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A NEW SPECIES OF *LAUBIERICONCHA* (BIVALVIA: VESICOMYIDAE) FROM DEEP WATERS OFF ARGENTINA

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ABSTRACT

A new species of bivalve belonging to the family Vesicomyidae, ***Laubiericoncha puertodeseadoi***, n. sp., is described. The material was collected during several cruises to the continental margin of Argentina on board of the R/V "*Puerto Deseado*". The distribution of the genus *Laubiericoncha* is expanded to include the southwestern Atlantic Ocean. The description was done by using morphological characters of the shell and mantle cavity organs. All type material of congeneric species was examined and illustrated. ***Laubiericoncha puertodeseadoi***, n. sp., is characterized by a compressed, subrectangular, elongated, inequilateral shell, with slightly prosogyrous umbo and a well-defined triangular pallial sinus, strong external ligament and ctenidia with two robust demibranchs, foot anteriorly projecting and fused siphons. This new species constitutes the first record of the genus *Laubiericoncha* living on the continental margin off Argentina.

Key words: Vesicomyidae, Argentina, new species, *Laubiericoncha*.

INTRODUCTION

The bivalve family Vesicomyidae, introduced by Dall & Simpson (1901), constitutes one of the six chemosymbiotic groups of bivalves that live around hydrothermal vents, hydrocarbon seeps and whale falls (Cosel & Olu, 2009; Krylova & Sahling, 2010; Taylor & Glover, 2010). Besides Vesicomyidae, species belonging to the families Lucinidae, Mytilidae, Nucinellidae, Solemyidae and Thyasiridae have been reported as being chemosymbiotic.

Vesicomyid species were historically collected in waters from 100 m to 6,400 m depth hosting sulphide-oxiding bacteria in their gills (Sibuet & Olu, 1998; Cosel & Olu, 2008).

The Vesicomyidae was mentioned by Hikida et al. (2003) as living in the Upper Cretaceous of Japan, but these authors did not illustrate its hinge structure, thus its vesicomyid position cannot be confirmed (Amano & Kiel, 2007). However, it has been widely recorded from middle to late Eocene of Washington to Recent by several authors (Otatume, 1942; Kanno et al., 1989; Squires & Goedert, 1991; Amano & Kanno, 2005; Krylova & Sahling, 2006; Kiel & Amano, 2010, among others).

The systematic position of Vesicomyidae is still far from resolved. It has been related to Veneroidea (Scarlato & Starobogatov, 1979), Glossoidea (Keen, 1969; Vokes, 1980; Boss, 1968, 1970, 1982; Bernard, 1983; Allen, 2001; Krylova & Janssen, 2006) and Arcticoidea (Okutani, 1966; Taylor et al., 1973; Slack-Smith, 1998). However, Taylor et al. (2007) left the family Vesicomyidae with an unresolved superfamilial status. They concluded that although Arcticoidea and Glossoidea are usually mentioned as superfamilies, the component, Arcticidae, Trapezidae, Glossidae, Vesicomyidae and Kelliellidae may not be monophyletic. Those works that placed Vesicomyidae in Arcticoidea and suggested a position close to the Veneroidea (Giribet & Wheeler, 2002; Mikkelsen et al., 2006; Taylor et al., 2007). However, the close relationship between *Arctica* and the venerids *Callista* and *Mercenaria*, made Arcticoidea (vesicomyds and articids) non-monophyletic (Giribet & Wheeler, 2002).

Not only is the systematic status of Vesicomyidae under discussion but also the internal structure of clade is as well. The validity of the family was studied by Allen (2001), who revised the genera *Kelliella* Sars, 1870, and

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Vesicomya Dall, 1886. He suggested that both type species are congeneric, making Vesicomyidae a synonym of Kelliellidae (Glossoidea). However, Krylova & Sahling (2010) rejected this synonymy, keeping both families as valid until new studies are performed. In recent years, several taxonomic studies, in which new taxa were introduced, placed the Vesicomyidae into Glossoidea (Krylova & Janssen, 2006; Cosel & Olu, 2008, 2009; Krylova & Cosel, 2011; Oliver et al., 2011, among others).

The suprageneric classification of Vesicomyidae was recently revised by Krylova & Sahling (2010). They recognized two subfamilies, Vesicomyinae, with only one genus, *Vesicomya*, and Pliocardiinae which groups fifteen genera, including *Laubiericoncha* Cosel & Olu, 2008. In this study, Krylova & Sahling (2010) did not consider genera with such exclusively fossil species as *Adulomya* Kuroda, 1931, *Hubertschenckia* Takada, 1953, and *Pleurophopsis* Van Winkle, 1919. The genus *Laubiericoncha* was introduced for species with two demibranchs by Cosel & Olu (2008) when they described the new species *L. myriamae* from Barbados. In addition, they also included three other species, *L. chuni* (Thiele & Jaeckel, 1931), *L. angulata* (Dall, 1896) and *L. suavis* (Dall, 1913), in the genus. Currently, *L. nanshaensis* (Xu & Shen, 1991) also belongs to this genus (sensu Krylova & Sahling, 2010). Previously, new material collected by Krylova & Janssen (2006: 246, pl. 4 fig. 25) from Edison Seamount, southwest Pacific Ocean, was identified to family level and considered congeneric in *Laubiericoncha* by Cosel & Olu (2008). In addition, Krylova & Janssen (2006) considered as congeneric an undescribed species from Gakkel Ridge in the Arctic Ocean mentioned by Sirenko et al. (1995). Finally, Cosel & Olu (2008) and later Krylova & Sahling (2010) included both unnamed species into *Laubiericoncha*, but highlighting that additional specimens are required to confirm or reject this new taxonomic position.

