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The First Record of *Exopalaemon styliferus* (H. Milne-Edwards, 1840) (Decapoda: Caridea: Palaemonidae) from Iran

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Abstract

During a recent ecological study, an unfamiliar shrimp species was encountered in summer 2008 in the downstream of Bahmanshir River (15 km to Persian Gulf) in Abadan city, Iran. This paper represents the first record of *Exopalaemon styliferus* (Milne-Edwards, 1840) of the family Palaemonidae from Iran. This species has been recorded from the north coast of Borneo and Indonesia westward through Thailand and India to Pakistan and in Iraq and Kuwait waters. This finding extends our knowledge on the global form of distribution of *E. styliferus*.

Keywords: Palaemonidae shrimp, *Exopalaemon styliferus*, new record, Bahmanshir River, Iran.

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Özet

Son dönemde yapılan bir ekolojik çalışmada, 2008 yazında, İran'ın Abadan şehrinde Bahmashir Nehri'nin mansabında (Basra Körfezi'ne 15 km uzaklıkta) yabancı bir karides türü ile karşılaşılmıştır. Bu makale İran'da, Palaemonidae familyasından *Exopalaemon styliferus*'e (Milne-Edwards, 1840) ait ilk kayıtları göstermektedir. Bu tür daha önce Borneo'nun kuzey kıyısı ve Endonezya'nın batısından başlayarak Tayland ve Hindistan üzerinden Pakistan, İran ve Kuveyt sularında kaydedilmiştir. Bu bulgu, *E. styliferus* dağılımınına ait bilgimizi arttırmaktadır.

Anahtar Kelimeler: Karides, *Exopalaemon styliferus*, yeni kayıt, Bahmanşir Nehri, İran.

Introduction

Exopalaemon styliferus has been found to occur in shallow marine and brackish waters from the north coast of Borneo and Indonesia westward through Thailand and India to Pakistan (Fischer and Bianchi, 1984). This species has also been recorded in Iraq and Kuwait waters (Salman and Bishop, 1990). Although the species cited ranges widely in coastal waters, it appears to occur in abundance only in or near estuaries of major rivers (Salman and Bishop, 1990). Up to date, 7 species of freshwater shrimps have previously been reported from Iran namely *Caridina fossarum* Heller, 1862, *C. babaulti* Bouvier, 1918, *Atyaephyra desmaresti* (Millet, 1831), *Palaemon elegans* (Rathke, 1837), *P. adspersus* (Rathke, 1837), *Macrobrachium rosenbergii* (De Man, 1879) and *M. nipponense* (De Haan, 1849). The first three species are native and the last four species are alien that were introduced into Iranian waters (Heller, 1862; Gorgin, 1996; Tarasov, 2002; Grave and Ghane, 2006). Distribution and identification of these shrimps have not been well determined. This paper relates the first record of *Exopalaemon styliferus* (H. Milne-Edwards, 1840) of the family Palaemonidae from Iran.

Material and Methods

Bahmanshir River situated in the southwest of Iran, is an outlet of Karoon River flowing water into the Persian Gulf (Figure 1). The hydraulic flow characteristic of Bahmanshir River is affected by tidal movements of water in the Persian Gulf, while the Persian Gulf is connected to the Sea of Oman through the strait of Hormuze (Shafai-Bajestan and Shirdeli, 2002).

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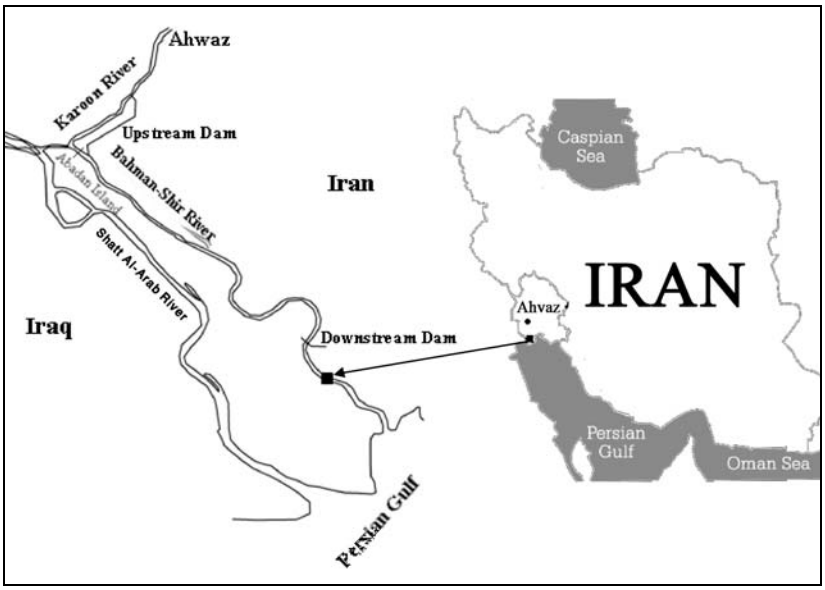

