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RESEARCH ARTICLE

The swimming crab *Portunus segnis* (Forskål, 1775): host for the barnacle *Chelonibia platula* (Ranzani, 1818) from the Turkish coast

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Abstract

During May 2011, the symbiotic barnacles *Chelonibia patula* (Ranzani, 1820) was collected in Iskenderun and Mersin Bays on the Levantine coast of Turkey. Three specimens of the swimming crab *Portunus segnis* (Forskål, 1775) and two specimens of the blue crab *Callinectes sapidus* Rathbun, 1896 infested by *C. patula* were obtained. This is the first record of *C. patula* on the carapace and cheliped of *P. segnis* from the Turkish coasts. Besides, it was also found that within the frame of this study *C. patula* has expanded its distribution range on *C. sapidus* carapace from Iskenderun to Mersin Bay, Levantine coast of Turkey.

Keywords: *Chelonibia patula*, *Portunus segnis*, barnacle, epibiosis, Turkey, Mediterranean Sea.

Introduction

Decapod crustacean species are important in the commercial fisheries of the world. Portunid crabs are economically important decapod crustaceans as human food in the Levantine Sea (Turkish coast), particularly two crabs belonging to the portunid family *Callinectes sapidus* Rathbun, 1896 and *Portunus segnis* (Forskål, 1775) (Özcan 2003). According to TUIK (2010), in 2009 totally 77 tonnes of blue crab *C. sapidus* was caught in the Levantine Sea coast of Turkey, but no catch data was reported for *P. segnis*. Swimming crab *P. segnis* is commercially important at local fish markets in Mersin and Iskenderun Bays where one crab specimen is sold for 0.25 to 0.42 Euro.

P. segnis is distributed in the western Indian Ocean from Pakistan to South Africa, Red Sea and Mediterranean Sea (Lai *et al*. 2010). It is one of the early lessepsian invaders, firstly recorded in the Mediterranean Sea as *Neptunus* (*Portunus*) *pelagicus* from Egypt (Fox 1924 [1898]). Later it was reported from Palestine (Fox 1924); Turkey (Gruvel 1928; Holthuis 1961; Kocataş 1981; Enzenross and Enzenross 1987, 1990; Özcan *et al*. 2005); Syria (Gruvel 1930; Hasan *et al*. 2008); Lebanon (Steinitz 1929); Cyprus (Demetropoulos and Neocleous 1969); Italy, (Ghisotti 1966; Crocetta 2006) and Rhodes Island, Greece (Corsini-Foka *et al*. 2004 [1991]).

Barnacles are sessile, fitler-feeding crustaceans that attach to variety of marine substrata, including whales, turtles, crabs and inanimate objects (Pasternak *et al*. 2002). *Chelonibia patula* (Ranzani 1820) is a cosmopolitan species and it was reported host-epizoon for the species. *C. patula* has been known from the western and central Mediterranean Sea, the Levantine Sea and Black Sea (Relini 1980; Koukoura and Matsa 1998; Pasternak *et al*. 2002; Beşir 2010; Bakır *et al*. 2010). *C. patula* has been reported infesting on several crab species such as *P. segnis* [as *Portunus pelagicus* (Linnaeus 1758)] in Israel (Pasternak *et al*. 2002); *P. pelagicus* in Australia (Shields 1992; Gaddes and Sumpton 2004); *Callinectes amnicola* and *Portunus validus* off Lagos Coast, Nigeria (Lawal-Are and Daramola 2010); *Arenaeus cribrarius* (Lamarck 1818) in Ubatubai Brazil (Costa *et al*. 2010) and *C. hellerii* from the Pakistan (Mahjabeen and Mustaqium 1994). According to Farrapeira (2010), *Callinectes bocourti* (Farrapeira 2009); *C. danae* (Farrapeira 2009); *C. exasperatus* (Farrapeira-Assunção 1991; Farrapeira *et al*. 2000) and *C. larvatus* are hosts for *C. patula* along the coast of Brazil.

C.patula barnacle epizooites on the carapace of *P. segnis* which has important commercial value was reported for the first time from the Turkish seas within the frame of this study. At the same time the distribution of *C. patula* on carapace of *C. sapidus* has extended from Iskenderun Bay to Taşucu (Mersin Bay).

Materials and Methods

Samplings were carried out on 12 - 17 May 2011, at two stations. One specimen of the swimming crab and one specimen of the blue crab were collected by commercial trawl in Iskenderun Bay. Two specimens of the swimming crab and one specimen of the blue crab were collected by commercial trawl in Mersin Bay. Sampling coordinates are 36° 40′ 830″ N 35° 42′ 900″ E (Iskenderun Bay) and 36° 31′ 260″ N 35° 13' 422″ E (Mersin Bay) (Figure 1). The specimens have been deposited at the Mustafa Kemal University, Faculty of Fisheries Museum, Hatay/Turkey (Collection numbers are for *C. sapidus* MSM-MAX/2011-1. MSM-MAX/2011-2. and for *P. segnis* MSM-MAX/2011-3. MSM-MAX/2011-4).

