Leiosolenus (Labis) patagonicus
(Bivalvia: Mytilidae) from Argentinean sea,
taxonomic revision and anatomical notes

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Abstract. The taxonomic status and anatomy of Leiosolenus (Labis) patagonicus (d’Orbigny, 1846 in 1834-1847) has been revised. This boring bivalve, belonging to the family Mytilidae, is the only Lithophaginae species distributed along the Argentinean coast. None of the fossil species mentioned for this area must be considered as a synonym of d’Orbigny’s species. Leiosolenus patagonicus is characterized by a thin shell, longitudinally elongated, with subterminal umbos and commarginal striae. The calcareous depositions on the outer surface of the shell are extended beyond the posterior margin. This species has well developed purple siphons, well differentiated morphologically from each other. Incurrent siphon is wider than excurrent, opened at the ventral edge and provided with a basal siphon valve at the base. Two pairs of demibranchs type B (1) from Atkins were observed. The shell characters and internal morphology were compared with other related species of the genus living along the South American coast. Finally, repository, type locality and habitat conditions were informed.

Keywords. Lithophaga; Boring bivalve; Morphology; Argentina.

INTRODUCTION

The family Mytilidae Rafinesque, 1815 is a cosmopolitan group, worldwide distributed (Bernard et al., 1993; Coan et al., 2000; Coan & Valentich-Scott, 2012; Von Cosel & Gofas, 2019; Huber 2010, 2015; Rios, 2009; Valentich-Scott et al., 2020) with more than 300 valid species (MolluscaBase, 2022). This is a diverse group adapted from shallow to deep waters. The supra-generic classification of Mytilidae has been modified during the years. One of the first modern revisions was made by Soot-Ryen (1955) who recognized more than twenty genera without subfamily divisions. However, this first approach has been modified significantly (Soot-Ryen, 1969; Scarlato & Starobogatov, 1979a, 1979b; Boss, 1982; Bernard, 1983; Starobogatov, 1992; Coan et al., 2000). Bieler et al. (in Bouchet & Rocroi, 2010) included eight subfamilies within Mytilidae, while Carter et al. (2011) suggested the presence of ten subfamilies. However, phylogenetic studies suggested the polyphyletic nature of many mytilid subfamilies (Owada, 2007; Liu et al., 2018; Lee et al., 2019; Audino, et al., 2020). More recently, Valentich-Scott et al. (2020) suggested that some traditional subfamilies are polyphyletic and it is necessary to complement morphological analyzes with phylogenetic ones to resolve this classification.

Some mytilid genera, such as Adula H. Adams & A. Adams, 1857 (in 1853-1858), Botula Mörch, 1853, Leiosolenus Carpenter, 1857 and Lithophaga Röding, 1798 are boring bivalves belonging to the subfamily Lithophaginæ H. Adams & A. Adams, 1857. Several authors pointed out that Lithophaga, Leiosolenus and Botula are chemical borers of calcareous materials, whereas Adula is a mechanical borer (Yonge, 1955; Wilson & Tait, 1984; Kleemann, 1990; among others). The species included within Lithophaga and Leiosolenus represent the 70% of boring mytilids (Kleemann, 1990). Recent phylogenetic studies based on molecular evidence (Owada, 2007; Liu et al., 2018; Audino et al., 2020) suggested that convergent evolution is common among marine mussels. The classification based on morphology differs from that suggested by molecular analysis. In this way, the subfamilies Mytilinæ, Modiolinæ, and Lithophaginæ are not monophyletic. However, species belonging to Lithophaga and Leiosolenus show morphological similarities such as an antero-posteriorly elongated shell, cylindrical, cov-
ered by brownish periostracum and poor byssus cor-
sage demonstrating an evolutionary convergence to the
boring habit. Precisely, these similarities led Carpenter
(1857) to locate Leiosolenus as a subgenus of Lithophaga.
During more than a century, this taxonomic relation be-
tween both genera was not modified (Soot-Ryen, 1969;
However, the presence of calcareous depositions over
periostracum, their smaller size and calcified perfora-
tions allow Leiosolenus to be treated as a valid genus
(Hodgkin, 1962; Wilson, 1979; 1984; Barthel et al., 1981;
Huber, 2010). Kleemann & Maestrati (2012) redefined
again Leiosolenus as a subgenus of Lithophaga recogniz-
ing that generic separation was still confusing. Despite
this, Huber (2015) continued treating Leiosolenus as a val-
id genus based on genetic analysis made by different au-
thors (Owada, 2007; Liu et al., 2018; Audino et al., 2020).

