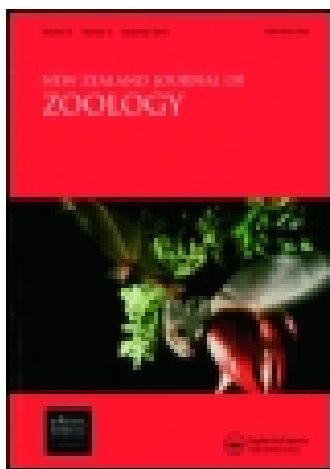


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## SHORT COMMUNICATION

### New record of the deep-sea crab *Ethusina abyssicola* from the Mar del Plata Canyon, Argentina

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*Ethusina abyssicola* Smith, 1884 (Decapoda, Ethusidae) belongs to Ethusidae, a family of small and deep-sea crabs adapted to carrying objects on their backs for camouflage. *Ethusina abyssicola* is the only species of that genus occurring in the West Atlantic, is distributed from New England, USA to Cape Frio, Brazil, and is one of the best adapted brachyuran crabs to inhabit deep water (up to 5046 m). We reported herein *E. abyssicola* in the deep and under-explored 'Mar del Plata Canyon' (38°01'S, 53°39'W), Argentina. The specimens were taken at 2934 m, which represents the greatest depth record for any brachyuran crab below 25°S in the southwestern Atlantic. Although *E. abyssicola* from the canyon mostly agree with previous descriptions, their outer orbital spines pointed forward and not outwards as in the original description. The significance of this difference is presently unknown and will require genetic analysis to be clarified.

**Keywords:** ethusid; abyssal bottom; porter crab; south-western Atlantic

#### Introduction

The Ethusidae Guinot, 1977 is a family of small, mostly deep-water brachyuran crabs, on which the last two pairs of pereopods are highly modified for carrying objects over the carapace (e.g. bivalve shells) for camouflage (Castro 2005). Because of the great depths they inhabit, most ethusids are rarely collected so their biology is still poorly understood. The 80 currently known species of Ethusidae are divided into four genera, of which *Ethusa* Roux, 1830 and *Ethusina* Smith, 1884 are the most species-rich, with 44 and 34 species, respectively (De Grave et al. 2009; Castro 2013). Most ethusids so far described are concentrated in the Indo-west Pacific region (70% of all species, Castro 2005). In contrast, only four species of *Ethusa* (*Ethusa americana*, *Ethusa microphthalma*, *Ethusa tenuipes* and *Ethusa truncata*) and one of *Ethusina* (*Ethusina abyssicola*) (Melo et al. 1998; Felder et al. 2009)

occur in the western Atlantic Ocean. Up to now, no species of Ethusidae have been collected from the coast off Argentina.

The Mar del Plata submarine Canyon is a 'cut' in the continental slope that shows a typically V-shaped configuration between depths of 1200 and 3700 m and is located off Mar del Plata (c. 37.5°S, 54°W), Argentina (Violante et al. 2010). Although still largely unexplored, the canyon is currently under study and knowledge about its particular fauna is beginning to emerge (e.g. Martinez et al. 2014). During the campaign 'Talud III' on board the Oceanographic Research Vessel (R/V) *Puerto Deseado* (hereafter RVPD) we collected two specimens of Ethusidae which were both identified as *E. abyssicola*. As a contribution to the biological knowledge of the Mar del Plata Canyon, we report herein the presence of *E. abyssicola* in the abyssal bottoms of this interesting area.

