

Five New Species of *Jaspidiconus* Petuch, 2004 (Conilithidae: Conilithinae) from the Caribbean Molluscan Province

Edward J. Petuch¹, David P. Berschauer², and André Poremski³

¹ Department of Geosciences, Florida Atlantic University, Boca Raton, Florida 33431

epetuch@fau.edu

² 25461 Barents Street, Laguna Hills, California 92653

shellcollection@hotmail.com

³ 51 S Street NW, Washington, DC 20001

aporemski@gmail.com

ABSTRACT

Five new species of the endemic western Atlantic conilithid genus *Jaspidiconus* Petuch, 2004 are described from the Caribbean Molluscan Province: *Jaspidiconus boriqwa* n. sp. (endemic to Puerto Rico), *Jaspidiconus culebranus* n. sp. (endemic to Culebra Island), *Jaspidiconus janapatriceae* n. sp. (endemic to Grand Cayman Island), *Jaspidiconus marcusii* n. sp. (endemic to Eleuthera Island, Bahamas), and *Jaspidiconus masinoi* n. sp. (endemic to the Utila Cays, Honduras). With the addition of these five new taxa, 40 *Jaspidiconus* species have now been described from the Tropical Western Atlantic Region, with at least 25 others still in need of description.

KEY WORDS

Conilithidae, *Jaspidiconus*, Tropical Western Atlantic Region, Caribbean Molluscan Province, Bahamian Subprovince, Antillean Subprovince, Nicaraguan Subprovince, *Jaspidiconus boriqwa*, *Jaspidiconus culebranus*, *Jaspidiconus janapatriceae*, *Jaspidiconus marcusii*, *Jaspidiconus masinoi*, Bahamas, Puerto Rico, Honduras.

INTRODUCTION

The conilithid genus *Jaspidiconus* Petuch, 2004 is the single largest group of cone shells found in the western Atlantic, containing 35 described species and at least 25 still-undescribed species. The genus also represents the largest single species radiation found within the family Conilithidae, rivalling other large species radiations seen in its sister family Conidae (such as the *Africonus* species complex of the Cape Verde Islands (Berschauer, 2015)). This species-richness reflects the widespread biogeography of the genus, with several species complexes being restricted to the three

biogeographical provinces of the Tropical Western Atlantic Region (the Carolinian, Caribbean, and Brazilian Molluscan Provinces; see Petuch and Sargent, 2011; Petuch, Myers, and Berschauer, 2015). As in many conoideans, most *Jaspidiconus* species exhibit direct development and lack a long-lived planktotrophic veliger. Because of this lack of dispersibility (vagility) and the strong propensity for genetic isolation, most of the known taxa are restricted to single islands or single archipelagos, allowing for a proliferation of endemic species (Berschauer, 2015).

Recently, three new *Jaspidiconus* species were brought to our attention by several renowned

shell collectors and divers, including Dr. Felix Lorenz (a new species from Grand Cayman Island), Robert Masino (a new species from the Utila Cays, Honduras), and Marcus Coltro (a new species from Eleuthera Island, Bahamas). One of the junior authors, André Poremski, also discovered two additional new species from Puerto Rico; one from the island mainland and one from nearby Culebra Island. Altogether, five new species are described here and these attest to the amazing conoidean biodiversity of the Caribbean Molluscan Province. The new taxa include:

Jaspidiconus boriqwa new species (endemic to Puerto Rico)

Jaspidiconus culebranus new species (endemic to Culebra Island)

Jaspidiconus janapatriceae new species (endemic to Grand Cayman Island)

Jaspidiconus marcusii new species (endemic to southern Eleuthera Island, Bahamas)

Jaspidiconus masinoi new species (endemic to the Utila Cays, Honduras)

The holotypes of the new species are deposited in the molluscan type collection of the Department of Malacology, Los Angeles County Museum of Natural History, Los Angeles, California, and bear LACM numbers.

SYSTEMATICS

Class Gastropoda

Subclass Sorbeoconcha

Order Prosobranchia

Infraorder Neogastropoda

Superfamily Conoidea

Family Conilithidae

Subfamily Conilithinae

Genus *Jaspidiconus* Petuch, 2004

Jaspidiconus boriqwa Petuch, Berschauer, and Poremski, new species
(Figure 1A & B)

