

**Nassarina thetys sp. nov. (Neogastropoda: Columbelloidea), a new species from the Brazilian coast**

Paulo Márcio S. COSTA

Laboratório de Malacologia, Dep. de Zoologia, Instituto de Biologia-C.C.S., Universidade Federal do Rio de Janeiro, Ilha do Fundão, CEP 21941-570, Rio de Janeiro, RJ, Brazil  
E-mail: pmscosta@hotmail.com

& Ricardo Silva ABSALÃO

at the above address, but also:

Dep. de Biologia Animal e Vegetal, Instituto de Biologia, Universidade do Estado do Rio de Janeiro, Av. São Francisco Xavier 524, CEP 20550-900, Rio de Janeiro, RJ, Brazil  
E-mail: absalao@hotmail.com

A new species of *Nassarina* Dall, 1889, *N. thetys* sp. nov., is described from the Brazilian seashore, based on shell and radula characters. In the Western Atlantic the species most similar to *N. thetys* is *N. metabrunnea*. The new species can be recognized by the comparatively large size of the shell, the spacing between the spiral lines that becomes increasingly wider and the spirals becoming more incassate towards the aperture.

Key words: Gastropoda, Prosobranchia, Columbelloidea, *Nassarina*, taxonomy, Atlantic Ocean, Brazil.

## INTRODUCTION

The genus *Nassarina* Dall, 1889, is in general represented by tropical species in the Western Atlantic Ocean, covering Florida to Rio de Janeiro State in the southeast of Brazil (Rios, 1994). The taxon *Nassarina* was created by Dall as a subgenus of *Nassaria* Link, 1807. After that, Dall & Simpson (1901) raised *Nassarina* to genus level and included the species *N. bushii* (Dall, 1889), *N. grayi* (Dall, 1889) and *N. columbellata* (Dall, 1889), *N. glypta* (Bush, 1805) and *N. metabrunnea* Dall & Simpson, 1901. In 1974, besides the species reported by Dall & Simpson (1901), Abbott added *N. minor* (C.B. Adams, 1845) and *N. monilifera* (Sowerby, 1844). In 1976 Radwin & d'Attilio allocated *N. grayi* to the genus *Cytharomorula* Kuroda, 1953, and in 1978 Radwin allocated *N. columbellata* to *Metulella* Gabb, 1873. De Jong & Coomans (1988) added *N. dubia* Olsson & McGinty, 1958, and *N. pygmaea* (C.B. Adams, 1850) to the malacofauna of the Western Atlantic. Until now only *N. metabrunnea* and *N. minor* were reported from the Brazilian seashore (Rios, 1994).

In later decades some individuals of a *Nassarina* similar to *N. metabrunnea* were collected along the Brazilian seashore. After study of the types of *N. metabrunnea*, *N. bushii*, *N. glypta*, *N. minor* and *N. pygmaea* we concluded that these specimens represent a new species, the eighth of the genus in the Western Atlantic.

The following abbreviations have been used:

CPMSC — Coleção Paulo Márcio Santos Costa, Rio de Janeiro, RJ; IBUFRJ —

Instituto de Biologia da Universidade Federal de Rio de Janeiro, Rio de Janeiro, RJ; MNRJ — Museu Nacional do Rio de Janeiro, Rio de Janeiro, RJ; MORG — Museu Oceanográfico Prof. Eliézer de Carvalho Rios — FURG, Rio Grande, RS (all above collections in Brazil); MCZ — Museum of Comparative Zoology, Harvard University, Cambridge, Mass., U.S.A.; USNM — United States National Museum, Smithsonian Institution, Washington DC, U.S.A.; ZMA — Zoological Museum of the University of Amsterdam, Amsterdam, the Netherlands.

The types of *N. bushii*, *N. glypta* and *N. metabrunnea* were examined. The radula of the new species was compared to the illustrations in Radwin (1978) and Bandel (1984).

#### MATERIAL EXAMINED

##### *Nassarina bushii* (Dall, 1889)

Holotype USNM 94.776 (fig. 7), off Cuba, Gulf of Mexico, 24°15'00"N 22°13'00"W, 419 m.

##### *Nassarina dubia* Olsson & McGinty, 1958

IBUFRJ 10.323, Alice in Wonderland, Bonaire, 25 m, 30.I.1998, leg. Paulino J.S. de Souza Jr., 8 specimens; CPMSC 2.163, Aruba, 1980, leg. F. Verberne, 4 specimens.

