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***Elasmopus thalyae* sp. nov. (Crustacea: Amphipoda: Maeridae), a new benthic species from soft and hard bottoms of Arcachon Bay (SE Bay of Biscay)**

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Abstract

A new species of *Elasmopus* is described and figured from specimens collected in different benthic communities of Arcachon Bay. It can be distinguished from its closest relative *E. rapax* by the palmar ornamentation of male gnathopod 2 propodus (shelf and 2 teeth). It preferentially lives on hard bottoms (in mussel fouling of navigation buoys, *Sabellaria spinulosa* reefs, algal rocky bottoms, *Laminaria* and *Saccorhiza* bulbs and as epibiont on the carapace of *Maja brachydactyla*) but also less abundantly on naked sandy bottoms. An identification key of Atlantic and Mediterranean European species is also given.

Key words: Crustacea, Amphipoda, *Elasmopus thalyae* sp. nov., Arcachon Bay, Bay of Biscay

Introduction

According to Vader and Krapp-Schickel (2012) and WORMS (Lowry 2014a), the *Elasmopus* genus contains more than 100 valid species around the world, living mostly in warm shallow waters among algae and epifauna. Six of them are known from European waters (European Register of Marine Species; see Lowry 2014b): *E. rapax* Costa, 1853, *E. brasiliensis* (Dana, 1853), *E. pecteniscrus* (Bate, 1862), *E. pocillimanus* (Bate, 1862), *E. perditus* Reid, 1951 and *E. vachoni* Mateus and Mateus, 1966.

Elasmopus rapax, the type species of genus *Elasmopus*, was first described by A. Costa, 1853 from Gulf of Naples. It is reported to have an extensive distribution through both tropical and temperate regions (Western and Eastern Atlantic Ocean from Southern Norway to South Africa, Red Sea, Indian Ocean, Pacific Ocean, Mediterranean Sea) and confirmed as an invasive species (Hughes and Lowry 2010). It is a well-known species in Atlantic and Mediterranean coastal waters (Chevreux and Fage 1925; Lincoln 1979; Karaman in Ruffo ed. 1982). However, according to Hughes and Lowry (2010), the original description and subsequent numerous redescrptions of this species are inappropriate for conclusive species identification. Furthermore, as the Costa’s type material is presumed lost, Hughes and Lowry (2010) designated a neotype of this species, based on material from the type locality (Gulf of Naples).

During recent surveys on the benthic fauna of the Arcachon Bay, *Elasmopus* specimens were collected in different sampling stations (sandy bottoms, mussel beds, hermele reef, mussel fouling). Comparisons with Hughes and Lowry’s neotype revealed important morphological differences, suggesting that they actually belong to a species new to science. We had also the opportunity to re-examine the *Elasmopus ‘rapax’* specimens collected by Chevreux in 1887–1922 on the west coast of France (English Channel and Atlantic Ocean) and deposited at the Muséum National d’Histoire Naturelle (MNHN, Paris). The present paper deals with the description of this new species and gives some ecological and biological information on the Arcachon population. Furthermore, an identification key to *Elasmopus* species from European waters is provided.

Ecological notes. In Arcachon Bay (see Fig. 1), *Elasmopus thalyae* **sp. nov.** was subtidally collected between 2 and 14.9 m, both on soft (van Veen, Eckman grabs) and hard bottoms (cylindrical core, hand-scraping). In all soft-bottom stations, the medium sandy fraction was dominant (median particles size: 221.6–355.7 μm ; organic content: 0.3–3.8%; silt and clay: 2.1–12.3%, fine sand: 6.5–35.8%, medium sand: 51.4–81.3%, coarse sand: 3.7–14.2%, gravel: 0–3.9%). Mussels were sometimes associated with these sandy bottoms, as in the case of stations ‘Stn. 11’ (2.4 m), ‘Bernet 1’ (5.7 m) and ‘Comprian’ (8.2 m). Hard-bottoms were represented by mussel fouling scraped on a navigation buoy (‘B13’) and by World War II submerged bunkers, the first one (‘622a’) at about 11.1 m, the second one (‘La Faille’) at about 14.9 m, both covered by a *Sabellaria spinulosa* reef in which core samplings were carried out.

Observed abundances were clearly related to bottom characteristics. On soft bottoms, values ranged between 2.0 (‘Chenal 2’, May 2013) and 83.0 ind.m⁻² (‘Stn. 11’, November 2011) whereas on reef bottoms values were clearly higher (January 2012): 302.2 \pm 599.6 ind.m⁻² at station ‘622a’; 604.4 \pm 555.1 ind.m⁻² at station ‘La Faille’ ($\bar{x} \pm s$). Abundance on buoy mussel fouling was not quantified but visual observations during samplings showed that this species is hugely dense in this habitat. Such results show that this species preferentially lives on hard bottoms (*Sabellaria* reefs and mussels beds) and that its presence on sandy bottoms is more or less occasional.

According to Chevreux (labels in MNHN tubes) and Chevreux and Fage (1925), the Atlantic specimens herein identified as *E. thalyae* **sp. nov.** were mainly collected on hard-bottoms with algae (*Laminaria* and *Saccorhiza* bulbs) but also as epibiont on *Maja brachydactyla*. Adult males from Brittany could reach a higher total length than Arcachon males (up to 13.78 mm at Trébeurden).

Biological notes. Brooding females of *Elasmopus thalyae* **sp. nov.** were only sampled in July 2013 at station ‘B13’ (navigation buoy), but their presence in the bay is probably more frequent during the year. In this sample, seven of these brooding females (BL range: 4.43–9.66 mm) were examined with respect to their marsupial content, represented by ovoid eggs in all specimens. Fecundity (Nw) ranged between 2 and 25 eggs marsupium⁻¹ (all examined marsupia apparently undamaged) and was significantly correlated to body length (BL in mm) by a power function:

$$\text{Nw} = 0.0138 \text{ BL}^{3.2904} \quad (\text{n} = 7; \text{r} = 0.944^{**})$$

Measured in different females, the eggs showed an ovoid shape with mean major and minor diameters of 0.424 \pm 0.036 mm and 0.346 \pm 0.038 mm, respectively ($\bar{x} \pm s$; n = 73).

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