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# THE GENUS *SPHENIA* TURTON, 1822 (BIVALVIA: MYIDAE) FROM SHALLOW WATERS OF ARGENTINA

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## INTRODUCTION

The genus *Sphenia* was first reported in southern South America by Pilsbry (1899), who described *Sphenia hatcheri* from shallow Patagonian waters. Later, Castellanos (1965) published a short note with comments on the type material of this species, studied by the late J. J. Parodiz at the Academy of Natural Sciences of Philadelphia, USA. Finally, in her catalogue of marine mollusks from Buenos Aires province (1970: 279), Castellanos mentioned Mar del Plata (38°S) as the farthest north distribution of this species. Coan (1999) published a detailed review of the Pacific species of *Sphenia*, including some interesting data about two Atlantic species, *S. hatcheri* and *S. fragilis*. Scarabino & Zaffaroni (2004) and Scarabino et al. (2006) briefly reported and discussed the distribution of these species in Uruguayan waters.

After an exhaustive study of the intertidal endolithic fauna of bivalves from Buenos Aires province, Argentina, new findings of specimens of *Sphenia* allow the reillustration and comparison of these species. In addition, new distributional ranges are provided.

## MATERIAL AND METHODS

Specimens collected from the intertidal sedimentary rock shoal, close to Santa Elena, Buenos Aires province, Argentina (37°51'8.81"S, 57°30'21.65"W), were the core of material studied. Additionally, all the specimens housed at the collections of the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires (MACN), and Museo de La Plata, Argentina (MLP) were studied. Scanning electron microscope images were produced with a Philips XL30 at the MACN. Most photographs were taken using a digital camera. All images were digitally processed with the appropriate software.

## SYSTEMATICS

*Sphenia fragilis*
(H. Adams & A. Adams, 1854)
Figures 1–8

*Synonyms*: (complete list in Coan, 1999)
*Tyleria fragilis* H. Adams & A. Adams, 1854: 418.
*Sphenia hatcheri*. Castellanos, 1970: 279 (*non* Pilsbry, 1899*, partim*); Figueiras & Sicardi, 1970: 22, pl. 7, fig. 103 (*non* Pilsbry, 1899).
*Corbula iheringiana* Pilsbry, 1897: 295, pl. 7, figs. 24–26; Castellanos 1970: 270.
*Sphenia fragilis*. Coan, 1999: 105, figs. 2–6, 18, 24; Scarabino et al., 2006: 161; Mikkelsen & Bieler, 2008: 378, fig.

*Material Examined*: (sp. = complete specimens, otherwise specified). 37°51'8.81"S, 57°30'21.65"W, Santa Elena, Buenos Aires, 16 sp., intertidal (MACN-In 38283); Mar del Plata, Buenos Aires, 1 sp. (MACN-In 10757); Miramar, 1 sp. (MACN 8451-15); Miramar, 2 sp. (MACN-In 8451); Miramar, Buenos Aires, 1 sp. (MACN-In 29511); Miramar, 1 left valve (MLP 2365-2); Río Quequén, Buenos Aires, 3 sp. (MACN-In 29514); Puerto Quequén, 1 sp. (MACN-In 19552); 41°12'S–62°54'W, 1 sp., 1 left valve, in 27.4 m depth (MACN-In 20652); Puerto Militar, Buenos Aires, in 30 m depth, 2 sp. (MACN-In 11142).

*Remarks*: The specimens studied showed a considerable variation in shell shape because of the constraints imposed by their nestling habit and consequent dependence on the substrata where the animal grows. Figures 1–5 illustrate specimens in which the height and length of, right and left valves, are the most variable feature. The chondrophore, as it was pointed out by Coan (1999), holds the main difference between *S. fragilis* and *S. hatcheri*. As it can be seen in Figure 19, the posterior