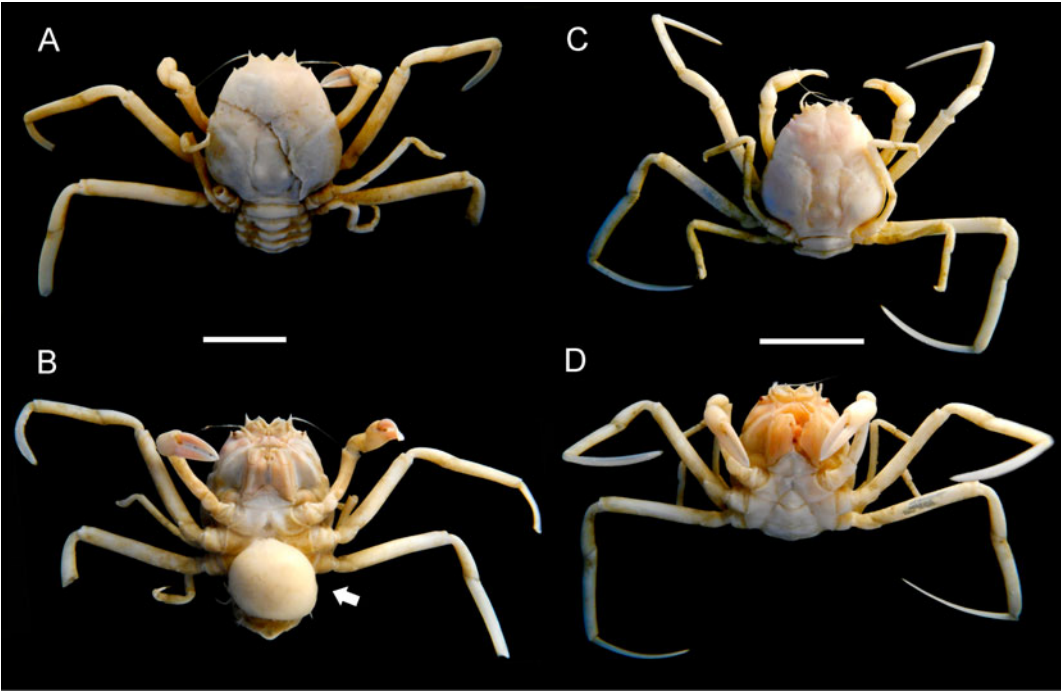
\*Corresponding author. Email: [eocampo@mdp.edu.ar](mailto:eocampo@mdp.edu.ar)

**Materials and methods**

The specimens of *E. abyssicola* were collected during September 2013 at station 45 (38°01'S, 53°39' W, 2934 m depth) of the Talud III campaign using a fishing net deployed from the RVPD. Living crabs were photographed on board immediately after being obtained and then preserved in 96% ethanol. Specimens were measured with digital calipers to the nearest 0.1 mm. The carapace length (CL) was measured from the tip of the frontal teeth to the posterior margin of the carapace, and the carapace width (CW) was taken across the widest part of the carapace. The anterior portion of the body of one specimen was drawn using an Olympus SZX7 compound microscope equipped with a camera lucida. The specimens collected were deposited in the Museo Argentino de Ciencias Naturales 'Bernardino Rivadavia' under the catalogue number MACN-In 39518a and 39518b.

**Results and discussion**

The RVPD specimens of *E. abyssicola* consisted of two females: a mature female (MACN-In 39518a) of CL 18.2 mm and CW 16.5 mm (Figs 1A, 1B)—infected by a large parasitic externa beneath the abdomen, corresponding to an unidentified rhizocephalan barnacle (see Fig. 1B)—and a smaller, immature female (MACN-In 39518b) of CL 13.0 mm and CW 12.4 mm (Figs 1C, 1D). Both specimens mostly agree with the original description of Smith (1884) and other authors (e.g. Rathbun 1937, pp. 91–92; Manning & Holthuis 1981, p. 46). The frontal teeth in the RVPD specimens were prominent and acute, the lateral frontal teeth were spiniform and longer than the triangular median (Fig. 2). The carapace of these specimens was longer than it was wide. The coloration pattern of the material resembled that described by Rathbun (1937) for *E. abyssicola*. Our specimens were covered with sediment, so



