Abstract

Abdellatif C., A. Bayed – First record of *Alkmaria romijni* Horst, 1919 (Polychaeta: Ampharetidae) from the Mediterranean coast (Smir Lagoon, Morocco).

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The collection of the polychaete *Alkmaria romijni* Horst, 1919 in the Mediterranean coastal Lagoon of Smir in the Northwest of Morocco represents the first record of this species for the Mediterranean Sea. The species was found in different habitats: mud, sandy mud, fine sand sediments and algal and seagrass meadows. This new record from this lagoon extends the known geographical distribution range of the species both in Morocco and in the Mediterranean. It contributes to knowledge of the biogeography of this rare species found, to date, only on Atlantic coasts between the Baltic Sea in the North and Morocco in the South. Some data on the distribution and auto-ecology of the species are provided.

KEY-WORDS: *Alkmaria romijni*, polychaetes, geographical distribution, Mediterranean Sea.

Résumé

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MOTS CLÉS :
*Alkmaria romijni*, polychètes, répartition géographique, Méditerranée.
The tentacled lagoon worm *Alkmaria romijni* Horst, 1919 is a Polychaeta species that currently belongs to the family Ampharetidae Malmgren, 1867, subfamily Ampharetinae Chamberlin, 1919 (Day, 1964; Hartmann-Schröder, 1971; Holthe, 1986) (for a photo of the species, see the website http://www.frammandearter.se/0/2english/pdf/Alkmaria_romijni.pdf). It was previously classified in the group of the Ampharetidae incertae sedis between Ampharetidae and Terebellidae (Fauvel, 1927). It was first described and named by Horst (1919) from three specimens collected in the Alkmadeer Sea (Netherlands). This description was brief and resulted in several systematic confusions (Amoureux, Elkaïm, 1972; Junoy, 1987). The first report of the species from Morocco was from three Atlantic estuaries (Amoureux, Elkaïm, 1972). These authors provided a fairly complete diagnosis with some ecological and reproduction data and analysed the previous synonymsies with other species such as *Microsamytha ryckiana* Augener, 1928 (Day, 1964; Hartmann-Schröder, 1971). Subsequently, Cazaux (1982) studied its larval development in the Arcachon lagoon (France). Later, the species was again described from the Spanish Atlantic estuaries and more data on its morphology and ecology were provided (Junoy, 1987).

In Smir lagoon, samples of the species were collected during a survey on macrobenthic fauna, carried out between May 1999 and November 2000 using 12 stations with different habitat types (Chaouti, Bayed, 2005). Samples were taken by a corer to a depth of 30 cm and they were sieved immediately through a 1 mm mesh size sieve.

The coastal lagoon of Smir (35°43’ N and 5°20’ W) is located on the Mediterranean northwest coast of Morocco 25 km from the southern shore of the Strait of Gibraltar. It has an area of about 3 km² and its maximum depth is almost 1.5 m. The bottom is dominated by muddy substrate and few sandy zones extend as intertidal sand-banks in the vicinity of the lagoon entrance. The substrate is extensively covered by algae (*Enteromorpha linza*, *Gracilariella verrucosa*, *Ulva lactuca*, *Ulva rigida*…) and seagrass (*Zostera noltii* and *Ruppia cirrhosa*) meadows. The lagoon is linked to the sea by a narrow inlet and regularly undergoes the tidal range with a mean amplitude of 1 m. Salinity ranges between 16 and 40 PSU and water temperature varies from 12°C (Winter) to 32°C (Summer).

The collected specimens of *A. romijni* had a length varying from 2 to 6 mm (see the following websites for further information: http://www.marlin.ac.uk/species/Alkmariaromijni.htm and http://www.marbef.org/data/aphia.php?p=taxdetails&id=129769#). The species is a tube builder and occurs in small thick tube of mucus covered by particles and various remnants and dug into the sediment. These tubes extend above the sediment surface, where the worm feeds on settling organic matter using its tentacles. Most of the characters commonly used for identification of the species such as prostomium (with two black eyes, three pairs of gills, two parallel hulls and eight fine tentacles), thoracic region with 16 segments (presence of thoracic setigers and uncini, thirteen thoracic uncinigers, three pairs of branchiae at least and cylindric dorsal ramus, first several neuropodia without acicular setae, all neurosetae uncini) and abdominal region (13-19 of abdominal chaeta-bearing segments, absence of anal cirri) were observed using the detailed description given by Fauvel (1927); Amoureux, Elkaïm (1972); Junoy (1987) and Hartmann-Schröder (1996).

