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THE NORTHERNMOST RECORD OF THE BRACHYURAN *HERBSTIA CONDYLIATA* (FABRICIUS, 1787) AND ITS DISTRIBUTION IN THE ADRIATIC SEA (DECAPODA, BRACHYURA, EPIALTIIDAE)

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ABSTRACT

A less known decapod species *Herbstia condyliata* (Fabricius, 1787) *has been recorded for the very first time in waters off the Slovenian coast, which is the northernmost locality for this species in the Adriatic Sea. The species is considered rare in the eastern Mediterranean; however, it is apparently common in the Adriatic Sea, where it is distributed from southern Dalmatia to the Gulf of Trieste.*

Key words: *Herbstia condyliata*, distribution, Decapoda, Gulf of Trieste, Adriatic Sea

RITROVAMENTO PIÙ A NORD DEL GRANCHIO *HERBSTIA CONDYLIATA* (FABRICIUS, 1787) E LA SUA DISTRIBUZIONE NEL MARE ADRIATICO (DECAPODA, BRACHYURA, EPIALTIIDAE)

SINTESI

Una specie meno nota di crostacei decapodi, Herbstia condyliata (Fabricius, 1787), è stata trovata per la prima volta nelle acque al largo della costa slovena, il che corrisponde alla località più settentrionale per questa specie nel mare Adriatico. La specie è considerata rara nel Mediterraneo orientale, per quanto la sua presenza risulti apparentemente comune nel mare Adriatico, dove la si trova dalla Dalmazia meridionale al Golfo di Trieste.

Parole chiave: *Herbstia condyliata*, distribuzione, Decapoda, Golfo di Trieste, mare Adriatico

INTRODUCTION

The decapod fauna of the northernmost part of the Adriatic Sea, *i.e.* Slovenia and the Gulf of Trieste, was not given any particular scientific attention in the past in comparison with other Adriatic areas. Only a single specific report on the subject is available, published by Manning & Števc̃iĉ (1982), together with an overview of the northern Adriatic fauna (Matjašič *et al.*, 1975; Manning & Števc̃iĉ, 1982). Therefore, discoveries of new decapod species are to be expected.

We report on the recent findings of the brachyuran *Herbstia condyliata* (Fabricius, 1787) (Fig. 1), previously not known in the area of the Gulf of Trieste, at least not in terms of published scientific issues. In general, a rather scarce number of published records is known from the eastern Mediterranean, although the species does not seem to be rare in the western part (Lewinsohn & Holthuis, 1986). In the Adriatic Sea, the species was supposed to be very rare (Števc̃iĉ, 1990), similar as in other adjacent areas of the eastern Mediterranean (*e.g.*, Koukouras *et al.*, 1992; Corsini & Kondilatos, 2006). However, in later supplements of the Adriatic decapod fauna list Števc̃iĉ (2002) claims that *H. condyliata* is more common than previously supposed, but a compre-

hensive work on species distribution in the Adriatic Sea has not been published yet.

In this study we aimed to collect all published and available unpublished data about *H. condyliata* occurrence in the Adriatic Sea and report on the recent findings of the northernmost occurrence of the species in the area.

MATERIAL AND METHODS

We have reviewed published references on occurrence of *H. condyliata* in the area of the Adriatic Sea. We included also data on species occurrence obtained by systematic samplings of crabs under the stones in infralittoral, data on by-catch by trawlers in shallow waters, data of marine biologist field work findings and occasional observations by marine photographers. Only a few specimens were preserved, and the specimen from Slovenia was delivered to the Piran Aquarium, where it was still alive at the time of the final version of the manuscript. The species was identified according to Falciai & Minervini (1992) and d'Udekem d'Acoz (2003). The biometric parameters of the above mentioned specimen and additional 17 specimens from Croatia such as carapax, cheliped, chela, dactylus, merus and carpus were measured to the nearest 0.1 mm (Tab. 1).

Tab. 1: Biometric data on 18 specimens of *Herbstia condyliata* in the Adriatic Sea (median and interval between minimum and maximum are given in brackets; in millimeters).

Tab. 1: Biometriĉni podatki za 18 primerkov vrste *Herbstia condyliata* iz Jadranskega morja (median in interval med minimumom in maksimumom sta podana v oklepajih; v milimetrih).

