

## *FARTULUM MAGELLANICUM* (PROSOBRANCHIA, CAECIDAE): A NEW SPECIES FROM THE MAGELLANIC PROVINCE

### *Fartulum magellanicum* (Prosobranchia, Caecidae): una nueva especie para la Provincia Magallánica

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#### ABSTRACT

A new species of Caecidae *Fartulum magellanicum spec. nov.* (Prosobranchia: Caecidae), sampled during the First Italian Oceanographic Expedition (1991) in the Magellan Strait and in the Beagle Channel area (Pacific Ocean) is here described. This species is the southernmost representative presently known for the Caecidae.

**KEYWORDS:** Gastropoda. Prosobranchia. *Fartulum*. New species. Magellanic Province. Chile.

#### RESUMEN

Se describe una nueva especie de Caecidae, *Fartulum magellanicum spec. nov.* (Prosobranchia: Caecidae), recolectada durante la Primera Expedición Oceanográfica Italiana (1991) en el Estrecho de Magallanes y en el área del Canal Beagle (Océano Pacífico), correspondiendo al representante más austral de la familia.

#### INTRODUCTION

The caecids are uncommon in deep water environments. Most of the living species presently occur in the midlittoral and infralittoral zone, while findings in the circalittoral zone are rarer. Two genera and three species belonging to this family have been previously recorded from the Chilean coasts: *Caecum chilense* Stuardo 1962 (Lat. 36°46' S; Long. 73°12' W) and *Caecum* (*Micranellum*) *subaustrale* Stuardo 1970 from the northern and

central Chilean coasts; *Fartulum moorei* Marincovich 1973 from Iquique (Northern Chile; Lat. 20°13' S; Long. 70°10' W). These three species occur in the malacological Peruvian Province and are all typical of shallow water (midlittoral and infralittoral zone). Before these findings the Caecidae family has been recorded in the eastern Pacific Ocean, just south of the coast of Panama. The species here described, instead, occurs both in the circalittoral and in the epibathyal bottoms and it is the southernmost representative of the Caecidae family presently known.

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## RESULTS

Family Caecidae

*Fartulum* Carpenter, 1857*Fartulum magellanicum* spec. nov.

(Plate I, Figs. 1 - 5)

**Material:** The description is based on the specimens collected during the First Oceanographic Italian Expedition (1991) along the 570 km of the Magellan Strait and in the area of the Beagle Channel with the R/V "Cariboo" and "OGS Explora".

a) R/V "Cariboo" (Van Veen Grab, 0.1 m<sup>2</sup>): Stn. 1 (52°45' S; 74°59' W), 20 specimens from a sample of organogenic sand in front of the Pacific entrance of the Strait of Magellan (depth 100 m - Cabo Deseado).

b) R/V "OGS Explora" (Van Veen Grab, 0.1 m<sup>2</sup>): Stn. 38 (52°46' S; 74°59' W), 40 specimens from a depth of 105 m and Stn. 39 (52°17' S; 74°25' W), 1 specimen coming from a depth of 125 m from samples of organogenic sand off the Pacific entrance of the Magellan Strait; Stn. 11 (55°07' S; 65°55' W), 10 specimens from samples of organogenic sand taken from a depth of 190 m off the eastern entrance of Beagle Channel; Stn. 11 bis (55°13' S; 66°00' W), 15 specimens from samples of organogenic sand taken from a depth of 245 m off the eastern entrance of Beagle Channel (Fig. 1).

7 Paratypes of *F. moorei* n. 1592 from the Natural History Museum of Los Angeles County have been also examined.

**Description:** Teleoconch cylindrical, moderately curved, vitreous or lightly opaque in less fresh shells. Under the optical microscope, surface seems entirely smooth, with less distinct annular growth striae. Using the SEM these striae are rather thick, irregularly distanced and little engraved. Aperture circular with a thin lip folded outwards. Septum well developed, oblique angled to the back of the shell. Maximum diameter, at aperture, is constant to middle of the teleoconch while the posterior diameter is always smaller. Operculum and soft parts not known.

