

FIRST RECORD OF MAGELONIDAE, *MAGELONA RIOJAI* JONES, 1963 (POLYCHAETA) IN COASTAL WATERS OF ARGENTINA

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INTRODUCTION

All magelonids currently are assigned to the genus *Magelona* Müller, with a total of about 35 described species (Fauchald, 1977; Fauchald & Jumars, 1979), but it is anticipated that more taxa may be recognized in the family (according to Uebelacker & Jones, 1984). Their affinities are most notably with the Spionidae, and also with the Chaetopteridae, but the specialization has produced a variety of structures known nowhere else (Hartman, 1944).

The first record of any magelonid was that of F. Müller (1858), who erected the genus *Magelona* for *M. papillicornis* from Brazil (Santa Catarina Island). The most recent studies on southern magelonids (Bolívar & Lana, 1986; 1988) show 6 species for the southeastern Brazilian coast. *M. riojai* Jones, 1963 is characteristic of high energy oceanic beaches, while the other species inhabit the mixohaline waters of Santa Catarina Island or Paranaguá Bay (*M. papillicornis* Bolívar & Lana, 1986 and *M. posterelongata* Bolívar & Lana, 1986) or occur both in estuarine waters and on the inner shelf (*M. variolamellata* Bolívar & Lana, 1986) in low to moderate energy environments. *M. nonatoi* Bolívar & Lana, 1986 and *M. crenulata* Bolívar & Lana, 1986 are distributed from Santa Catarina State and north up to Rio de Janeiro (Bolívar & Lana, 1986).

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This is the first record of the family Magelonidae from Argentine waters, represented by *M. riojai*, extending its southern distribution from 30°S (Brazil) to 38°S, through the biogeographical barrier of Río de la Plata.

MATERIAL AND METHODS

Material was collected with a benthic dredge (60 x 25 x 20 cm) at 12 sampling stations in front of Mar del Plata city in 1996, in sandy bottoms between 6.5 and 12.5 m depth (Fig. 1). Samples were sieved through a 1 mm mesh screen, and the material retained was stained with Rose Bengal for sorting. Organisms were identified and counted under a stereomicroscope. Material was fixed with 4% formaldehyde and stored in 70% ethyl alcohol. Specimens were stained in an aqueous solution of methylene blue (MBA, following Nateewathana & Hylleberg, 1991), and the pattern was drawn.

The material has been deposited in the Department of Invertebrate Zoology of La Plata Museum of Natural History (Colección Annelida, Polychaeta, n° 6055).

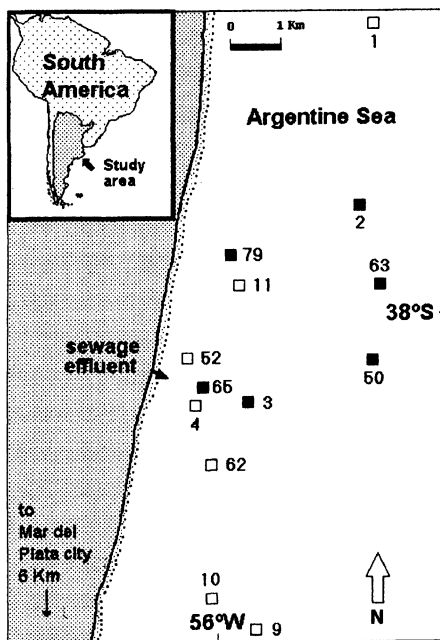


Fig. 1

Benthic stations sampled in front of Mar del Plata sewage outfall. Black squares are stations with the magelonid polychaete *Magelona riojai*. Numbers by the squares are station numbers.

RESULTS AND DISCUSSION

Magelona riojai (Fig. 2) was identified following Bolivar & Lana (1986). The main characters recognized were: setiger 9 with mucronate setae (Fig. 3), lateral lamellae smooth, and postsetal lamellae not well developed or absent in the first eight setigers. Abdominal hooded hooks are tridentate in tandem (Fig. 4). The material examined agrees in all respects with the descriptions and drawings in Bolivar & Lana (1986). Gametes were not observed in the specimens studied.

