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SHORT COMMUNICATION

The Occurrence of *Phronima sedentaria* Forskål, 1775 (Crustacea: Amphipoda) in the Gulf of Antalya (Eastern Mediterranean, Türkiye)

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Abstract: This study reports the occurrence of *Phronima sedentaria* in the Eastern Mediterranean. The new pram shrimps were collected from the Gulf of Antalya, located on the Levantine coast of Turkey. Examination and definition of the sampled specimen in the area reported as the first occurrence.

Anahtar kelimeler:

Pram karidesi
Hyperiid amphipod
Levantin Denizi
Antalya Körfezi

Antalya Körfezi'nde (Doğu Akdeniz, Türkiye) *Phronima sedentaria* Forskål, 1775 (Crustacea: Amphipoda) Türünün Kaydı

Öz: Bu çalışma *Phronima sedentaria* türünün Akdeniz'in doğusundaki bulunurluğunu temsil etmektedir. "Pram shrimp" olarak da adlandırılan bu Amphipod türü Türkiye'nin Levant Denizi kıyısında yer alan Antalya Körfezi'nden örneklenmiştir. Bu alanda örneklenen türün incelenmesi ve tanımlanması sonucunda, ilk kayıt olarak rapor edilmektedir.

Introduction

The family Phronimidae currently includes two genera; *Phronima* Latreille, 1802 and *Phronimella* Claus, 1871. The genus *Phronima* includes 10 accepted species (Shih, 1991; Vinogradov et al., 1996).

The pram shrimp *Phronima sedentaria* (Forskål, 1775) is a pelagic hyperiid amphipod often found living inside transparent pelagic tunicates such as salps and pyrosomes; *P. sedentaria* parasitizes and fashions these tunicates into gelatinous, barrel-like abodes where it shelters and rears its young (Quigley et al., 2015). The species is one of the most well-known and common hyperiid amphipods dwellings within plankton (Diebel, 1988) and is distributed throughout the tropical and temperate oceans, including the Mediterranean Sea (Zeidler and De Broyer, 2009).

Here, we report the capture locations of *P. sedentaria* specimens in Antalya Bay, located off Turkey in the eastern Mediterranean, in association with an unidentified salp species; this represents the first report of such specimens in the study area. There was no information about the species' distribution in the Turkish seas.

Material and Methods

This study was conducted after receiving legal permission (Date: 07.04.2016, No: 1320) from the Republic of Turkey, Ministry of Agriculture and Forestry General Directorate of Fisheries and Aquaculture.

The specimens were collected on the bathyal ground of the Antalya Bay in April and July 2019 (Figure 1) within the framework of a monthly sampling program conducted by the research vessel "Akdeniz Su." The sampling design was developed for fishery surveys, with no intention of specifically sampling *P. sedentaria*. A bottom trawl net with a mouth opening of 1.5 m was used for sampling. The hauling speed was about 2.4 knots, and the hauling duration was 1 h. All hauls were conducted during daylight.

"Pram shrimp" specimens and their sexes were identified based on the *Hyperiid Amphipods of the World Oceans* guide (Vinogradov et al., 1996). The total length (TL) was measured with a digital caliper to the nearest 0.01 mm. The specimens were preserved in 70% ethanol and stored in the Faculty of Fisheries laboratory, Akdeniz University.

