



A new species of *Ammonicera* (Gastropoda: Omalogyridae) from Southwestern Atlantic: an unprecedented interaction between an omalogyrid and a *Tubastraea* coral

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Abstract: The new microgastropod *Ammonicera zelindae* sp. nov. is the fifth occurrence of the genus in the Tropical Southwest Atlantic, and the first record from Northeastern Brazil. The new species was found associated with a dendroid sun coral colony, *Tubastraea columnata*. *Tubastraea* represents a coral group introduced into the Atlantic in the early 1940s. In 2008 sun coral colonies were for the first time reported in the Todos-os-Santos Bay (Brazilian Northeastern coast), an environment protected area. *Ammonicera zelindae* sp. nov. was found associated with a colony collected in an artificial environment (a touristic terminal) located on Bom Jesus dos Passos Island (12°45'20.5"S, 38°38'23.2"W). In this work, the new species is characterized and compared with the congeners previously known from the Atlantic. The unprecedented interaction of this microgastropod with an exotic coral genus is here commented. As part of the results, a list of the worldwide *Ammonicera* and an identification key for the species are also provided.

Key words: Marine microgastropod, Todos-os-Santos Bay, bioinvasion, Taxonomic Key.

Uma nova espécie de *Ammonicera* (Gastropoda: Omalogyridae) do Atlântico Sudoeste: uma interação sem precedentes entre um omalogirídeo e um coral *Tubastraea*. Resumo: O novo microgastrópode *Ammonicera zelindae* sp. nov. é a quinta ocorrência do gênero para o Atlântico Sudoeste Tropical, e o primeiro registro para o Nordeste do Brasil. A nova espécie foi encontrada associada a colônia dendróide de coral-sol, *Tubastraea columnata*. *Tubastraea* representa grupo de corais introduzidos no Atlântico no início da década de 40. Em 2008, colônias de coral-sol foram registradas pela primeira vez na Baía de Todos-os-Santos (costa nordeste do Brasil), uma área de preservação ambiental. *Ammonicera zelindae* sp. nov. foi encontrada em colônia coletada em ambiente artificial (terminal turístico), localizado na Ilha Bom Jesus dos Passos (12°45'20.5"S, 38°38'23.2"W). Neste trabalho, a nova espécie é caracterizada e comparada às congêneres previamente conhecidas para o Atlântico. A interação inédita de *Ammonicera* com gênero de coral exótico é aqui comentada. Uma lista das *Ammonicera* conhecidas no mundo e uma chave de identificação taxonômica das espécies seguem como parte dos resultados.

Palavras-chave: Microgastrópodes Marinhos, Baía de Todos-os-Santos, bioinvasão, Chave Taxonômica.

Introduction

The family Omalogyridae Sars, 1878 comprises a group of marine gastropods with the smallest known size, with planispiral shells and adult diameters generally smaller than one millimeter. The interest in omalogyrid gastropods has increased as new species have been described worldwide (Bäumler *et al.* 2008). However, data on the geographical distribution of the family remain restricted, being even scarce, where the malacofauna has been well investigated (Lima *et al.* 2011).

These tiny gastropods live commonly associated with seaweeds, also feeding on algae cell contents. They are known for simultaneous hermaphroditism, with early development characterized by an intracapsular veliger larvae (Fretter 1948; Pimenta & Simone 2003). Omalogyridae is represented by three modern genera: *Omalogyra* Jeffreys, 1860, *Ammonicera* Vayssière, 1893, and *Retrotortina* Chaster, 1896. However, despite being recorded since the 1920s to the Atlantic Ocean (Florida: Dall 1927; Bieler & Mikkelsen 1998; Caribe: Rolán 1992a, 1992b; Bahamas: Redfern 2001), little data is available regarding the presence of the group in Brazil.

Rios (1994) cited *Omalogyra* (*Amonnicera*) *planorbis* (Dall, 1927) - currently accepted as *Palazzia planorbis* (Dall, 1927), as the only representative of the Omalogyridae from Brazil. Three years later, *Ammonicera plana* Simone, 1997, was described from Southeastern Brazil, in Ubatuba littoral, São Paulo State (23°26'2" S, 45°05'9" W) – the snail was found in association with the endemic reef-building coral, *Mussismilia hispida* (Verrill, 1901) (Simone 1997).

Lima *et al.* (2011) reported the occurrence of four Caribbean species, *A. lineofuscata* Rolán, 1992; *A. circumcirra* Rolán, 1992; *A. cf. familiaris* Rolán, 1992 and *A. sculpturata* Rolán, 1992, in the environmental protected area of the Saint Peter and Saint Paul Archipelago (0°55'N, 29°20'44"W). Although the microgastropods have been characterized as organisms '(...) which usually live among rubble and beneath stones, associated with algae and biogenic substrata (...)’ (Lima *et al.*, 2011: 89), neither the specialized habitat nor the kind of interaction adopted by the species were explained.