The staining pattern with methylene blue is shown in Fig. 5. The dorsum was not stained anteriorly and there were blue transverse bands in the abdominal region. Laterally, transverse bands appeared throughout the body between the parapodia, becoming more diffuse posteriorly (Fig. 5). The ventral surface was a homogeneous pale blue, except for two parallel bands not stained in the thoracic region (Fig. 6).

Magelonids were recorded at 6 stations in front of the sewage discharge (about 800 m from the coast at 6.5 m depth), seaward and north of the sampling area (about 3 km from the coast and 12.5 m depth) (Table 1).

These samples were grouped in both the Principal Component Analysis and the Cluster Diagram, and are defined as "rich stations" (more than 30 species, mean abundance up to 480 individuals), in well-sorted fine and very fine sands with low organic content (between 0.21 to 0.48%). The dominant taxa, characterized by small organisms, are the bivalve *Amiantis purpuratus* Lamarck, 1818, Amphipoda, and Tanaidacea (Elías *et al.*, 1997; Elías & Vallarino, submitted).

In Brazil, *Magelona riojai* was found in high energy oceanic beaches of well-sorted fine sand with low organic content (Bolivar & Lana, 1988). Bolivar & Lana (1986) suggested that the species has behavioral adaptations to high-energy conditions and is able to build sub-surface burrows covered by mucus. The species appears to be restricted to the intertidal or shallow subtidal sandy beaches of the open sea (Bolivar & Lana, 1986).

In Mar del Plata, *Magelona riojai* was found in shallow subtidal sandy bottoms subjected to moderate to low sewage influence. Its distribution far from the effluent and seaward to the north (according to the predominant littoral current south to north, see Lanfredi, 1972; Isla & Ferrante, 1997) suggests that the conditions for the species will be enhanced by flocculent organic matter suspended in the water column. Magelonids are discretely motile, tentaculate, surface-deposit-feeders (SDT of Fauchald & Jumars, 1979). However, selectivity may be shown when they feed on poorly sorted material or handle large particles, and magelonids will take small crustaceans as prey when given the opportunity. The presence of pelagic organisms in the digestive tracts of worms living in a high energy environment such as a well sorted beach is more indicative of feeding on the organic debris in ripples than of filter-feeding (Fauchald & Jumars, 1979). This agrees with observations of Bolivar & Lana (1988), who mention that *M. riojai* is a selective surface deposit-feeder.

Magelona riojai from Mar del Plata

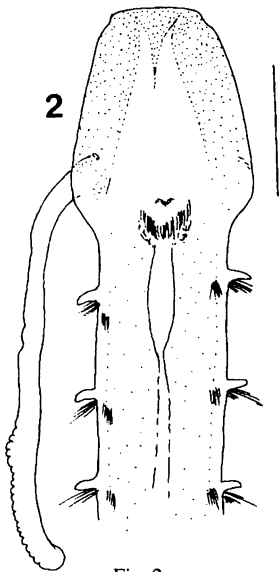


Fig. 2
Dorsal view of anterior end; specimen appears wider than normal due to pressure of coverslip. Scale is 0,78 mm.

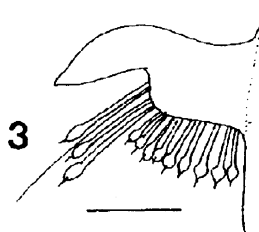


Fig. 3
Part of parapodium of setiger 9 with mucronate setae. Scale is 0.06 mm.

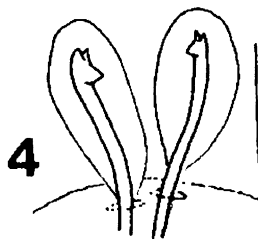


Fig. 4
Abdominal hooded hooks. Scale is 0.01 mm.

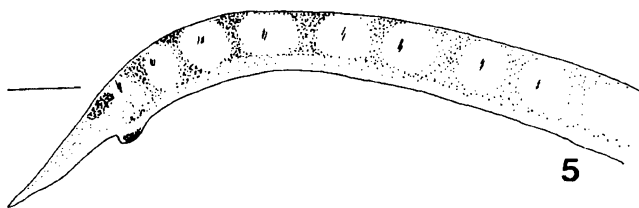


Fig. 5
Lateral view of specimen stained with methylene blue. Scale is 0,4 mm.

