

Two new species of *Mitrella* Risso, 1826 (Gastropoda, Columbellidae) from west Atlantic

Dos nuevas especies de *Mitrella* Risso, 1826 (Gastropoda, Columbellidae) del Atlántico oeste

Paulo Márcio Santos COSTA* and Paulino José Soares de SOUZA**

Recibido el 2-X-2000. Aceptado el 20-XII-2000

ABSTRACT

Two new species of *Mitrella* Risso, 1826 are described from the west Atlantic Ocean. *Mitrella cabofrioensis* sp. nov. is known only from the southeastern coast of Brazil. This species is diagnosed by its pattern of white flamules over a reddish brown background, and a dome-like, paucispiral protoconch, with 2 whorls. *Mitrella antares* sp. nov. is known from the Bahamas, Cozumel island, and Brazilian coast. This species is diagnosed by its large, globose, multispiral protoconch, with 3 whorls, and by two strong denticles on the columella.

RESUMEN

Se describen dos nuevas especies de *Mitrella* Risso, 1826 del Atlántico Oeste. *Mitrella cabofrioensis* sp. nov. se conoce sólo de la costa sudeste de Brasil. La especie se distingue por su patrón de manchas blancas sobre fondo pardo rojizo y por su protoconcha paucispiral, con forma de cúpula y dos vueltas. *Mitrella antares* sp. nov. se conoce de las Bahamas, isla Cozumel y costa de Brasil. Se distingue por su protoconcha grande, globosa, multispiral, con 3 vueltas, y por los dos fuertes dentículos en la columela.

KEY WORDS: Mollusca, Gastropoda, Columbellidae, *Mitrella*, West Atlantic, Brazil.

PALABRAS CLAVE: Mollusca, Gastropoda, Columbellidae, *Mitrella*, Atlántico oeste, Brasil.

INTRODUCTION

The inventory of Brazilian molluscan diversity is still far from complete. Examination of specimens deposited in collections as well as originating from diverse sources such as oceanographic vessels, trawling boats, and scuba divers often yield new taxa. Herein we describe two species of *Mitrella* from the west Atlantic.

Mitrella Risso, 1826 is comprised of small columbellids (4–20 mm). It has a

circum-tropical distribution and its species are found from intertidal to bathyal depths (BOUCHET AND WARÉN, 1985). The genus still needs a thorough diagnosis. This causes much confusion and the species assigned to this genus vary greatly (ABBOT, 1974; LEAL, 1991; RADWIN, 1978; RIOS, 1994). Herein we consider the following west Atlantic species as belonging to *Mitrella*: *M. ocellata* (Gmelin, 1791); *M. dichroa*

* Laboratório de Malacologia, Dep. de Zoologia, Instituto de Biologia - C.C.S., Universidade Federal do Rio de Janeiro. Ilha do Fundão, 21941-590, Rio de Janeiro, RJ, Brazil. e-mail: pmscosta@hotmail.com

** Instituto de Biociências, Universidade de São Paulo. Mailing address: Museu de Zoologia, Universidade de São Paulo. PO Box 42694. São Paulo, SP, 04299-970, Brazil. e-mail: pjsouza@yahoo.com

(Sowerby, 1844), *M. lunata* (Say, 1826); *M. profundus* (Dall, 1889); and *M. nitidulina* (Locard, 1897).

MATERIAL AND METHODS

Shells were photographed under a stereomicroscope Zeiss SV11. The scanning electron microscope (SEM) photographs were made at Centro de Pesquisas da Petrobrás, Rio de Janeiro.

Specimens of *M. cabofrioensis* were collected by trawling off Cabo Frio, Rio de Janeiro state, southeastern Brazil (see Figure 1) and specimens of *Mitrella antares* sp. nov. were collected by SCUBA diving, and oceanographic vessels between Bahamas and Marataízes, Espírito Santo state, southeastern Brazil (Fig. 1).

