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NEW RECORD OF THE BLUE CRAB, *CALLINECTES SAPIDUS* RATHBUN, 1896, (DECAPODA: BRACHYURA) IN THE ADRIATIC SEA

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ABSTRACT

Authors are reporting on the new record of the blue crab Callinectes sapidus *in the Adriatic Sea. The specimen was found at the mouth of the river Neretva in November 2009. From the very first record of this species, dating from 1949, another 12 records of the species have been detected in the Adriatic Sea. The majority of sites where the blue crab was found are coastal lagoons.*

Key words: blue crab, *Callinectes sapidus*, Decapoda, non-indigenous species, Adriatic Sea

NUOVA SEGNALAZIONE DI GRANCHIO BLU, *CALLINECTES SAPIDUS* RATHBUN, 1896, (DECAPODA: BRACHYURA) IN MARE ADRIATICO

SINTESI

Gli autori riportano una nuova segnalazione di Granchio blu, Callinectes sapidus*, in mare Adriatico. L'esemplare di granchio è stato trovato nella foce del fiume Neretva nel novembre del 2009. Dalla prima segnalazione della specie, che risale al 1949, il Granchio blu è stato trovato altre dodici volte nel mare Adriatico. Le lagune costiere rappresentano la maggioranza dei siti, dove la specie è stata trovata in Adriatico.*

Parole chiave: Granchio blu, *Callinectes sapidus*, Decapoda, specie non indigena, mare Adriatico

INTRODUCTION

Blue crab *Callinectes sapidus* Rathbun, 1896, is a portunid crab, occurring off the western Atlantic coast of America from Nova Scotia to Argentina. It is generally found over muddy and sandy bottoms. This species is characterized by sexual dimorphism in adults with the males having blue fingers and females orange or reddish ones. The first occurrence of this species in the Adriatic Sea dates back to 1949, when the blue crab was reported in Grado (northern Adriatic Sea) by Giordani Soika (1951).

Nowadays, the species has been confirmed in different parts of the eastern Mediterranean Sea, namely the Adriatic Sea as well as the Aegean Sea (Koukoras *et al.*, 1992), in waters off Turkey (Enzenrob *et al.*, 1997; Atar &

