Mediterranean Marine Science

Vol 15, No 1 (2014)

Vol. 15, No 1 (unpublished)

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doi: 10.12681/mms.673

Short Communication

Mediterranean Marine Science
Indexed in WoS (Web of Science, ISI Thomson) and SCOPUS
The journal is available on line at http://www.medit-mar-sc.net
DOI: http://dx.doi.org/10.12681/mms.673

First record of the Northern brown shrimp, *Farfantepenaeus aztecus* (Ives, 1891) (Crustacea: Decapoda: Penaeidae) in the South Adriatic Sea, Montenegro

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Handling Editor: Argyro Zenetos

Received: 15 October 2013; Accepted: 2 December 2013; Published on line: 17 December 2013

Abstract

A single adult female specimen of the Northern brown shrimp, *Farfantepenaeus aztecus*, a species native to the western Atlantic coasts, was caught in Boka Kotorska Bay (southern Adriatic Sea) on 19 September 2013. This is the first record of this alien species in the Adriatic Sea.

Keywords: *Farfantepenaeus aztecus*, alien species, first record, Boka Kotorska Bay, South Adriatic Sea, Montenegro.

Introduction

In the past few years, numerous alien species have been introduced to the Mediterranean Sea. Besides the alien species of Indo-Pacific origin introduced via the Suez Canal (the Lessepsian migrants), there are also numerous species of eastern and western Atlantic origin that have been introduced to the Mediterranean via the Strait of Gibraltar (CIESM, 2013). As a result of human activities (shipping, trade, aquaculture etc.), in the last century many species of decapod crustaceans have been accidentally introduced in the Mediterranean Sea (Froglia & Speranza, 1993).

Information on the presence and distribution of marine alien species along the coasts of Montenegro is scarce and fragmented (Katsanevakis *et al.*, 2011) and deal mainly with fish species. Until now, no invasive crustacean species have been reported in Montenegro. Only two species of the family *Penaeidae* live along the Montenegrin coast and represent an important fraction of the total catch on the Montenegrin shelf. These are the deep-water pink shrimp *Parapenaeus longirostris* (Lucas, 1846) and the karamote shrimp *Melicertus kerathurus* (Forskål, 1775).

This report concerns the first record of the northern brown shrimp in the southern part of the eastern Adriatic Sea.

The northern brown shrimp, *Farfantepenaeus aztecus* (Ives, 1891), occurs along the Western Atlantic coast from approximately Martha's Vineyard, MA through Florida and the Gulf of Mexico to the lower Yucatan Peninsula (Williams, 1984). The depth distribution is from 4 to 160 m, with highest densities at 27-54 m. This species was firstly recorded in the eastern Mediterranean Sea in 2010 from Antalya Bay, Turkey (Deval *et al*., 2010). Within the last 3 years the species has expanded to the Gulf of Iskenderun to the east and Finike to the west (Gökoğlu & Ovzarol, 2013). According to Deval *et al*. (2010) the unexpected finding of *F. aztecus* in the Mediterranean Sea is due to introduction with ballast waters.

Material and Methods

On 19 September 2013, an adult female specimen of *F. aztecus* (Ives, 1891) was caught by a "bukvara" gillnet, which has a 22 mm mesh size, at a depth of 20-25 m on sandy-mud bottom in the Boka Kotorska Bay (42°24'53"N and 18°40'81"E), Montenegro (Fig. 1). Total length of carapace was 48 mm CL and total length was 200 mm TL. The specimen was brought to the Laboratory of Ichthyology and Marine Fishery, Institute of Marine Biology and photographed (Fig.2). Identification of the specimen was performed in accordance with several identification keys (Pérez Farfante, 1988; Pérez Farfante & Kensley, 1997; Tavares, 2002). After identification, the specimen was deposited in the Ichthyological Collection of the Institute.