The suggested subgenera included within Leiosolenus
are not definitive. Huber (2015) recognized the subgen-
era Leiosolenus s. s., Diberus Dall (1898), Labis Dall (1916),
Myofoceps P. Fischer (1886 in 1880-1887) and Stumpiella
Soot-Ryen (1955) based on the pattern of calcareous
depositions that cover shell’s surface. The biodiversity
of boring Mytilidae was widely studied and their shell
morphology was defined by Owada (2007) as lithopha-
giform based on the relation of different measures, such
as length, height, width and vectors related to the byssal
retractor muscles. The observed results showed differ-
ences between the retractor muscles distance that was
significantly different in lithophagiform taxa than mytili-
form and modioliform taxa.

In the Argentinean Sea only the presence of
Leiosolenus (Labis) patagonicus (d’Orbigny, 1846 in
1834-1847) has been mentioned in literature (Carcelles,
1944; Carcelles & Williamson, 1951; Castellanos, 1957,
1970; Rios, 1966, 2009; Pastorino, 1995; Scarabino, 2003;
Scarabino et al., 2006; Zelaya, 2016). Turner & Boss (1962)
included this species within the subgenus Labis based on
smooth valves, with a very thin layer of calcareous depo-
sitions, posteriorly thicker and rounded or triangular cal-
careous projections. Morphological variation of L. pata-
gonicus was studied by Márquez et al. (2017). The study
revealed that L. patagonicus shows significant differenc-
es in shell size and shape between subtidal specimens
housed in empty shells and those extracted at intertidal
area from the clay rocky shore. These results reveal that
phenotypic plasticity is apparently conditioned by the
type of substrate (composition and hardness) and other
environmental conditions (Bagur et al., 2013).

Finally, it is important to mention the importance
of L. (L.) patagonicus at ecological level. Boring bivalves
have a special role because they are considered ecosys-
tem engineers. When they drill the substrate they are
also modifying the natural landscape. However, studies
carried out with this local species show that the volume
of rock eroded by physical agents, such as waves and
the movement of pebbles is 70 times greater than that
generated by biological effects (Bagur et al., 2013). At the
same time, the presence of this species increases species
richness along the intertidal area (Arribas et al., 2016)
due to the fact that, when the bivalves die, they leave the
holes that give shelter to other organisms.

Despite the presence of this species in local and
foreign catalogues, it had not been reviewed in detail.
Hence, in this work the anatomy and taxonomic status of
L. patagonicus is revised.

MATERIAL AND METHODS

A total of 82 lots and 500 specimens of L. patagonicus
were studied in this work. Material deposited in the fol-
lowing institutions were examined: Instituto de Biologia
de Organismos Marinos (CNP-INV); Museo de Ciencias
Naturales “Bernardino Rivadavia” (MACN); Museo de
La Plata (MLP) and London Natural History Museum
(NHMUK). Additionally, 229 specimens were sampled
from rocky substrate by using hammers and chisels in
different localities of Argentinean coast (Fig. 1). Living
specimens were immediately immersed in filtered sea-
water to be studied and photographed alive under a ste-
reomicroscope. To facilitate the dissection, animals were
previously relaxed with magnesium chloride tablets
(10% in sea water) by 30 minutes. All digital photographs
were taken by a Nikon D5000 with a 60 mm Nikkor mi-
icro-lens. Sampled specimens were fixed in ethanol 96%
and deposited in the CNP-INV (see additional material ex-
amed section). Comparisons with congeneric species
were based on available information from the literature.

Figure 1. Distribution map of L. patagonicus. Black dots: lots from institu-
tions, grey dots: sampled specimens.
**RESULTS**

**Family Mytilidae Rafinesque, 1815**

**Subfamily Lithophaginae**


**Genus Leiosolenus Carpenter, 1857**

**Diagnosis:** Shell thin, cylindrical, longitudinally elongated, umbos subterminal or terminal, with rounded ends, sculpture of commarginal striae; calcareous depositions on outer surface; in some species they are extended beyond the posterior margin; hinge edentulous; shelter covered by calcareous conical tubes.