The shell characters of *Laubiericoncha*, together with some diagnostic anatomical features (i.e., two demibranchs), allow us to recognize it from the other genera of the family. In this paper, we introduced a new species of *Laubiericoncha* from deep waters of the South Atlantic basin.

MATERIAL AND METHODS

The material herein described was collected during several cruises to the continental slope of Argentina on board of the R/V "*Puerto Deseado*". Most of the specimens were collected, with a modified Agassiz dredge, but in one station (24) with bottom trawl net also collected empty shells. One specimen with soft parts was fixed in 96% ethanol. All the other specimens were collected dead, but most of them with both valves still articulated. Critical point dry was used to study several soft parts, including the demibranchs, under the SEM (Philips XL30) at the MACN. Fresh cuts of the valves were coated and photographed at SEM. Type series measures are reported in the Table 1. Type material was deposited in the collection of Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (MACN-In) and Centro Nacional Patagónico (CNP-Inv).

SYSTEMATIC DESCRIPTION

Order Cardiida Férussac, 1822
Superfamily Glossoidea Gray, 1847
Family Vesicomyidae Dall & Simpson, 1901
Subfamily Pliocardiinae Woodring, 1925

Genus *Laubiericoncha* von Cosel & Olu, 2008.

Type Species: *Laubiericoncha myriamae* von Cosel & Olu, 2008, by original designation.

TABLE 1. Type series measures with ***Laubiericoncha puertodeseadoi***, n. sp.; F: length of fibrous ligament y, N: length of posterior lamellar ligament. Units in mm.

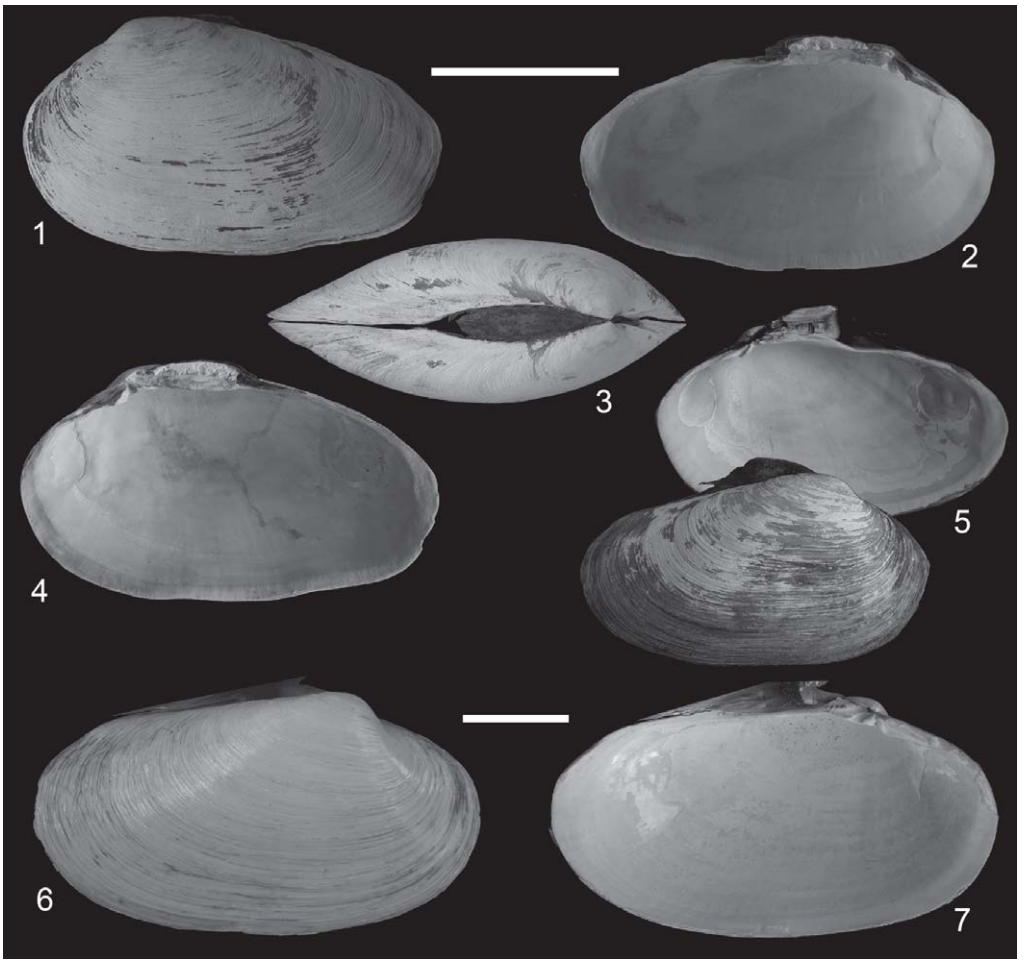
Specimen	Length	Height	Width	F	N
1	110.0	59.3	21.3	26.5	46.0
2	94.7	55.0	18.2	30.0	35.0
3	110.1	62.6	22.8	35.3	40.0
4	131.5	73.1	24.1	36.0	47.3
5	110.6	66.1	21.0	34.5	43.7
6	116.6	61.3	20.7	–	rv only
7	95.0	53.1	20.7	–	34.1 rv only
8	42.1	22.7	6.2	7.3	15.2
9	50.0	28.2	8.5	14.8	20.1
10	47.0	25.5	7.0	¿	15.7
11	80.0	47.7	18.0	25.0	29.8
12	114.0	72.8	21.0	32.8	42.0

Distribution

Western Atlantic basin (this paper), Barbados. Eastern Atlantic: Gulf of Guinea. Eastern Pacific: Panama Bay, Baja California, Gakkel Ridge, Arctic.