Locus	Sex	N	Carapace length	Carapace width	Right cheliped total length	Right chela length	Upper margin of cheliped propodius	Dactylus	Carpus	Merus
Piran (Slovenia)	M	1	55.0	42.0	93.0	47.0	36.0	21.0	13.0	33.0
Krk (Croatia)	M	3	16.3 (13.0-17.4)	11.1 (8.9-12.8)	14.7 (11.6-16.3)	6.6 (4.8-7.1)	4.2 (3.0-4.5)	2.9 (2.4-3.3)	2.5 (2.2-3.2)	5.6 (4.9-6.0)
Iž (Croatia)	M	6	24.0 (20.9-39.0)	18.0 (14.4-31.6)	26.4 (17.0-57.2)	11.6 (8.0-27.3)	6.8 (5.3-17.9)	5.2 (3.8-11.6)	3.7 (3.0-8.1)	9.7 (6.2-21.1)
Korĉula (Croatia)	M	4	19.8 (14.4-38.0)	14.8 (9.8-31.4)	16.2 (12.9-32.9)	6.7 (5.8-15.5)	3.9 (3.4-10.2)	3.0 (2.6-6.8)	2.5 (2.1-4.9)	5.5 (4.6-12.6)
Total males		14	22.4 (13.0-55.0)	16.4 (8.9-42.0)	20.5 (11.6-93.0)	9.0 (4.8-47.0)	5.3 (3.0-36.0)	3.9 (2.4-21.0)	3.1 (2.1-13.0)	7.5 (4.6-33.0)
Krk (Croatia)	F	3	24.1 (9.4-25.3)	18.1 (6.0-19.1)	22.8 (21.8-23.8)	10.1 (10.1-10.2)	6.1 (5.9-6.3)	4.6 (4.4-4.8)	3.2 (3.2-3.2)	8.8 (8.6-9.0)
Iž (Croatia)	F	1	29.5	23.1	28.5	12.2	7.1	5.3	3.9	10.9
Total females		4	24.7 (9.4-29.5)	18.6 (6.0-23.1)	23.8 (21.8-28.5)	10.2 (10.1-12.2)	6.3 (5.9-7.1)	4.8 (4.4-5.3)	3.2 (3.2-3.9)	9.0 (8.6-10.9)

RESULTS AND DISCUSSION

On 23 May 2009, a specimen of *H. condyliata* was photographed in the protected area Nature monument Cape Madonna (Piran) during night dive (Fig. 2). On 12 May 2010, another specimen was captured by a trawler off the northern coast of Piran (Slovenia) as by-catch. These are the first published records of the species in the Slovenian coastal sea and probably also in the whole Gulf of Trieste. The specimen was caught in the area of rocky bottom characterized by the precoralligenous stage of the coralligenous biocoenosis. Such habitat type offers plenty of cavities and cracks between rocks, thus providing shelter for *H. condyliata*. Although species size varies greatly according to data collected from different parts of the Adriatic Sea (Tab. 1), the specimen caught in Slovenia is one of the largest of its species even compared to other literature data (Pesta, 1918; Falciai & Minervini, 1992; d'Udekem d'Acoz, 2003; Corsini & Kondilatos, 2006). In days following 12 May 2010, many specimens were caught in the very same area off the northern Piran coast, but not preserved.

The presence of *H. condyliata* in the Adriatic Sea was confirmed already in the beginning of 20th century, but only for the South Dalmatian islands of Korčula, Vis and Hvar (Stossich, 1880; Pesta, 1918). According to collected data, the species is distributed along the whole eastern coast from south Dalmatia to the Gulf of Trieste (Fig. 3). It is found at rocky bottom in the coralligenous biocoenosis (Corsini & Kondilatos, 2006; T. Turk, *in litt.*, *unpubl. data*) or sandy bottom with rocks, marine caves and also in *Posidonia oceanica* beds (Garcia-Raso, 1990). It was up to date recorded also in the submarine cave near Vrbnik (the island of Krk) in the Kvarner archipelago (Arko-Pijevac *et al.*, 2001) and in the anchialine cave Živa voda on the island of Hvar in the middle Adriatic Sea (Novosel *et al.*, 2007).

Therefore, it is probably not present along the western Adriatic coast, with the exception of Venice (Števcic, 1990), where sandy bottom predominates. However, future studies are needed to reveal ecological characteristics and distribution limits of this poorly studied species.