**Type species:** *Leiosolenus spatiosus* Carpenter, 1857, by monotypy.

**Distribution:** Almost cosmopolitan, Pacific and Atlantic coast of North America, Central America and South America; Red Sea; Eastern Atlantic from Europe to Angola; Indo Pacific from Eastern Africa to Australia and New Zealand (Rios, 2009; Huber, 2010; Coan & Valentich-Scott, 2012; Kleemann & Maestrati, 2012; Von Cosel & Gofas, 2019; Valentich-Scott et al., 2020; MolluscaBase, 2022).

**Remarks:** Currently, species with outer calcareous deposition are included within *Leiosolenus*, and those without calcareous depositions in *Lithophaga*. Huber (2015) treated both genera as valid based on genetic and morphological results previously mentioned (Owada, 2007; Liu et al., 2018; Audino et al., 2020). At the moment, *Leiosolenus* includes 35 valid species widely distributed (Huber, 2010, 2015; Coan & Valentich-Scott, 2012; Velásquez et al., 2017; MolluscaBase, 2022, among others).

*Leiosolenus (Labis) patagonicus* (d’Orbigny, 1846 in 1834-1847) (Figs. 2A-K, 3A-G, 4A-I)


**Type locality:** Ensenada de Ross, Río Negro province, Argentina.

**Additional material examined:** Argentina: Buenos Aires coast: MACN 15801, 25 complete specimens, subtidal. MACN 15223, 1 empty shell; Santa Clara del Mar: MLP 4206, 16 empty shells and 13 complete specimens; Mar del Plata: MACN 9361, 4 empty shells; MACN 16869, 1 empty shells; MACN 12201-1, several valves with calcareous conical tubes; MACN 2399-1, 1 complete specimen; Miramar: MLP 1246, 2 complete specimens; MACN 10036, 1 empty shell; MACN 29444, 20 empty shells; MACN 13107-1, 9 empty shells; Necochea: MACN 9368-2, 1 empty shell; Puerto Quequén: CNNP INV 2864, 20 complete specimens, intertidal; MACN 18506, 13 empty shells and 30 complete specimens. Rio Negro, Caleta de los Loros: MACN 39037, specimens extracted from oysters; Bahía Creek: MLP 4071-3, several complete specimens; San Matías gulf: MACN 21284, 2 complete specimens; MACN 30799, 1 complete specimen; MLP 4169, 2 empty shells; CNNP INV 2870, 8 empty shells. Chubut, Punta Norte: MACN 11504, 3 empty shells with calcareous conical tubes; MACN 11504b, shells with calcareous conical tubes; San José gulf: MACN 24475, 4 empty shells, MACN 26488, 4 complete specimens; MACN 9179-1, 5 empty shells; Villarino: CNNP INV 2866, 2 empty shells, intertidal; CNNP INV 2865, 4 empty shells, intertidal; CNNP INV 2863, 19 empty shells, intertidal; Isla de los Pájaros: MLP 3777, 4 empty shells and 1 complete specimen; Punta Gales: CNNP INV 2876, 3 empty shells, intertidal; CNNP INV 2877, 14 empty shells, intertidal; CNNP INV 2875, 15 empty shells; Bahía Fracasso: CNNP INV 2883, 7 empty shells, intertidal; Puerto Pirámides: MLP 4233, 4 empty shells and 2 complete specimens; Punta Pardelas: CNNP INV 2892, 2 empty shells, intertidal; CNNP INV 2893, 1 specimen, intertidal; CNNP INV 2871, 7 complete specimens; MLP 50053, 10 complete specimens; MLP 50054, 6 empty shells and 2 complete specimens; MLP 50056, 1 complete specimen; Puerto Madryn: MLP 1933, 5 empty shells and 2 complete specimens; MLP 1939, several complete specimens; MLP 4915, 2 empty shells and 1 complete specimen; MACN 10336, 4 complete specimens within coral algae (Order Corallinales); MACN 23242, 8 empty shells; MACN 1972-8, 4 empty shells and 1 complete specimen; MACN 9219-1, 2 empty shells; MACN 9281-1, 1 complete specimen; Punta Cuevas: CNNP INV 2884, 2 articulated shells and 6 complete specimens, intertidal; Punta Este: CNNP INV 2873, specimens with calcareous conical tubes, intertidal; CNNP INV 2885, 6 pairs of articulated shells, intertidal; CNNP INV 2878, 33 complete specimens and habitats, intertidal; CNNP INV 2881, 5 com-
Figure 2. *L. patagonicus*. Shell morphology. (A–C) substrate belonging to the holotype (NHMUK 1854.12.4.790, not found); (D–K) internal and external view of shell (CNP-INV 2887).
Diagnosis: Shell oval, medium size, with smooth calcareous projections behind posterior end; calcareous depositions on the outer surface of the shell with a granular appearance.