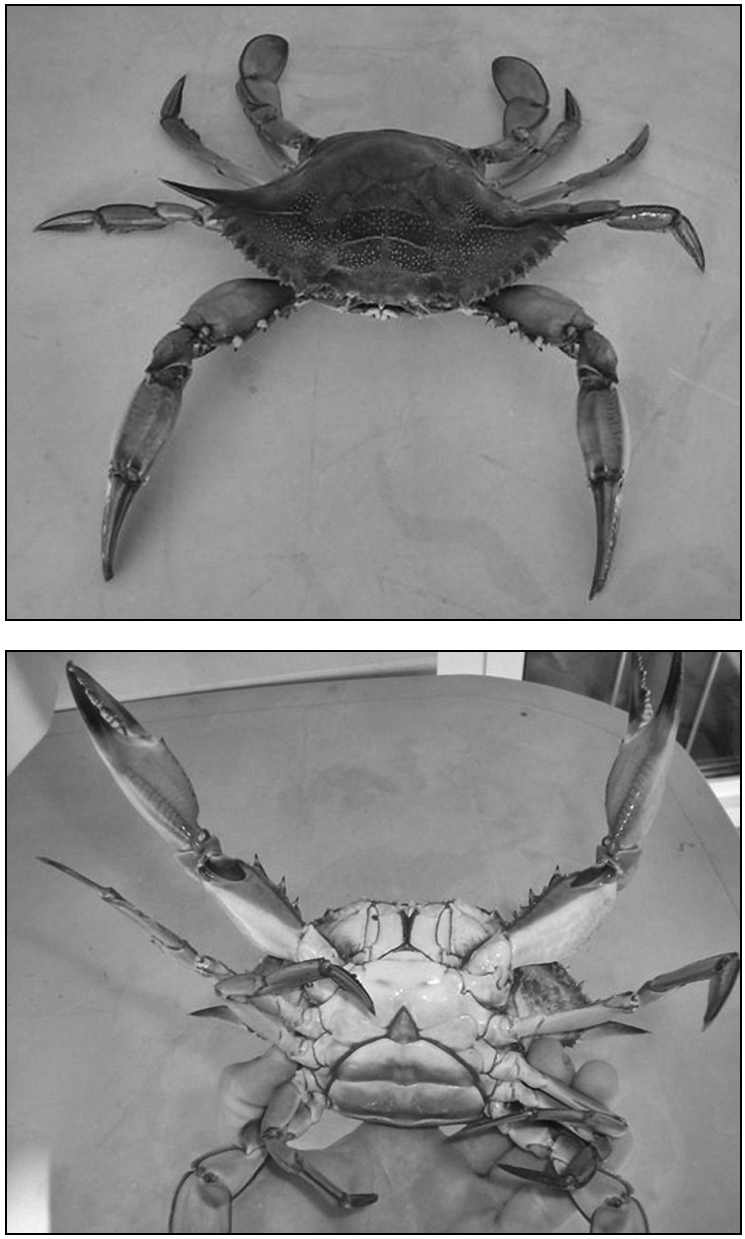

Fig. 1: A specimen of the blue crab *Callinectes sapidus* ***caught in November 2009 at the mouth of the river Neretva (south-eastern Adriatic Sea), photographed from the dorsal (above) and ventral sides (below). (Photo: P. Dugandžić)***
Sl. 1: Primerek modre rakovice *Callinectes sapidus****, ujete novembra 2009 v ustju reke Neretve (jugovzhodni del Jadranskega morja), fotografiran s hrbtne (zgoraj) in trebušne strani (spodaj). (Foto: P. Dugandžić)***

Seçer, 2003), Lebanon (Shiber, 1981), Israel (Holthuis & Gottlieb, 1955) and Egypt (Abdel-Razec, 1987) and the Black Sea (Monin, 1984), and in the western Mediterranean in the Gulf of Genova (Tortonese, 1965) and in waters off Sicily (see Gennaio *et al.*, 2006 for references).

In this report we are dealing with the record of the blue crab in the southern part of the eastern Adriatic Sea. Since the blue crab is reported amongst the most aggressive alien species in the Mediterranean, new information of this non-indigenous species is worth to be published in order to understand the species expansion in the new environment.

MATERIAL AND METHODS

On 25th November 2009, a female of the blue crab was found at the mouth of the stream Norin that flows into the river Neretva, on muddy bottom at the depth of 4 m (Fig. 1). The carapace length (CL) and carapace width (CW) of the specimen were measured to the nearest milimetre, the specimen was weighed with digital balance. The specimen was subsequently photographed and is now housed in a private collection.

RESULTS AND DISCUSSION

The specimen measured 210 mm of carapace width and 105.0 mm of carapace length. The measured body weight was 504 g. According to the classification of Harding (2003), who divided crabs in three size groups (small – CW < 80 mm, medium – CW 80 – 120 mm and large CW > 120 mm), our specimen should be considered as a large one.

At least 8 species of alien crabs were up to date recorded in the Adriatic Sea (Kirinčić & Števčić, 2008) (Tab. 1, Fig. 2). Among them are two species of the genus *Callinectes*, *C. sapidus* and *C. danae* (Mizzan, 1993). In the eastern part of the Adriatic Sea the blue crab was first reported in October 2004, when four specimens were caught near Ston (south-eastern Adriatic) in a hypersaline lagoon at the depth of 0.5 m (Onofri *et al.*, 2008). In the same area the species was recorded in two additional cases in 2004 and 2006. An additional report of the blue crab is known from the Lagoon of Patok in Albania (Beqiraj & Kashta, 2010). Authors are considering the species to be an established one, since the species was regularly caught in the lagoon in 2009 and due to the presence of ovigerous females and juveniles.