Remarks

The morphological differences of *Laubiericoncha* with other large Vesicomyidae were pointed out by Cosel & Olu (2008) in their description of the genus. Species belonging to *Laubiericoncha* can be distinguished from other vesicomyid genera by the combination of shell and anatomical characters. It differs from *Callogonia* Dall, 1889, by the presence of a larger shell with a different outline and hinge configuration characterized by a diverging, thin but prominent cardinals (Cosel & Olu, 2008). *Vesicomya* Dall, 1886, and *Isorropodon* Sturany, 1896, have hinge morphology that is clearly different (Cosel & Salas, 2001; Cosel & Olu, 2008). *Calyptogena, s.s.*, lacks a pallial sinus and has only one demibranch in each gill, whereas *Laubiericoncha* has two demibranchs and a triangular pallial sinus (Cosel & Olu, 2008). *Archivesica* Dall, 1908, is the most similar to *Laubiericoncha*. It also has two demibranchs, but the pallial sinus is



FIGS. 1–7. ***Laubiericoncha puertodeseadoi***, n. sp. FIGS. 1–4: ***Laubiericoncha puertodeseadoi*** holotype, MACN-In 39803; FIG. 5: Paratype MACN-In 39804; FIGS. 6, 7: Paratype CNP-INV 1922. Scale bar: Figs. 1–5 = 5 cm, Figs. 6, 7 = 1 cm.

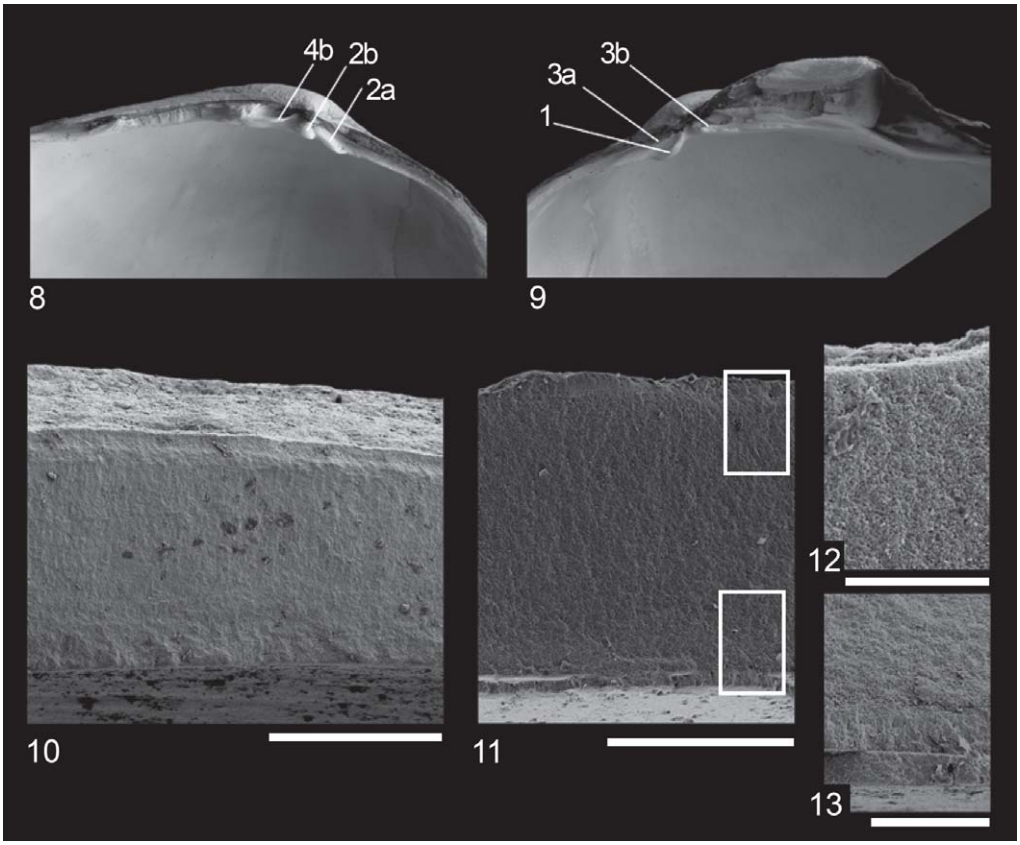
shorter, broader and blunt (not acute), the shell outline is subquadrate, the umbo is more prominent and the ventral margin is straight. Finally, species belonging to *Laubiericoncha* can be easily distinguished from those vesicomyids with a very elongate shell of the genera *Abyssogena* Krylova et al., 2010, *Ectenagena* Woodring, 1938, *Pleurophopsis* Van Winkle, 1919, and *Adulomya* Kuroda, 1931 (Cosel & Olu, 2008).

