

# NOTES AND NEWS

## NORTHERNMOST RECORD OF THE SHAMEFACED CRAB *CALAPPA GRANULATA* (LINNAEUS, 1767) (BRACHYURA, CALAPPIDAE) IN THE MEDITERRANEAN AREA

BY

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### INTRODUCTION

The box crabs or shamefaced crabs (family Calappidae) are a distinctive group of marine crabs found in tropical and subtropical regions of the world. The family is best known for the shallow water genus *Calappa* with its unusual, shovel-shaped chelae. The shamefaced crab *Calappa granulata* (Linnaeus, 1758) is a sublittoral species known from the Mediterranean Sea and adjacent Atlantic Ocean from Portugal to Mauritania, including the Azores, Madeira, the Canary Islands, and the Cape Verde Islands (Manning & Holthuis, 1981; Števcíć, 1990). Spanò et al. (2004) reported that shamefaced crabs are distributed in all oceans, but particularly abundant in tropical waters and inhabiting a wide variety of bottoms (sandy, shell grit, hard rocks, and coral). In the Mediterranean, *C. granulata* occurs between 10 and 400 m (though not very common), while some authors noted it lives on sandy mud and muddy detritus at depths between 13 and 400-700 m (Manning & Holthuis, 1981; Abelló et al., 1988). Typically, it burrows in inshore soft bottoms (Zariquiey Alvarez, 1968). The species can reach 10 cm CL (carapace length) (Coudre, 2010) and 9.2 cm CW (carapace width) (Fischer et al., 1981).

In recent years, it has been found in the Mediterranean Sea at several locations: in the Gulf of Taranto (Ionian Sea) (Pastore, 1995), in the Strait of Sicily (Spanò et al., 2004), in the coastal waters of the Sea of Marmara (Artüz, 2006), and in Edremit Bay (Aegean Sea) (Balkis & Kurun, 2008). In the Adriatic Sea, it is very rare and has only been found in areas of the Southern and Middle Adriatic (Manning & Števcíć, 1982; Števcíć, 1990; Milišić, 2008). The last records of this species were from the Southern Adriatic, during trawling operations in the framework of the E.U. Project MEDITS (Ungaro et al., 2005).

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The present paper now reports the northernmost record of *C. granulata* in the Mediterranean area (and the first record for the Northern Adriatic).

#### MATERIAL AND METHODS

On 4 December 2010, a specimen of the shamefaced crab *Calappa granulata* was collected in the Northern Adriatic (7 Nm [nautical miles: approx. 12.6 Km] northwest off Umag, on the western coast of the Istria Peninsula,  $45^{\circ}24'14.32''\text{N}$   $13^{\circ}14'15''\text{E}$ ) (fig. 1), in a region substantially further north than previous records