The reports of the blue crab occurrence in the Adriatic are mainly limited to the southern part of the Adriatic Sea. Only few reports are dealing with the finding of this species in the northern Adriatic, reporting sites such as Grado, the Lagoon of Venice and the waters of Ravenna (Tab. 1, Fig. 2). The majority of sites where the blue crab has been recorded are lagoons. Together with river mouths where blue crabs were found in few cases they could be described from bionomical point of view as euryhaline and eurythermal biocenosis. Low numbers of species, living in this biocoenosis, are able to withstand the great variations of salinity and temperature (Bellan-Santini *et al.*, 2002). In such unstable environments, non-indigenous species might take advantage to settle down.

In certain Mediterranean areas such as the coast of Turkey, the importance of commercial and recreational fishing of the blue crab increased substantially (Atar & Secer, 2003). In the Adriatic localities, the blue crab was recorded only in a single or few specimens. Only in the Lagoon of Patok in Albania, the blue crab is already present in high densities (Beqiraj & Kashta, 2010) and triggers the attention of local fishermen.

The present record of *C. sapidus* from the Neretva river area could give some reasons for the conclusion that this species established a population in the area, since several specimens were found and registered in scientific literature (Onofri *et al.*, 2008) at different times and at different locations (in and around the river Neretva area) in the last few years. In addition to that, several specimens were observed by local fishermen who support the conclusion that the population could have already been established in the new environment. In any event, the impact of a possibly successful colonization by this exotic species would, at least, represent a possible change in the composition of the native fauna. blue crabs feed on various crustaceans, molluscs, fish detritus, and other blue crabs. They are characterized as opportunistic benthic omnivores (in Onofri *et al.*, 2008). Its strong swimming capability, high fecundity, and its aggressiveness, imply that such colonization might have significant effects on the existing local communities. On the other side, it might well become a candidate for a target species in commercial fishery (in Onofri *et al.*, 2008).

Tab. 1: Localities in the Adriatic and Ionian Sea, where the blue crab *Callinectes sapidus* ***was up to date confirmed, listed in chronological order.***
Tab. 1: Lokalitete v Jadranskem in Jonskem morju, na katerih je bila ugotovljena vrsta morske rakovice *Callinectes sapidus,* ***razvrščene v časovnem zaporedju.***

N	Site	Area	Abundance	Date	Source
1	Grado	Northern Adriatic	1	4 Oct 1949	Giordani Soika, 1951
2	Lagoon of Venice	Northern Adriatic	1	8 Oct 1950	Giordani Soika, 1951
3	Lagoon of Venice	Lagoon of Venice	1	6 Oct 1991	Mizzan, 1993, 1999
4	Lagoon of Venice	Lagoon of Venice	1	13 Oct 1992	Mizzan, 1993, 1999
5	Mouth of river Neretva	Southern Adriatic	1	1 Oct 2004	Onofri *et al.*, 2008
6	Ston	Southern Adriatic	4	15 Oct 2004	Onofri *et al.*, 2008
8	Ugento ponds, Lecce	Ionian Sea	5	Jul–Oct 2004	Gennaio *et al.*, 2010
7	Mouth of river Neretva	Southern Adriatic	1	6 Dec 2006	Onofri *et al.*, 2008
9	Ravenna	Northern Adriatic	1	12 Mar 2007	Scaravelli & Mordenti, 2007
10	Lesina Lake	Southern Adriatic	5	Jun–Oct 2007	Florio *et al.*, 2008
11	Varano Lake	Southern Adriatic	2	?	Florio *et al.*, 2008
12	Lagoon of Patok	Southern Adriatic	12	11-29 Oct 2009	Beqiraj & Kashta, 2010
13	Mouth of river Neretva	Southern Adriatic	1	25 Nov 2009	This work