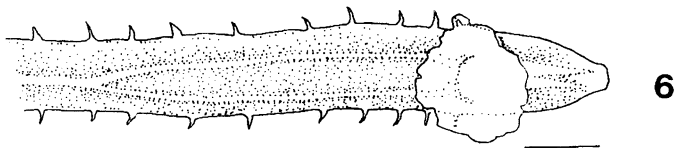


Fig. 6
Same individual showing staining pattern in ventral view. Scale is 0,4 mm.

Fonte: First record of Magelonidae, *magelona riojai* Jones, 1963 (Polychaeta), in coastal waters of Argentina. ELIAS, Rodolfo & BREMEC, Claudia Silvia.

In Mar del Plata area, the stations with well sorted sands had the lowest abundance of magelonids, while one of those with moderate selection had the greatest abundance (Table 1). This factor, the low organic content of the substrate (between 0.21 to 0.48 %), and the strong hydrodynamic forces in the shallow shelf suggest the species could be a facultative suspension feeder, like Spionidae, Fabriciinae and *Owenia*, taxa also found in the area (Elías *et al.*, 1997).

Table 1. Characteristics of sampling stations in front of Mar del Plata City where *Magelona riojai* was found in 1996. Relative abundance corresponds to number of individuals in a sample.

Station	Date	Relative abundance	Depth (m)	Sediment type	Phi	Selection
2	Apr. 30	3	11	Fine sand	2.62	Moderate
3	Apr. 30	6	9	Fine sand	2.62	Moderate
50	July 17	19	12.5	Medium sand	1.73	Moderate
63	Aug. 29	6	11.5	Very fine sand	3.17	Poor
65	Aug. 29	7	6.5	Very fine sand	3.17	Moderate
79	Sept. 17	2	10.6	Very fine sand	3.33	Well sorted

The presence of small organisms in this area could be related to the existence of opportunistic species due to the unstable sediments of the inner shelf. *Magelona rosea* Moore, 1907 was reported to be associated with a macroinfaunal assemblage characteristic of unstable sandy inorganic sediments in a salt marsh in Massachusetts, USA (Sarda *et al.*, 1995). A similar polychaete fauna (i.e., *Owenia fusiformis*, *Paraprionospio pinnata* Ehlers, 1901) with small organisms was also reported for the shallow shelf of northern Chile and Peru (Carrasco, 1997). *Magelona* spp. were cited as opportunistic small polychaete species in the Dogger Bank (Kröncke, 1990).

This record extends the southern range of distribution of *Magelona riojai* from 30° to 38°S, and constitutes the first mention of both the family and the species for marine waters of the Argentine shallow shelf.

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ABSTRACT

Magelona riojai Jones, 1963 (Magelonidae) is reported for the first time in Argentine waters. The specimens were collected during a benthic sampling program developed in Mar del Plata city coastal area (38°S), aimed at determining the structure of subtidal soft-bottom macrobenthic communities and their relationship to sewage effluent. This is also the first report of the family in Argentina, and extends its southern range of distribution from 30° to 38°S. The specimens were recorded in sandy bottoms with low organic content, between 6.5 to 12.5 m depth, in front of a sewage effluent of Mar del Plata city.

RESUMO

Magelona riojai Jones, 1963 (Magelonidae) é registrada pela primeira vez em águas argentinas. O material foi coletado no decorrer de um programa de amostragem bêntica na região costeira da cidade de Mar del Plata, que teve como objetivo a análise da estrutura de associações macrobênticas sublitorais de fundos moles, sob influência de esgoto. Este é também o primeiro registro na Argentina da família Magelonidae, que tem sua distribuição ampliada de 30° S para 38°S. Os exemplares foram coletados em fundos arenosos, com baixos teores de matéria orgânica, em profundidades variáveis de 6,5 a 12,5 m, defronte ao local de despejo dos esgotos de Mar del Plata.

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