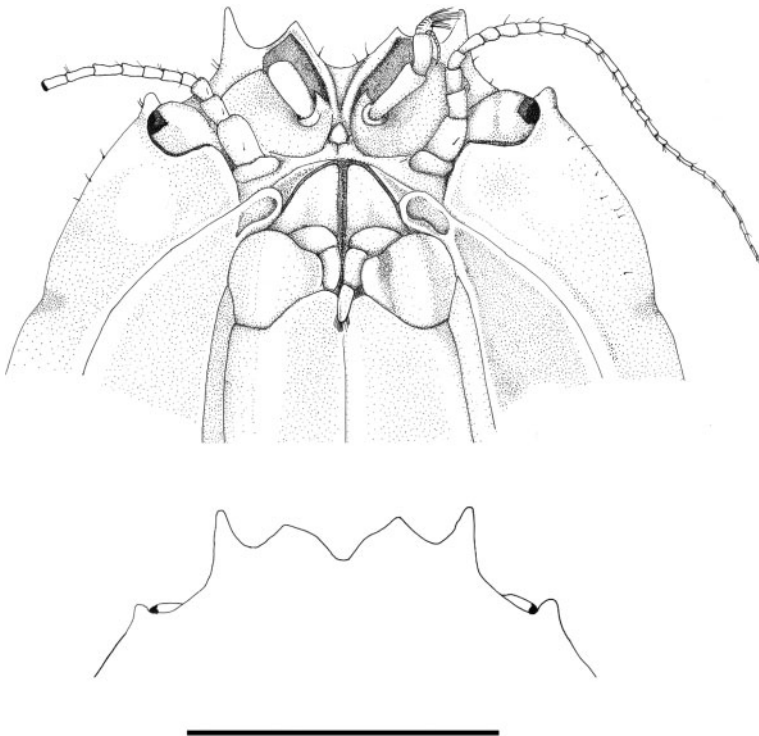
**Figure 1** *Ethusina abyssicola* Smith, 1884 from the Mar del Plata Canyon, Argentina. **A, B**, mature female (MACN-In 39518a), the arrow indicates the externa of an unidentified rhizocephalan barnacle. **C, D**, immature female (MACN-In 39518b). A–C dorsal, B–D ventral. Scale bar = 1 cm.

they showed a dirty creamy white coloration when collected. The dorsal carapace of the cleaned specimens showed a slightly bluish tint with yellowish white pereopods, while the claw fingers, outer maxillipeds, and subhepatic and suborbital carapace were slightly rose tinted.

The outer orbital spines in the RVPD specimens pointed almost directly forward (Fig. 2) and not outwards as in the original description (Smith 1884; see also Rathbun 1937). Variations in the orbital spines of *E. abyssicola*, as observed herein, have previously been noted by other authors. Gore (1983) mentioned that the outer orbital spines of *E. abyssicola* from the Caribbean Sea were quite small and pointed directly forward, similar to the RVPD specimens, but different to the original description (Smith 1884). This type of variation has led others to consider the existence of other species of *Ethusina* in the West Atlantic (see Gore 1983), a possibility that has not yet been explored. It

would be of interest to assess the significance of that variability when comparing the morphology of specimens of *E. abyssicola* along their range of distribution and determining the grade of isolation among populations by analysing molecular markers.

*Ethusina abyssicola* was originally described from material collected in the northwestern Atlantic (Smith 1884) and it was later reported at the Cape Verde Islands and the Azores Islands in the eastern Atlantic (Milne Edwards & Bouvier 1900). Manning & Holthuis (1981) showed by the use the gonopods that most of these eastern specimens refer to *Ethusina alba* rather than *E. abyssicola*. We had the opportunity to examine photographs of some eastern *E. abyssicola* (MNHN-B 24152, collected off the Azores by the R/V *Talisman*) and we agree with Manning & Holthuis that these specimens belong to *E. alba*. *Ethusina abyssicola* is restricted to the western Atlantic and is found from off New England southward to North Carolina, the



**Figure 2** Anterior carapace of *Ethusina abyssicola* Smith, 1884 (MACN-In 39518a) from the Mar del Plata Canyon, Argentina. Above, ventral view. Below, dorsal view. Scale bar = 1 cm.

Gulf of Mexico and the Caribbean Sea to off Cape Frio, Brazil (Gore 1983), and now in the Mar del Plata Canyon, Argentina. The present study reports for the first time the family Ethusidae in Argentinean waters and extends more than 1600 km southwards the known distribution range of *E. abyssicola*.

*Ethusina abyssicola* is well adapted to inhabit deep water. The species was collected from 1227 to 4060 m (Rathbun 1937), but has occasionally been caught at depths of 5046 m in the Caribbean Sea, which is among the lowest depths on record for a brachyuran (Gore 1983). The RVPD specimens of *E. abyssicola* were taken at a depth of 2934 m, the lowest depth recorded for any brachyuran crab below 25°S in the southwestern Atlantic. No specimens of *E. abyssicola* were caught in shallower stations and no deeper sites than station 45 were sampled by the RVPD. It is therefore unknown if *E. abyssicola* occurs at greater depths in the canyon.

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