



SHORT COMMUNICATION


NEW RECORD AND INCREASED GEOGRAPHICAL DISTRIBUTION OF *SPHENIA FRAGILIS* (H. ADAMS ET A. ADAMS, 1854) (BIVALVIA: MYIDAE) ON THE BRAZILIAN COAST

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ABSTRACT: The present study reports a new record of the bivalve mollusc *Sphenia fragilis* (H. Adams et A. Adams, 1854), belonging to the family Myidae, for the Amazon region. The record occurred in September 2020 in the Rio dos Peixes estuary (Primavera, Pará), during benthic fauna sampling in the intertidal mangrove zone. A recent study recorded the species on the Amazon coast, but even so, the limits of its geographical distribution within Brazilian waters were confined between Ceará and Santa Catarina. Such biogeographical expansion highlights the need for revisions in the species' dispersion patterns, contributing to the understanding of its population dynamics and distribution.

KEYWORDS: Amazon region; benthos; bivalve; Mollusca

The family Myidae Lamarck, 1809 has ca. 80 species described worldwide (MOLLUSCABASE 2025), and these are known to inhabit a variety of habitats, living either attached by their byssus in deep substrates (e.g., crevices or rocks) (YONGE 1951, SCARABINO et al. 2006, HUBER 2010, PASTORINO & BAGUR 2011), or in association with other organisms (e.g., shrimps, annelids, and other bivalves) (YONGE 1951, NARA et al. 2008, CASTRO et al. 2022). Furthermore, myids exhibit morphological variability in their external features (CASTRO et al. 2021), possessing an inequilateral and inequivalve shell with a white coloration, ornamentation in the form of concentric striae, a

long and wide posterior region, in addition to the presence of a prominent, 'spoon-shaped' chondrophore in one of the valves (COAN 1999, MIKKELSEN & BIELER 2007, RIOS 2009, PASTORINO & BAGUR 2011).

The genus *Sphenia* (Turton, 1822) is among the least-studied members of Myidae, with species often only identified at the genus level. In South America, the first record of this genus was made by PILSBRY (1899), who described *Sphenia hatcheri* Pilsbry, 1899 in shallow waters of Patagonia. In Brazil, the genus *Sphenia* has been formally recorded since 1966, originating from a preserved specimen of *Sphenia fragilis* (H. Adams et A. Adams, 1854) deposited in the

Malacological Collection of LABOMAR, collected on Mucuripe Beach, Fortaleza – Ceará (MATTHEWS & RIOS 1969).

Studies on sphenid bivalves in the Atlantic are restricted to specific ecological studies or surveys of benthic assemblages. In Brazil, for example, the two existing studies on the species relate to its previous record in the Amazon region (CASTRO et al. 2021, 2022). In this context, the present study records a new occurrence of the bivalve mollusc *S. fragilis* on the Amazonian coast, confirming the species presence in the region.

The record occurred in the Rio dos Peixes estuary, located in the municipality of Primavera (00°54'40.0"S, 47°04'10.7"W), which belongs to the Northeast Pará Mesoregion and the Bragantina Microregion, Pará State, Brazil. The region's climate is characterised as the Am type (tropical monsoon), according to the Köppen classification, with temperatures ranging between 29 °C and 31 °C, salinity variation between 8 and 31 PSU and an annual rainfall index of around 2,200 mm (PEREIRA et al. 2016). Its borders are defined by the municipality of São João de Pirabas to the north, Quatipuru to the east, Capanema to the south, and the municipalities of Santarém Novo and Peixe-Boi to the west.

The *S. fragilis* specimens were collected during sampling carried out in a mangrove area, during spring tides, in September 2020. Subsequently, the individuals were coded, fixed in 70% alcohol, and transported to the Laboratory of Zoology at the Federal Rural University of the Amazon (LabZoo – UFRA), where the taxonomy was confirmed using specialized literature (PASTORINO & BAGUR 2011) and the shell morphometry of the specimens was documented. Taxonomic confirmation was carried out using specimens deposited in the Museum für Naturkunde – Leibniz Institute for Evolution and Biodiversity Science in Berlin (ZMB Moll 122209), and for individuals previously collected in the Urindeua River (Salinópolis, Pará), in the years 2013 and 2016, in the malacological collection of the Zoology Museum of the Federal Rural University of the Amazon – MZUFRA (MZUFRA Moll 1016).

The geographical distribution limits of *S. fragilis* were determined based on species records found in scientific literature, institutional and museum databases made available through the Global Biodiversity Information Facility (GBIF) (<https://www.gbif.org/>), Ocean Biodiversity Information System (OBIS) (<https://obis.org/>), Brazilian Fauna Taxonomic Catalog (CTFB) (<http://fauna.jbrj.gov.br>), and the speciesLink (<http://www.splink.org.br/>).

In total, two individuals of *S. fragilis* were found and deposited in the MZUFRA, under voucher: Moll1150. The individuals had an average anteroposterior length of 4.95 mm (Fig. 1).