##### *Nassarina glypta* (Bush, 1885)

Lectotype USNM 35.363 (fig. 6), off Cape Hatteras, North Carolina, U.S.A., 'Albatross' Sta. 2108, 88 m, 1885; MORG 26.201, off Tampa, Florida, U.S.A., dredged between 180 and 360 m, VI.1964, 5 specimens.

##### *Nassarina metabrunnea* Dall & Simpson, 1901

Holotype USNM 159.695 (fig. 2), off Mayaguez, Puerto Rico.

##### *Nassarina minor* (C.B. Adams, 1845)

Paralectotype MCZ 186122, Jamaica; IBUFRJ 9.082, 18°20'S 38°55'W, 26.IV.1996, leg. *N. Oc.* Antares, 1 specimen; IBUFRJ 2.120, Itapuã, Bahia, Brazil, III.1991, leg. Geraldo Semer, 10 specimens; MORG 28.116, Deadman's Reef, Grand Bahama Island, Bahamas, 26°34'45"N 78°51'45"W, 7 specimens; CPMSC 1.423, Salvador, Bahia, Brazil, II.1985, leg. Flaviano F.L. Neto, 5 specimens; CPMSC 2173, Itapuã, Bahia, Brazil, II.1995, leg. Geraldo Semer, 1 specimen; CPMSC 1643, Guarapari, Espírito Santo, Brazil, between 10 and 15 m, VII.1993, leg. Alfredo Bodart, 3 specimens.

##### *Nassarina monilifera* (Sowerby, 1844)

IBUFRJ 10.322, Alice in Wonderland, Bonaire, between 6 and 8 m, 11.II.1998, leg. Paulino J.S. de Souza Jr., 8 specimens; MORG 28.115, Garbage Hole, Grand Bahama Island, Bahamas, 3 m, 1 specimen; CPMSC 2.164, Aruba, 1980, leg. F. Verberne, 3 specimens.

*Nassarina pygmaea* (C.B. Adams, 1845)

Holotype MCZ 155918, Jamaica; CPMSC 2.162, Aruba, 1980, leg. F. Verberne, 2 specimens.

## SYSTEMATICS

Family Columbellidae Swainson, 1840

Subfamily Pyreninae Suter, 1909

Genus *Nassarina* Dall, 1889

***Nassarina thetys*** sp. nov. (figs. 1, 4, 5, 8, 9, 11)

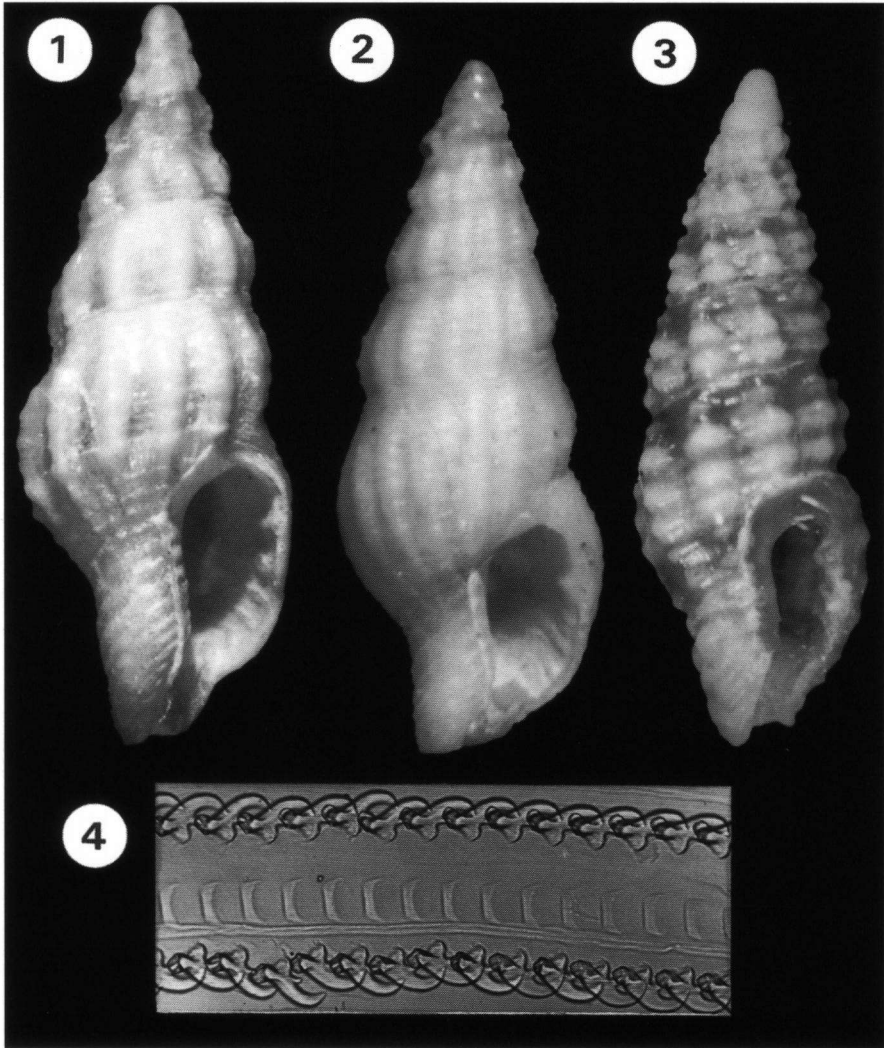
Shell fusiform and large for the genus (holotype height 8.54 mm, width 3.25 mm; all material studied 7.4-9.45 x 2.85-3.5 mm). Spire high, acute, covering almost the total length of the shell. Protoconch globose, smooth, paucispiral with 2.55 whorls. Teleoconch with six convex whorls, sculptured with axial ribs (10 to 12 on the body whorl) crossed by spiral lines that become gradually more incassate towards the anterior (apertural) direction of each whorl (seven in penultimate whorl of the holotype), the interspaces between the spiral lines also gradually widen in the same direction. Suture well impressed. Colour pattern variable, dark to light brown. Aperture oval, outer lip thick, forming a varix. Inner margin of outer lip with six lirate teeth. Inner lip reflected, with six to seven crenellations. Anal canal deep. Siphonal canal long. Operculum chitinous, yellowish with basal nucleus.