This boreo-lusitanian species (Junoy, 1987) was known in the Baltic Sea (Holthe, 1986), throughout the British islands (Gilliland, Sanderson, 2000), in the North Sea (Horst, 1919; Fauvel, 1927), in French Atlantic waters, the Marennes-Oléron Bay (Montaudouin, Sauriau, 2000) and the Arcachon basin (Cazaux, 1982), on the North western Iberian coasts (Junoy, 1987; Junoy, Viéitez, 1990; 1992; Castellanos et al., 2003) and in intertidal areas of southern and western coastal ecosystems of Portugal: the Tagus estuary (Rodrigues et al., 2006) and the Óbidos Lagoon (Carvalho et al., 2005) respectively (Figure 1).
### Table 1
Habitat preferences and some ecological characteristics of *Alkmaria romijni.*

<table>
<thead>
<tr>
<th>Site</th>
<th>Ecosystem type</th>
<th>Habitat</th>
<th>Organic matter (%)</th>
<th>Salinity (PSU)</th>
<th>Temperature (°C)</th>
<th>Associated polychaetes</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bou Regreg (Morocco)</td>
<td>Estuary</td>
<td>Fine sand, Coarse sand</td>
<td>Not recorded</td>
<td>1.5 – 34.9</td>
<td>29 – 30 at surface, 26 – 27 at 5 cm depth</td>
<td>Nephys hombergii, Glycera convoluta, Hediste diversicolor, Streblospio shrubsolii, Mercierella engmatica, Scolelepis squamata</td>
<td>Amoureux, Elkaïm (1972)</td>
</tr>
<tr>
<td>Bou Regreg (Morocco)</td>
<td>Estuary</td>
<td>Intertidal area, Sandy mud, silty mud, fine muddy sand, Md: &lt;63 µm, Silty particles: 02 – 87.4 % Subtidal area, Sandy mud, Heterogeneous sandy mud, Md: 110 – 180 µm, Silty particles: 3.0 – 63.1%</td>
<td>2.1 – 11.4</td>
<td>17.3 – 36.8</td>
<td>16.7 – 17.9</td>
<td>Nephys hombergii, Diopatra neapolitana, Hediste diversicolor, Streblospio dekhuyzeni, Capitella capitata</td>
<td>Cherkaoui et al. (2003)</td>
</tr>
<tr>
<td>Merja Zerga (Morocco)</td>
<td>Lagoon</td>
<td>Sand, Muddy sand, Sandy mud</td>
<td>6 – 12.7</td>
<td>5 – 31</td>
<td>10.5 – 30.8 at surface, 9.4 – 23.6 at 5 cm depth</td>
<td>Hediste diversicolor, Heteromastus filiformis, Scoloplos armiger, Nephtys hombergii, Glycera tridactyla, Nephtys cirrosa, Capitella capitata</td>
<td>Bazari et al. (2003)</td>
</tr>
<tr>
<td>Smir (Morocco)</td>
<td>Lagoon</td>
<td>Fine silty, sandy mud, fine sand, Md: &lt;63 – 236 µm, Silty particles: 18.8 – 84.3%, Zostera noltii and Enteromorpha linza beds</td>
<td>3.5 – 14.8</td>
<td>23.7 – 38.3</td>
<td>17.2 – 30.8</td>
<td>Hediste diversicolor, Streblospio shrubsolii</td>
<td>Chaoui, Bayed (2005)</td>
</tr>
<tr>
<td>Tagus (Portugal)</td>
<td>Estuary</td>
<td>Intertidal area, Sand 74.6%, Fines content 25%</td>
<td>2.4</td>
<td>Not recorded</td>
<td>Not recorded</td>
<td>Streblospio shrubsolii</td>
<td>Rodrigues et al. (2006)</td>
</tr>
<tr>
<td>Óbidos (Portugal)</td>
<td>Lagoon</td>
<td>Intertidal area, Sand 9 – 94%, Fines content: 4 – 81%</td>
<td>0.72 – 6.14</td>
<td>Not recorded</td>
<td>Not recorded</td>
<td>Heteromastus filiformis</td>
<td>Carvalho et al. (2005)</td>
</tr>
<tr>
<td>Iberian coasts (Spain)</td>
<td>Estuary</td>
<td>Mud, fine mud, Md: 57 – 206 µm, Trask index: 1.16 – 1.27</td>
<td>0.7 – 5</td>
<td>26 – 33</td>
<td>74 – 19</td>
<td>Pygospio elegans, Streblospio benedicti, Capitella capitata, Heteromastus filiformis</td>
<td>Junoy (1987)</td>
</tr>
<tr>
<td>Ria de Foz (Spain)</td>
<td>Estuary</td>
<td>Muddy silt clay &gt;5%</td>
<td>Moderate to high, ≥ 31.5</td>
<td>Not recorded</td>
<td>Pygospio elegans, Streblospio benedicti, Capitella capitata, Heteromastus filiformis</td>
<td>Junoy, Viéitez (1990)</td>
<td></td>
</tr>
<tr>
<td>Arcachon bay (France)</td>
<td>Lagoon</td>
<td>Mud</td>
<td>Moderate</td>
<td>5 – 35</td>
<td>Not recorded</td>
<td>Pygospio elegans, Capitella capitata</td>
<td>Cazaux (1982)</td>
</tr>
<tr>
<td>British coastal waters (27 sites)</td>
<td>Estuary and Lagoon</td>
<td>Silty mud, clay, sand, Mud, sand flat, mud–fine mud, mud with gravel, gravel with muddy sand, muddy sand, slate gravel on sand with mud</td>
<td>Not recorded</td>
<td>5 – 48</td>
<td>Not recorded</td>
<td>Pygospio elegans, Hediste diversicolor</td>
<td>Gilliland, Sanderson (2000)</td>
</tr>
<tr>
<td>North of Europe</td>
<td>Coastal ecosystem</td>
<td>Not available</td>
<td>Not available</td>
<td>0.9 – 5</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
</tr>
</tbody>
</table>
Furthermore, *A. romijni* was recorded from Morocco in the Atlantic Estuaries of Sebou, Oum R’bia (Amoureux, Elkaïm, 1972), Bou Regreg (Amoureux, Elkaïm, 1972; Cherkaoui et al., 2003) and from the Atlantic Lagoon of Merja Zerga close to the Gibraltar Strait (Bazairi et al., 2003) (Figure 1).