Description: Shell of average size for genus, fusiform, biconic, with distinctly rounded sides; spire high and elevated, pyramidal; shoulder sharply-angled, distinctly sloping, bordered by prominent, overhanging undulating carina; carinal undulations proportionally large, producing distinct coronations on shoulder and spire whorls; body whorl polished and shiny, sculptured with 15 deeply-incised spiral sulci, which become deeper and more closely-packed toward anterior end; areas between spiral sulci ornamented with single large, wide, raised pustulated cord; base shell color violet-purple (as in holotype), bright pink, or purplish-pink; base color overlaid with prominent large reddish-brown longitudinally-arranged amorphous flammules, often arranged in a zebra pattern; evenly-spaced, tiny brown dots present on raised body whorl cords; coronated shoulder and carina marked with alternating dark brown and purplish-white spots, with brown spots being present between each low knob; spire whorls pale violet, marked with very prominent, widely-spaced dark brown amorphous flammules, which often connect to brown longitudinal body whorl flammules; aperture wide and flaring, becoming wider toward anterior end, cream-white within interior; protoconch proportionally large, rounded, composed of 2 whorls; protoconch and early whorls white; periostracum smooth, pale yellow, transparent.

Type Material: Holotype: length 20.7 mm, on clean coral sand near reef, 3 m depth off Playa Boqueron, Cabo Rojo, southwestern side of Puerto Rico, Greater Antilles, Caribbean Sea (collected by André Poremski), LACM 3351. **Other Material Studied:** length 21.5 mm, same locality and depth as the holotype, in the

research collection of E.J. Petuch; length 22.0 mm, same locality and depth as the holotype, in the collection of André Poremski.

Type Locality: Off Playa Boqueron, Cabo Rojo, Puerto Rico, on clean carbonate sand in 3 m depth.

Distribution: At present, known only from the southwestern coast of Puerto Rico, in the vicinity of Cabo Rojo.

Ecology: The new species prefers clean carbonate sand substrates near coral reefs and sea grass beds in depths of 2-3 m.

Etymology: Named for the “Boriquas”, the Arawak-based name to which native Puerto Ricans refer to themselves; in reference to the new species being endemic to Puerto Rico. Named as a noun in apposition.

Discussion: Of the known Caribbean Province *Jaspidiconus* species, *J. boriqua* is most similar to the southern Caribbean Sea *J. jaspideus* (Gmelin, 1791) from Trinidad and Tobago and the northern Venezuelan islands (southern Grenadian Subprovince) and the coast of Venezuela (Venezuelan Subprovince) (Petuch, 2013: 133, figure 9.4C). The new northern Caribbean (Antillean Subprovince) species differs from its southern Caribbean (Grenadian and Venezuelan Subprovinces) congener in being a smaller, more slender, and more fusiform shell with more rounded sides, and in being a less sculptured shell that lacks the prominent large bead-like pustules seen on the body whorl and spire of *J. jaspideus*. The new Puerto Rican cone is also a more colorful species, having a bright violet or pinkish-violet base color and distinctive reddish-brown longitudinal flammules.

Jaspidiconus culebranus Petuch, Berschauer, and Poremski, new species
(Figure 1C & D)

Description: Shell of average size for genus, elongately fusiform, biconic, with slightly rounded sides; shoulder sharply-angled, subcarinated; spire high and protracted, slightly stepped, pyramidal; body whorl smooth and shiny, ornamented with 12-15 evenly-spaced incised spiral sulci, which become stronger and more closely-packed toward anterior end; entire shell uniform pale cream-white or whitish-orange, becoming darker on spire whorls; aperture proportionally wide, pale yellow-cream within interior; protoconch proportionally large, rounded, composed of 2 ½ whorls, pale cream-orange in color; periostracum thin, smooth, transparent yellow.

Type Material: Holotype: length 17.7 mm, in 4 m depth, within pockets of clean sand among Turtle Grass beds, near the municipal landfill on Culebra Island, off eastern Puerto Rico (collected by André Poremski), LACM 3352.

Other Material Studied: length 16.9 mm, same locality and depth as the holotype, in the research collection of E.J. Petuch; length 16.4 mm, same locality as the holotype, in the collection of André Poremski.

Type Locality: 4 m depth, within pockets of clean sand among Turtle Grass (*Thalassia testudinum*) beds, offshore of the municipal landfill, Culebra Island, northern Caribbean Sea.

Distribution: At present, known only from Culebra Island off the eastern coast of Puerto Rico. The species is apparently endemic to Culebra.

Ecology: The new species prefers clean carbonate sand substrates, in 3-4 m depths, near Turtle Grass (*Thalassia testudinum*) beds.

Etymology: Named for the type locality, Culebra Island (“Snake Island” in Spanish).

