

First record of *Parandalia tricuspis* (Müller, 1858) and *Sigambra cf. tentaculata* (Treadwell, 1941) (Pilargidae: Polychaeta) in Argentina

Primer registro de *Parandalia tricuspis* (Müller, 1858) y *Sigambra cf. tentaculata* (Treadwell, 1941) (Pilargidae: Polychaeta) en Argentina

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Resumen. - *Parandalia tricuspis* (Müller 1858) y *Sigambra cf. tentaculata* (Treadwell 1941) fueron registrados en áreas submareales frente a Mar del Plata (38°S, 57°W, Argentina). Ésta constituye la primera mención de *P. tricuspis* en aguas argentinas. El género *Sigambra* era conocido para la región patagónica; la presente cita extiende hacia el norte su distribución. El tipo sedimentario (arenas finas y muy finas) y el contenido orgánico parecen ser los factores determinantes

para el asentamiento de *P. tricuspis*, cuyos ejemplares fueron recolectados tanto en aguas abiertas como dentro del puerto de la ciudad. *Sigambra cf. tentaculata* solo fue recolectada en el puerto, en sedimentos fango arenosos con alto contenido de materia orgánica.

Key words: Pilargids, subtidal, port, sediment type, benthos

Introduction

Polychaetes of the family Pilargidae are a group of euribathic organisms and, according to Hartman (1947), with wide distribution. They live in soft-bottom substrates, although with no dominance in terms of abundance or richness (Salazar-Vallejo 1986). Pilargids are not tube builders, and due to their anatomical structure (sack-like pharinx) they are considered carnivores or omnivores (Fauchald & Jumars 1979). Systematics of pilargids was confuse and several species have been changed from one genus to another. The family has been revised by Hartman (1947), Pettibone (1966), Emerson & Fauchald (1971) and Salazar-Vallejo (1986).

Previous records of pilargids in South America were made along the coast of Chile (Wesenberg-Lund 1962, Hartmann-Schröder 1965, Hartmann 1967, Cañete *et al.* 1990, Rozbaczyllo & Quiroga 2000) and southern Brazil (Nonato 1981, Lana 1984, Salazar-Vallejo 1990). Records in argentinean waters are scarce. *Ancistrosyllis groenlandica* McIntosh 1879 was registered for Drake Channel and Malvinas (Falkland) Islands by Hartman (1947), and posteriorly Salazar-Vallejo & Orensanz (1991) extended its distribution to Uruguay and Argentina. These authors also identified fragments of

Pilargis cf. maculata Hartman 1947 from subtidal beds of *Mytilus* at 38°S, in argentinean waters, and *Parandalia tricuspis* and *Sigambra tentaculata* only in uruguayan localities (Salazar-Vallejo & Orensanz 1991, J.M. Orensanz pers. comm. 2003).

In a general survey of the subtidal macrobenthos off Mar del Plata, pilargids were collected at two different sites: shallow waters close to the intertidal sewage discharge and the city harbor. The organisms were identified as *Parandalia tricuspis* (Müller 1858) and *Sigambra cf. tentaculata* (Treadwell 1941). Both constitute new records for argentinean waters. The present work shows ecological aspects of these species, like relationships of abundance and size of specimens according to the type and contents of organic matter in the bottom, and removal of sediments due to storms.

Material and methods

The material examined was taken from shallow bottoms between 4-14 m depth and 200 m - 5 km offshore, from the sewage discharge. Quantitative samplings were carried out from December 1999 to March 2002. Samples were collected before and after a storm event during March 2002. An additional survey was carried out in Mar del Plata harbor in December 2001 (Fig. 1).

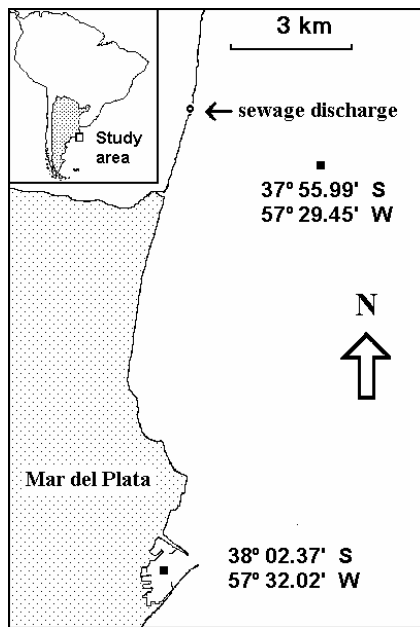


Figure 1

Sampling areas around Mar del Plata city. Pilargids were found in two sites: off the sewage discharge, and the harbor city

Áreas de muestreo alrededor de la ciudad de Mar del Plata.
Los pilárgidos fueron hallados en dos sitios:
frente a la descarga cloacal, y en el puerto

Sampling was done with a van Veen type grab of 0.05 m². Three to four grabs were taken for biological analysis, and one or two extra grabs for sedimentological analysis. Total organic carbon was determined according to Walkley & Black (1965).