In the radula (figs. 4 and 8) the central tooth is about twice as wide as long. Its anterior front is straight, the posterior edge is concave. The anterior corners are rounded, the margins are slightly convex and the posterior corners acute. The lateral teeth are about twice as long as wide and are moderately curved along the longitudinal axis. The bases extend into a broad but relatively short extension of the outer posterior corner. The basal cusp is wide and attached to the basal membrane of the radula. The central and distal cusps are hook-like, slender and acute; the distal one is the largest.

The distribution of the new species as far as known is restricted to Brazilian waters and is featured in the map (fig. 11).

Types and type locality. — Holotype MORG 39.009, 8.54 x 3.25 mm, off Guarapari, Espirito Santo State, Brazil, 20°41'S 40°22'W, between 20 and 30 m depth, in calcareous algae, IV.1994, dredged by Messrs. Carlos Lira and Alfredo Bodart.

Paratypes (all from Brazil): MNRJ 5.727, 8.6 x 3.1 mm, between Rio de Janeiro, 19°30'S 39°40'W, and Espirito Santo, 22°30'S 41°00'W States, 50 m depth, trawled by nets; MORG 22.140, 7.4 x 2.85 mm, Ilha de Itaparica, 12°50'S 39°07'W, Bahia State, 15 m depth, 1982, leg. Bernardo Linhares; MORG 15.229, 2 specimens (7.6 x 3.0 mm, 7.9 x 3.1 mm), off Amapá State, 3°18'N 49°18'W, 76 m, 24.XI.1968; dredged by oceanographic vessel 'Almirante Saldanha'; MORG 14.285, 9.35 x 3.5 mm, off Guarapari, 22°30'S 41°00'W, Espirito Santo State, 80 m, 7.IX.1968, dredged by oceanographic vessel 'Almirante Saldanha'; IBUFRJ 8.003, 7.45 x 2.9 mm, off Rio Doce, 19°39'S 39°34'W, Espirito Santo State, 44 m, 27.II.1996, dredged by oceanographic vessel 'Antares'; IBUFRJ 10.319, 9.2 x 3.4 mm, off Santa Cruz de Cabralia, 16°9'55"S 38°14'39"W, Bahia State, 58 m, 26.X.1997, dredged by research vessel 'Astro Garoupa'; USNM 880279, 9.45 x 3.4 mm, Ilha de Itaparica, 12°50'S 39°07'W, Bahia State, 15 m, 1982, leg. Bernardo Linhares.



Figs. 1-4. *Nassarina* spp. 1, *N. thetys*, holotype MORG 39.009, 8.54 x 3.25 mm; 2, *N. metabrunnea*, holotype USNM 159.695, 6.15 x 2.35 mm; 3, *N. minor*, CPMSC 1.634, 4.5 x 1.6 mm; 4, *N. thetys*, radula, highly enlarged.



