

# Mollusc aquaculture and malacological research in Santa Catarina State (Central Southern Brazil Region): a brief synthetic critical review

**A. Ignacio Agudo-Padrón**

Project “Avulsos Malacológicos - AM,” P. O. Box 010, Florianópolis, Santa Catarina, SC, Brazil (CEP 88010-970). Email: ignacioagudo@gmail.com. <http://noticias-malacologicas-am.webnode.pt>.

**Abstract.** A brief synthesis and critical review about the malacological research situation and creation/production importance of aquatic molluscs capable of commercial handling in the Santa Catarina State territory, central portion of the Southern Brazil, is presented. Total of eight species, seven marine (*Perna perna* (Linnaeus, 1758), *Crassostrea gigas* (Thunberg, 1795), *Crassostrea rhizophorae* (Guilding, 1828), *Nodipecten nodosus* (Linnaeus, 1758), *Pteria hirundo* (Linnaeus, 1758), *Octopus vulgaris* (Cuvier, 1797) and one freshwater forms (*Anodontites trapesialis* (Lamarck, 1819)) are directly involved in activities of aquaculture, basically developed in so-called “marine farms” or “farming parks”, mainly for current human consumption and, experimentally, production of cultured pearls. When it comes to regional research with molluscs, the Santa Catarina State historically have focused their effort and interest almost uniquely in the research and development of the creation/production of marine forms capable of commercial handling. Other general aspects of their knowledge are practically ignored and/or relegated to a background.

**Keywords:** Regional aquaculture, Mollusc culture, Marine species, Freshwater species, Santa Catarina State, Central Southern Brazil Region.

Traditionally, when it comes to regional research with molluscs, the State of Santa Catarina (Central southern Brazil region) have historically focused their effort and interest almost uniquely to research and development of the creation/production of marine forms (exotics and natives) capable of commercial handling, getting other general aspects of their knowledge practically relegated to a background (Agudo-Padrón and Bleicker, 2009).

Today, the systematic marine malacological inventory of Santa Catarina's

State, Subtropical Central Southern Brazil region, comprises a total of 671 confirmed species and subspecies, included in 365 genera and 152 families, corresponding to 42% of the estimate for Brazil in general (Agudo-Padrón, 2015a). Before reaching such registration, only sporadic and occasional contributions on the species occurring in the region were produced, as well as "underestimated" registration numbers (Agudo-Padrón, 2014b) consequence of the sensitive lack of in-depth studies, situation only recently

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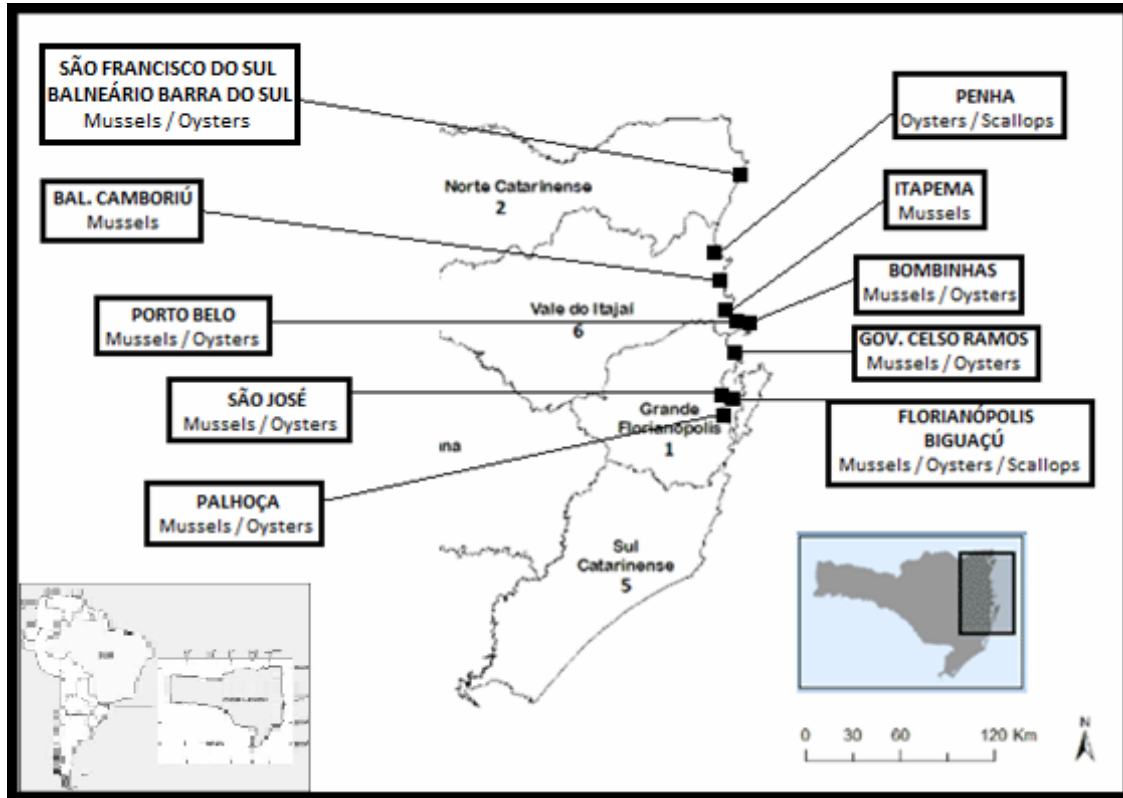
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**Figure 1.** Coastal plain and localization of consolidated mollusc production poles in Municipal Districts of State of Santa Catarina, Brazil. For additional statistical information, see Santos and Costa (2015).