Discussion: In size, shape, and height of the spire, the new Culebra Island endemic is most similar to *Jaspidiconus boriqwa* (described in the previous section), but differs in being an uncolored, uniformly pale shell which lacks any type of color pattern or markings and in being a smoother, less-sculptured shell that lacks any raised cords, beads, and shoulder coronations. As can be seen on Figure 1A, B, C & D), the protoconch of *J. culebranus* is proportionally much larger and more bulbous than that of the closely-related *J. boriqwa*. The rich pale orange-cream shell color of the new Culebra cone is distinctive and is not seen on any other known Caribbean congener.

Jaspidiconus janapatriceae Petuch, Berschauer, and Poremski, new species
(Figure 1E & F)

Description: Shell small for genus, fusiform, with only slightly rounded sides; shoulder sharply-angled, bordered by large, well-developed smooth prominent carina; spire subpyramidal, only slightly stepped; spire whorls smooth and unsculptured; body whorl smooth and shiny, with 8-10 deeply-incised spiral sulci around anterior one-half of body whorl; posterior one-half of body whorl smooth and unsculptured; entire shell uniformly pure white; aperture proportionally wide and flaring, becoming wider toward anterior end, pure white within interior; protoconch proportionally large, rounded, composed of 2 whorls, pure white in color; periostracum thin, smooth, transparent yellow.

Type Material: Holotype: length 16.0 mm, on open carbonate sand sea floor in 4 m depth, near George Town, Grand Cayman Island, Cayman Islands, western Caribbean Sea (collected by Dr.

Felix Lorenz), LACM 3353. **Other Material Studied:** 2 specimens, lengths 15.5 mm and 16.2 mm, same locality and depth as the holotype, in the research collection of E.J. Petuch; 2 specimens, lengths 15.7 mm and 16.0 mm, in the collection of André Poremski; and 1 specimen, length 15.7 mm, in the collection of David P. Berschauer.

Type Locality: 4 m depth on clean carbonate sand, near George Town, Grand Cayman Island, Cayman Islands, western Caribbean Sea.

Distribution: Known only from Grand Cayman Island, Cayman Islands.

Ecology: The new species prefers clean carbonate sand and open sea floors, in depths of 2-5 m.

Etymology: Named for Jana Patricia Kratzsch of Giessen, Germany, noted underwater photographer and naturalist, and life companion of Felix Lorenz.

Discussion: *Jaspidiconus janapatriceae* stands out from all the other known Caribbean *Jaspidiconus* species by being so unusually generalized and beautifully simplistic; the shell is only pure white and lacks any coloring or color pattern and, with the exception of a few incised sulci around the anterior half of the body whorl, it is essentially smooth, lacking any raised cords, pustules, or coronations. Besides its smaller-than-average size, the main distinguishing feature of the new Caymanian cone is the well-developed shoulder carina, which is proportionally larger than other congeners and which tends to extend beyond the edge of the shoulder angle.

Jaspidiconus marcusii Petuch, Berschauer, and Poremski, new species
(Figure 1G & H)

Description: Shell very small for genus, averaging only 9 mm, stocky, truncated, broad across shoulder; shoulder sharply-angled, bordered by thin sharp carina; spire proportionally low, subpyramidal, only slightly stepped; body whorl smooth and shiny, ornamented with 10-12 deeply-incised spiral sulci around anterior one-half; base shell color pale Canary yellow, overlaid with wide, evenly-spaced deep orange-yellow amorphous longitudinal flammules arranged in zebra pattern; shoulder carina white, marked with widely-spaced dark reddish-brown elongated spots; spire whorls bright yellow, marked with large, widely-spaced dark reddish-brown flammules; aperture proportionally wide, bright yellow within interior; protoconch proportionally very large, rounded, bulbous, composed of 2 whorls, bright cherry red in color; periostracum thin, smooth, transparent yellow.

Type Material: Holotype: length 9.0 mm, on open carbonate sand sea floor, 3 m depth off Tarpum Bay, Eleuthera Island, eastern Exuma Sound, Bahamas, LACM 3354 (collected by Marcus Coltro); **Other Material Studied:** length 9.0 mm, same locality and depth as holotype, in the research collection of E.J. Petuch; length 8.7 mm, same locality as the holotype, in the collection of David P. Berschauer; length 10.5 mm, same locality as the holotype, in the collection of André Poremski.

Type Locality: On carbonate sand in 3 m depth, off Tarpum Bay, Eleuthera Island, eastern Exuma Sound, Bahamas.

Distribution: Known only from the Exuma Sound area of southern Eleuthera Island, Bahamas, near Tarpum Bay.

Ecology: The new Bahamian cone prefers open sea floors in quiet, sheltered lagoons, where it lives on substrates composed of fine, clean carbonate sand and silt.