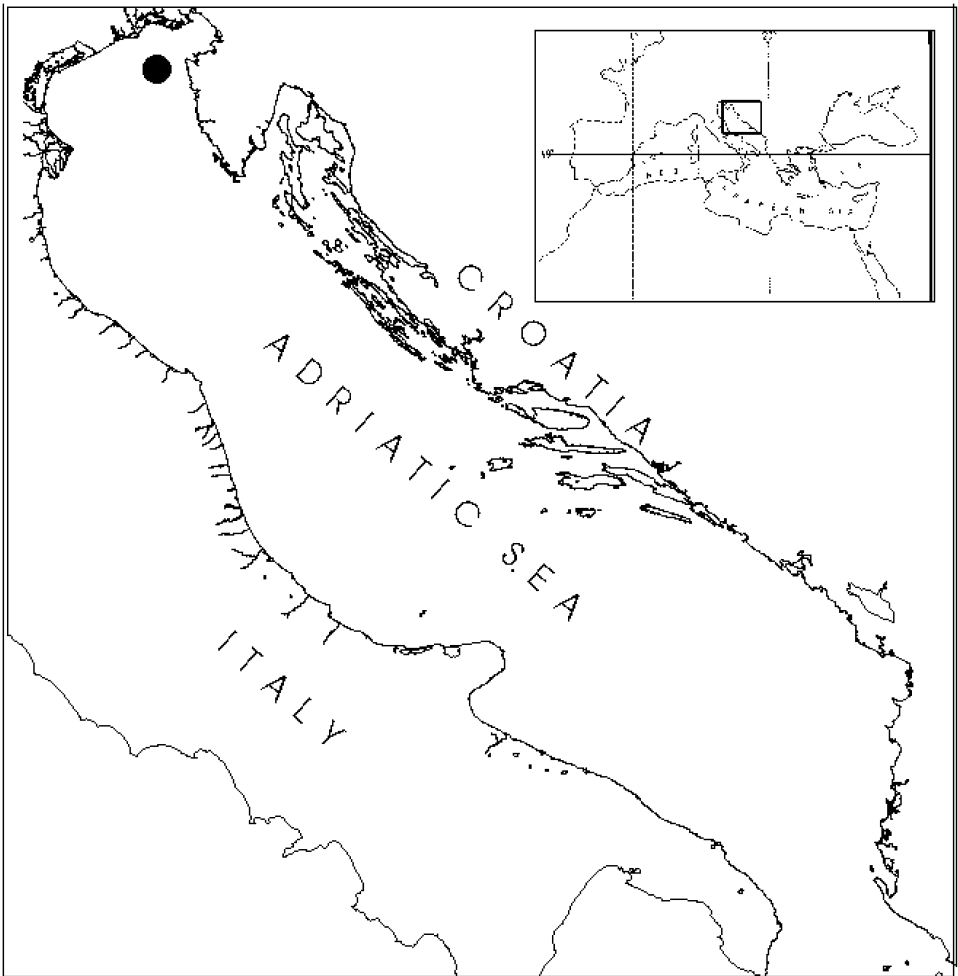


Fig. 1. *Calappa granulata* (Linnaeus, 1767). Sampling location in the Northern Adriatic (7 Nm [approx. 12.6 Km] northwest off Umag, western coast of the Istria Peninsula) ( $45^{\circ}24'14.32''\text{N}$   $13^{\circ}14'15''\text{E}$ ).

in the Adriatic. It was collected by gillnet (mesh size 40 mm, called “listarica” used for catching the common sole, *Solea solea*) at about 25 m depth on a sandy bottom followed by a typical muddy bottom community (Avčín & Vrišer, 1983). The sea surface temperature was 16.4°C. The specimen was identified following Holthuis (1987), and deposited in the collection of the Institute of Oceanography and Fisheries at Split, Croatia (Catalogue number: IOR-CrusCg 2010).

Weight ( $W_t$ ) and carapace measurements, including length (CL, distance between the centre of the anterior interorbital margin and the centre of the posterior margin) and width (CW, maximal distance between the posterior anterolateral spines), as well as sex determination were performed.

#### RESULTS AND DISCUSSION

### ***Calappa granulata*** (Linnaeus, 1767)

(fig. 2)

Material examined. — Umag (Istria, Northern Adriatic): one specimen ( $\sigma$ ),  $CL_{\sigma} = 7.5$  cm,  $CW_{\sigma} = 9.6$  cm,  $W_t = 234.5$  g.

The carapace is almost oval in outline, being broader than long, with the frontal edge strongly convex and finely toothed. The rear edge is weakly convex with fewer, larger teeth. First pair of legs with strongly built pincers that have a crest on their upper side, reminiscent of a cock's comb. Colour of carapace pale pink, with five rows of deep red spots, posterior part whitish; exterior face of cheliped propodus pale pink on the upper side and white, often with some yellow tubercles, in the lower part; legs white on the merus and yellow on the propodus; ungues dark-brown.

Although investigations of decapod crustaceans in the Adriatic Sea (especially in the Northern Adriatic) have a long tradition (see in Štević, 1990; Pastore, 1995) there were no records registered in the scientific literature of the shamefaced crab in its northern part. Our record of *C. granulata* near Umag (western coast of Istria Peninsula, Northern Adriatic) indicates the northernmost record of this species in the Adriatic, and according to that, for the Mediterranean area as a whole. The occurrence of *C. granulata* in the northern region of the Adriatic Sea suggests that the species may have a broad distribution. In recent years, the frequency of occurrence of elements of the warm-water fauna in the Northern Adriatic has increased (Lipej & Dulčić, 2010). In the opinion of some authors, this fact may be considered as a consequence of global warming (see Dragičević & Dulčić, 2010). In our opinion, however, this might also be due to other reasons. We hypothesize, that pelagic larvae of the shamefaced crab could be transported by currents, since the hydrodynamic characteristics of the Adriatic Sea support



Fig. 2. *Calappa granulata* (Linnaeus, 1767). Specimen of the shamefaced crab from the Northern Adriatic ( $CL_{\sigma} = 7.5$  cm,  $CW_{\sigma} = 9.6$  cm,  $W_t = 234.5$  g).

a hypothesis of passive transport. This record could be also explained by the effect of the “Adriatic ingressions” (Ionian water ingressions in the Adriatic — the influence of the ingressions can be observed in almost all periodic fluctuations of parameters including salinity, temperature, transparency, as well as primary production) and oceanographic changes in the Adriatic Sea (Dulčić & Grbec, 2000). Increase in water temperature, in the Northern Adriatic, especially during the winter months (Grbec et al., 1998) could enhance the survival of the larvae in that area. According to Góes et al. (1998), enlargement of the geographic distribution of marine invertebrates may be a result of larval dispersion, through the action of currents, winds, and tides, as well as other non-biological factors. However, shipping as a potential vector of arrival cannot be excluded. Studies aiming to improve the knowledge of the occurrence of this brachyuran crab may clarify the actual areas of occurrence of the species. This present, single record does not allow any reliable comment to be made regarding whether or not the species has established a breeding population in the area.

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