Figs. 5-8. *Nassarina* spp. 5, *N. thetys*, paratype MNRJ 5.727, 8.6 x 3.1 mm; 6, *N. glypta*, lectotype USNM 36.363, 5.0 x 2.0 mm; 7, *N. bushii*, holotype USNM 94.776, 9.15 x 3.85 mm; 8, *N. thetys*, lateral teeth of radula, highly enlarged.

Etymology. — Thetys is a marine goddess in Greek mythology, daughter of Nereus and Doris, who personified the movement of the waves.

## DISCUSSION

The main diagnostic character of *N. thetys* (figs. 1 and 5) is the presence of spiral lines that increase gradually towards the anterior (apertural) direction of each whorl and the spacing between these lines that also gradually increases in width. In all other species where there is any variation in these lines, it is almost imperceptible as in *N. monilifera* and *N. pygmaea*. Anyway, in these two species, as in the others, the spaces in between the spiral lines are always regular.

The outline of the shell clearly distinguishes *N. thetys* (figs. 1 and 5) and *N. metabrunnea* (fig. 2) from all other species of *Nassarina* in the region. On the other hand, *N. thetys* has a larger shell than *N. metabrunnea* and, besides this, *N. thetys* has a paucispiral protoconch with 2.5 whorls, while *N. metabrunnea* has a multispiral protoconch with 3.3 whorls.

The main conchological differences are summarized in table 1.

The first record of *N. metabrunnea* for Brazil is by Rios (1975); he based his conclusions on individuals that we discovered to be *N. thetys*. Consequently *N. metabrunnea* has not yet been reported from Brazilian waters.

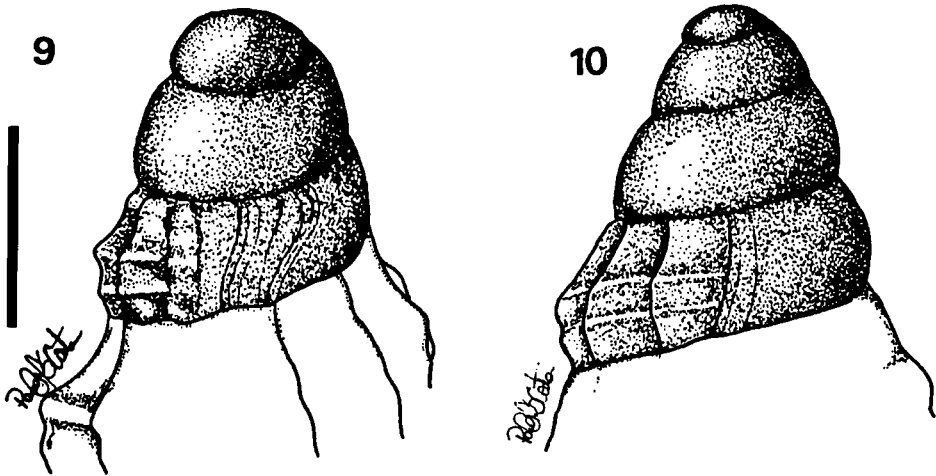
Radwin (1978) simply characterized the rhachidian tooth for all species of *Nassarina* as subrectangular. This succinct description precludes a proper comparison of these teeth in *N. thetys* and congeners. We do not know what details he observed. Fortunately his description of the lateral teeth is more detailed and will be the base for the following discussion.

The lateral teeth of *N. metabrunnea* (fig. 42 in Radwin, 1978) are almost straight, whereas those in *N. thetys* are moderately curved. Besides that, the base of the lateral teeth of *N. thetys* is shorter than that in *N. metabrunnea*.

The lateral teeth of *N. monilifera* are almost three times as long as wide, but in *N. thetys* these are about two times as long as wide. In the former species the central and distal

	<i>Nassarina thetys</i>	<i>Nassarina glypta</i>	<i>Nassarina bushii</i>	<i>Nassarina metabrunnea</i>	<i>Nassarina monilifera</i>	<i>Nassarina dubia</i>	<i>Nassarina pygmaea</i>	<i>Nassarina minor</i>
Total length mm	8.84	4.4	9.15	6.15	4.3	3.45	2.8	4.5
Width mm	3.25	2.0	3.85	2.35	1.7	1.5	1.2	1.6
Teleoconch whorls	6.0	3.75	4.75	4.75	4.5	3.5	3.6	4.25
Protoconch type	paucispiral	multispiral	paucispiral	multispiral	paucispiral	paucispiral	paucispiral	paucispiral
Protoconch whorls	2.55	4.0	1.9	3.35	1.9	1.7	1.8	4.2
Axial ribs	10-12	10	10	14	12	10	16	11-12
Penultimate whorl spiral lines	7	3	4	9	4-5	2	3	3-4
Interspaces between spiral lines	not equal	equal	equal	equal	equal	equal	equal	equal
Outer lip tooth	6 lirate	5 lirate	6	7 lirate	4	5-7 lirate	4-5	5
Inner lip crenellations	6-7	4	smooth	7	3-4	2-3	smooth	4-5