Laubiericoncha puertodeseadoi, n. sp.
(Figs. 1–28)

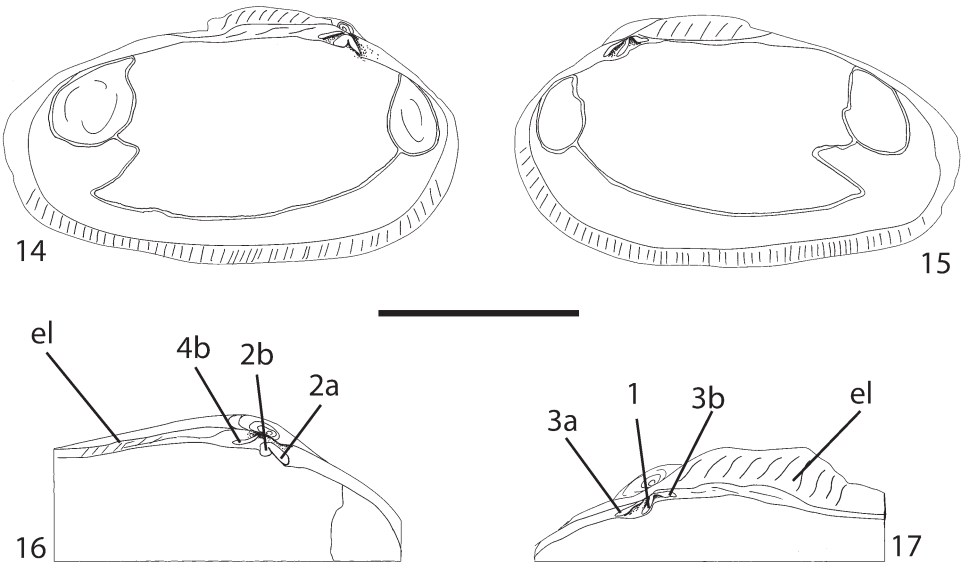
Types: Holotype, MACN-In 39803, articulated shell only. Twelve Paratypes from type locality: MACN-In 39804, eight articulated valves and a single right valve; CNP-INV 1921, one complete specimen with soft parts; CNP-INV 1922, a single right valve.

Type Locality: Station 24 of "*Talud Continental I*" expedition on board of R/V "*Puerto Deseado*", 37°54.206'S, 54°2.616'W in 2,419.59 m depth collected on 14/August/2012 with bottom trawl.

Etymology: Dedicated to the crew of the Consejo Nacional de Investigación Científica y Técnica (CONICET)'s ship R/V "*Puerto Deseado*" because of the effort and dedication to get these samples.



FIGS. 8–13. ***Laubiericoncha puertodeseadoi***, n. sp. FIG. 8: Detail of left hinge; FIG. 9: Detail of right hinge, both from the specimen in fig. 5; FIGS. 10–13: Ultrastructure of the shell; FIGS. 10, 11: General aspect of three layers; FIG. 12: Detail of outer layer with irregular prisms; FIG. 13: Inner layer diffuse with irregular complex crossed lamellar structure. Scale bar: Fig. 10 = 1 mm, Fig. 11 = 500 µm, Fig. 12 = 100 µm, Fig. 13 = 200 µm.



FIGS. 14–17. Schematic drawings of the insides of valves of ***Laubiericoncha puertodeseadoi***, n. sp. FIGS. 16, 17: Hinges of ***L. puertodeseadoi***. Scale bar: 5 cm.

Additional Material Examined: MLP 13918: 2 right valves from St. 42 of *Talud Continental exp*., 37°59.110'S, 54°41.136'W in 877 m depth collected on 26/May/2013 with modified Agassiz dredge; MLP 13919: 1 articulated specimen, four right and three left valves from St. 56 of *Talud Continental exp*., 37°54.840'S, 54°2.470'W 2,204 m to 37°55.405'S, 54°2.390'W, in 2,137 m, collected on 09/Sept/2013.