Results and Discussion

The specimen of *F. aztecus* found in Boka Kotorska Bay has specific characteristics: smooth carapace; rostrum armed with ten dorsal teeth (one epigastric tooth + nine teeth) and two ventral teeth; adrostral sulcus and carina long, reach-

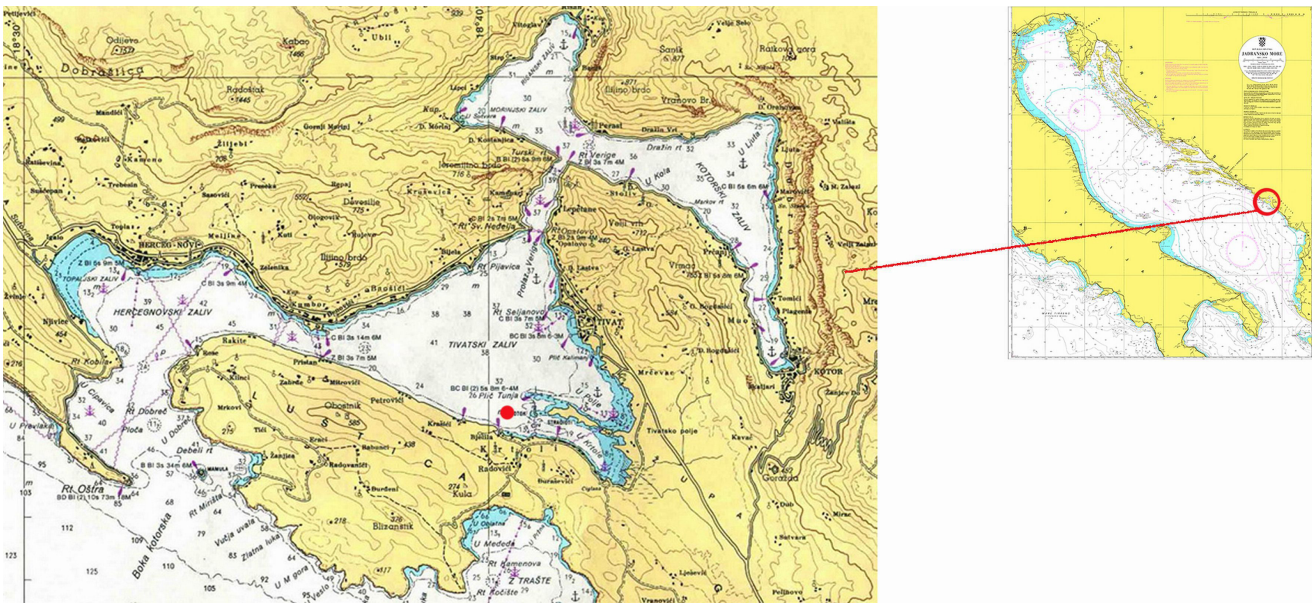

Fig. 1: Map of Boka Kotorska Bay showing the location (full red circle) where the Northern brown shrimp *Farfantepenaeus aztecus* has been collected.

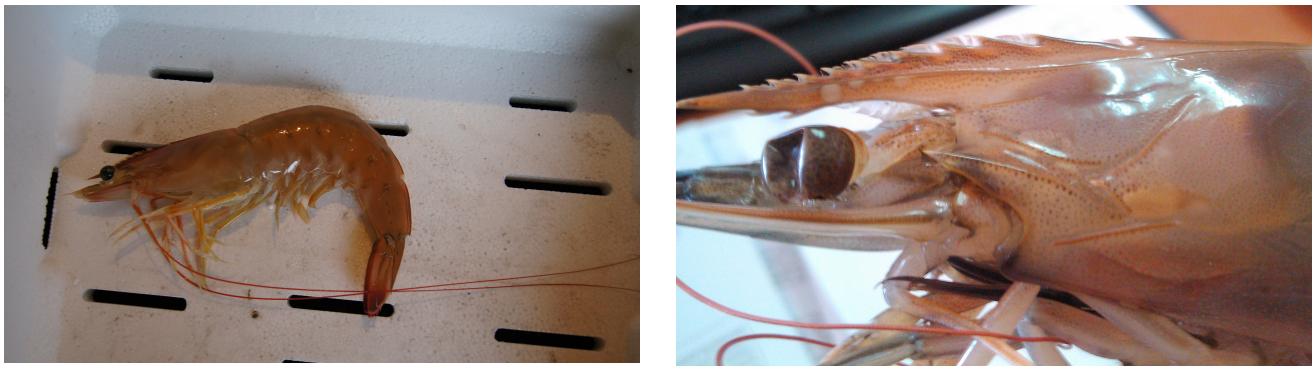

Fig. 2: *Farfantepenaeus aztecus* (Ives, 1891), adult female, Boka Kotorska Bay, Montenegro. A: lateral view, B: dorsal view of carapace (Photo: Olivera Marković).

ing far beyond the epigastric tooth, gastrofrontal carina present; postorbital spine absent; antennal and hepatic spines pronounced; first three pairs of pereiopods terminate with a chela; first pereiopod with a spine on ischium and basis and second pereiopod with a spine only on basis; three short well-defined cicatrices on the sixth abdominal somite and one small on the fifth abdominal somite; dorsolateral sulcus on the sixth abdominal somite and telson unarmed.