**Variability:** The dimensional characteristics of all the unbroken specimens coming from 4 of the 5 sampled stations of occurrence (Tab. I) were recorded. The specimens have a length range included between 0.85 and 2 mm. Diameter at aperture between 0.15 and 0.35 mm. These values are constant also at the middle of the teleoconch, while the diameter at the posterior end varies between 0.10 and 0.30 mm.

*F. magellanicum* spec. nov. has an average length of 1.33 mm, mean diameter at the aperture is 0.25 mm and at the middle of the teleoconch is 0.24 mm, while the septal end diameter is 0.19 mm. The mean of the ratio between the aperture diameter and the posterior end diameter is 1.16.

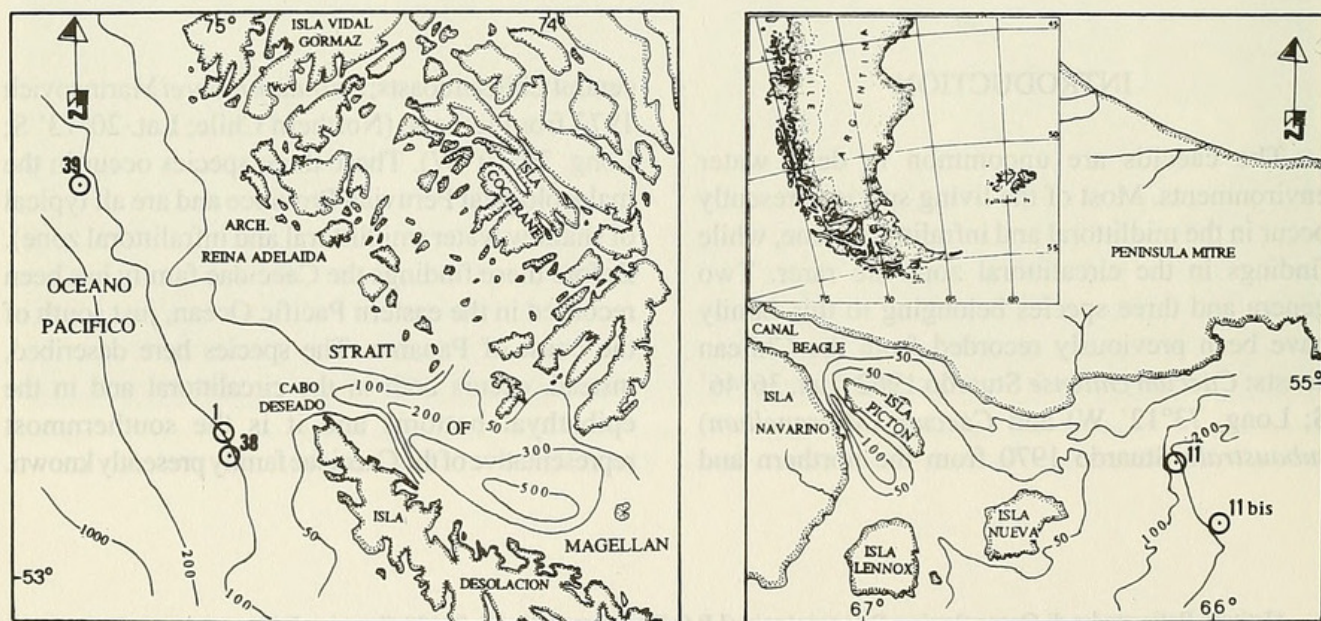


FIGURE 1. Pacific sector of the Strait of Magellan and the Canal Beagle area. Location of sampling stations.