Median density was estimated; individual size was measured in complete specimens for testing (t-student) differences between pre- and post-storm samples and between harbor and offshore samples.

Results and discussion

Parandalia tricuspis (Müller 1858)

Material examined

The total number of specimens collected was 492, 12 from the city harbor (32.73-71.05 mm in length) and the rest from the area influenced by the sewage discharge (1.55-23.24 mm in length) (Table 1).

Parandalia tricuspis was identified following Salazar-Vallejo & Orensanz (1991). The material fits well with the redescription published by Salazar-Vallejo (1990), except for the number of neurosetae in each fasciculum, 12 in uruguayan individuals and 4 in our

material from Argentina. However, the number of neurosetae in posterior fascicles is not considered a diagnostic character to the specific level (Parker 1996)¹.

Habitat

Parandalia tricuspis was found in fine to very fine sandy sediments in the zone of sewage discharge, with a mean organic carbon content of 0.54%. The species was absent in coarser surrounding bottoms with lower organic carbon content of 0.28%. Density was 400 and 2,500 ind.m⁻² in December and March, before and after the storm, respectively (Fig. 2). The sediment type was muddy-sandy, with mean organic carbon content of 1.83% at the harbor, where density was 38 ind.m⁻² (Fig. 2). Mean individual size was lower after the storm (4.44 mm), while before the storm and at the harbor, organisms were larger (5.48 and 33.5 mm, respectively). These differences were highly significant ($P < 0.01$).

Remarks

These results suggest that sediment type is a limiting factor in the distribution of this species, only collected in finer bottoms of the area. For pilargids, a positive relationship to fine sand was found, although in general terms, polychaetes are related to a combination of sediment, organic content and depth (Méndez & Green-Ruiz 1998). Specimens of *P. tricuspis* were larger at the harbor area than in pre-storm shallow samples, although the presence of small-sized organisms was related to contaminated environments (see Pearson & Rosenberg 1978). Bottoms deeper than 6 m off the domestic sewage discharge are not contaminated by organic pollution (Elías *et al.* 2001, 2004). In the subtidal areas off Mar del Plata, local hydrodynamics and periodical storm disturbance are the main factors structuring benthic assemblages, producing cyclical changes and forcing communities to restart succession (Palacios *et al.* 2001², Elías *et al.* 2004, Elías *et al.* in press). This fact agrees with the observed pattern in mean size of this pilargid species before and after the storm.

¹Parker T. [mblcsdla@netcom.com] "Misdiagnosis of *Parandalia ocularis* (Polychaeta: Pilargidae)." [http://www.keil.ukans.edu/~worms/parandal.html]. October 1996.

²Palacios JR, EA Vallarino, MS Campodonico & R Elías. 2001. Resiliencia en comunidades macrobentónicas submareales del Atlántico SO: vertidos cloacales y tormentas como fuerzas estructurantes en el corto plazo. Extended Abstracts of IX COLACMAR, San Andrés, Colombia.

Table 1
Sampling stations and number of specimens of *Parandalia tricuspis* collected at the study area

Estaciones de muestreo y número de especímenes de *Parandalia tricuspis* en el área de estudio

Station	Date	Latitude °S	Longitude °W	Nº	Depth (m)	Bottom type
57	Dec-00	37° 55.87'	57° 29.71'	1	13.0	Muddy-sand
60	Dec-00	37° 55.27'	57° 29.11'	2	13.5	Fine sand
1	May-01	37° 55.02'	57° 31.09'	2	7.5	Fine sand
2	May-01	37° 55.30'	57° 31.24'	3	7.1	Fine sand
3	May-01	37° 55.83'	57° 31.36	2	8.0	Fine sand
55	May-01	37° 56.19'	57° 29.93'	1	13.0	Muddy-sand
60	May-01	37° 55.37'	57° 29.11'	1	13.5	Muddy-sand
2	Aug-01	37° 55.30'	57° 31.24'	2	7.1	Muddy-sand
60	Dec-01	37° 55.27'	57° 29.11'	4	13.5	Muddy-sand
63	Dec-01	37° 56.25'	57° 28.38'	1	15.4	Fine sand
1	Mar-02	37° 55.02'	57° 31.09'	2	6.0	Fine sand
2	Mar-02	37° 55.30'	57° 31.24'	2	5.5	Fine sand
3	Mar-02	37° 55.83'	57° 31.36	1	7.0	Fine sand
4	Mar-02	37° 56.12'	57° 31.26'	6	6.4	Fine sand
4'	Mar-02	37° 56.12'	57° 31.26'	10	6.0	Fine sand
5	Mar-02	37° 53.30'	57° 28.40	2	14.0	Fine sand
51	Mar-02	37° 56.49'	57° 29.39'	6	13.8	Fine sand
55	Mar-02	37° 56.19'	57° 29.93'	10	12.0	Fine sand
57	Mar-02	37° 55.87'	57° 29.71'	48	12.5	Fine sand
58	Mar-02	37° 55.89'	57° 28.82'	2	14.0	Coarse sand
60	Mar-02	37° 55.27'	57° 29.11'	42	13.0	Muddy
60'	Mar-02	37° 55.27'	57° 29.11'	196	13.0	Muddy
63	Mar-02	37° 56.25'	57° 28.38'	137	14.4	Muddy
7(city harbor)	Dec-01	38° 02.37'	57° 32.02'	12	4.9	Anoxic mud