Description

Shell – equi-valve, thin, fragile, oval, rounded ends, circular in cross section, length up to 40 mm. (MACN 15801); umbo prosogyrate, anterior, poorly developed; dorsal margin slightly arched, ventral margin straight, poorly defined concentric and irregular growth lines, covered by calcareous granular depositions on the posterior and ventral area of the external surface, hiding juvenile ridges; smooth calcareous projections extending beyond the limits of posterior end of valves (Figs. 2H, J); inner surface blue to violet, vitreous luster; pallial sinus and scar adductor muscles poorly visible; hinge plate adonta, extremely small teeth; opisthodetic ligament (Figs. 2F, H).

Internal anatomy – mantle folds with purple coloration (Fig. 3A); middle mantle fold smaller than others; siphons

Figure 3. L. patagonicus. Mantle cavity organs of the specimen deposited as CNP-INV 2873. (A) general view of the organism after removal of the left valve; (B-D) detail of the siphon morphology; (E) basal siphonal valve. (F-G) tubular structure secreting mucous substance. Abbreviations: AAM = anterior adductor muscle; BSV = basal siphonal valve; ES = excurrent siphon; IS = incurrent siphon; PAM = posterior adductor muscle.
Figure 4. *L. patagonicus*. Mantle cavity organs of the specimen deposited as CNP-INV 2873. (A) ventral view, observing the foot and gills on sides; (B) external and internal demibranch details; (C) detail of food groove over the distal edge of outer demibranch; (D-E) labial palps; (F-G) morphology of the foot; (H-I) byssus gland. Abbreviations: BF = byssal filaments; BG = byssus gland; F = foot; FG = Food groove; ID = inner demibranch; LILP = left inner labial palp; LOLP = left outer labial palp; OD = outer demibranch; RILP = right inner labial palp; ROLP = right outer labial palp; OD = outer demibranch; RILP = right inner labial palp; ROLP = right outer labial palp.
Figure 5. Different substrates where *L. patagonicus* can be sampled. (A-B) *Aulacomya atra* (MACN-29479); (C) Corallinacea algae; (D-E) *Ameghinomya antiqua* (P.P. King, 1832) (CNP-INV 2877); (F-H) *Ostrea puelchana* d’Orbigny, 1844 (CNP-INV 2877); (I) sedimentary rock with tubes (CNP-INV 2877); (J-K) detail of tubes (CNP-INV 2864).
well developed, different in size and shape, usually with a purple coloration (Figs. 3B-D); fused at the base, ex-
current siphon smaller than incumbent, free of tentacles
over the opening ring; incumbent siphon free of tenta-
cles, opened along ventral edge, with a basal siphonal
valve, flap-like with finger-like edges, placed at the base
(Fig. 3E); some specimens provided with a tubular struc-
ture, over the edge of incumbent siphon, which secreted a
whitish and viscous substance (Figs. 3F-G); two pairs of
demibranches along antero-posterior axis; internal and
external demibranches equal in length, filibranch type
B (1) from Atkins (1937) (Figs. 4A-C); filaments connect-
ed by vascular connections give reticulate appearance
( Fig. 4B); food groove present at distal border of each de-
mibranch (Fig. 4C); labial palps longer than wide, trian-
gular in shape, smooth external surfaces, internal provid-
ed of transverse folds (Figs. 4D-E); foot poorly developed,
longer than wide (Figs. 4F-H); anterior adductor muscle
smaller than posterior, lenticular shape, closely located
to dorsal edge; posterior adductor muscle oval (Fig. 3A);
byssal pit relatively deep, with golden filaments of bys-
sus, placed posteriorly to the foot (Figs. 4H-I).

Habitat and Ecology

Leiosolenus patagonicus is distributed from the inter-
tidal zone to shallow subtidal, covering horizontal and
vertical hard substrates. Also, it can be found inside oth-
er types of hard substrates such as shells of other species
of bivalves (Aulacomya atra, Ameghinomya antiqua or
Ostrea puelchana) or Corallinaceas algae (Fig. 5).

Distribution: Leiosolenus patagonicus was reported from
Santa Catarina, Brazil, to Magellan region and Malvinas/
Falklands islands (Rochebrune & Mabile, 1889; Pastorino,
1995; Rios, 1994, 2009). Specimens from Santa Clara del
Mar, Buenos Aires province, to Puerto San Julián, Santa
Cruz province, were herein examined.