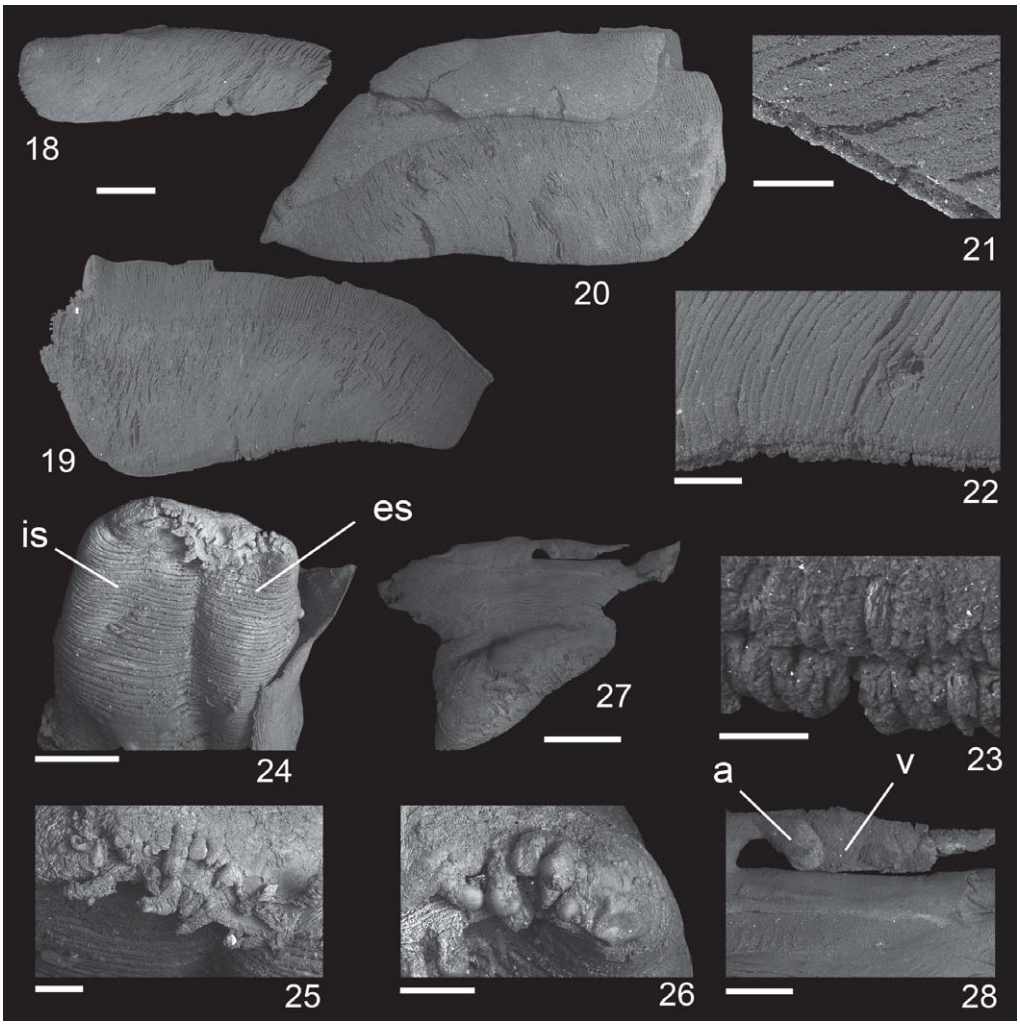
Description

Shell: compressed, moderately thick, large, up to 131 mm of shell length, approximately subrectangular, elongated, inequilateral with slightly prosogyrous umbo located appreciably closer to the anterior end, about 20–30 percent of total length of valves (Figs. 1–7); umbos very close but not touching (Fig. 3); dorsal margin curved, straight in younger specimens, ventral gently convex; anterior margin rounded; posterior margin enlarged, subrectangular to pointed profile; ornamentation comprising irregular, close arranged irregular growth lines; periostracum grey plumbic, yellowish glossy in young specimens, pellucid (Figs. 1, 5); Pallial line impressed, thick, visible all along; pallial sinus shallow and triangular (Figs. 2, 4, 7, 14–15); anterior adductor scar teardrop shaped; posterior adductor scar subcircular, larger; anterior pedal retractor scar deeply impressed, somewhat hidden under the hinge plate, above very close but not touching anterior adductor scar; posterior pedal retractor scar united with posterior adductor scar; external ligament opisthodetic, parivincular, strong, with fibrous layer occupying about 35% of shell length, placed on a thick nymphal plate (Fig. 3); subumbonal pit present and well distinct; hinge plate with a thin and prominent cardinal 1, anteriorly inclined and curved, dorsally surrounded by a curved cardinal tooth comprising the fused 3a and 3b in the right valve (Figs. 9, 17); left valve with, short, thick and fused 2a and 2b cardinal tooth, placed directly under the umbo, 2b descending vertically to the ventral margin of the hinge plate and 2a anteriorly inclined, a laminar cardinal tooth (4b) much longer but thinner and posteriorly inclined complete the left hinge (Figs. 8, 16); shell ultrastructure with an outer layer of reclined, very irregular fibrous prisms; middle layer of very diffuse crossed lamellar structure with barely distinguishable first order lamellae; inner layer very diffuse with irregular complex crossed lamellar structure. The inner and middle layer appear homogeneous at high magnifications (Figs. 10–13).

General Anatomy: Ctenidia with two strong demibranchs, the outer considerably shorter than the inner in the dorsoventral axis, similar in length occupying about half of shell length (Figs. 18–20), food groove clearly visible in both demibranchs (Figs. 21, 22); foot anteriorly projecting, laterally flattened but well developed (Fig. 27); siphons fused, the incurrent slightly larger than excurrent; with very short tentacles along the apertural ring (Figs. 24–26), morphology and size of tentacles looks equal in both siphons; heart elongated antero-posteriorly, with two auricles and one ventricle surrounding the hindgut (Fig. 28).