Abbreviations used:

ANSP Academy of Natural Sciences, Philadelphia, U.S.A.
BMNH The Natural History Museum, London, U.K.
IBUFRJ Instituto de Biologia da Universidade Federal do Rio de Janeiro, Brazil
MCZ Museum of Comparative Zoology, Harvard, U.S.A.
MNHN Muséum National d'Histoire Naturelle, Paris, France
MNRJ Museu Nacional - Universidade Federal do Rio de Janeiro, Brazil
MORG Museu Oceanográfico Professor Eliézer de Carvalho Rios, Rio Grande, Brazil
MZSP Museu de Zoologia da Universidade de São Paulo, Brazil
USNM United States National Museum, Washington D.C., U.S.A.

SYSTEMATICS

Family COLUMBELLIDAE Swainson, 1840

Subfamily PYRENINAE Suter, 1913

Genus *Mitrella* Risso, 1826

Mitrella Risso, 1826: 246 - 247. Type species by SD, *Mitrella flaminea* Risso, 1826 [= *Mitrella scripta* (Linnaeus, 1758)], Mörch, 1859: 257-258. Holotype Muséum National d'Histoire Naturelle, Paris.

Mitsella Mörch, 1859: 257 - 258 (error pro *Mitrella*).

Diagnosis: Shell surface generally smooth, except for spiral grooves on anterior part of shell. Rarely, first

whorls of teleoconch, with thin spiral striae. Spire high, acute. Inner surface of external lip denticulated

Mitrella cabofrioensis sp. nov. (Figs. 2-4, 9-11)

Holotype MORG 39010 (length 9.5 mm, width 4.0 mm).

Paratypes: MNRJ 7162 (length 10 mm, width 4.0 mm); IBUFRJ 6930 (length 9.8 mm, width 4.0 mm); USNM 880111 (length 9.6 mm, width 3.8 mm); MNHN (length 9.6 mm, width 3.9 mm); BMNH 1995189 (length 9.2 mm, width 3.8 mm): off Cabo Frio, Rio de Janeiro, Brazil, 23° 18' 00" S, 42° 00' 00" W, 23/IV/1993, trawler boat "Muriaé III", 140m, on calcareous conglomerate; MZUSP 28194 (length 6.6 mm, width 3.0 mm, juvenile), off Cabo Frio, Rio de Janeiro, Brazil, N. Oc. W. Besnrad.

Type locality: off Cabo Frio, Rio de Janeiro, Brazil, 23° 18' 00" S, 42° 00' 00" W, depth 140m.

Etymology: The specific epithet *cabofrioensis* refers to the type locality.

Diagnosis: Shell large (~ 9.5 mm) slightly inflated; protoconch dome-like, large with 2 whorls; pattern composed

of irregular sigmoidal white flamules over a reddish brown background; siphonal canal distinct.

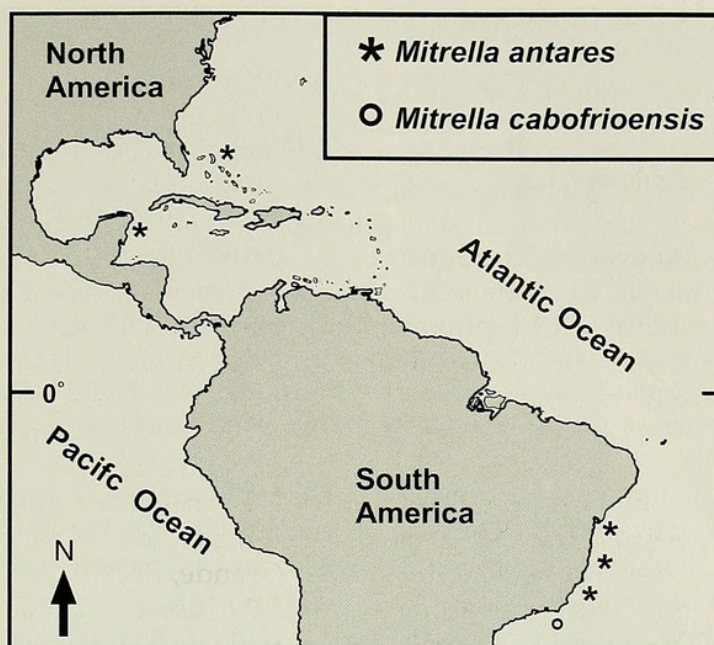


Figure 1. Geographic distribution of *Mitrella cabofrioensis* sp. nov. and *Mitrella antares* sp. nov.
 Figura 1. Distribución geográfica de *Mitrella cabofrioensis* sp. nov. y *Mitrella antares* sp. nov.