Remarks: Leiosolenus patagonicus has been historically
included within the genus Lithophaga (Dunker, 1882;
Ihering, 1900; Carcelles, 1944; Carcelles & Williamson,
1951; Turner & Boss, 1962; Rios, 1966; Huber, 2010;
among others). However, the presence of calcareous depositions on the external surface of the shell and posterior projections places it within Leiosolenus. In addition, fine and smooth calcareous projections place it within the subgenus Labis (Huber, 2010). Morton (1993) described for Leiosolenus aristatus (Dillwyn, 1817) that calcareous depositions and posterior projections are se-
creted by glands located in middle mantle folds and, in
adult stages, siphons may smooth these depositions. A
similar process may occur in L. patagonicus. Two junior synon-
yms have been mentioned in literature (Carcelles,
1944; Parodiz, 1996, among others): Lithodomus patagoni-
cus dalli Ihering, 1907 and Lithophagus platensis Philippi,
1893. The first one was described from lower Miocene
deposits exposed at Rada Tilly, San Jorge gulf, and the
second one from Miocene deposits of Parana Formation
(del Río & Martinez, 1998; Coan & Kabat, 2017). Parodiz
(1996) mentioned that both are close, but Genta Iturrería
(2014) considered both as valid species. Type material of
Ihering (MACN-PI 320, holotype) do not show calcareous
depositions or external radial ornamentation. The types
of Philippi were not found, therefore, in this work, both
species are not considered synonymous of L. patagoni-
cus until new material confirm or reject the synonymy.

DISCUSSION

Leiosolenus patagonicus shows a characteristic exter-
nal morphology clearly different from other species of
the genus that inhabit South American waters (Table 1).
It differs from L. attenuatus (Deshayes, 1836) and L. peru-
vianus (d’Orbigny, 1846 in 1834-1847) by having a less
elongate shell, less pointed posterior end and broader
calcareous depositions. External ornamentation separ-
ates patagonicus from tropical western Atlantic species,
L. bisulcatus (d’Orbigny, 1853), and eastern Pacific species
L. plumula (Hanley, 1843 in 1842-1856). Crossed calcar-
eous projections observed in L. aristatus (Dillwyn, 1817)
and the absence of posterior projection and little size of
L. spatiosus (Carpenter, 1857) clearly distinguish these
two species from patagonicus. Regarding morphology of
soft tissues, Simone & Gonçalves (2006) have studied the
internal anatomy of L. aristatus. In general terms, both
species are anatomically very similar. However, L. arista-
tus slightly differs from L. patagonicus by having more
flattened anterior adductor muscle and both siphons
are totally fused being only internally separated by a
septum. In addition, morphological characters of three
Thailand species included within Leiosolenus illustrated
by Valentich-Scott & Tongkerd (2008) showed differenc-

es, mainly on labial palps and shape and size of adductor
muscles. In this way, L. lima (Joussseaume in Lamy, 1919)
showed large ellipsoidal labial palps, smaller anterior ad-
ductor muscle and more ovate and larger posterior ad-
ductor muscle; L. malaccanus (Reeve, 1857) showed more
elongated and pointed labial palps, smaller anterior and
posterior adductor muscles; and L. obesus (Philippi, 1847)
showed larger and longer labial palps, narrower, with an-
terior adductor muscle ovate-elongated and posterior
adductor muscle circular. These morphological differenc-
es between species of the same genus but with different
distributions may be the result of differential environ-
mental pressures operating over individuals.

All substrates were the specimens of L. patagonicus
were sampled are sedimentary rocks and shells, rich in
calcium. They can be found in high density (Olivier et al.,
1966; Pastorino, 1995; Bagur et al., 2013, among others)
appearing as clusters formed by the cementation of the
tubes secreted by organisms (Bagur et al., 2013). These
conical tubes are secreted by each specimens, covering
the posterior end of specimens. These specimens have
not only developed the ability to create tubes but also re-
voke inner walls of the shelter. All this is possible thanks	on the ability of specimens of this species to secrete cal-
cite. In this way specimens protect themselves from the
external environment (Bagur et al., 2013).
Table 1. Seven species belonging to the genus *Leiosolenus* found in South American waters, with comparison of main morphological characters.