In this study, a new *Ammonicera* is described. This finding is part of a broader taxonomical investigation intending to inventory the malacofauna associated with the exotic genus *Tubastraea* Lesson 1829 in the Todos-os-Santos Bay (12°50'S, 38°38'W; Bahia State). Known as ‘sun corals’ because of the bright yellow and orange polyps, *Tubastraea coccinea* Lesson, 1829 was the first species to be introduced in the Caribbean, including Curaçao (12°N, 68°W) and Jamaica (18°N, 77°W), in the early 1940s (Vaughan & Wells 1943). The species started being monitored in the Atlantic and were first reported to Brazil (Campos Basin, northern Rio de Janeiro State, 20°19'S, 40°20'W) in the late 80s (Castro & Pires 1991). As the colonies dispersed through Southern Rio de Janeiro (22°50'S, 44°00'W/23°20'S, 44°45'W, Ilha Grande Bay) two species were then identified by de Paula & Creed (2004): *T. coccinea* and *T. tagusensis* Wells, 1982. In 2008, sun corals also arrived on the Brazilian Northeastern coast, introduced in the Todos-os-Santos Bay and established in natural and artificial environments (Sampaio *et al.* 2012). Supported by de Paula & Creed (2004), the same species from the Southeastern coast were described by Sampaio *et al.* (2012) to the Bahia State, being the plocoid colonies with shorter corallites designated *T. coccinea*, while the dendroid colonies with taller corallites attributed to *T. tagusensis*. Recently Serra *et al.* (2024) provided a new scenario concerning the diversity of *Tubastraea* corals in the Todos-os-Santos Bay, indicating that plocoid colonies may refer to more species than previously expected (among them, two new species: *T. megalostoma*, and *T. gradidentata*), while the dendroid colonies may represent two new species: the unbranched *T. columnata* and the branched *T. ramosa*. Hence, the research on the interactions of the malacofauna with the exotic *Tubastraea* has expanded significantly in this section of the Brazilian coast, with a recent publication pointing out that *Tubastraea* larvae may settle on shells of exotic mollusks (i.e., *Isognomon bicolor*, *Saccostea cucullata*) that co-occur in the biofouling (Brahim *et al.* 2024).

Therefore, beyond the interactions on a macroscale, one important goal is to investigate the micromollusks associated with the *Tubastraea* colonies. Because of their small size, the scarce knowledge of habitat preferences, and ecological

interactions, the *Ammonicera* is a good example of a hidden biodiversity. Thus, besides a new *Ammonicera* species from Northeastern Brazil, the interaction between an omalogyrid gastropod and *T. columnata* comprises pioneer data on the malacofauna associated with a newly-described *Tubastraea* species. In addition, a list of the worldwide *Ammonicera* and an identification key for the species are also provided.

Material and Methods

The material was collected in the Todos-os-Santos Bay (TSB) - the second largest navigable bay in the country, with a total estimated area of 1,233 km² (Cirano & Lessa 2007; Hatje & Andrade 2009). Due to the extensive industrial zone, TSB has undergone critical impacts. Nevertheless, it was considered a priority conservation area by the Ministry of the Environment, designated Environmental Preservation Area in 1999 (State decree no. 7.595 June 5th, 1999) (Hatje & Andrade 2009).

Tubastraea colonies were collected using quadrats (50 x 50 cm). In the laboratory, seawater

from samples was filtered (sieves of 100 µm, 250 µm, and 500 µm) and colonies and precipitated debris were fixed in 70% ethanol solution. *Ammonicera* specimens were sorted from the microfauna associated with sun coral colonies from Bom Jesus dos Passos Touristic Terminal (12°45'20.5"S, 38°38'23.2"W) (Fig. 1). Colonies were identified following Serra *et al.* (2024), and dendroid unbranched specimens were designated *T. columnata*.

During the taxonomic studies, characteristics of the teleoconch, and the embryonic shell were firstly described using a stereoscopic microscope (Zeiss AxioZoom V16). For scanning electron microscopy, the shell was mounted on aluminum pin stubs, previously covered with a double-sided sticky tape, sputter-coated with 35 nm of gold in a Denton Vacuum Desk IV ion coater, and examined through a Jeol JSM-6390LV (FIOCRUZ-BA).

For the taxonomic key, data on the genus *Ammonicera* were compiled from the Mollusca Database and available literature. Biogeographic appointments were based on Spalding *et al.* (2007).