Etymology: Named for the renowned diver, shell collector, and shell dealer, Marcus Coltro, of Sao Paulo, Brazil and Miami, Florida, who discovered the new species in Tarpum Bay.

Discussion: Of the 7 known Bahamian *Jaspidiconus* species (*see* Petuch, 2013: 81-85; Petuch, Myers, and Berschauer, 2015; Berschauer, 2015), *J. marcusii* is morphologically closest only to *J. oleiniki* Petuch, 2013 from the Bimini Chain of islands along the western side of the Great Bahama Bank (*see* Petuch, 2013: 85). Both species share the same stocky, broad shell shape and the same type of subpyramidal spire, but the Biminian *J. oleiniki* differs in being a larger shell with a much more stepped spire, and in lacking the bright yellow base color of *J. marcusii*, and having, instead, a pure white shell with large pale orange-pink blotches. The Eleutheran *J. marcusii* also has a more colorful spire, marked with large reddish-brown flammules, and has small brown spots along the shoulder carina; these characters are missing on the Biminian *J. oleiniki*.

Jaspidiconus masinoi Petuch, Berschauer, and Poremski, new species
(Figure 1 I & J)

Description: Shell of average size for genus, fusiform, slightly inflated, with rounded sides; shoulder sharply-angled, bordered by low, rounded carina; spire distinctly subpyramidal, only slightly stepped; body whorl smooth and

shiny, sculptured with 12-15 incised spiral sulci, which become deeper and closer together toward anterior end; body whorl base color pink or pale lavender (as on holotype), overlaid with 12-15 rows of alternating brown and white spots and also numerous widely-spaced amorphous dark tan or brown longitudinal flammules; shoulder carina white, marked with widely-spaced small brown dots; suture of spire whorls edged with tiny, evenly-spaced brown dots; some specimens (such as the specimen in the Poremski collection) are uniformly pale pink, with only traces of longitudinal flammules and bands of dots; aperture proportionally wide and flaring, becoming wider at the anterior end, deep purplish-pink within interior; protoconch and early whorls pale orange-white; protoconch proportionally large, rounded, composed of 2 whorls; periostracum thin, smooth, transparent yellow.

Type Material: Holotype: length 12.1 mm, collected at night on fine carbonate sand near Turtle Grass beds, in 7 m depth off Sandy Cay, Utila Cays, Honduras (collected by Robert Masino), LACM 3355; **Other Material Studied:** length 13.0 mm, same locality as the holotype, in the research collection of E.J. Petuch; length 12.0 mm, same locality as the holotype, in the collection of André Poremski.

Type Locality: 5-7 m depth on fine, clean carbonate sand near Turtle Grass beds, off Sanday Cay, Utila Cays, Honduras, Western Caribbean Sea.

Distribution: Known only from the Utila Cays of the Caribbean coast of Honduras.

Ecology: The new Honduran cone prefers clean, fine carbonate sand and silt, near Turtle Grass (*Thalassia testudinum*) beds, in 5-7 m depths.

Etymology: Named for Robert Masino of Naples, Florida, renowned diver, shell collector, tour guide, and amateur naturalist, in recognition of his generous donations of rare specimens to research malacologists. These have led to many important contributions to Caribbean malacology.

Discussion: Of the Honduran *Jaspidiconus* species, *J. masinoi* is most similar to *J. roatanensis* Petuch and Sargent, 2011 from Roatan Island. Both species are of similar size and have the same type of stocky, inflated shell form with rounded sides. *Jaspidiconus masinoi*, however, is a more elongated and much more colorful shell, having a base color of bright pink or lavender, marked with rows of brown dots and large brown flammules. *Jaspidiconus roatanensis*, on the other hand, is a pure white shell with a zebra-like pattern of slender reddish-brown longitudinal flammules (see Petuch and Sargent, 2011; Petuch, 2013:105) and characteristically exhibits rows of small pustules on the body whorl. This pustulated ornamentation is missing on the new Utila Cays cone. The distinctive deep purple-pink color seen inside the aperture of *J. masinoi* is unique among Western Caribbean *Jaspidiconus* species, and readily separates it from similar-appearing taxa.

ACKNOWLEDGMENTS

The authors thank Robert Masino (Naples, Florida), Dr. Felix Lorenz (Giessen, Germany), and Marcus Coltro (Sao Paulo, Brazil and Miami, Florida) for their generous donations of study specimens.