<table>
<thead>
<tr>
<th>Species</th>
<th>External sculpture</th>
<th>Anterior end</th>
<th>Morphology of calcareous projection</th>
<th>Maximum shell length</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Leiosolenus (Labis) patagonicus</em> (d’Orbigny, 1846 in 1834-1847)</td>
<td>Smooth with thin calcareous incrustations</td>
<td>Rounded</td>
<td>Trigonal, flattened, extended beyond the posterior</td>
<td>45 mm</td>
<td>Santa Catarina, Brazil to Magellan region and Malvinas/Falkland Islands</td>
</tr>
<tr>
<td><em>Leiosolenus (Labis) attenuatus</em> (Deshayes, 1836)</td>
<td>Smooth with pustulose incrustations</td>
<td>Rounded</td>
<td>Narrowly pointed, not feather-like, extended beyond the posterior in both valves</td>
<td>111 mm</td>
<td>Eastern Pacific, from California, USA to Peru</td>
</tr>
<tr>
<td><em>Leiosolenus (Labis) peruvinus</em> (d’Orbigny, 1846 in 1834-1847)</td>
<td>Smooth with pustulose incrustations</td>
<td>Broadly rounded</td>
<td>Narrowly pointed, feather-like prolonged beyond the posterior in both valves</td>
<td>79 mm</td>
<td>Lambayique, Peru to Valparaiso, Chile</td>
</tr>
<tr>
<td><em>Leiosolenus spathiosus</em> (Carpenter, 1857)</td>
<td>Over anterior part and anterolateral valve, vertical irregular wrinkles</td>
<td>Rounded</td>
<td>without posterior projection</td>
<td>63 mm</td>
<td>San Felipe, Gulf of California, USA to Bocapán, Perú</td>
</tr>
<tr>
<td><em>Leiosolenus (Diberus) bisulcatus</em> (d’Orbigny, 1853)</td>
<td>Divided in two sections by a sulcus; regular growth lines on the anterior disc, posterior area usually with a second sulcus and covered by calcareous incrustations</td>
<td>Anterior end rounded and higher than the posterior</td>
<td>Incrustation extended beyond the end and smoothly rounded</td>
<td>41 mm</td>
<td>Western Atlantic from North Carolina, USA to Vitoria, Brazil, Eastern Atlantic in St. Helen Island.</td>
</tr>
<tr>
<td><em>Leiosolenus (Diberus) plumula</em> (Hanley, 1843)</td>
<td>Radial ornamentation extending from the umbos to the posterior margin of the valves</td>
<td>Rounded</td>
<td>Feather-like incrustations beyond the posterior end</td>
<td>70 mm</td>
<td>California, USA to Ecuador, reported as introduced in Philippines and Australia</td>
</tr>
<tr>
<td><em>Leiosolenus (Myoforceps) anistatus</em> (Dillwyn, 1817)</td>
<td>Concentric growth lines covered by calcareous deposit.</td>
<td>Truncate</td>
<td>Pointed, Crossed</td>
<td>52 mm</td>
<td>Cosmopolitan, Eastern Pacific from California, USA to Ecuador; Western Atlantic from North Carolina to Brazil, Eastern Atlantic from Bay of Biscay to Southern Angola; Southern Mediterranean</td>
</tr>
</tbody>
</table>

In relation to basal siphonal valve, also called proximal siphonal valve or siphon membrane, it was described in other mytilids. Apparently, it has functions related to regulation of water flow or the cleaning of the mantle cavity (Soot-Ryen, 1955; Carter et al., 2012). We believe that this is a character of taxonomic importance, so its description deserves to be taken into account.

**CONCLUSION**

In this work *L. patagonicus* (d’Orbigny, 1846 in 1834-1847) was re-described. This is a valid species without synonyms. After revision of type material, *Lithodomus patagonica dalli* Ihering, 1907 and *Lithodomus platensis* Philippi, 1893 are not considered synonyms of *L. patagonicus* until new material confirm or reject the synonymy. Morphological characters of congeneric species distributed along the southwestern Atlantic and southeastern Pacific Ocean were compared (Table 1). Currently, the species with calcareous depositions over the shell and projections beyond the posterior end are placed within *Leiosolenus* and the species provided with smooth projections are placed within the subgenus *Labis*. In a regional context, the genus *Leiosolenus* is represented by seven species in South American waters. The anatomical characters herein revised state the bases to compare our local species with other boring bivalves currently unstudied. Finally, the wide distribution of valid species suggest that the biogeographical history of the genus is far to be resolved. In the southwestern Atlantic, the genus is only represented by *L. patagonicus*.

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**REFERENCES**


