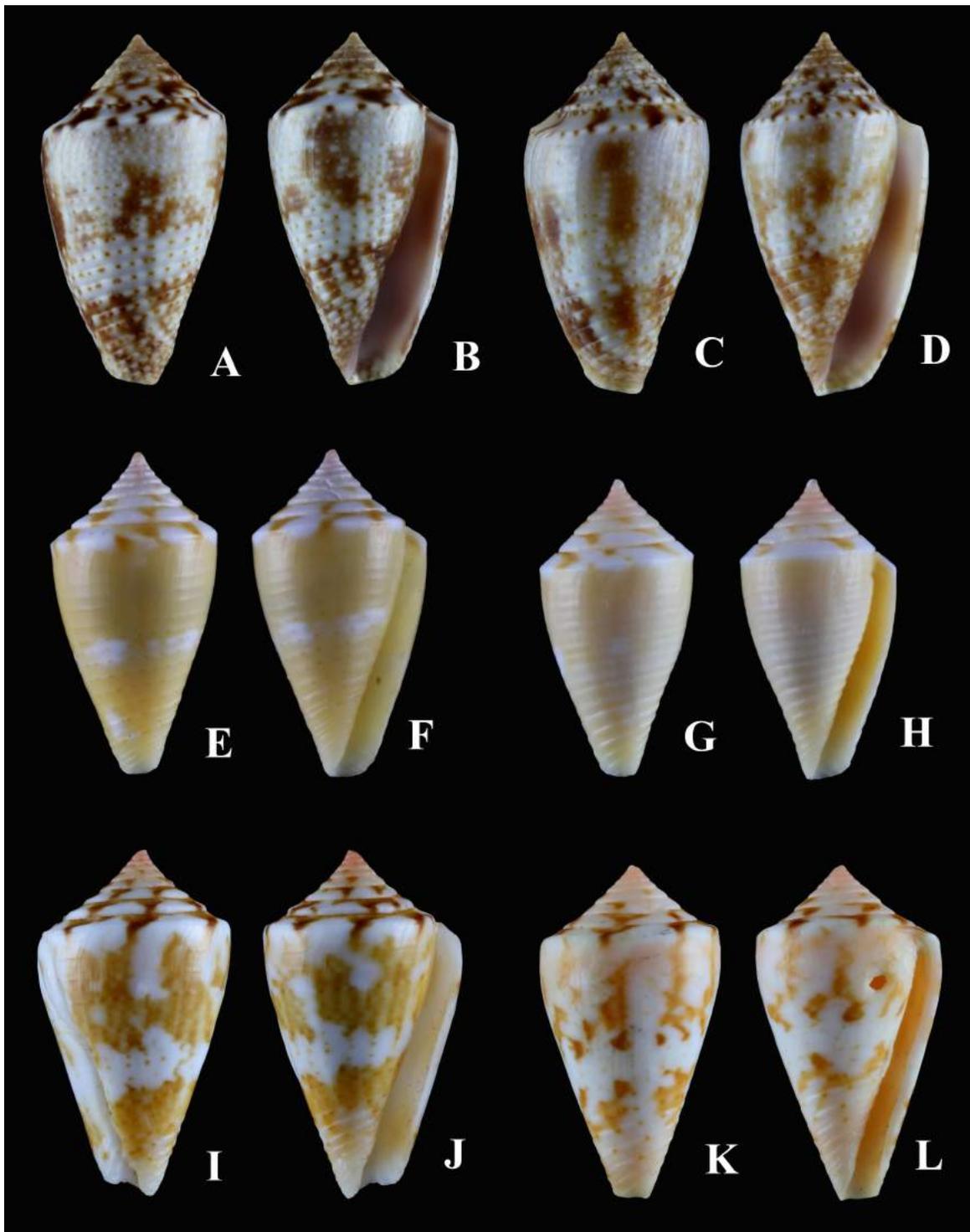


Figure 2. New *Poremskiconus* and *Jaspidiconus* species from Brazil. Images: **A, B** = *Jaspidiconus josei* new species. Holotype, MZSP 131315, length 20.1 mm. **C, D** = *J. josei* new species, length 20.7 mm in the Berschauer Collection. **E, F** = *Poremskiconus forsecai* new species. Holotype, MZSP 131313, length 16.6 mm. **G, H** = *P. forsecai* new species, length 12.8 mm in the Berschauer Collection. **I, J** = *P. smoesi* new species. Holotype, MZSP 131314, length 19.9 mm. **K, L** = *P. smoesi* new species, length 19.1 mm in the Berschauer Collection.