TABLE I. Dimensional features (mm) of *Fartulum magellanicum spec. nov.*

SPECIES		length	aperture diam.	central diam.	post. end diam.	diam >/ diam <
<i>Fartulum magellanicum spec. nov.</i>						
Stn. 1						
1	HOLOTYPE	1.45	0.25	0.25	0.2	1.25
2	PARATYPE	1.30	0.25	0.25	0.2	1.25
3		1.35	0.25	0.25	0.2	1.25
4		1.30	0.25	0.25	0.17	1.47
5		1.65	0.35	0.35	0.27	1.30
6		1.25	0.25	0.2	0.2	1.25
7		1.25	0.25	0.2	0.2	1.25
8		1.10	0.25	0.2	0.2	1.25
9		2.00	0.35	0.35	0.29	1.20
Stn. 38						
1		1.30	0.25	0.25	0.2	1.25
2		1.18	0.21	0.21	0.17	1.24
3		1.35	0.25	0.25	0.2	1.25
4		1.20	0.21	0.21	0.17	1.24
5		1.30	0.25	0.25	0.2	1.25
6		1.35	0.25	0.25	0.2	1.25
7		1.30	0.25	0.25	0.2	1.25
8		1.30	0.25	0.25	0.2	1.25
9		1.32	0.25	0.25	0.2	1.25
10		1.35	0.25	0.25	0.15	1.67
Stn.11 bis						
1		1.20	0.25	0.22	0.2	1.25
2		1.35	0.25	0.25	0.2	1.25
3		1.40	0.25	0.25	0.2	1.25
4		1.40	0.25	0.25	0.2	1.25
5		1.55	0.25	0.25	0.2	1.25
6		1.40	0.25	0.25	0.2	1.25
7		1.30	0.25	0.25	0.2	1.25
8		1.40	0.25	0.25	0.2	1.25
Stn. 11						
1		1.45	0.25	0.2	0.15	1.66
2		1.20	0.25	0.2	0.2	1.25
3		0.85	0.2	0.15	0.12	1.66
4		1.20	0.25	0.22	0.2	1.25
range		0.85/2	0.15/0.35	0.15/0.35	0.15/0.30	—
<i>Fartulum moorei</i> holotype*		1.55	0.38	0.38	0.32	1.19
paratype						
1		1.25	0.3	0.3	0.3	1
2		1.45	0.34	0.3	0.23	1.47
3		1.3	0.34	0.34	0.25	1.36
4		1.5	0.35	0.35	0.3	1.16
5		0.95	0.25	0.22	0.2	1.25
6		1.05	0.25	0.25	0.2	1.25
7		0.9	0.3	0.27	0.2	1.5
Mean	<i>Fartulum magellanicum spec. nov.</i>	1.33	0.25	0.24	0.19	1.16
Mean	<i>Fartulum moorei</i>	1.24	0.31	0.3	0.25	1.41

\*After Marincovich 1973.

**Holotype:** The holotype has a total length of 1.45 mm, aperture diameter of 0.25 mm, in the middle of the teleoconch of 0.25 mm and a diameter at the posterior end of 0.20 mm. All the specimens are deposited at the Museum of the Istituto Policattedra di Oceanologia e Paleoecologia of Catania University. Holotype n. M1. 8.8.95; Paratypes staz. 1 n. M1/A; staz. 38 n. M1/B; staz. 11 n. M1/C; staz. 11 bis n. M1/D.

**Type locality:** Type locality is Stn. 1 located on the continental shelf off the Pacific entrance of the Magellan Strait, off Cabo Deseado (52°45' S; 74°59' W) at a depth of 100 m (Fig.1).

**Affinity:** Between the three species of Chilean Caecidae presently known, the closest to the species here described is *Fartulum moorei* Marincovich. Both the species are characterized by an apparently smooth shell. The septum of *F. moorei* is depressed and its mucro is angled nearly 90° to right, while *F. magellanicum spec. nov.* has a slender dome-shaped septum. The aperture is completely different, *F. magellanicum spec. nov.* has a folded outer lip which is instead lacking in *F. moorei*. *F. magellanicum spec. nov.* is more slender than *F. moorei* which is larger.

## DISCUSSION

*Fartulum magellanicum spec. nov.* is probably the southernmost species of the Caecidae family presently known for the Chilean coasts, its distributional area being included between 52° and 55°S and included in the Malacological Magellanic Province (Stuardo, 1964).

The three species of *Caecidae* presently known for the Chilean coasts are distributed around the central and northern part of Chile and all occur in the Peruvian Province. Morphometrical and geographical data are supplied in Tab. II. *C. chilense* Stuardo is the more common species and has its distributional area included between 12°30' S and

37°20' S (Stuardo 1962; 1970; Marincovich 1973). Between San Vicente Bay and the Gulf of Arauco (personal data, unpublished), in substrata of organogenic sand included between the low intertidal and 72 m of depth. *C. (M.) subaustrale* Stuardo is presently known for the type locality (in front of Los Vilos; 31°54' S; 71°32' W), at a depth of 10 m on a bottom of organogenic sand. Also *F. moorei* Marincovich, the species that for its morphological characteristic is closer to *F. magellanicum spec. nov.*, is known only for the type locality (Iquique, 20°13' S and 70°10' W) in the low intertidal zone.