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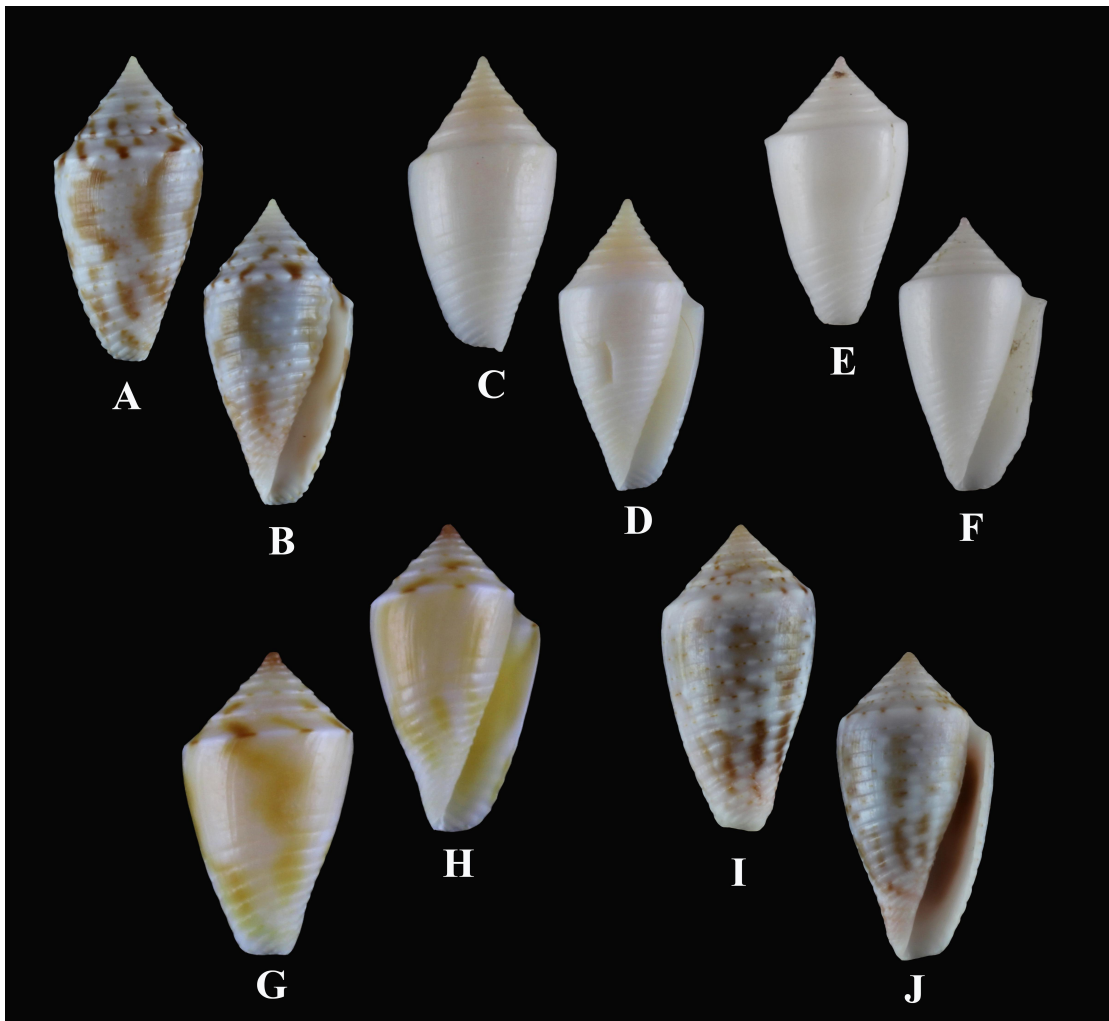


Figure 1. New Species of *Jaspidiconus* Petuch, 2004 from Puerto Rico, Culebra Island, Grand Cayman Island, Eleuthera Island, and the Until Cays. Images: A, B= *Jaspidiconus boriqua* new species. Holotype, length 20.7 mm, LACM 3351. From 3 m depth off Playa Boqueron, Cabo Rojo, Puerto Rico. C, D= *Jaspidiconus culebranus* new species. Holotype, length 17.7 mm, LACM 3352. From 4 m depth, off the public landfill on Culebra Island, Puerto Rico. E, F= *Jaspidiconus janapatriceae* new species. Holotype, length 16.0 mm, LACM 3353. From 4 m depth off George Town, Grand Cayman Island, Cayman Islands. G, H= *Jaspidiconus marcusii* new species. Holotype, length 9.0 mm, LACM 3354. From 3 m depth off Tarpum Bay, Eleuthera Island, Bahamas. I, J= *Jaspidiconus masinoi* new species. Holotype, length 12.1 mm, LACM 3355. From 7 m depth off Sandy Cay, Utila Cays, Honduras.