Species biodiversity in the Adriatic Sea is influenced by water masses from the Mediterranean Sea. According to Pećarević *et al*. (2013), the introduction of certain zoobenthic species is related to climate change and range expansion, while for other species the vectors of introduction are mainly associated with shipping activities. Katsanevakis *et al*. (2011) claimed that the low number of marine alien records in Montenegro is partly due to limited research effort in the area. In addition, the number of established alien species in the southern and middle Adriatic is lower than that in the northern areas of the basin (Zenetos *et al.*, 2012), but is expected to increase because of the natural expansion of species already established in the central Mediterranean.

In our opinion, this record of an adult female specimen of *Farfantepenaeus aztecus* in the South Adriatic Sea possibly indicates that this species has established a population in the area. Therefore, future investigation and good collaboration with local fisherman is required.

Acknowledgements

The authors would like to give special thanks to Srećko Andričić, a fisherman from Tivat, for providing this specimen of the Northern brown shrimp. We also thank Dr Kostas Kapiris for his useful suggestions.

References

CIESM, 2013. *Atlas of exotic species*. http://www.ciesm.org/online/atlas/index.htm (Accessed 19 September 2013).

Deval, M.C., Kaya, Y., Güven, O., Gökoğlu, M., Froglia, C., 2010. An unexpected find of the western Atlantic shrimp, *Farfantepenaeus aztecus* (Ives, 1891) (Decapoda, Penaeidea) in Antalya Bay, eastern Mediterranean Sea. *Crustaceana,* 83 (12), 1531-1537.

Froglia, C., Speranza, S., 1993. First record of *Dyspanopeus sayi* (Smith, 1869) in the Mediterranean Sea (Crustacea, Decapoda, Xanthidae). *Quaderni dell' Istituto Ricerche Pesca Marittima* 5 (2), 163-166.

Gökoğlu, M., Ovzarol, Y., 2013. Biogeographic expansion of *Farfantepenaeus aztecus* (Ives, 1891) (Decapoda, Penaeidea) in the eastern Mediterranean. p. 475-476. In: Bilecenoglu *et al*., 2013. New Mediterranean Marine biodiversity records (December, 2013). *Mediterranean Marine Science*, 14 (2), 463-480.

Katsanevakis, S., Zenetos, A., Mačić, V., Beqiraj, S., Poursanidis, D. *et al*. 2011. Invading the Adriatic: spatial patterns of marine alien species across the Ionian-Adriatic boundary. *Aquatic Biology*, 13 (2), 107-118.

Pećarević, M., Mikuš, J., Bratoš Cetinić, A., Dulčić, J. *et al*. 2013. Introduced marine species in Croatian waters (Eastern Adriatic Sea). *Mediterranean Marine Science* 14 (1), 224-237.

Pérez Farfante, I., 1988. *Illustrated Key to Penaeoid Shrimps of Commerce in the Americas*. NOAA Technical Report, NMFS 64, 32 pp.

Pérez Farfante, I., Kensley, B., 1997. *Penaeoid and Sergestoid Shrimps and Prawns of the World. Keys and diagnoses for the families and genera*. Mémoires du Muséum National d'Histoire Naturelle, Paris, V. 175, 233 pp.

Tavares, M., 2002. Shrimps. p. 251-291. In: *The living marine resources of the Western Central Atlantic, Volume 1 Introduction, molluscs, crustaceans, hagfishes, sharks, batoid fishes and chimaeras.* Carpenter, K.E. (Ed.). FAO Species Identification Guide for Fishery Purposes and American Society of Ichthyologists and Herpetologists, Special Publication No. 5. FAO, Rome.

Williams, A.B., 1984. *Shrimps, lobsters, and crabs of the Atlantic coast of the Eastern United States, Maine to Florida*. Smithsonian Institution Press, Washington, D.C. 550 pp.

Zenetos, A., Gofas, S., Morri, C., Rosso, A., Violanti, D. *et al*. 2012. Alien species in the Mediterranean Sea by 2012. A contribution to the application of European Union's Marine Strategy Framework Directive (MSFD). Part 2. Introduction trends and pathways. *Mediterranean Marine Science*, 13 (2), 328-352.