Distribution

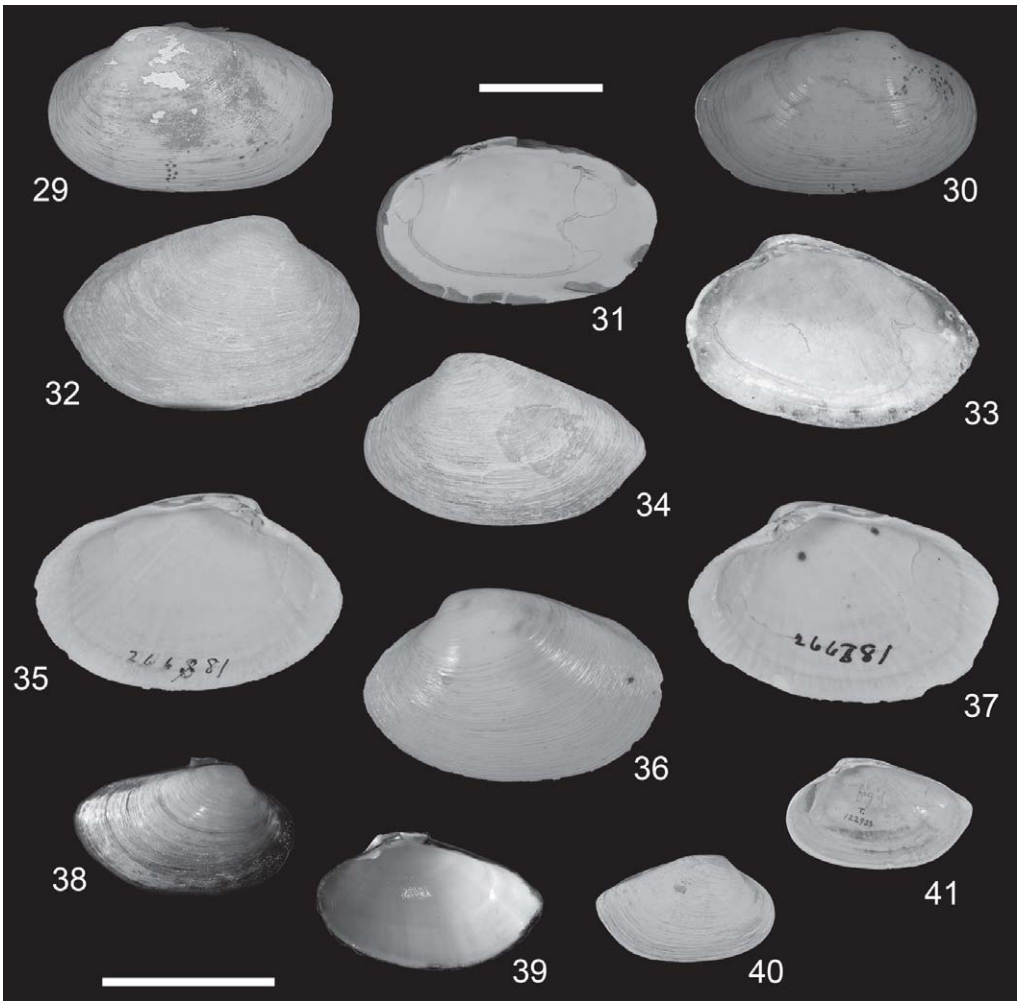
Only known from off Buenos Aires province coast, southwestern Atlantic Ocean in 877–2,204 m depth.



FIGS. 18–28. Soft parts of ***Laubiericoncha puertodeseadoi***, n. sp. FIG. 18: Left outer demibranch; FIG. 19: Left inner demibranch; FIG. 20: Right demibranch; FIG. 21: Food groove of outer demibranch; FIG. 22, 23: Food groove of inner demibranch; FIGS. 24–26: Fused siphons with short tentacles along the apertural ring; is: incurrent siphon, es: excurrent siphon); FIG. 27: Foot anteriorly directed; FIG. 28: Heart; a: auricle, v: ventricle. Scale bar: Figs. 18–20 = 2 mm, Figs. 21, 26, 27 = 200 µm, Fig. 22 = 400 µm, Fig. 23 = 100 µm, Fig. 24 = 4 mm, Figs. 25, 28 = 1 mm.

Remarks

Combination of shell characters and general anatomy undoubtedly placed this new species into the genus *Laubiericoncha*. Shell outline of ***L. puertodeseadoi*** resembles *L. chuni* more than the type species, *L. myriamae* (Figs. 32–34, 29–31, respectively). It has a dorso-posterior area straight and enlarged that goes to the posterior end with a very pronounced angle very similar to *L. chuni*. The posterior end in ***L. puertodeseadoi*** and *L. chuni* is more acute and lower, whereas in *L. myriamae* it is more rounded and placed in the horizontal mid-line. The rounded ventral margin of *L. angulata* (Figs. 40, 41) makes its shell outline more oval to ellipsoidal, whereas in ***L. puertodeseadoi*** is clearly straight, making it subrectangular. The oval to subcircular shell outline plus a less elongate shell of *L. suavis* (Figs. 35–37), with a less marked posterior end thus distinct from the new species. The external ligament, stronger and larger than that in *L. myriamae*, *L. chuni* and *L. suavis*, easily distinguishing ***L.***



FIGS. 29–41. Species included in the genus *Laubiericoncha*. FIGS. 29–31: *L. myriamae*, holotype MNHN 20550; FIGS. 32–34: *L. chuni*, Lectotype ZMB 77848a; FIGS. 35–37: *L. suavis*, holotype USNM 266881; FIGS. 38, 39: *L. nanshaensis*, holotype SSBII11–10 (no. 30934 in label); FIGS. 40, 41: *L. angulata*, holotype USNM 122933. Scale bar: Figs. 29–34 =4 cm; Figs. 35–41 = 2 cm.