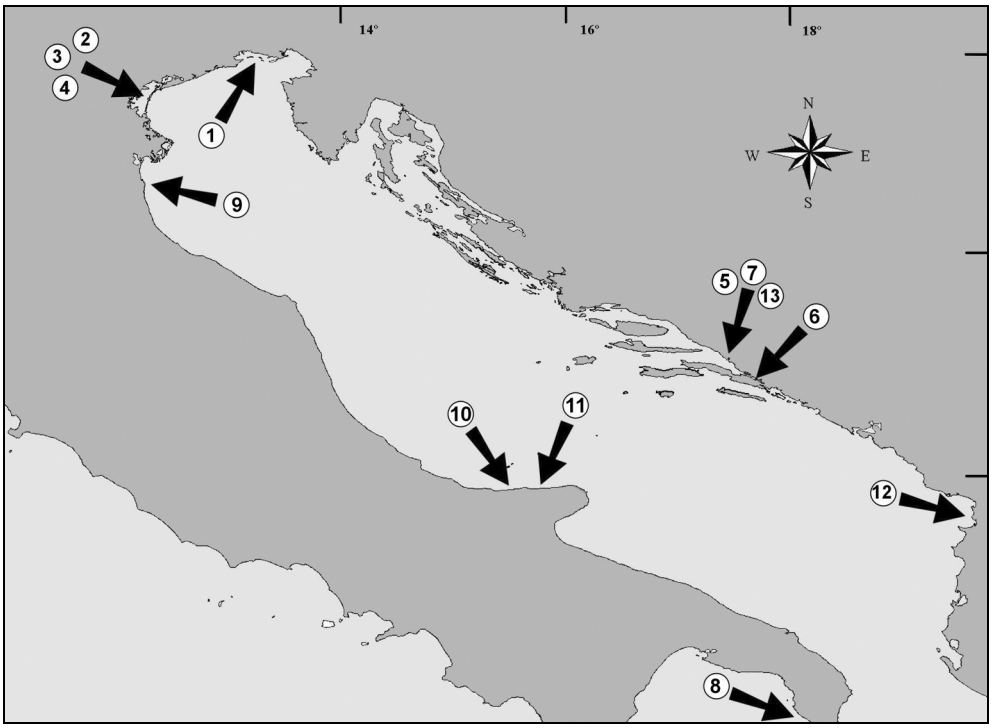

Fig. 2: Sites, where *C. sapidus* ***was up to date recorded in the Adriatic and Ionian Sea (site 8). See Table 1 for explanation.***
Sl. 2: Lokalitete v Jadranskem in Jonskem morju (lokaliteta 8), na katerih je bila ugotovljena modra rakovica *C. sapidus****. Glej Tabelo 1 za razlago.***

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NOVA NAJDBA MODRE RAKOVICE, *CALLINECTES SAPIDUS* RATHBUN, 1896, (DECAPODA: BRACHYURA) V JADRANSKEM MORJU

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POVZETEK

Avtorji poročajo o novi najdbi modre rakovice Callinectes sapidus*, ki je tujerodna vrsta v Jadranskem morju. Osebek te vrste je bil ujet na ustju reke Neretve v novembru 2009. Od prvega zapisa o najdbi te vrste, ki sega v leto 1949, je bila vrsta do danes ugotovljena še v 12 primerih. V večini primerov so bile modre rakovice najdene v obrežnih lagunah, ki jih uvrščamo v evrihaline in evritermne biocenoze. Za te so značilna velika nihanja slanosti in temperature in nizka vrstna pestrost. Na podlagi novih podatkov modre rakovice v ustju reke Neretve avtorji dopuščajo možnost, da se je vrsta v novem okolju že ustalila. V novem okolju bo verjetno imela vpliv na samonikle vrste, gotovo pa bo postala zanimiva kot tarčna vrsta za lokalno ribištvo.*

Ključne besede: modra rakovica, *Callinectes sapidus*, Decapoda, tujerodna vrsta, Jadransko morje

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