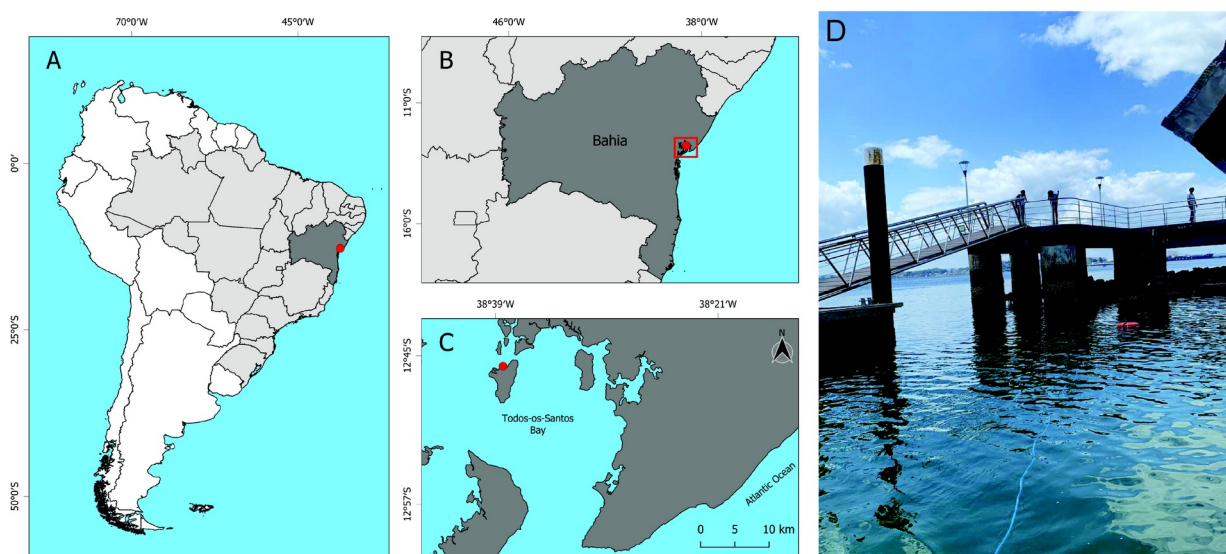


Figure 1. Map of Study Area (A- South America view with Brazil in light gray and Bahia State in dark gray, B- Bahia State, indicating Todos-os-Santos Bay, C- Todos-os-Santos Bay, red point= Bom Jesus dos Passos Touristic Terminal (12°45'20.5"S 38°38'23.2"W). D- Piers of Bom Jesus dos Passos Touristic Terminal, where samples were collected.

Systematics

Subclass Heterobranchia Burmeister, 1837

Superfamily Omalogyroidea Sars, 1878

Family Omalogyridae Sars, 1878

Genus *Ammonicera* Vayssi re, 1893

Type species: *Ammonicera*

fischeriana Monterosato, 1869

Ammonicera zelindae sp. nov. (Fig. 2)

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Holotype: metalized, MZUSP 168441.

Type locality: Touristic Terminal dos Passos, Bom Jesus dos Passos Island (12°45'20.5"S, 38°38'23.2"W), TSB, Bahia State, Brazil.

Diagnosis. Shell thin, opaque. Protoconch with two smooth spiral cords and a soft groove. Teleoconch surface with unequally spaced, fine axial striae and three spiral cords: two laterals and a thicker peripheral, delimited by soft grooves. Aperture circular with thin and smooth lips.

Description: Shell thin, planispiral, biconcave, without carinae or nodules; diameter ~0.35 mm with 2¾ whorls; color ranging from yellowish to light brown, opaque. Protoconch with ~1 whorl with a pair of soft lateral cords, one close to the suture, and other along the central region (Figs. 2A, B). Transition between protoconch and teleoconch unclear. Teleoconch subtly sculpted by axial fine striae, unequally spaced. Three spiral cords are present, two initially subsutural, continuing as lateral, prominent (Figs. 2A, E, F); fine grooves delimiting two lateral cords. Low additional, narrow cord running in periphery, along middle region of last whorl (Figs. 2E, F). Aperture rounded, truncated in region connected to last whorl, occupying ~25% of shell width (Figs. 2E, F), with cutting edges (Figs. 2A, C).

Etymology: The name of the new species was in honor of the great Master of coral reef studies from Brazil, Dr. Zelinda Margarida de Andrade Nery Leão, a naturalist researcher of the Geoscience Institute of the Federal University of Bahia and titular member of the Science Academy of the Bahia State, known worldwide.