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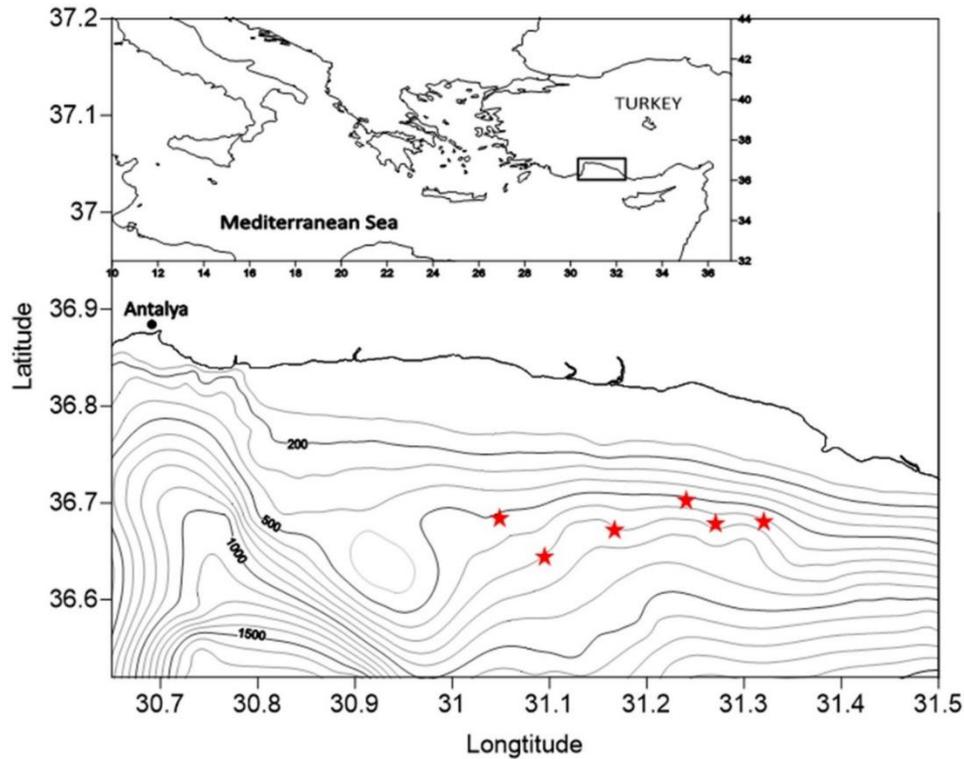


Figure 1. The sampling stations of the specimens in the Antalya Gulf

Results

Specimen characterization

The specimens were identified as *Phronima sedentaria* (Forskål, 1775) of the genus *Phronima* Latreille, 1802 and family Phronimidae Rafinesque, 1815. Twelve female individuals (TLs 32–40 mm) were collected from six stations at depths between 530 m (N36°42.610',

E31°10.040') and 650 m (N36°41.500', E31°09.380'). Notably, many juveniles (> 200) were collected, along with two adult females (40 mm TL) and an empty unidentified salp in the second haul at a depth of 540 m. In the fifth haul, six female individuals (TLs 32–39 mm) and seven empty unidentified salps were sampled (Table 1).

Table 1. Specimens of the pram shrimp *P. sedentaria* collected in Antalya Bay, Turkey

Date	Hauls	Stratum (m)	TL (mm)	Sex	Specimen	Unidentified salp
27.04.2019	1	500-599	36	F	1	-
	2	500-599	40	F	1 with 200 ⁺ juveniles	1
	3	600-699	37	F	1	2
	4	600-699	-	-	-	2
	5	600-699	32-39	F	6	7
21.07.2019	6	600-699	38-40	F	2 with 200 ⁺ juveniles	2

Species classification

The characteristics of the specimens agreed well with the descriptions of *P. sedentaria* (Figure 2a–b) presented by Vinogradov *et al.* (1996). The length of the fifth segments of pereopod V of the females were much greater

than their widths (Figure 2c). The rami of the uropods of the females were approximately equal in length (Figure 2d). The specimens could be easily distinguished from all other species in the genus based on many distinctive features.



Figure 2. A, B: Lateral views of the specimen; C: female V pereopod close-up view; D: abdomen, pleopods and uropods

Discussion

Previous studies (Christodoulou et al., 2013; Vinogradov et al., 1996) reported the presence of *P. sedentaria* based on Stephensen (1924) without giving details or specifying the location of collected specimens. Veini and Kiortsis (1974) sampled a few *P. sedentaria* individuals in Greek waters also without giving the details of the specimens. Four preserved specimens of *P. sedentaria* were reported in Global Biodiversity Information Facility (see details; GBIF.org) in Spain and France; date unknown and in Italy; 1930. However, it's been noted that all locations and dates are invalid but only occurrence in Greece (2009) seems to be valid (Tecchio and Ramirez-Llodra, 2018). Furthermore, only two species from the genus *Phronima* (*Phronima stebbingi* and *Phronima atlantica*) were reported in the Aegean by Bakir et al. (2014).

This paper represents the first report of captured living specimen *P. sedentaria* in the Turkish waters of eastern Mediterranean.

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Conflict of Interest

The authors declare that there are no conflicts of interest.

Author Contributions

M. Tunca Olguner; performed data collection, identify the specimen, laboratory studies, design and wrote the manuscript. M. Cengiz Deval; verification of the specimen, provided help in editing, design and correction. All authors discussed the results and contributed to the final manuscript.

Ethics Approval

Ethics committee approval is not required for this study. This study was conducted after receiving legal permission (Date: 07.04.2016, No: 1320) from the Republic of Turkey, Ministry of Agriculture and Forestry General Directorate of Fisheries and Aquaculture.

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