In Smir Lagoon, *A. romijni* primarily occurred in intertidal areas (Table I) where pH varied from 8.1 to 8.8, sediment organic matter content from 3.3% to 14.8%, silty particle rate from 19% to 85% with rather low hydrodynamics. The species was recorded from a wide range of sediment categories from silty mud to sand, but its preferred sediment was thought to be sandy mud with the organic matter content not exceeding 14%. The species abundances ranged from 1 to 464 ind./m recorded on unvegetated sediments and from 1 to 219 individuals on algae and seagrass habitats.

Considering all of the samples collected during this study, it was clear that this species preferentially lives in the intertidal areas without high hydrodynamics (strong tidal currents and high sediment mobility) covered - or not - by vegetation and with a wide range of salinity, temperature, silt and sand content and organic matter (Table I). According to Giangrande et al. (2000), the species is devoid of the teeth suited for herbivory, but has 8 retractile buccal (mouth) tentacles able to stretch ahead to collect the food particles. The species is considered as a surface deposit-feeder and detritivore depending on its occurrence at shallowest depth or on vegetal surface respectively.

*A. romijni* is a familiar species in Poecilohaline ecosystems (wide range of salinity) and is considered as a typical lagoon species (Barnes, 1994), as a brackish water species (Amoureux, Elkaïm, 1972) and as mesopolynhaline lagoonal mud species (Cazaux, 1982). It is clearly tolerant of a wide range of salinity, possibly from less than 5 to 48 PSU (Gilliland, Sanderson, 2000), but certainly within the range 5-35 PSU because more recordings, including those with greatest abundance, have been found within the latter.

The importance of the discovery of *A. romijni* in the Mediterranean resides in the fact that the species was known previously only on Atlantic coasts. The present record from the Smir Lagoon significantly extends the distributional range of the species both along the Moroccan coasts and in the Mediterranean.

Bibliography


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