Description: Shell (Figs. 2-4) large (length 9-10 mm), fusiform, acute, slightly inflated. Surface glossy, marked with very tenuous growth lines; anterior part of the body whorl with numerous (about 20) spiral grooves, broadening towards the tip of the siphonal canal. Pattern consisting of a series of irregular sigmoidal white flammules over a reddish brown background. Spire moderately high, comprising slightly more than half of total shell length. Protoconch (Fig. 9) dome-like, very large, smooth, vitreous, paucispiral with 2 whorls. Teleoconch with 3.25 slightly convex whorls, imparting an inflated aspect to the shell. Aperture moderately broad, internally with purplish white ation; inner margin of external lip with 6 denticles; columella slightly concave, with keel, on anterior end, reaching siphonal canal. Siphonal canal distinctive, short, slightly bent upwards. Operculum oval, corneous, with yellow coloration, nucleus terminal.

Radulae (Figs. 10, 11) rachiglossate, central tooth rectangular, about four times wider than long. Anterior edge straight or slightly convex, posterior edge is slightly concave. Lateral tooth approximately 1.55 longer than wide, slender, falcate with three cusps: basal cusp short, blunt; middle

cusp sharp, short, thin, moderately curved; external cusp long, sharp, almost straight at its terminal part; distance between cusps subequal; base measuring $28.0\ \mu\text{m}$, from its anterior margin to the edge of basal cusp, length $43.5\ \mu\text{m}$ between base and tip of distal cusps.

Habitat: Calcareous conglomerate, at approximately 140 m.

Range: Known only from off Cabo Frio, Rio de Janeiro State, Brazil (Fig. 1).

Remarks: *Mitrella cabofrioensis* has a very distinctive colour pattern, different from all other *Mitrella*. It differs from *M. dichroa* (Sowerby, 1844) by being slightly larger, more inflated, having more convex whorls, and protoconch shape. It is different from *M. lunata* in its much larger size, and protoconch shape. *M. ocellata* has a similar radula and paucispiral protoconch, but *M. cabofrioensis* differs by being slightly smaller, more inflated, having thinner shell, and larger siphonal canal. *M. profunda* Dall, 1889 differs from *M. cabofrioensis* by having a lighter coloration, smaller, more inflated shell, a conical, multispiral protoconch, and a columellar plication. *M. nitidulina* Locard, 1897, differs from *M. cabofrioensis* in its uniform cream white color, and in the multispiral, sculptured protoconch.

Mitrella antares sp. nov. (Figs. 5-8, 12-14)

Holotype MORG 33314 (length 3.6 mm, width 1.9 mm).

Paratypes: ANSP 367004, Indian Cay, Grand Bahama Island, Bahamas, J. Worsfold, 1980, 14 specimens; MNRJ 7257, Itapuã, Salvador, Bahia State, Brazil, 1 specimen; MORG 21241, Abrolhos Archipelago, Bahia State, Brazil, 8 specimens; MNRJ 7185 (length 3.5 mm, width 1.8 mm); IBUFRJ 8465 (length 3.4 mm, width 1.9 mm); USNM 880119 (length 3.6 mm, width 1.8 mm); MNHN (length 3.5 mm, width 2.0 mm); BMNH 1996073 (length 3.2 mm, width 1.7 mm); MZUSP 28244 (length 3.55 mm, width 1.8 mm); IBUFRJ 8.466 (length 3.2 mm, width 1.7 mm); MORG 33315 (length 3.6 mm, width 1.8 mm); ANSP 399368; off Marataízes, Espírito Santo state, 20° 10' S, 40° 37' W, Brazil, collected by diver, 30 m depth, 04/1995.

Type locality: off Guarapari - Espírito Santo state, Brazil, 20° 41' S, 40° 22' W, depth 25 m.