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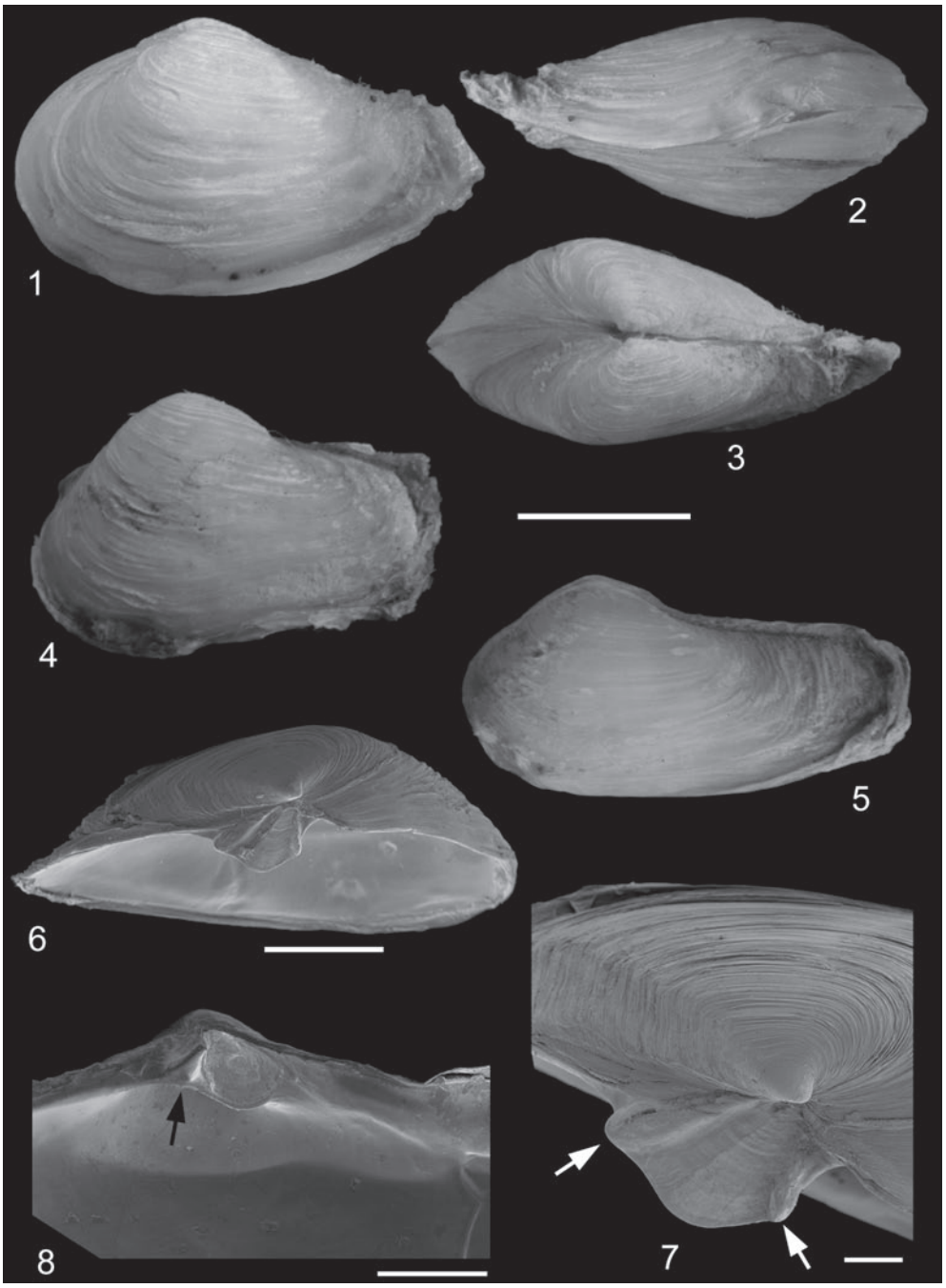
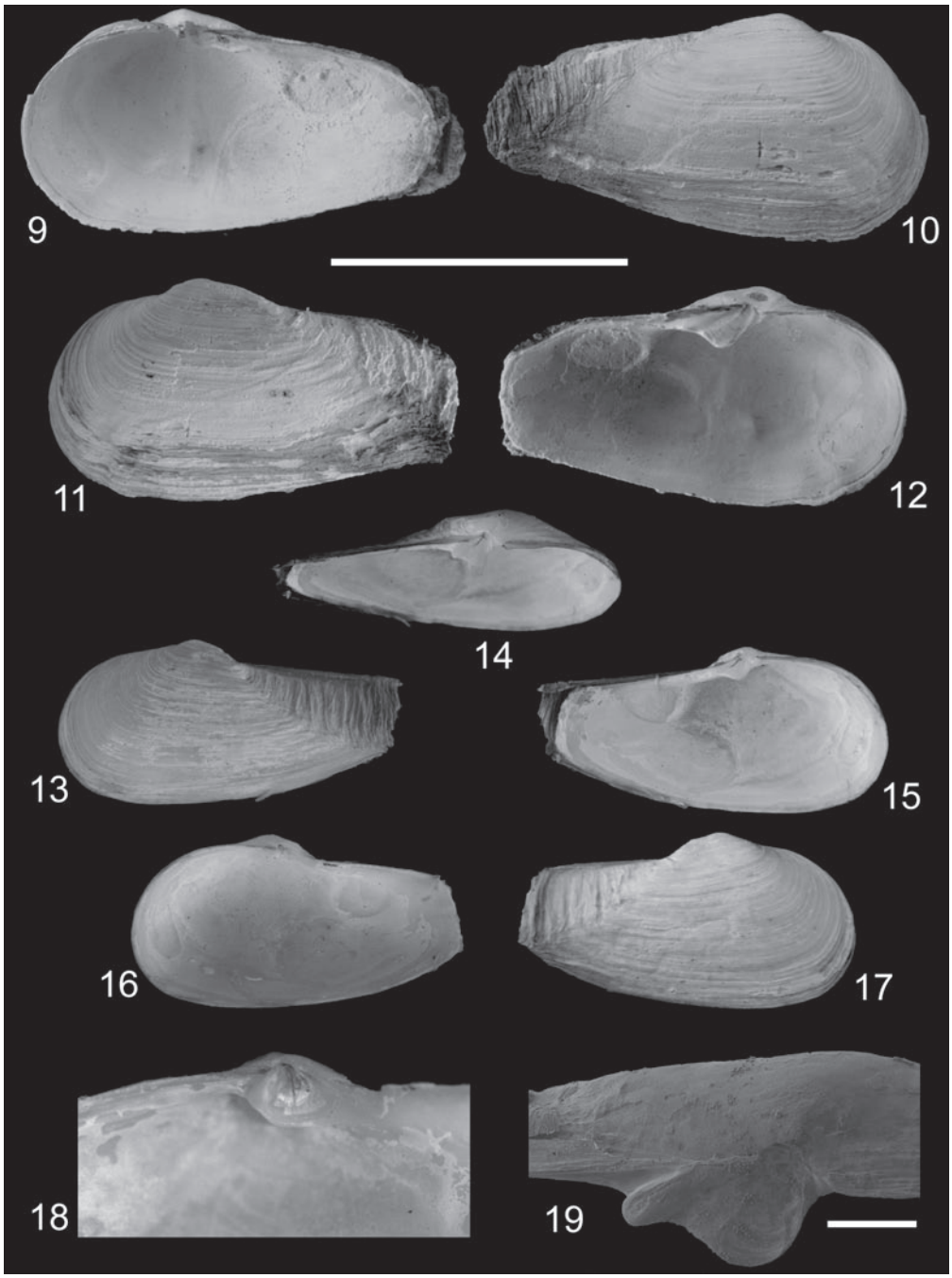