Habitat-Distribution: Until now, the single individual alive of *A. zelindae* sp. nov. was found associated with a dendroid colony of the introduced coral *Tubastraea*, established on an artificial substrate in the TSB, Touristic Terminal dos Passos, Bom Jesus dos Passos Island, Bahia State, Northeastern coast.

Remarks: *Ammonicera zelindae* sp. nov. is distinguishable from its congener *A. sculpturata*, recorded from Brazil, by: (1) the absence of shell nodules and carinae (while *A. sculpturata* shows irregular nodules); (2) the presence of a central cord on the lateral region (while *A. sculpturata* lacks such cords) (Rolan 1992b).

The new species resembles *A. circumcirra*, *A. familiaris*, *A. lineofuscata*, and *A. plana* from the Atlantic Ocean by having no nodules on the shell surface. *Ammonicera zelindae* sp. nov. is distinguishable from *A. plana* by having 3 spiral

bands, while the congener from southeastern Brazil has 5 spiral bands (Simone, 1997).

Comparing the new species with *A. circumcirra* from Cuba, it differs by the opaque shell, while the Caribbean congener has shiny periostracum (Rolán 1992a); by its thicker central cord, and highly defined axial bands.

Ammonicera zelindae sp. nov. is also different from *A. familiaris* and *A. lineofuscata* by presenting protoconch with a smooth spiral cord, while there is an ornamented cord in *A. familiaris* and *A. lineofuscata* (Rolan 1992b).

General view on the genus *Ammonicera*

List of living species: *Ammonicera albanyensis* Rubio & Rolán, 2020, *Ammonicera albospeciosa* Rolán, 1992, *Ammonicera andresi* Oliver & Rolán, 2015, *Ammonicera angulata* Sleurs, 1985, *Ammonicera arrondoi* Oliver & Rolán, 2015, *Ammonicera aurea* Waki, Rolán, Noseworthy, H.-S. Kang & K.-S. Choi, 2017, *Ammonicera binodosa* Sleurs, 1985, *Ammonicera burnayi* Rolán, 1992, *Ammonicera caledonica* Rubio & Rolán, 2020, *Ammonicera chosenuca* Chernyshev, 2003, *Ammonicera circumcirra* Rolán, 1992, *Ammonicera columbretensis* Oliver & Rolán, 2015, *Ammonicera croata* Rubio & Rolán, 2020, *Ammonicera extracarinacostata* Sleurs, 1985, *Ammonicera familiaris* Rolán, 1992, *Ammonicera fischeriana* Monterosato, 1869, *Ammonicera galaica* Oliver & Rolán, 2015, *Ammonicera gonzalezi* Rolán & Rubio, 2017, *Ammonicera japonica* Habe, 1972, *Ammonicera lignea* (Palazzi, 1988), *Ammonicera lineofuscata* Rolán, 1992, *Ammonicera mcleani* Sartori & Bieler, 2014, *Ammonicera mexicana* Sartori & Bieler, 2014, *Ammonicera minortalis* Rolán, 1992, *Ammonicera multistriata* Rolán, 1992, *Ammonicera nodicarinata* (Sleurs, 1985), *Ammonicera nodulosa* Oliver & Rolán, 2015, *Ammonicera nolai* Rolán, 1992, *Ammonicera oteroi* Rolán, 1992, *Ammonicera pascuensis* Rubio & Rolán, 2020, *Ammonicera plana* Simone, 1997, *Ammonicera plicata* Sleurs, 1985, *Ammonicera robusta* Rolán, 1992, *Ammonicera rota* (Forbes & Hanley, 1850), *Ammonicera rotundata* (Palazzi, 1988), *Ammonicera san* Rolán & Peñas, 2009, *Ammonicera sculpturata* Rolán, 1992, *Ammonicera shornikovi* Chernyshev, 2003, *Ammonicera sleursi* Sartori & Bieler, 2014, *Ammonicera sucina* (Laseron, 1954), *Ammonicera superstriata* Oliver & Rolán, 2015, *Ammonicera tahitiensis* Rubio, Rolán & J. Letourneux, 2020, *Ammonicera tenuicostata* Sleurs, 1985, *Ammonicera tomalba* Rubio & Rolán,

2020, *Ammonicera tomensis* Rubio & Rolán, 2020, *Ammonicera vangoethemi* (Sleurs, 1985), *Ammonicera verdensis* Rolán, 1992, *Ammonicera vladivostokensis* Chernyshev, 2003, ***Amonicera zelindae* sp. nov.**