Stuardo (1970) reports of the existence of another species of *Caecum* from southern Chile, whose description was expected with the results of the study of Prosobranch molluscs collected by the Lund Expedition in Chile during 1948-49. These results, however, till today are unpublished and it was not possible to trace the preserved material.

All the specimens of *F. magellanicum spec. nov.* were found in a sediment of organogenic white sand. This datum agrees with the endopsammic behaviour of the caecid that due to their diminutive sizes, the slender form of the shell, the ciliar movement that they have, are strictly sand-inhabiting species. Observations made in the laboratory (Panetta, 1980) on living specimens of two Mediterranean species showed that the *Caecum* move with a surprising agility in the sediment, feeding on unicellular organisms (diatomee) that they graze from grains of sand. Arnaud and Poizat (1979) affirm in a study made on the distribution of the Caecidae in the Gulf of Marseille (France) that this genera seems to prefer sandy bottoms particularly exposed to strong (medium-high) hydrodynamism. These ecological conditions seem to be the same as those present on the bottoms of the Pacific shelf and the western threshold of the Magellan Strait and the eastern entrance of the Beagle Channel, where the specimens here studied were found. This fact seems to be strengthened by

TABLE II. Features of the Caecidae species from the chilean coast (dimension in mm).

SPECIES	HOLOTYPE SIZES				TYPE LOCALITY	DEPTH	SEDIMENT	BIOGEOGRAPHICAL PROVINCE	LATITUDINAL RANGE
	length	diam. >	Mid-Teleoc.	diam. <					
<i>Caecum chilense</i> STUARDO	1.98	0.49	-	0.37	Bio Bio river mouth 36°46' S; 73°12' W	2-4 m	Organogenic sand	Peruvian	12°30' S - 37°20' S
<i>Caecum (M.) subaustrale</i> STUARDO	2.26	0.55	-	0.39	Front of Los Vilos 31°54' S; 71°32' W	10 m	Organogenic sand	Peruvian	31°54' S
<i>Fartulum moorei</i> MARINCOVICH	1.55	0.38	0.38	0.32	Iquique 20°13' S; 70°10' W	Intertidal	Sandy gravel	Peruvian	20°13' S
<i>Fartulum magellanicum spec. nov.</i>	1.45	0.25	0.25	0.2	Off Cabo Deseado 52°45' S; 74°59' W	100 m	Organogenic sand	Magellanic	52°45' S - 55°13' S