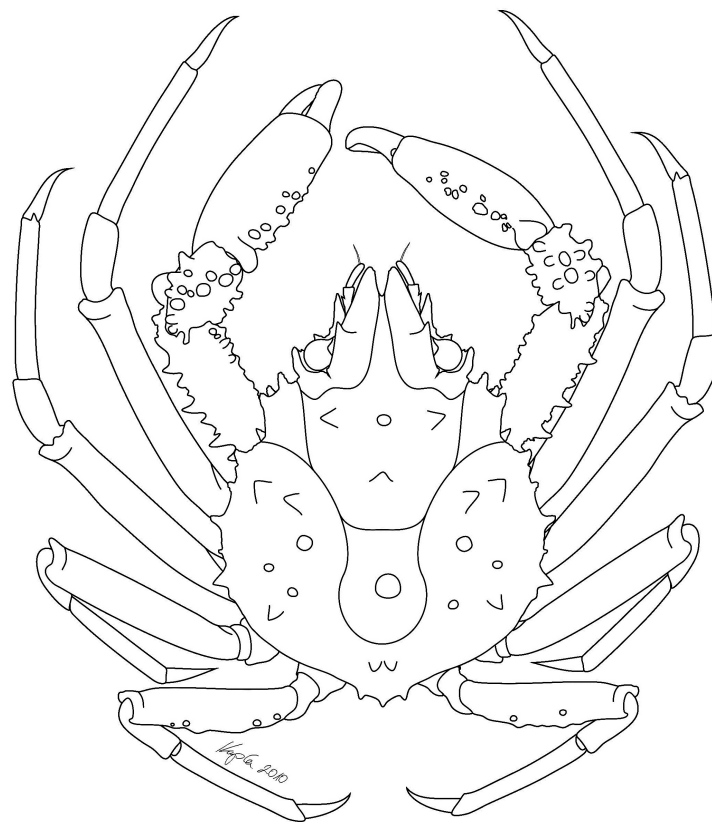


Fig. 1/Sl. 1: *Herbstia condyliata* (Fabricius, 1787). (Drawing/Risba: A. Kapla)

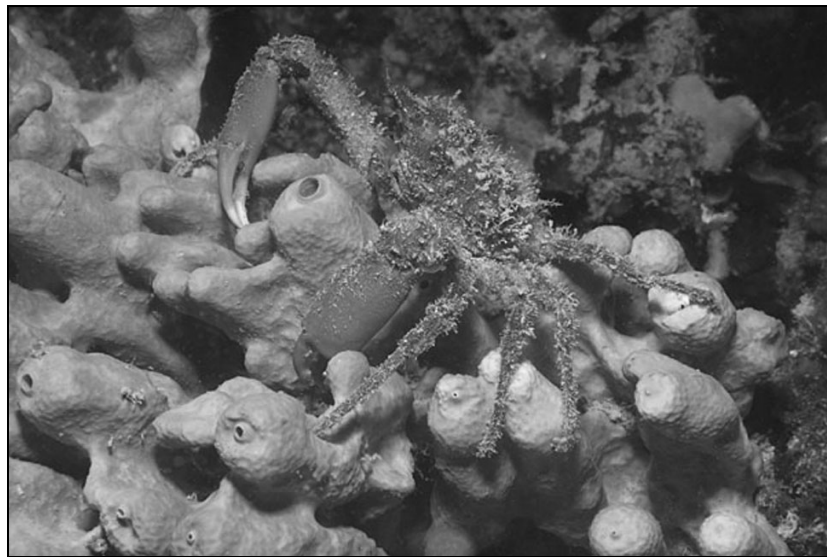


Fig. 2: A specimen of *H. condyliata* photographed in its natural habitat at the nature monument Cape Madonna in Piran. (Photo: B. Furlan)
Sl. 2: Primerek vrste *H. condyliata*, fotografiran v njegovem naravnem habitatu pri naravnem spomeniku Rt Madona v Piranu. (Foto: B. Furlan)