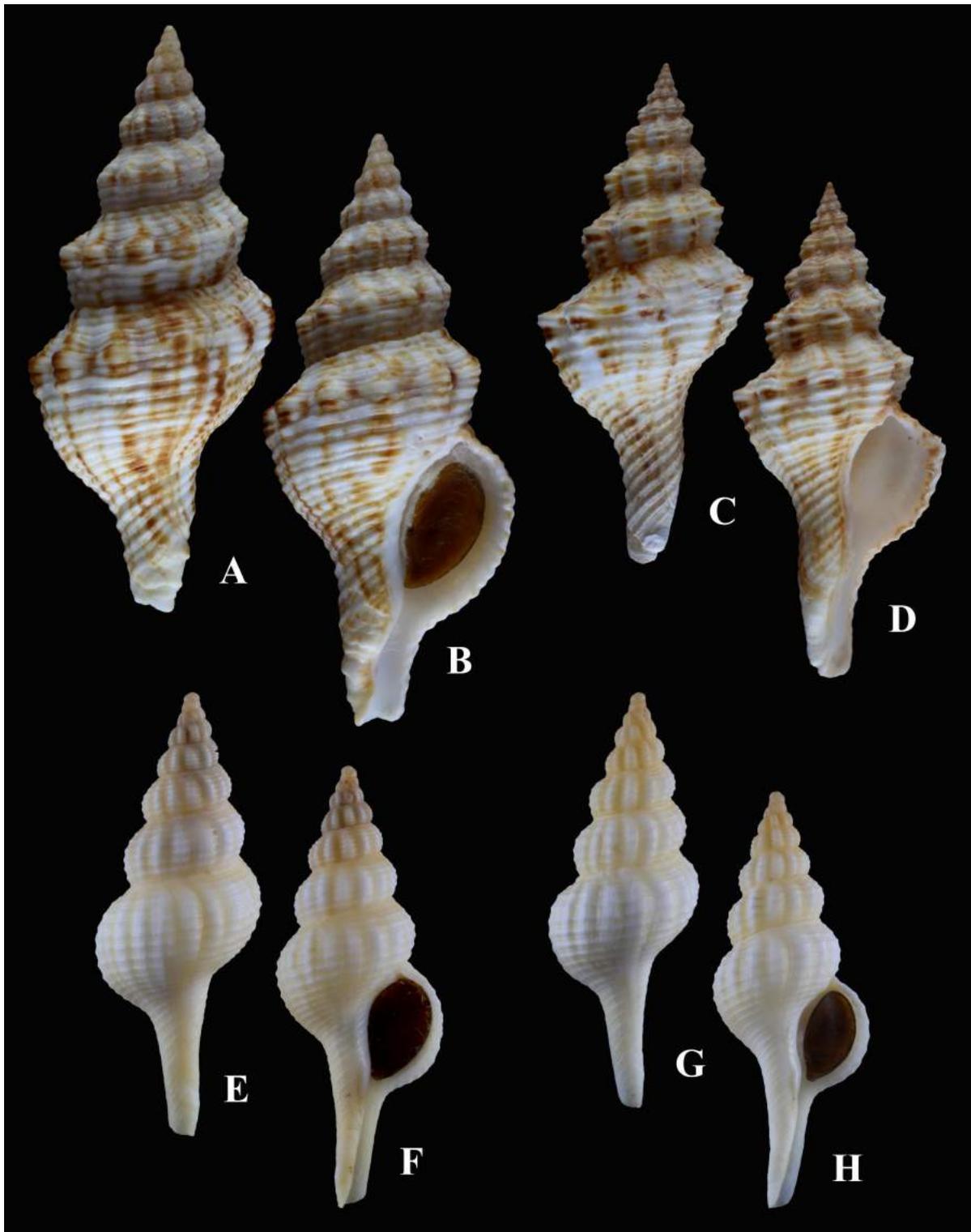


Figure 3. New *Fusinus* species from Brazil. Images: **A, B** = *Fusinus damasoi* new species. Holotype, MZSP 131311, length 69.5 mm. **C, D** = *F. damasoi* new species, length 59.4 mm in the Berschauer Collection. **E, F** = *F. mariaodeteae* new species. Holotype, MZSP 131312, length 43.2 mm. **G, H** = *F. mariaodeteae* new species, length 40.9 mm in the Berschauer Collection.