Taxonomic key to living *Ammonicera* species in the world

- 1 Shell with prominent nodules and carinae... 2
Shell without nodules and carinae ... 22
- 2 Two rows of nodules in the body whorl... *A. binodosa*
One row of nodules in the body whorl... 3
- 3 Teleoconch periphery without cords or grooves... 4
Teleoconch periphery with cords or grooves... 8
- 4 Protoconch apically sculptured... 5
Protoconch not apically sculptured... 6
- 5 Nodules increasing along teleoconch... *A. minortalis*
Nodules with equal size along teleoconch... *A. columbretensis*
- 6 Protoconch with two cords... *A. aurea*
Protoconch with one cord... 7
- 7 Protoconch cord centralized ... *A. albanyensis*
Protoconch cord peripherally positioned... *A. tahitiensis*
- 8 Peripheral projections present... 9
Peripheral projections absent... 14
- 9 Well-marked peripheral projections... 10
Soft peripheral projections ... 11
- 10 Shell white translucent ... *A. robusta*
Shell brownish orange... *A. burnayi*
- 11 Shell covered by apical grooves... *A. superstriata*
Shell not covered by grooves... 12
- 12 Shell color transparent... *A. angulata*
Shell color not transparent... 13
- 13 Shell brown, nodules well pronounced... *A. nodicarinata*
- Shell greenish, nodules weakly pronounced... *A. verdensis*
- 14 Teleoconch spiral sculpture formed by 5 cords... 15
Teleoconch spiral sculpture formed by 3 or less cords... 16
- 15 Peripheral wall with obsolete transversal ribs. Nodules weakly pronounced... *A. arrondoi*
Peripheral wall with well-marked transversal ribs. Nodules well pronounced... *A. nodulosa*
- 16 Opercular opening hexagonal... 17
Opercular opening rounded... 18
- 17 Teleoconch peripheral wall convex... *A. mcleani*
Teleoconch peripheral wall keeled... *A. mexicana*
- 18 Periphery marked by a raised spiral cord, suprapерipheral and infraperipheral walls concave... *A. gonzalezi*
Peripheral walls convex or straight, never concave... 19
- 19 Central spiral cord mid-whorl positioned present... 20
Central spiral cord mid-whorl positioned absent... 21
- 20 Protoconch with three cords, nodules gradually increasing in size... *A. extracarinacostata*
Protoconch with two cords, nodules with equal size... *A. albospeciosa*
Protoconch with one cord, nodules with equal size... *A. andresi*
- 21 Prominent and irregular nodules present in body whorl... *A. sculpturata*
Nodules with regular size in body whorl... *A. rota*
- 22 Body whorl laterally smooth, without ornamentation... 23
Body whorl with lateral ornamentation... 29
- 23 Teleoconch without spiral cord... *A. pascuaensis*
Teleoconch with spiral cord... 24

- 24 Teleoconch central spiral cord present in apical view... 25
Teleoconch central spiral cord absent in apical view... 26
- 25 Apical spiral cord soft, positioned mid whorl... *A. fischeriana*
Apical spiral cord well marked, positioned peripherally on the whorl... *A. oteroi*
- 26 Shell not laterally compressed... 27
Shell very laterally compressed... 28
- 27 Protoconch with one strong spiral groove.
Transition to teleoconch not marked ... *A. plicata*
Protoconch with two weak spiral grooves.
Transition to teleoconch well-marked... *A. galaica*
- 28 Shell with five colored bands per whorl... *A. plana*
Shell without colored bands per whorl... *A. san*
- 29 Protoconch cords smooth... 30
Protoconch cords with ribs... 41
- 30 Teleoconch without spiral cord... 31
Teleoconch with spiral cord... 32
- 31 Protoconch with a central distinct groove... *A. croata*
Protoconch without grooves... 33
- 32 One spiral brown band in shell, striation shell acute.... *A. lineofuscata*
Three spiral brown bands in shell, striation shell weak and rounded... *A. sucina*
- 33 Teleoconch with tuberculate spiral cord... *A. multistriata*
Teleoconch without tuberculate spiral cord... 34
- 34 Protoconch with central groove positioned mid shell, well-marked... 35
Protoconch without central groove... 36
- 35 Protoconch well ornamented, and not distinguishable from teleoconch. Spiral cord distinct and persistent in all shell whorls... *A. tomalba*
- 36 Shell with peripheral radial grooves ... *A. nolai*
Shell without peripheral radial grooves... 37
- 37 Protoconch with 3-4 cords... *A. lignea*
Protoconch with 2 cords... 38
- 38 Teleoconch without or with soft lines between spiral cords in apical view... 39
Teleoconch with two grooves between spiral cords in apical view...40
- 39 Teleoconch with soft lines between spiral cords, spiral cord persistent in all whorls ...
Ammonicera zelindae sp. nov
Teleoconch without lines or grooves. Spiral cord short, fading in the last whorls... *A. rotundata*
- 40 Shell sculpture persistent and visible in all teleoconch, apical tubercles visible in lateral view... *A. circumcirra*
Shell sculpture fading along the teleoconch, shell softly striated in lateral view... *A. sleursi*
- 41 Shell covered by several axial and pronounced lines along ventral, dorsal, and periphery surface ... 42
Shell without axial pronounced lines along shell surface... 44
- 42 Peripheral wall keeled, with a groove.
Teleoconch with a pronounced central cord in apical view... *A. tenuicostata*
Peripheral wall convex. Teleoconch without a central cord in apical view... 43
- 43 Teleoconch with spiral grooves in all views... *A. vangoethemi*
Teleoconch without spiral grooves... *A. caledonica*
- 44 Teleoconch with a central spiral cord in apical view...45
Teleoconch without spiral cord in apical view... 47