Table 1. Comparison of local species of the genus *Nassarina*.



Figs. 9-10. Details of the protoconch of *Nassarina* spp. 9, *N. thetys*; 10, *N. metabrunnea*. Scale bar 0.5 mm for both figures.

cusps are subequal, but in *N. thetys* the distal cusps are clearly larger than the central cusp.

The main differences in the lateral teeth of *N. bushii* and *N. glypta* as compared to those of *N. thetys* are in the basal cusp and in the different size of central and distal cusps. The basal cusps of the teeth in *N. bushii* and *N. glypta* are short and obtuse, whereas in *N. thetys* these are relatively acute and curved downward. The central and distal cusps in *N. bushii* are subequal (Radwin, 1978, figs. 40-41), while in *N. glypta* the width of the distal cusps distinguishes it from its congeners. On the other hand, in *N. thetys* the central cusp is shorter than the distal one.

The lateral teeth in *N. minor* have a narrower and longer base (Radwin, 1978, fig. 46) than that present in *N. thetys*. The basal tooth is long and acute in the former, whereas in the latter it is wider and somewhat obtuse when compared to that in *N. minor*. The central cusp has almost the same length as the distal cusps in *N. minor*, but in *N. thetys* the central cusp is smaller than the distal one.

The rachidian tooth of *N. monilifera* (see Bandel, 1984: 128, pl. 15 fig. 5) is only slightly wider than long, whereas the rachidian tooth of *N. thetys* is about twice as wide as long. All corners of the tooth in the former species are rounded, but the posterior corners of the tooth in *N. thetys* are acute.

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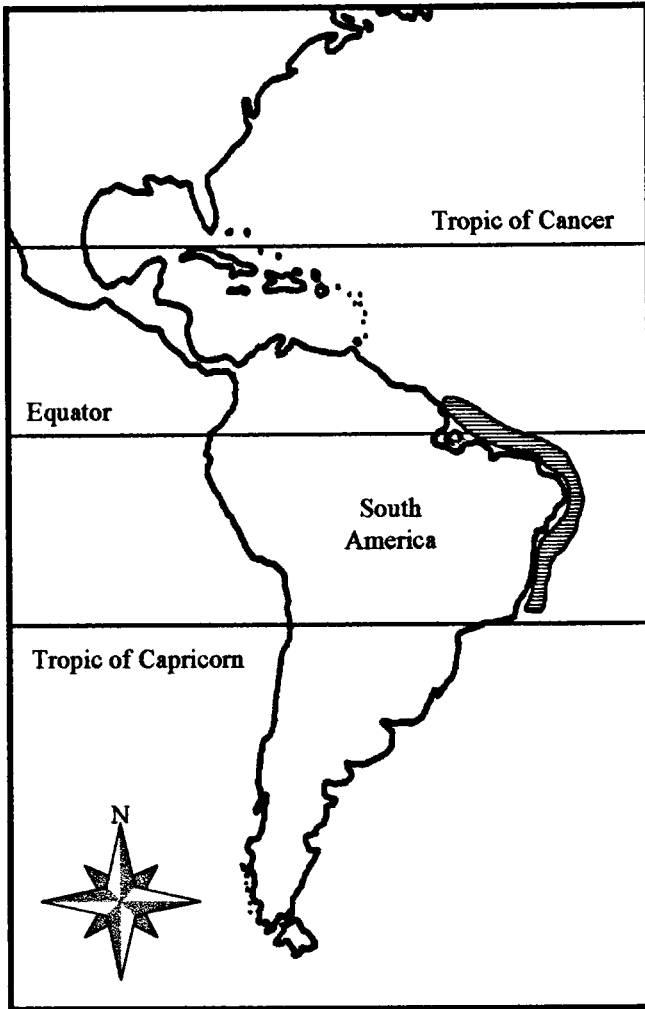


Fig. 11. Distribution of *Nassarina theys*.

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