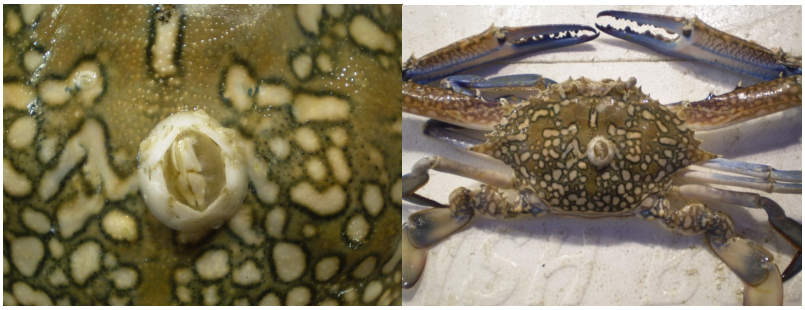
Figure 1. Sampling locations

Results and Discussion

A total of three specimens of *P. segnis* and two specimens of *C. sapidus* infested by *C. patula* were obtained. Among these, two specimens of *P. segnis* were from Mersin Bay (Figure 2) and one specimen of *P. segnis* was from Iskenderun Bay while one specimen of *C. sapidus* was from Mersin Bay and one specimen of *C. sapidus was* from Iskenderun Bay.

Two specimens of barnacle were found on the cheliped of *P. segnis* [Specimen 1 (Isk. Bay)]. All other barnacle specimens were found on the carapace of *C. sapidus* and *P. segnis*. Some morphometric measurements of the specimens are given in Table 1.

C. patula is a cosmopolitan species and it has wide distribution in the Mediterranean Sea. It was reported for the first time on *C. sapidus* from Iskenderun Bay (Bakır *et al*. 2010) and later reported on *Spondylus gaedoropus* (Mollusca) from Antalya Bay on the Turkish coast (Beşir 2010).



a b

Figure 2. Specimen of *Chelonibia patula* (b) and their host *Portunus segnis* from Mersin Bay (a)

Table 1. Morphometric measurements of *Callinectes sapidus*, *Portunus segnis* and *Chelonibia patula*

	C.sapidus			***C.patula***		***P.segnis***			***C.patula***	
	CW (mm)	W (g)	N	Max Ø	Min Ø	CW (mm)	W (g)	N	Max Ø	Min Ø
Specimen 1 (Isk. Bay)	120.2	89.4	2	9.1	1.2	110.2	79.9	18	2.9	1.5
Specimen 2 (Mer. Bay)	98.4	80.1	1	1.6	-	127.1	92.8	3	8.6	1.7
Specimen 3 (Mer. Bay)	-	-	-	-	-	75.1	59.2	2	3.1	1.7

CW: carapace width in cm; W: weight of crab; N: number of *C. patula* on a crab; Max.: maximum; Min.: minimum; Ø: basal diameter of *C. patula* specimens in mm.

Generally *C. patula* fouling the carapace crabs (Ross and Jackson 1972; Key *et al*. 1997; Pasternak *et al*. 2002; Bakır *et al*. 2010). Several study reported this species on carapace, chelipeds and also walking legs of crabs, such as *C. hellerii* from Pakistan (Mahjabeen and Mustaqium 1994), and *Callinectes amnicola* and *Portunus validus* off Lagos Coast, Nigeria (Lawal-Are and Daramola 2010). The main epibiont of the crab *Arenaeus cribrarius* was *C.patula* (5.6% of mature crab) from Fortaleza and Ubatuba Bays in Brazil (Costa *et al*. 2010). In this study *C. patula* was recorded on the carapace and cheliped of *P. segnis* and on the carapace of *C. sapidus*.

C. patula was placed mostly on the central region of the carapace of the host *P. segnis* (as *P. pelagicus*). According to Pasternak *et al.* (2002), 91% of the *C. patula* orientation on both small and large crab, were at rostro-carinal axis with

(RCA) angles of no more than 120 degree with respect to the anterior margin of the *P. segnis*.

Males showed a higher infestation rate by *C. patula* when compared to mature non-ovigerous crab females (Costa *et al*. 2010). According to Lawal-Are and Daramola (2010) crabs infested by barnacle lose their market values because of the aesthetic problem.

Present study reports a new host (*P. segnis*) for *C. patula* in the Turkish coast and geographical range northwest to Taşucu (Mersin Bay), on carapace *C. sapidus*. *P. segnis* and *C. sapidus* are economically important crabs were being affected negatively by infestation of *C. patula* by means of their market values, fishery production and their physiology. In order to understand the distribution range and the effects of *C. patula*, especially on the economically important species, further studies should be conducted in the area.

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Yüzücü yengeç *Portunus segnis* (Forskål, 1775): Türkiye kıyılarında sirriped *Chelonibia platula* (Ranzani, 1818) için konakçı

Özet

Mayıs 2011 zarfında, simbiyotik sirriped *Chelonibia patula* (Ranzani, 1820) İskenderun ve Mersin Körfezi'nden (Türkiye kıyıları) toplanmıştır. *C. patula* tarafından infekte olan 3 yüzücü yengeç *Portunus segnis* (Forskål, 1775) ve 2 mavi yengeç *Callinectes sapidus* Rathbun, 1896 bireyi elde edilmiştir. *C. patula*'nın *P. segnis*'in karapası ve kelipedi üzerinden Türkiye kıyılarından ilk kez rapor edilmektedir ve ayrıca *C. patula*'nın *C. sapidus*'un üzerindeki dağılımı İskenderun Körfezi'nden Mersin Körfez'ine kadar genişlemiştir.

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