- 45 Protoconch with two wide spiral grooves ... *A. chosenica*
 Protoconch with one spiral groove... 46
 46 Teleoconch with two spiral grooves well marked on both sides. Peripheral wall with pronounced transversal ribs... *A. familiaris*
 Teleoconch with two spiral grooves unclearly marked on both sides. Peripheral wall with obsolete transversal ribs. *A. shornikov*
 47 Apical side of protoconch slightly sculptured, transition to teleoconch not distinct ... *A. japonica*
 Apical side of protoconch highly sculptured, transition to teleoconch well marked... *A. vladivostokensis*

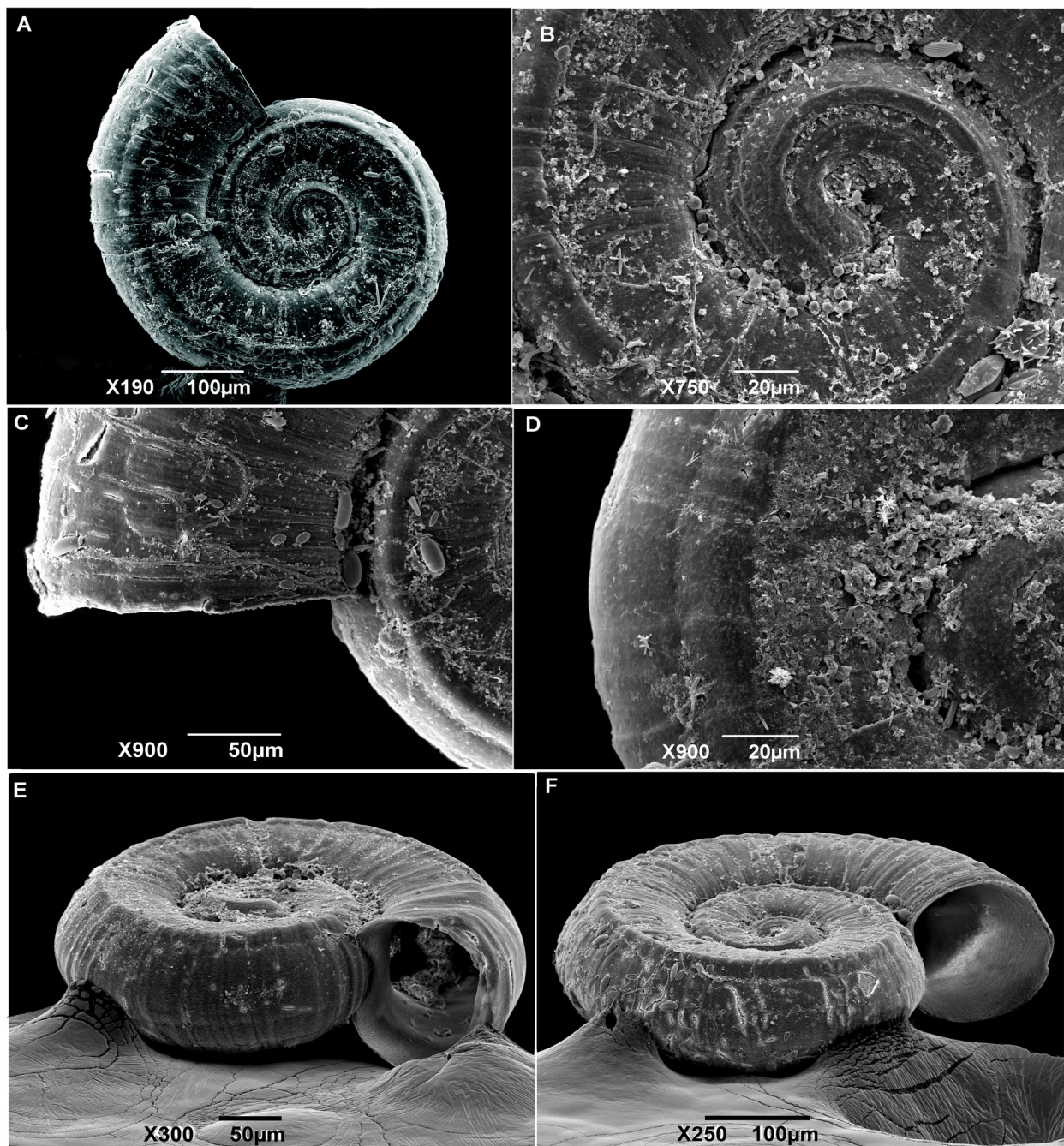


Figure 2. *Ammonicera zelindae* sp. nov. holotype MZUSP 168441, Touristic Terminal dos Passos, Bom Jesus dos Passos Island (12°45'20.5"S 38°38'23.2"W). A- Apical view. B- Protoconch. C- Teleoconch end. D- Upper spiral cords delimited by soft lines. E and F- Peripheral view with opercular opening.

Discussion

Instead of an erratic or opportunistic behavior, the occurrence of *Ammonicera* in algae or coral communities, supports a selective preference for living carbonate habitats. Moreover, reefs and coral communities, where they have been often found along the Brazilian coast, are biocenoses associated with well-preserved areas under low coastal impacts. This is particularly evident considering the biodiversity of *Ammonicera* so far reported to St.

Peter and St. Paul Archipelago (Lima *et al.* 2011) – ‘St. Peter and St. Paul archipelago is a remote group of rocks lying just north of the equator on the mid-Atlantic ridge (0°55'N, 29°22'W), approximately 960 km off the northeast coast of Brazil’ (p. 567, Amaral *et al.* 2002).

This point of view is correlated with the genus distribution, commonly found in temperate and warm waters worldwide, but absent in cold and polar waters (Fig. 3). These tiny snails are likely to select