Figure 1. The sampling site (■), downstream of Bahmanshir River, Iran.

During a recent ecological study, an unidentified shrimp species was encountered in summer 2008 in the downstream of Bahmanshir River in Abadan city, Iran. About 472 specimens of the shrimps were collected and preserved in 5% neutralized (buffered) formalin solution and, some of them were sent for identification to Aristotle University of Thessaloniki (School of biology, Department of zoology), Greece. The sampling area, downstream of Bahmanshir River (30°06′37″ N, 48°34′51″ E; 15 km to Persian Gulf) (Figure. 1), is characterized by shallow waters (<2.5 m) with soft, muddy bottom and temperature of 26-27°Ċ. Salinity of the sampling site water is variable from 1-2 ppt in the ebb time to about 20 ppt in the flood time in the summer.

Specimens were sexed using the criterion of presence or absence of the appendix masculina on the endopods of the second pair of pleopods. Total length (BL) (distance between the nib of the rostrum and telson end) was measured using Vernier calipers to the nearest 0.01 mm.

Results and Discussion

Of the 472 specimens collected from the downstream Bahmanshir River area during the summer 2008, the males comprised 55.5% (262), the ovigerous female comprised only 14.4% (68); and the remaining 30.2% (142) were non-ovigerous females. A survey revealed that the maximum size of *E. styliferus* is 93 mm. This is slightly longer than the total length quoted by Fischer and Bianchi (1984), as 90 mm for males and 86 mm for females, and smaller than total length reported by Salman and Bishop (1990). A photograph of *E. styliferus* from the downstream Bahmanshir River is found in Figure 2.

The present specimens: the rostrum was long and slender with an elevated basal crest of 3 to 7 teeth over the eye; 2-3 sub-distal teeth were present on the dorsal margin of the rostrum of the specimens; ventral margin with 6 to 10 teeth (Figure 3). The number of ventral marginal teeth of *E. Styliferus* recorded in the literature coincides with the count reported here. However, Fischer and Bianchi (1984) reported 5 to 7 teeth over the eye and 1-2 sub-distal teeth. Whereas, Salman and Bishop (1990) stated that the maximum number of ventral marginal teeth of the species is 4 (range: 1-4).

Shrimps were whitish translucent, with the distal part of rostrum dark reddish brown and some darker spots on the tips of uropods and telson. Ovigerous females with large dark spots on the first 4 abdominal pleura. Eggs of berried females were yellowish (Figure 2).

The shrimp *Exopalaemon styliferus* is recorded for the first time in Iran. This finding extends our knowledge of the global distribution of *E. styliferus*. The only other freshwater shrimps known from southern Iran are *Caridina fossarum* Heller, 1862, *C. babaulti* Bouvier, 1918 and *Atyaephyra desmaresti* (Millet, 1831). Further studies are needed to ventilate data on the particular origin and the likelihood of encountering more populations in Iran. The paucity of freshwater shrimp records in Iran must be due to the lack of sampling.

The geographic distribution of the mentioned species is extending from the Far East, namely the northern coast of Borneo and Indonesia westward via Thailand and India to Pakistan. Meanwhile, it has been reported from the southwestern Iraq and Kuwait adjacent to the Persian Gulf. According to the present field research, it was found in the Iranian locality, Abadan where there was no any report or information regarding its presence in the Iranian inland waters, and hence extending its geographical distribution records. There is the possibility that the species may

Figure 2. Ovigerous female of *Exopalaemon styliferus* from Bahmanshir River (TL= 93 mm).

Figure 3. Carapace of *Exopalaemon styliferus* from Bahmanshir River (C.L.=18 mm).

occur along the northern coastal part of the Persian Gulf from Khuzestan in the west to the east (Pakistan) and the apparent geographic gap may be due to poor samplings.

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