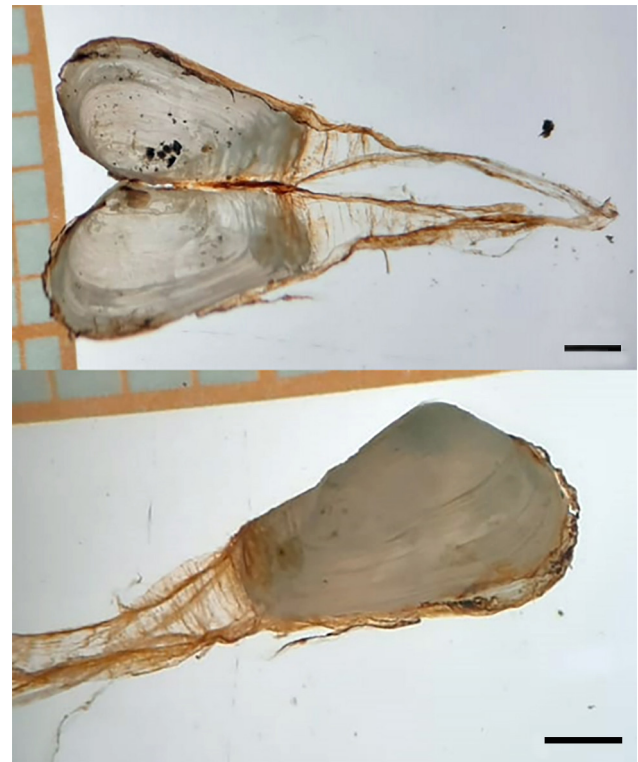


Fig. 1. Specimens of *Sphenia fragilis* found in the Rio dos Peixes estuary, Para State, Brazil. Scale bar 1 mm

This is the first record of *S. fragilis* in the Rio dos Peixes estuary and the second for the State of Pará, at a geographical distance of approximately 45 km from the Urindeua river, where the first record of the species for the Amazonian region was made (CASTRO et al. 2022).

The estimated distribution of *S. fragilis* indicates the presence of the species in the eastern Pacific and western Atlantic oceans (COAN 1999). With the present record, together with that of CASTRO et al. (2022), we demonstrate that this species is present on the Amazonian coast, and this indicates an increase in its geographical range on the Brazilian coast beyond that estimated by RIOS (2009), who determined the biogeographical limits of this bivalve between the states of Ceará and Santa Catarina. Thus, we highlight the biogeographical expansion of *S. fragilis* into the North Region of Brazil (Fig. 2).

CASTRO et al. (2022) found much larger individuals in the Urindeua river compared with the size recorded in the present study. The authors also reported *S. fragilis* specimens inhabiting crevices originating from the agglomeration of *Crassostrea* sp. oysters in the collection area. This was also observed in the present study, where the specimens were associated with the byssus of mussels present in the mangrove. This behavior of association with other organisms (e.g., oyster and mussel banks) is commonly observed in this species (RIOS 2009, PASTORINO & BAGUR 2011).

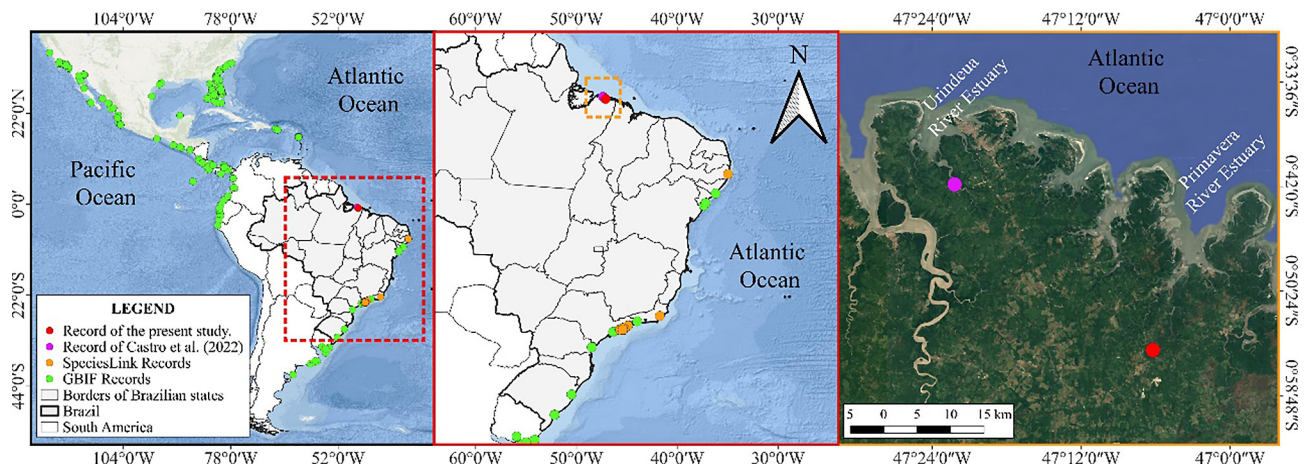


Fig. 2. Occurrences of *Sphenia fragilis* along the American continental coastal region, with emphasis on the Brazilian coast and the records in the Amazonian region. Legend: ● – record from the present study; ● – record from CASTRO et al. (2022) in the Urindeua river; ● – records from the SpeciesLink database; ● – records from the Global Biodiversity Information Facility – GBIF

The distribution of *S. fragilis* was previously restricted to the South and Southeast Brazilian coast (COAN 1999). Furthermore, historically, numerous studies have been conducted on the Amazonian coast (MARQUES-SILVA et al. 2006, BRAGA et al. 2024) and *S. fragilis* has not been recorded (SANTOS et al. 2021). Subsequently, new records demonstrated its expansion to the Northeast coast, including Rio Grande do Norte (FARRAPEIRA et al. 2010, FRANCO 2022) and Ceará (MATTHEWS & RIOS 1969), Piauí, and Maranhão (FERES 2010). It is believed that the expan-

sion of the distribution of bivalve mollusks is strongly associated with the displacement of specimens present in ship ballast water or encrusted on their hulls, as documented by FARRAPEIRA et al. (2010). The occurrence of *S. fragilis* on the Amazonian coast, confirmed by recent records in the state of Pará, represents a significant expansion of its distribution area along the Brazilian coast, which was previously restricted to the Northeast, South, and Southeast regions of Brazil.

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