Etymology: The specific epithet *antares* refers to the red giant star in the Scorpio constellation.

Diagnosis: Shell small (~ 3.5 mm) inflated, protoconch large, convex whorled with 3 ¹/₂ whorls, columella 2 strong denticles in parietal wall.

Description: Shell (Figs. 5-7) small (length 3.2 – 3.6 mm) fusiform, inflated, translucent. Surface glossy, sculptured with very thin sigmoidal growth lines, anterior part of shell sculptured with 9 spiral grooves. Colour pattern composed of brown subsutural blotches, extending anteriorly, forming sigmoidal flames. Spire high, about ¹/₃ of total shell length. Protoconch (Fig. 12) globose, high, multispiral with 3.00 to 3.50 convex whorls, suture of the first nuclear whorl marked with dark brown coloration. Teleoconch with 3.5 distinctively convex whorls. Aperture trapezoidal, outer lip thickened forming a varix, inner margin of outer lip with five lirate teeth, decreasing in size anteriorly. Parietal wall smooth. Columella (Fig. 8) with two strong, closely set denticles on its anterior half. Siphonal canal short. Operculum corneous, oval with terminal nucleus.

Radulae (Figs. 13, 14) rachiglossate, central tooth rectangular, about four times wider than long, anterior edge straight or slightly convex, posterior edge slightly concave. The lateral tooth approximately 1.65 longer than wide, falcate, stout with three cusps: basal cusp triangular, sharp, straight; middle cusp sharp, short, slightly shorter than basal cusp, moderately curved; external cusp long, sharp, almost straight at its terminal part; distance between basal and middle cusps about half of distance between middle and external cusps,

base measuring 14.0 µm, from its anterior margin to edge of basal cusp, length 23.0 µm, between base and tip distal cusp.

Habitat: Calcareous algae and coralline bottoms between 10 and 90 m depth.

Range: Known from Abaco, Bahamas; Cozumel island, Mexico; and in Brazil between Abrolhos Archipelago, Bahia state and Off Marataízes, Espírito Santo state, 20° 10' S, 40° 37' W (Fig. 1).

Remarks: *Mitrella antares* is most similar to *M. lunata* due to similar size (3.5 mm) and color pattern. *M. antares* is more inflated, has a globose protoconch, wider aperture, and denticles present on the columella. These species have been confused with each other in museum collections and we have found lots of *M. antares* identified as *M. lunata* (ANSP 367.004, MORG 21.241). *M. antares* differs from *M. dichroa* by being much larger, more inflated, having more convex whorls, and protoconch shape. *M. antares* differs from *M. ocellata* by being much smaller, more inflated, and its pattern. *M. profundus* also has a similar color pattern to *M. antares*, only somewhat lighter it also differs from *M. antares* in being larger, and having a conical, multispiral protoconch. *M. nitidulina* a deep water species, differs from *M. antares* by being larger, more elongate, with a uniform cream coloration, and multispiral sculptured protoconch.

The multispiral protoconch (with 3.00 to 3.50 whorls), suggests a planktotrophic development pattern of *M. antares*, that might help explain its wide geographic range. Other columbellids with multispi-