FIGS. 1–8. *Sphenia fragilis* (H. Adams & A. Adams). FIG. 1: Left valve; FIG. 2: Ventral view of the same specimen in 1; FIG. 3: Dorsal view of the same specimen in 1; FIG. 4: Left valve; FIG. 5: Left valve; FIG. 6: Inner view of left valve, tilted to show the chondrophore. Scale bar Figs. 1–5 = 3 mm; FIG. 7: SEM image of the left valve, right arrow showing a ridge on the anterior margin of chondrophore, left arrow showing the posterior ridge of condrophore slightly projected. Scale bar = 200 µm; FIG. 8: SEM image of right valve showing the hinge area, arrow pointing the anterior cardinal teeth. Scale bar = 500 µm. All specimens from MACN-In 38283.




FIGS. 9–19. *Sphenia hatcheri* Pilsbry. FIG. 9: Inner view of right valve; FIG. 10: Outer view of the same in 9; FIG. 11: Outer view of right valve; FIG. 12: Inner view of the same in 11; FIG. 13: Outer view of right valve; FIG. 14: Left valve slighly tilted to see the hinge area; FIG. 15: Inner view of the same in 13; FIG. 16: Inner view of right valve; FIG. 17: Outer view of the same in 16. Scale bar for all specimens = 1 cm; FIG. 18: Detail of the hinge of right valve; FIG. 19: SEM image of the chondrophore. Scale bar = 500 µm. All specimens from MACN-In 37986.

ridge of the condrophore of *S. hatcheri* in the left valve is longer and clearly projecting out of the ventral edge, whereas in *S. fragilis* this ridge is weakly or not projecting (Fig. 7). In addition, *S. fragilis* has a distinctive ridge on the anterior margin of the condrophore (Fig. 7, right arrow). A larger anterior cardinal tooth in the right valve of *S. hatcheri* is another distinguishing feature. The same tooth is also present in the right valve of *S. fragilis* but much smaller and anterior to a deeply recessed resilifer (Fig. 8, arrow). Also *S. hatcheri* is larger than *S. fragilis* (30.1 mm vs. 12.7 mm according to Coan, 1999).