**Table 1.** Aquatic mollusc species cultivated in Santa Catarina State, Southern Brazil region.

Taxon	Cultive type	Finality
Marine forms		
Ostreidae		
<i>Crassostrea gigas</i> (Thunberg, 1795)*	Lanterns	Edible
<i>Crassostrea rhizophorae</i> (Guilding, 1828)	Lanterns	Edible
<i>Crassostrea virginica</i> (Gmelin, 1791)	Lanterns	Edible
Mytilidae		
<i>Perna perna</i> (Linnaeus, 1758)	Long-lines	Edible
Pectinidae		
<i>Nodipecten nodosus</i> (Linnaeus, 1758)	Lanterns	Edible
Pteriidae		
<i>Pteria hirundo</i> (Linnaeus, 1758)	Lanterns	Pearls
Octopodidae		
<i>Octopus vulgaris</i> Cuvier, 1797	Suspended cages	Edible
Freshwater forms		
Mycetopodidae		
<i>Anodontites trapesialis</i> (Lamarck, 1819)	Lanterns and Tanks	Pearls

\*This exotic species, initially reproduced under “laboratory conditions”, ended up spontaneously invading the regional environment (Melo et al., 2010).

overcome (Agudo-Padrón, 2015a), and whose trajectory widely summarized in Agudo-Padrón and Bleicker (2009), mainly.

Of these, only seven are directly involved in human activities of mariculture, developed in so-called “marine farms” or

“farming parks” (see Poli et al., 2004, for a knowledge of its general technical aspects): one Cephalopoda (Octopodiculture), activity in “experimental stage” (Souza and Almeida, 2013, Teixeira et al., 2014), and six Bivalvia (Ostreiculture, Mitiliculture and Pectiniculture, mainly) (Agudo, 2006; Agudo-Padrón, 2015a) (Figure 1, Table 1).

The biogeographical subsidies that enable the development of the cultivate of marine bivalve molluscs (malacoculture) in the State of Santa Catarina since the decade of the 1980s (Agudo-Padrón and Bleicker, 2009) are widely detailed in the regional literature (Agudo-Padrón, 2012), occupying three of the four malacological regions in direct contact with the sea, involving twelve municipalities (Agudo-Padrón, 2015a, 2015b) (Figure 1), corresponding to the Central (5 -> Great Florianópolis) and Northern sections (5 -> Itajaí Valley & 2 -> North) of the State’s coastal plain (Agudo-Padrón, 2014a), being the Mytilidae *Perna perna* (Linnaeus, 1758) (brown mussel, cultivated on suspended ropes/long-lines - Mitiliculture) and the Ostreidae *Crassostrea gigas* (Thunberg, 1795) (Pacific or Japanese oyster, cultivated on suspended baskets or “lanterns” - Ostreiculture), the main commercial species grown (Figure 1, Table 1), economic base of the aquaculture of molluscs in the state, the largest center of production in Brazil (Santos and Costa 2015).

A third species, whose cultivation had specific start in the year 1998, the Pectinidae *Nodipecten nodosus* (Linnaeus, 1758) (scallop, cultivated on suspended baskets or “lanterns” - Pectiniculture) (Figure 1, Table 1), soon became an important extra alternative to the traditional fishing communities of the Santa Catarina coast by its high commercial value and foreign demand, factors encouraging for the growth of its production (Agudo, 2006; Santos and Costa 2015).

Worth commenting also that, recently, only one species of native limnic bivalve, the Unionoid Mycetopodidae *Anodontites trapesialis* (Lamarck, 1819) (Naiadiculture) (Table 1), is currently being considered “experimentally” in the State (Agudo 2006) for its potential to produce

cultured pearls (Agudo-Padrón, 2015b), species that is part of the recent current inventory of 224 non-marine (terrestrial and freshwater) forms known to the State (Agudo-Padrón, 2008, 2014a, 2015a), interest previously shared through the native marine species Pteriidae *Pteria hirundo* (Linnaeus, 1758) (Alves, 2010) (Table 1).

When it comes to regional research with molluscs, traditionally the Santa Catarina State historically have focused their effort and interest almost uniquely in the research and development of the creation/production of marine forms (exotics and natives) capable of comercial handling. Other general aspects of their knowledge are practically ignored and/or relegated to a background.

Regional “indifference” it is the watchword in this case, clearly reflected in the following two facts: (1) total absence of curators and regional representative institutional collections of molluscs in the state - the few existing are in downright dubious, precarious and restricted conditions; (2) sensitive lack of incentives and/or “university” motivations, by example, for the formation of expert researchers in the area and development of research in this field of the regional zoology - to not be the ones specifically targeted to the sector of exploration in mariculture.

### Conflict of interest statement

Author declare that they have no conflict of interests.

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