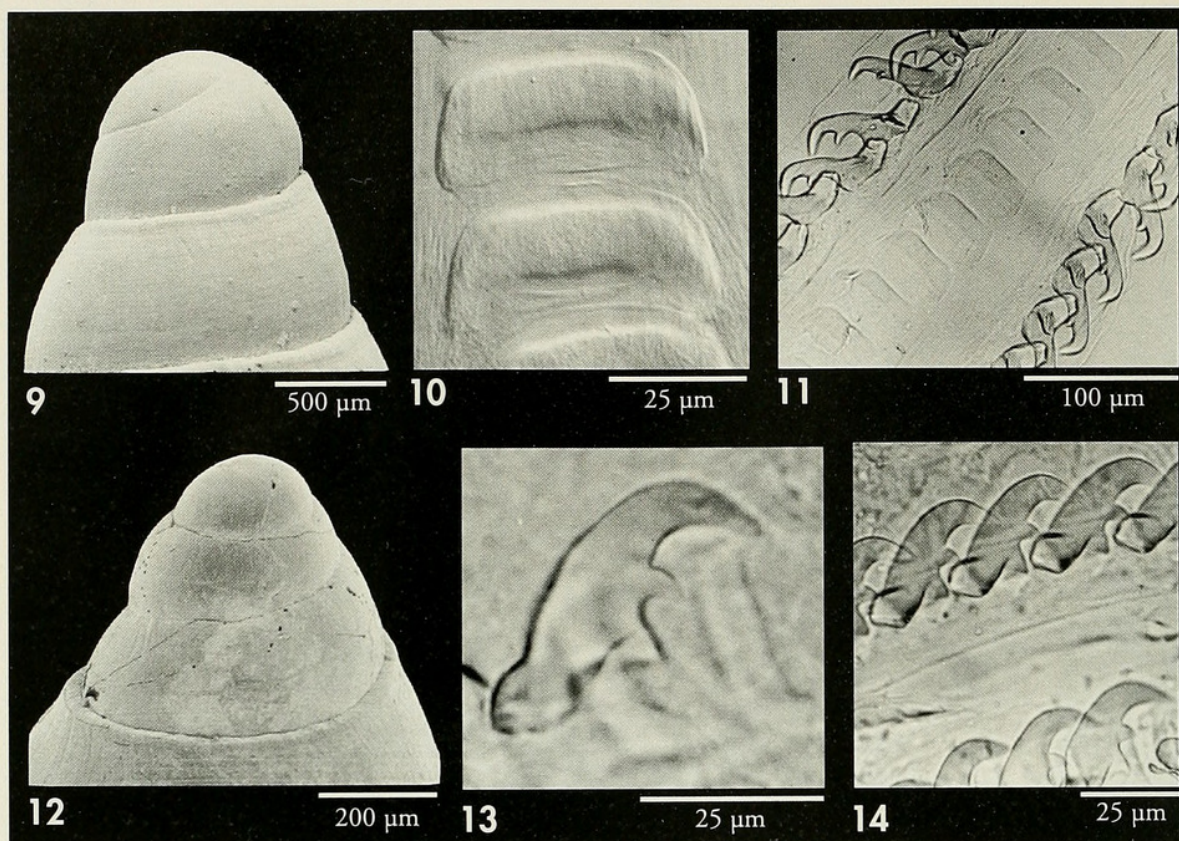


Figures 2-4. *Mitrella cabofrioensis* sp. nov. holotype (MORG 39010), shell length 9.5 mm. Figures 5-8. *Mitrella antares* sp. nov. 5-7: holotype (MORG 33314), shell length 3.6 mm; 8: detail of aperture showing denticles on columella (paratype: ANSP 367004).

Figuras 2-4. Mitrella cabofrioensis sp. nov. holotipo (MORG 39010), longitud de la concha 9,5 mm. Figuras 5-8. *Mitrella antares* sp. nov. 5-7: holotipo (MORG 33314), longitud de la concha; 8: detalle de la apertura mostrando los denticulos de la columela (paratipo: ANSP 367004).

ral protoconchs [e.g. *Anachis obesa* (Adams, 1845) e *M. dichroa* (Sowerby, 1844)] also present similar ranges, in the Caribbean islands., and along the west Atlantic coast, between Florida, EUA,

and south east Brazil. However, there is no register of these species, either in meso-Atlantic islands, nor in the east coast of the Atlantic. See Table I for a comparison among all the cited species.



Figures 9-11. *Mitrella cabofrioensis* sp. nov. 9: protoconch; 10: radula, central teeth; 11: lateral teeth. Figures 12-14. *Mitrella antares* sp. nov. 12: detail of protoconch; 13, 14: radula, lateral teeth. *Figuras 9-11. Mitrella cabofrioensis* sp. nov. 9: protoconcha; 10: rádula, dientes centrales; 11: dientes laterales. *Figuras 12-14. Mitrella antares* sp. nov. 12: detalle de la protoconcha; 13, 14: rádula, dientes laterales.