Coan (1999) cited *S. fragilis* as occurring in both eastern Pacific and western Atlantic oceans. We have studied material from Uruguay and Argentina. The distribution range in both countries covers the entire marine coast from Uruguay to 41°12'S–62°54'W in Argentina. Most of the material comes from the intertidal zone with the exception of two lots collected at about 30 m depth.

*Sphenia fragilis* is found usually intertidally among and under the talus of the Rhodophyta *Corallina officinalis*. Also, sometimes it is part of the fauna associated to the byssal filaments of *Brachidontes rodriguezii*, the most abundant mytilid forming large banks at the study area. Living together with *S. fragilis* is *Hiatella meridionalis*, another byssate bivalve fairly common in this habitat; they share the same crevices, a usual behavior already reported by Yonge (1951) for *Sphenia binghami* and *Hiatella* sp. from Port Erin, Isle of Man, United Kingdom.

Coan (1999) pointed out the wide distribution of *S. fragilis*. This distribution is apparently not only Recent, as Scarabino & Zaffaroni (2004) confirmed its presence of *S. fragilis* in Quaternary deposits of Uruguay.

*Sphenia hatcheri*
Pilsbry, 1899
Figures 9–19

*Synonymy*: (complete list in Coan, 1999)

*Sphenia hatcheri* Pilsbry, 1899: 128, pl. 1, fig. 5, 6; Carcelles, 1950: 82, pl. 5, fig. 94; Carcelles & Williamson, 1951: 347; Castellanos, 1965: 173–175, pl. 1, figs. 1–8; Castellanos, 1970: 278–279, pl. 25, figs. 9–11 (*partim*); Scarabino & Zaffaroni 2004: 11.

*Sphenia subequalis* Dall, 1908: 422–423; Carcelles, 1950: 82.

*Material Examined*: Puerto Deseado, 1 sp. (MACN-In 17753); 4 km S of Punta Desengaño, San Julián, Santa Cruz, several valves (MACN-In 36931); 7.5 km S of San Julián, 1 sp. (MACN-In 36919); intertidal coast near of Estancia La Costa, Coyle, Santa Cruz (MACN-In 37986); Santa Cruz coast between Coyle and Río Gallegos, 3 sp. (MACN 10125); Santa Cruz, (MACN-In 29513); Cabo Buen Tiempo, Santa Cruz, several sp. (MLP 10246); Monte Tigre, S coast, Río Gallegos, Santa Cruz, 5 left, 1 right valves (MLP 1681); Monte Tigre, Río Gallegos, Santa Cruz, 1 sp., 4 left, 2 right valves (MLP 1349); Monte Tigre, Río Gallegos, Santa Cruz, (MLP 2041); San Sebastián, Tierra del Fuego, 8 sp., 11 left, 9 right valves; (MACN-In 12617); Punta María, Rio Grande, Tierra del Fuego, 7 sp. (MACN-In 37910); Río del Fuego, Tierra del Fuego, several sp. (MACN-In 12616); 54°53'S, 68°14'W, Bridges Is., Tierra del Fuego, 1 left, 1 right valves (MLP 12225).

*Remarks*: According to Coan (1999), based on Figueiras & Sicardi (1970) and Castellanos (1970), the distribution in the southwestern Atlantic is from La Paloma (34°40'S) in Uruguay to Mar del Plata, in Argentina. Coan (1999) suggested that these northern records may represent sporadic recruitment. Along the Pacific coast of South America, *S. hatcheri* occurs from Tierra del Fuego to Isla Chiloe in Chile. We restricted here the distribution on the southwestern Atlantic from Tierra del Fuego to Puerto Madryn, Golfo Nuevo, Chubut, Argentina, the latter based on specimens in the ANSP 170466, reported by Castellanos (1965). No specimens of *S. hatcheri* either from Uruguayan or Buenos Aires province coasts have been found during our field work nor in the collections examined. Those records north of Puerto Madryn cited by Coan (1999) from the published literature are here considered as belonging to *S. fragilis*, as well as specimens from Mar del Plata, Buenos Aires province (MACN-In 10757) mentioned by Castellanos (1970) and repeated by Coan (1999).

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