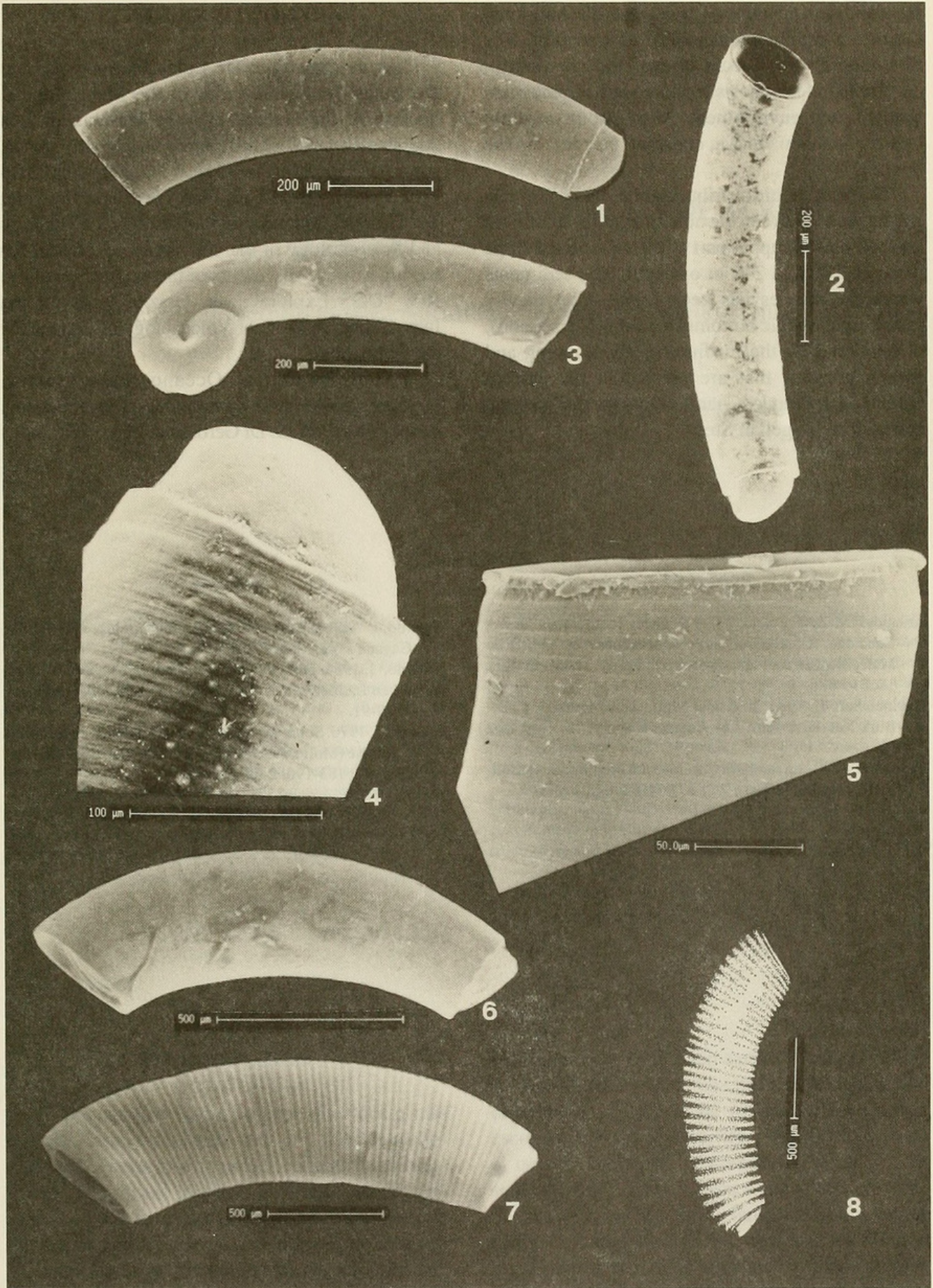


PLATE I. Fig. 1. Holotype of *Fartulum magellanicum spec. nov.*, off Cabo Deseado (Pacific Ocean) Stn. 1; 100 metres. Fig. 2. Paratype of *F. magellanicum spec. nov.*, Stn. 1; 100 metres. Fig. 3. Young shell which still retains its initial spiral coil. Fig. 4. Holotype: detail of the shape of the septum. Fig. 5. Holotype: detail of the aperture, outer lip and sculpture. Fig. 6. Paratype of *F. moorei* Marincovich from Iquique (Chile). Fig. 7. *Caecum (Micranellum) subaustrale* Stuardo from San Vicente Bay (Chile). Fig. 8. *Caecum chilense* Stuardo, reproduction of the holotype from Stuardo (1970).

the condition of general freshness of shells that indicate a minimum incidence of transport. The three species of Caecid known for the central-northern Chilean coasts prefer coarse organogenic sandy beach environments with strong medium hydrodynamism and a constant current on the bottom.

The bathymetric distribution of *F. magellanicum spec. nov.* is between the outer part of the continental shelf and the upper part of the continental slope between 100 and 245 m of depth. The sediments where the species has been found are typically sandy organogenic bottoms (medium coarse sand), in relation with the medium-strong flooding and ebbing currents that are present in the eastern entrance of Beagle Channel and in the western entrance of Magellan Strait.

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PNRA Biological Oceanographic sector, Programme on Benthic Communities, Unit of Catania, Responsible Prof. S. Di Geronimo, Paper 26.

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