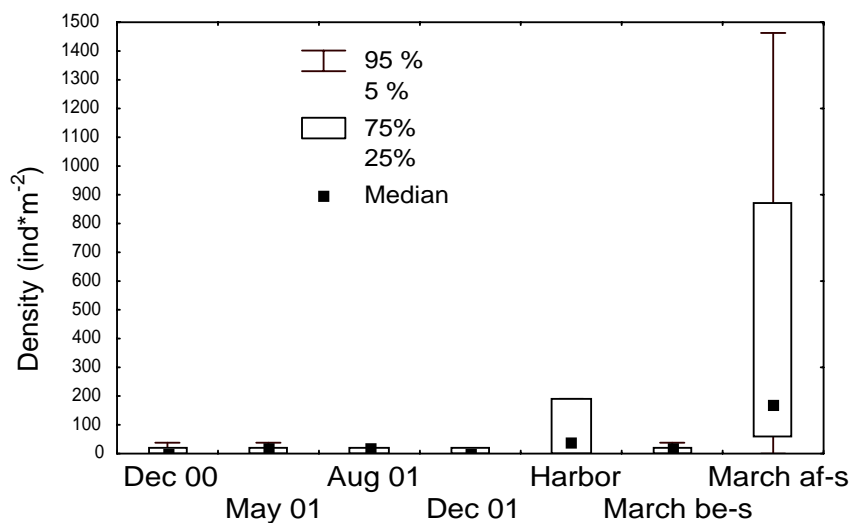


Figure 2

Median density of *Parandalia tricuspis* at the Mar del Plata area. Sampling in the harbor was performed during December 2001. In March 2002 sampling was carried out before (be-s) and after (af-s) a storm

Densidad mediana de *Parandalia tricuspis* en el área de Mar del Plata. El muestreo en el puerto fue realizado en diciembre de 2001. En marzo de 2002 el muestreo se realizó antes (be-s) y después (af-s) de una tormenta

Sigambra cf. tentaculata (Treadwell 1941)

Material examined

Station 6 (38°02.54'S-57°31.83'W; 4 complete specimens; 10,4 m; anoxic mud), station 4 (38°02.37'S-57°32.02'W; 2 complete specimens; 9 m; muddy). The mean size of specimens was 12.52 mm length, ranging from 5.42 to 30.98 mm.

The studied material fits well with the redescrptions given by Salazar-Vallejo & Orensanz (1991) and Leon-Gonzalez (1991). Moreira & Parapar (2002) redescrbed *S. tentaculata* (Treadwell 1941) from type-material and re-established *S. parva* (Day 1963), previously considered synonyms, based on differences in the arrangement and number of papillae on the proboscis. We could not observe these characters in our stained (Rose of Bengal) specimens, so we decided to refer this specimens as *S. cf. tentaculata*.

Habitat

The specimens were found in only 2 of the 11 stations analyzed, in muddy-sandy bottoms with high organic matter contents between 2.14 and 1.06 %, with densities of 76 and 19 ind.m⁻², respectively. The two stations were placed between the mouth and the inner region of the harbor, where bottoms are stable and not affected by contamination or hydrodinamism (Rivero *et al.* 2003)³.

The genus *Sigambra* was previously cited in very fine to fine sandy beaches at Puerto Madryn (43°S, 65°W) (Escofet 1983) and according to J.M. Orensanz (pers. comm.) the material also corresponds to *Sigambra cf. tentaculata*.

Acknowledgements

To the Soil Laboratory of Instituto Nacional de Tecnología Agropecuaria (INTA – Balcarce) for organic carbon determination. Water column measurements were performed by personnel of the enterprise Obras Sanitarias Sociedad de Estado (OSSE). We are indebted to Dr. Paulo da Cunha Lana (UFPR – Brazil), Dr. K. Fauchald (NMNH – U.S.A), Dr. J.M. 'Lobo' Orensanz (CenPat – Argentina) and Dr. N. Rozbaczylo (PUCC – Chile) for bibliography and advice. Samplings were taken from the "ARA Luisito", Escuela Nacional de Pesca. This work was read in the VIII International Polychaete Conference. Madrid (Spain), 5-9 July, 2004.

This is Department of Ciencias Marinas (UNMdP) contribution N° 116 and INIDEP contribution N° 1358.

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Recibido en agosto de 2004 y aceptado en enero de 2005