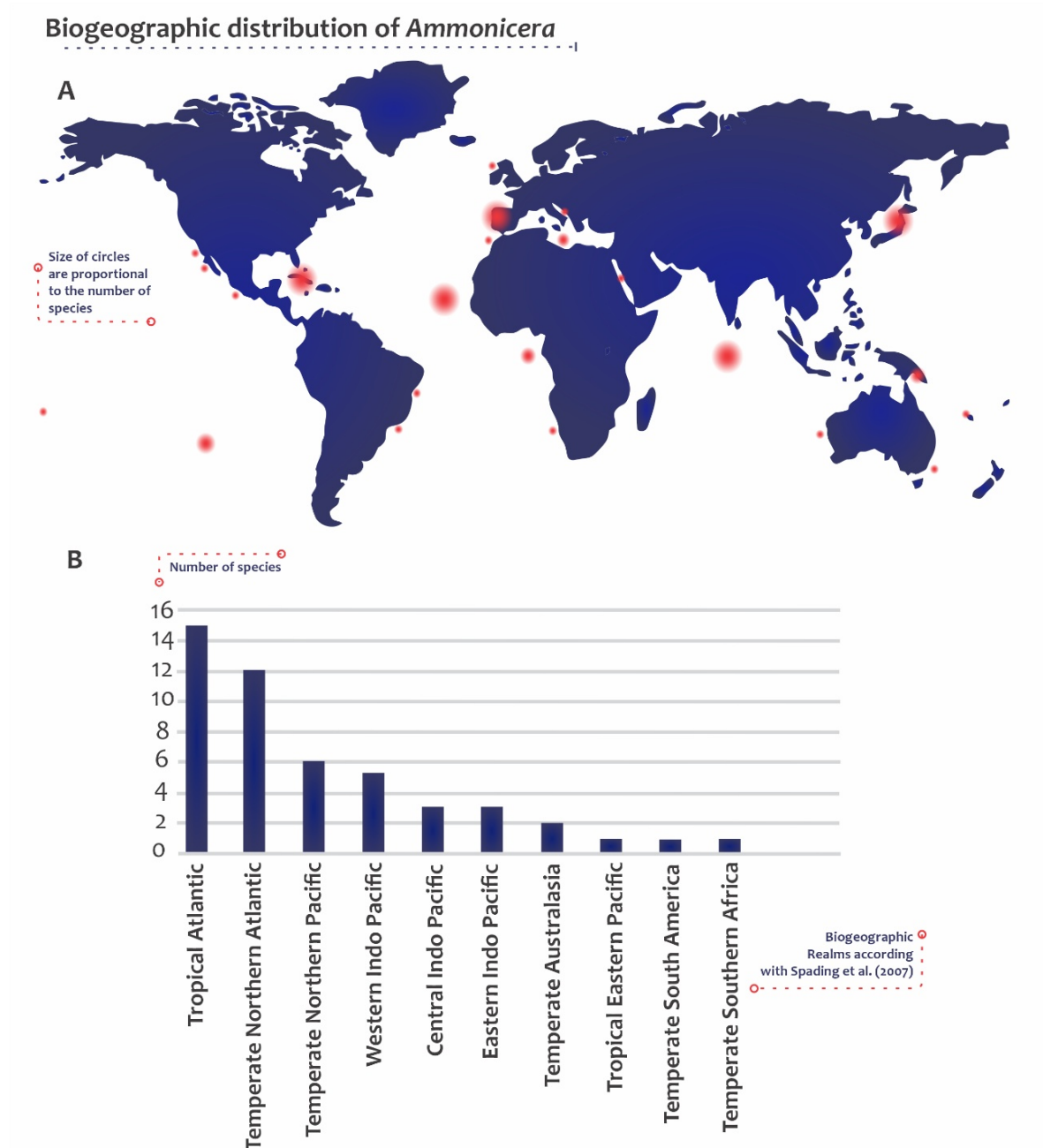


Figure 3. Distribution of all living species of *Ammonicera*, considering the type locality, according to provinces (3A) and realms (3B) by Spalding *et al.* (2007), size of circles in 3A are proportional to the number of species.

ecologically stable environments, being probably distributed through a range of subtidal depths, preventing low sedimentation stress. Another important point relies on the relationship with scleractinian corals, although feeding on algae cells. Macro and microalgae are usually found on coral colonies, or even inside coral tissues, as usually observed among zooxanthellate, reef-building species such as the endemic *Mussismilia hispida* (Verrill, 1902) (Simone 1997; Nogueira 2003).

Sun corals are commonly observed in benthic communities with high representativeness of algae and sponges, which may also be used as ecological niches (Silva *et al.* 2017). In addition, dendroid colonies with taller corallites may provide a more complex habitat structure for the associated fauna, suitable for grazing or coralivorous microgastropods.

Using the endemic *Mussismilia* as a model, Nogueira *et al.* (2015) have suggested a positive correlation between complex coral morphologies and species richness. Contrasting with two massive congeners, *M. braziliensis* (Verrill, 1868) and *M. hispida*, *Mussismilia harttii* (Verrill, 1868) with longer, phaceloid corallites and a large internal volume of polyp interspace, is instead the coral with the highest abundancies and number of species as well. Hence, assuming this correlation may be applied to other genera, one may think that dendroid branched and unbranched *Tubastraea* (with longer corallites and larger polyp interspaces) will probably also stand out in terms of species richness whether compared with those with shorter corallites (plocoid).