ACKNOWLEDGMENTS

We are indebted to Dr. Arnaldo C. dos Santos Coelho, (MNRJ), Dr. Eliézer C. Rios, (MORG), M. Sc. Sérgio Floeter and Mrs. José Coltro and Colin Redfern, who pro-

vided additional material for this study. Dr. Luiz R. Simone and M. Sc. Renata Gomes, made valuable comments and criticisms on the manuscript. Dr. Eduardo

Table I. Comparison among different species of *Mitrella* from the studied area.
 Tabla I. Comparativa entre varias especies de *Mitrella* presentes en el área estudiada.

	Length mm	Width mm	Teleoconch whorls	Protoconch whorls	External lip teeth	Columellar plicae	Depth range m
<i>M. ocellata</i>	11.0	5.0	4-5	1.75-2.0	6-8	no	Intertidal
<i>M. dichroa</i>	7.5	3.2	5-5.5	2.75-3.0	6-8	no	0-30
<i>M. cabofrioensis</i>	9.5	4.0	4	2.0	6	no	135
<i>M. profundus</i>	87.7	3.7	6	3.25	9	yes	196-1400
<i>M. nitidulina</i>	11.5	5.2	6	3.5-4	*	no	1200-2900
<i>M. lunata</i>	3.2	1.5	4-4.5	3.25-4	5-7	no	0-30
<i>M. antares</i>	3.6	1.9	3.5	3.0	5	no **	15-35

* no fully adult specimens were examined
 ** in fully adult specimens there are two closely set teeth on the columella

Koutsoukos, director of SEBIPE-DIVEX, Centro de Pesquisas da Petrobrás, for the use of the scanning electron microscope.

The senior author is supported by doctoral grant of the CAPES (Fundação Coordenação de Aperfeiçoamento de Pessoal de Nível Superior). The junior author is supported by doctoral grant of

the FAPESP (Fundação de Amparo a Pesquisa do Estado de São Paulo), proc. 97/11429-3. This work was funded by Fundação Universitária José Bonifácio, Universidade Federal do Rio de Janeiro, Academy of Natural Sciences of Philadelphia ("Jessup Award"), and American Museum of Natural History.

BIBLIOGRAPHY

- ABBOTT, R. T., 1974. *American Seashells* 2nd ed. 663 pp. Van Nostrand Reinhold Co., New York.
- BOUCHET, P. AND WARÉN, A., 1985. Revision of the northeast Atlantic bathyal and abyssal Neogastropoda excluding the Turridae (Mollusca, Gastropoda). *Bollettino Malacologico*, Supplemento 1: 121-296.
- LANGE DE MORRETES, F., 1949. Ensaio de catálogo dos Moluscos do Brasil. *Arquivos do Museu Paranaense* 7: 3-216.
- LEAL, J. H., 1991. *Marine prosobranch gastropods from oceanic islands off Brazil: Species composition and biogeography*. x + 419 pp. Backhuys / U.B.S., Oegstgeest.
- MÖRCH, O. A. L., 1859. Note sur les Dents Linguales du Genre *Columbella*. *Journal de Conchyliologie* 7: 254 - 262.
- RADWIN, G. E., 1978. The Family Collumbellidae in the Western Atlantic, Part IIb. - The Pyreninae (Continued). *The Veliger* 20 (4): 328 - 344.
- RIOS, E. C., 1994. *Seashells of Brazil*. 368 pp., pl.113. Editora FURG, Rio Grande.
- RISSO, J. A., 1826. *Histoire Naturelle des Principales Productions de l'Europe Méridionale et Particulièrement de Celles des Environs de Nice et des Alpes Maritimes*. 4: i-vii + 1-439; pl. 1-12.



2001. "Two new species of *Mitrella* Risso, 1826 (Gastropoda, Columbellidae) from west Atlantic." *Iberus : revista de la Sociedad*

Espan

~

ola de

Malacologi

,

a 19, 15-21.

View This Item Online: <https://www.biodiversitylibrary.org/item/101689>

Permalink: <https://www.biodiversitylibrary.org/partpdf/41160>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.