TABLE 2. Morphological features of described vesicomyid species included in the genus *Laubiericoncha*.

	L. puertodeseadoi n. sp.	*L. myriamae* Cosel & Olu, 2008	*L. chuni* (Thiele & Jaeckel, 1931)	*L. angulata* (Dall, 1896)	*L. suavis* (Dall, 1913)	*L. nanshaensis* (Xu & Shen, 1991)
Type locality	Argentine Sea 37°54.206'S, 54°2.616'W, 2419.59 m	Southern part of Barbados accretionary prism, ESE of Trinidad	W of Campo, Cameroon, Gulf of Guinea, 2°00'N, 8°4.3'E, 2492 m	U.S. Fish Commision, st. 3392, 2322 m, hard bottom, Gulf of Panama	W coast of Baja California, W of Tiburon Island (Animas) (25°N, 1345 m)	Nansha Islands, 6°04'N, 113°37'E, 2626 m, 5/June/1985
Type material	MACN-In 39803, holotype	MNHN 20551, holotype	ZMB 88412, 88413, syntypes	USNM 122933, holotype	USNM 266881, holotype	MBM CAS N°SSBII11-10 (N°30934 in label), holotype
Shell	compressed, subrectangular, elongated, posterior end tapering	oblong-oval anterior and posterior end rounded	oblong-oval Posterior end tapering	posterior end tapering	oblong-oval to elliptical anterior and posterior rounded	posterior end tapering
Ultrastructure	Outer layer fibrous prisms; middle layer of very diffuse CL structure, inner layer irregular CCL	?	?	?	?	?
Hinge	Same configuration of type species, RV with 3a shorter; LV with 4b narrower and 2a–2b stronger	RV with cardinal 1 and a fused cardinal 3a and 3b; LV with fused 2a–2b, and posterior laminar cardinal 4b	very similar to type species in tooth shape and size	Like type species, with 3a slightly shorter	Like type species, with 3a shorter and 1 more vertically oriented, LV with 2b shorter and 4b longer	?
Pallial sinus	triangular, less deep than type species, similar to *L. suavis* and *L. chuni*	acute and triangular	triangular, less deep than type species	acute and triangular, high	triangular, less deep than type species	triangular shallower than type species
Ctenidia	two demibranchs	two demibranchs	two demibranchs	?	?	?
Siphons	fused, short with tentacles, no categories of tentacles observed	fused, short with tentacles	fused and short	?	?	?

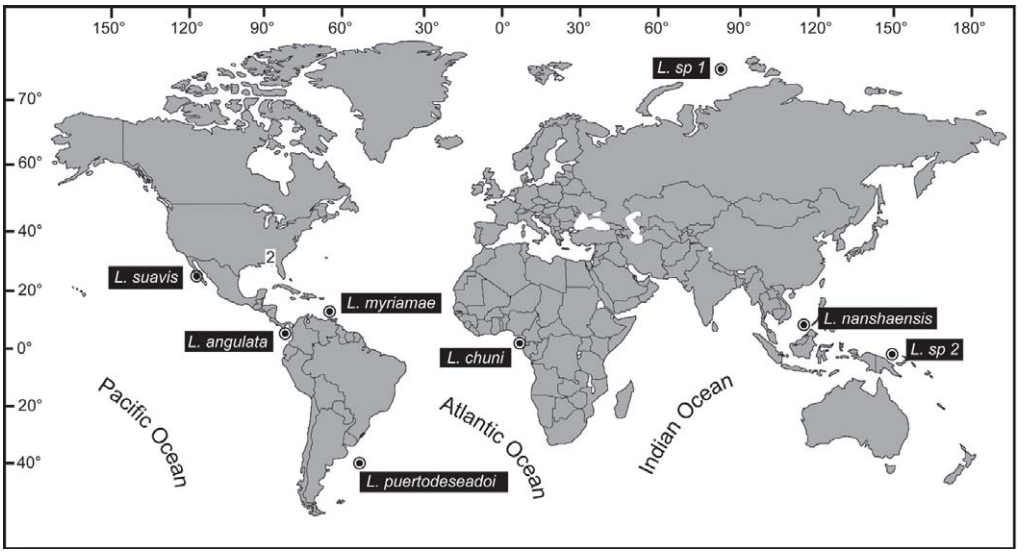


FIG. 42. Global occurrences of the genus *Laubiericoncha*, *L. sp 1* correspond introduced by Sirenko et al., 1995 and *L. sp 2* by Krylova & Janssen, 2006.

puertodeseadoi. The type material of *L. angulata* lacks the ligament; however, the nymphal plate is less developed posteriorly suggesting a smaller ligament. *Laubiericoncha nanshaensis* described from Nansha Islands, South China Sea, is smaller, with a posterior end more acute placed in the horizontal midline, and the pallial sinus is shallower (Figs. 38, 39). All species currently included in *Laubiericoncha* have the same hinge configuration and pallial sinus shape; however, there are some variation in tooth shape, orientation and size that allows distinguishing the valid species (Table 2). The intraspecific variation of ***L. puertodeseadoi*** was not evident. All collected specimens looks equal in hinge morphology, pallial sinus depth and shell outline. Nevertheless only ten articulate shells and eleven single valves were collected during the fieldwork, and additional specimens would be needed to confirm this observation.