Therefore, as the investigation on the *Tubastraea* associations advances in the TSB, plenty of microinvertebrates will be diagnosed. Moreover, depending on the organism, the interaction may occur in distinct phases of the coral life including the early founder polyp stage, or along the colonial development. Nevertheless, considering the low diversity of the shallow water scleractinians found along the Brazilian Northeastern coast (inventory updated by Leão *et al.* 2016), benthic communities with *Tubastraea* offer a more complex environment, particularly assuming that sun corals are acting as local new niches to be explored as refuge or food resource, at low competitive costs. In fact, a trend that has been already observed among some crustaceans, as amphipods (Alves *et al.* 2020).

Finally, the description of *A. zelindae* sp. nov. is highly valuable to the knowledge of the biodiversity of the Omalogyridae, a worldwide

poorly explored taxonomical group. The association between an omalogyrid and a *Tubastraea* coral is unprecedented. But, even reiterating the preference of *Ammonicera* for living carbonates, further analyses are necessary to discuss niche displacement at this moment. One may expect that taxonomy associated with conservation policies may underline the strategies for biodiversity management in the TSB. Certainly, the scenario is quite complex for the overspread *Tubastraea* – a coral genus that releases larvae into seawater (Glynn *et al.* 2008). Thus, following the evaluation of the impacts of an organism that has been considered potentially bioinvasive, the ecological role of the sun corals as a specialized habitat for native biota should be assessed rather than ignored.

Ethical statement

Collection of biological samples were conducted following all applicable ethical regulations regarding collection of biological samples and experimentation with animals. Investigation was performed under permit Sisbio N° 15161-1, issued by Chico Mendes Institute for Biodiversity Conservation (ICMBio).

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