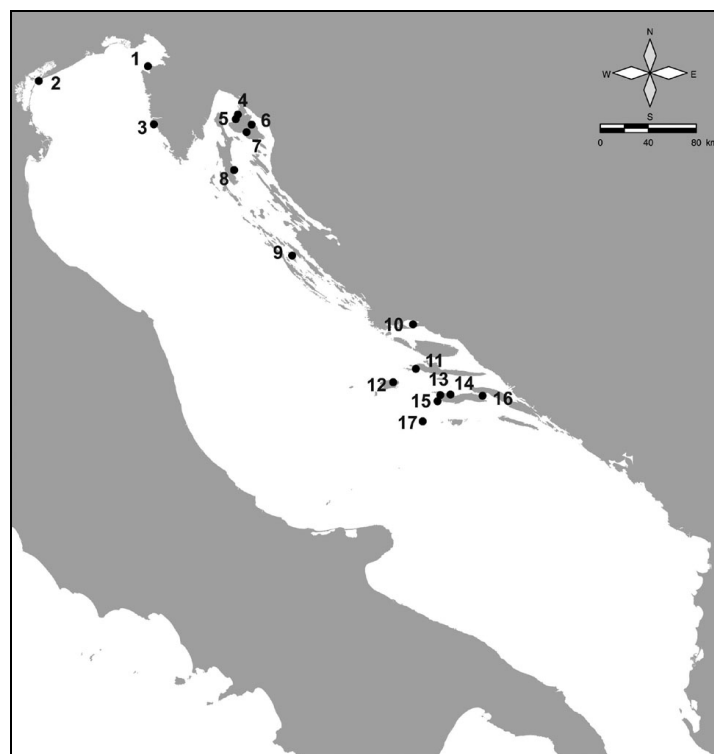


Fig. 3: Distribution of *H. condyliata* along Adriatic Sea coast. Legend: 1-Piran, 2-Venice, 3-Rovinj, 4-Krk/Njivice, 5-Krk/Malinska, 6-Krk/Vrbnik, 7-Krk/Punat, 8-Cres/Čutin, 9-Veli Iž, 10-Split, 11-Hvar, 12-Vis/Vis, 13-Korčula/Prigradica, 14-Korčula/Vela Luka, 15-Korčula/Trstenik, 16-Korčula/Korčula and 17-Sušac.

Sl. 3: Razširjenost vrste *H. condyliata* ob Jadranski obali. Legenda: 1-Piran, 2-Benetke, 3-Rovinj, 4-Krk/Njivice, 5-Krk/Malinska, 6-Krk/Vrbnik, 7-Krk/Punat, 8-Cres/Čutin, 9-Veli Iž, 10-Split, 11-Hvar, 12-Vis/Vis, 13-Korčula/Prigradica, 14-Korčula/Vela Luka, 15-Korčula/Trstenik, 16-Korčula/Korčula in 17-Sušac.

Although *H. condyliata* is supposed to be rare in the eastern Mediterranean and just occasionally found in low numbers (Koukouras & Kattoulas, 1975; Lewinsohn & Holthuis, 1986; Koukouras *et al.*, 1992; Kocatas *et al.*, 2004; Corsini & Kondilatos, 2006), it seems to be more common along the eastern Adriatic coast (Arko-Pijevac *et al.*, 2001; Števičič, 2002; Novosel *et al.*, 2007; see Fig. 3).

To our opinion, *H. condyliata* is in general a common species in the Adriatic Sea although only locally abundant. The first sighting of this species in the Slovenian coastal sea was obtained by the means of SCUBA diving during night time, when these crabs are active. This case proves the suitability of diving techniques, which could provide new data on rare or less known

species in otherwise inaccessible habitats for standard (destructive) fishing gears. At the same time, it justifies the urge for the establishment of a network of different groups who are somehow dealing with the biodiversity of the marine environment such as scientists, conservators, fishermen, divers, underwater photographers and others.

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ZAPIS O NAJSEVERNEJŠEM POJAVLJANJU RAKOVICE *HERBSTIA CONDYLIATA* (FABRICIUS, 1787) IN RAZŠIRJENOST TE VRSTE V JADRANSKEM MORJU (DECAPODA, BRACHYURA, EPIALTIIDAE)

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POVZETEK

Manj znana rakovica *Herbstia condyliata* je bila prvič zabeležena v slovenskem delu Jadranskega morja, kar je obenem tudi njena najsevernejša lokaliteta v Jadranskem morju. Čeprav naj bi bila ta vrsta redka v vzhodnem Sredozemlju, kaže, da je v Jadranskem morju razmeroma običajna in jo najdemo od južne Dalmacije pa vse do Tržaškega zaliva.

Ključne besede: *Herbstia condyliata*, razširjenost, Decapoda, Tržaški zaliv, Jadransko morje

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