Despite the unique specimen collected with soft parts, the morphology of mantle cavity organs of ***L. puertodeseadoi*** is very close to *L. myriamae* and *L. chuni*. Siphons, ctenidia and foot morphology were similar to those observed in *L. myriamae* and *L. chuni*. However, we recognized slight differences, such as a less elongated ctenidia and a stronger foot in the new species. The morphology of soft parts of other members of the genus *Laubiericoncha* is, at the moment, unknown.

DISCUSSION

The family Vesicomyidae was previously registered in the southwestern Atlantic Ocean. Rios (1994, 2009) reported the presence of two species of vesicomyids, that is, *Calyptogena troncosoi* Rios, 2009, and *Vesicomya albida* (Dall, 1889), in the southern coast of Brazil. However the later species was considered into *Kelliella* (Rosenberg, 2014). Previously, Domaneschi & Lopes (1990) described *Calyptogena birmani* off Paraná state, also from the southern coast of Brazil. Within regional context, ***Laubiericoncha puertodeseadoi***, n. sp., constitutes the first record of the family Vesicomyidae, described off Buenos Aires province and the first record of the genus in the southwestern Atlantic Ocean. In recent years, the genus *Laubiericoncha* had been registered in several localities worldwide (Cosel & Olu, 2008; Krylova & Sahling, 2010). After three cruises to the deep canyons off Buenos Aires coast province (Mar del Plata submarine canyon), several specimens of ***Laubiericoncha puertodeseadoi*** were collected between 870–2,200 m depth. The material was found together with gastropods of the families Naticidae and Volutidae characteristic of soft bottoms with no signs of interaction among them.

The taxonomic position of species grouped into the genus *Laubiericoncha* has been widely

discussed (Cosel & Salas, 2001, Krylova & Janssen, 2006). These authors noted differences in hinge configuration, pallial sinus and shell outline in a few described species then included in the genera *Callogonia* and *Vesicomya*. Later, Cosel & Olu (2008) introduced the genus *Laubiericoncha* to encompassed four species, the type species, *L. myriamae,* and *L. angulata* (Dall, 1896), *L. chuni* (Thiele & Jaeckel, 1931) and *L. suavis* (Dall, 1913). Finally, Krylova & Sahling (2010) considered *L. nanshaensi*s (Xu & Shen, 1991) as a fifth species of the genus. This work confirmed ***Laubiericoncha puertodeseadoi***, n. sp., as the sixth described species of the genus, expanding its distribution to the southwestern Atlantic Ocean. However, there are two additional unnamed species that were tentatively placed in *Laubiericoncha*. They were registered by Sirenko et al. (1995) from Gakkel Ridge in the Arctic (*L. sp 1*; Fig. 42) and by Krylova & Janssen (2006) from Edison Seamount in the southwestern Pacific Ocean (*L. sp 2*; Fig. 42). The new species here described places the genus *Laubiericoncha* in six geographical regions. It was registered in the Caribbean, Argentina, West African, Panamic, Indo Pacific and Arctic basins (Fig. 42). These records make *Laubiericoncha* a widely distributed genus of the family Vesicomyidae which share shell characters, like hinge configuration, pallial sinus form and shell outline, and soft parts, like two demibranchs and fused siphons.

Phylogenetic analysis of the family Vesicomyidae suggested a multiple trans-Pacific migrations between the western and eastern parts of the Pacific Ocean (Kojima et al., 2004). The cladistic relationships of *Laubiericoncha* and other vesicomyid genera were discussed by Decker et al. (2012). In their work, the species *L. chuni* and *L. myriamae* do not form a monophyletic group. They pointed out that taxonomy based on morphology of several genera, including *Laubiericoncha,* did not match with their molecular conclusions. This phylogenetic result agrees with those mentioned by Goffredi et al. (2003) who reported that vesicomyid genera are polyphyletic and need to be morphologically revised. The presence of two demibranchs in *Laubiericoncha* is considered as an ancestral character (Decker et al., 2012). In the Pliocardiinae, this character is also shared by *Archivesica* species and *Phreagena kilmeri* and *Ectenagena extenta* forming a cluster supported by a 99% bootstrap value (Decker et al., 2012). Although *Phreagena kilmeri* and *Phreagena soyoae* were considered synonyms (Kojima et al., 2004; Okutani et al., 2009), some authors considered both species as valid (Krylova & Sahling, 2010; Coan & Valentich-Scott, 2012). Not only the presence of two demibranchs suggest a generic assignment, but also the sharing of hinge configuration, pallial sinus form and shell outline place the new species into *Laubiericoncha*. In our analysis, we considered the genus *Laubiericoncha* as a natural taxon because morphological differences were not observed among valid species that would divide the genus into separate taxa. This discrepancy, between molecular taxa and morphological characters, should be retested. The genera mentioned by Decker et al. (2012) were represented in their analysis by only two species each one. Additional material would be needed to confirm the polyphyletic status of the genus *Laubiericoncha*. Morphological characters of Atlantic species are closely related to Pacific species within the genus *Laubiericoncha*. These evolutionary relationships were mentioned by Peek et al. (2000), who suggested a circumpolar dispersal, with subsequent isolation leading to speciation. In addition, in recent years, different vesicomyid genera were revised and redefined (Cosel & Salas, 2001; Cosel & Olu, 2009; Krylova & Cosel, 2011; Krylova et al., 2010) and none of them questioned the affinities of these genera.

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