

Research article

Rare planktonic phyllosoma larvae of the family Scyllaridae (Crustacea, Decapoda) in the Eastern Mediterranean

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Abstract: The family Scyllaridae is the high-value fishery of commercially exploited species. The larva of spiny and slipper lobsters (Palinuridae and Scyllaridae respectively) can disperse during several months before metamorphosing into a benthic form. The rare planktonic phyllosoma larvae was collected by commercial fisheries trawling in the eastern Mediterranean Sea. Trawl surveys carried out in the 13 May 2024, Samandağ coast (between Syria, Cyprus and Türkiye), eastern Mediterranean Sea, at different depths between 570 and 650 m. This result reports the availability of larvae of lobsters of high economic importance in this region.

Keywords: Slipper lobsters, Scyllaridae, phyllosoma larvae, Eastern Mediterranean

Citing: Özcan, T., Marun, S., & Özcan, G. (2024). Rare planktonic phyllosoma larvae of the family Scyllaridae (Crustacea, Decapoda) in the Eastern Mediterranean. *Acta Biologica Turcica*, 37(4), S9:1-4.

Introduction

Decapod crustaceans are a diverse group, englobing several species of commercial and ecological interest (Briones-Fourza'n & Hendrickx, 2022). They are one of the most valuable resources of the world's trawl fisheries. Crustaceans of commercial importance on the Levantine coast of Türkiye are generally fished (Özcan et al., 2016).

The Family Scyllaridae Latreille, 1825 (slipper lobsters) is diverse of all families of marine lobsters and achelate crustaceans, in the group of decapoda found in all warm (both tropical and temperate habitats) oceans and seas. They are characterized by their unique plate-like antennae and the presence of a specialized larval phase called phyllosoma (Holthuis, 1991; Scholtz & Richter, 1995).

The slipper lobsters (Scyllaridae) are present in about 20 genera and at least 90 species in world and

in the Mediterranean with five species (Falciai & Minervini, 1992; Lavalli et al., 2020). In the eastern Mediterranean Sea, mainly Mediterranean Slipper Lobster *Scyllarides latus* (Latreille, 1802) is a native species, still quite common in the eastern Mediterranean and of commercial importance (Bianchini et al., 1998; Butler et al., 2013a; Özcan et al., 2016). *S. latus* data shows that a total of 7.0 tons of lobsters (0.5 tons from the Sea of Marmara, 6.5 tons from the Turkish Aegean Sea) in the Turkish Seas were fished (TUİK, 2013; Özcan et al., 2016). The small European locust lobster, *Scyllarus arctus* (Linnaeus, 1758) is commonly found in the Mediterranean Sea and in the north-eastern Atlantic waters (Forest & Holthuis, 1960; Butler et al. 2013b). The species is a local economic species and is consumed by humans (Özcan et al., 2016). And the less common *Scyllarus pygmaeus* (Bate, 1888) is found

in the eastern Mediterranean Sea and coast of Türkiye (Forest & Holthuis, 1960; Bakır et al., 2014). The objective of this paper is to report some rare findings of study larval individuals of the family Scyllaridae in the waters between Türkiye and Cyprus, eastern Mediterranean Sea, and to give information on phyllosoma larvae of spiny and slipper lobsters of ecological or commercial interests in the area.

Material and Methods

One specimen of phyllosoma was collected during commercial trawl surveys carried out on 13 May

2024, off the Samandağ coast (between Syria, Cyprus, and Türkiye), eastern Mediterranean Sea (Figure 1). The samples were collected using deep trawl nets at different depths ranging from 570 to 650 m. The specimens were measured, photographed, and fixed in 5% formalin seawater immediately after sampling and preserved in 70% ethanol. The measurements (in mm) included: for the phyllosomas, total length (TL, from the anterior margin of the cephalic shield between the eyes to the posterior tip of the abdomen) and carapace length (CL).



Figure 1. Map showing the sampling location

Results and Discussion

While commercial fishing activities are carried out in the international waters of the Eastern Mediterranean between Türkiye, Syria, and Cyprus, the phyllosomas/early juveniles caught and the pictures of captured early juveniles are shown in Fig. (2).

In the eastern Mediterranean Sea, three species of Scyllarus were found: one of them of commercial importance (*S. latus*), a locally economic species consumed by humans (*S. arctus*) (Özcan et al., 2016) and also in the summer season, commercial species in the eastern Mediterranean coast (Demirhindi, 1960) and the latest rare species, *S. pygmaeus* is found in the eastern Mediterranean Sea and the coast of

Türkiye (Bakır et al., 2014). *S. latus* adults' individuals were fished incidentally by gill nets and traps in hard substrate areas along the coast of the Eastern Mediterranean of Türkiye (Aktaş et al., 2011); also, it is already in Annex III of the Barcelona Convention, the list of species whose exploitation is regulated under the protocol concerning specially protected areas and biological diversity in the Mediterranean Sea (UNEP/MAP, 2012). Other species include one of local economic importance and another with very scarce distribution. As a consequence of overfishing for *S. latus*, it may go extinct or disappear from the region.



Figure 2. Planktonic phyllosoma larvae (TL = 29 mm; CL = 16 mm); dorsal view [Photo S. Marun]

Slipper lobsters (Scyllaridae) off the southeastern coast of Brazil spawning period occurred twice a year, with a higher relative frequency between July and October (Duarte et al., 2015) and the hooded slipper lobster has 2 spawning seasons per year (Oliveira et al., 2008). In the Eastern Mediterranean Sea, former research suggests that the species of family Scyllaridae spawns in early summer (Demirhindi, 1960; Spanier and Lavalli, 2007). Martins (1985) reported that the planktonic phyllosoma larvae of the *S. latus* spend about 11 months offshore, before metamorphosing into a benthic form. In the Eastern Mediterranean, a study conducted under laboratory conditions has provided information for the first time on the mating and spawning of *S. latus*, the hatching of eggs, and the survival of phyllosoma larvae (Aktaş et al., 2011). There are 3 species found in the Eastern Mediterranean, and the biology and characteristics of these species in the current ecosystem need to be investigated for sustainable fisheries management, as two of them are important because of the high economic value of this fishery.

Acknowledgment

The authors would like to thank the captain, Ferhat EREN and crew of the fishing vessel, F/V "Elif 1" for their help in collecting and sorting the material.

Ethical Approval

Not applicable.

Conflicts of Interest

The authors declare that they have no conflict of interest.

Funding Statement

The work was not supported by any funding from public or commercial agencies and did not have any grants.

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