

SHORT COMMUNICATION

**A short note on pelagic fishes in the Finike Seamounts
and adjacent waters, the eastern Mediterranean Sea**

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Abstract

This article reports pelagic fish species recorded during the survey of cetaceans in the Finike Seamounts region and the adjacent waters in 2021. The Mediterranean flyingfish *Cheilopogon heterurus* (Rafinesque, 1810) and Atlantic bluefin tuna *Thunnus thynnus* (Linnaeus, 1758) were observed and recorded during their flight/leap movements on the water surface. The scientific sharing of these data is important in terms of emphasizing the richness of the pelagic life of the Finike Seamounts region and underlines the importance of declaring the region as a Special Environmental Protection Area (SEPA).

Keywords: *Cheilopogon heterurus*, *Tunnus thynnus*, offshore observations, Finike Seamounts SEPA, Anaximander Mountains

Received: 04.08.2022, **Accepted:** 29.08.2022

In the eastern Mediterranean, a total of 31 seamounts/seamount-like structures have been identified (Öztürk *et al.* 2015). One of these regions, the Finike Seamounts Region, was first proposed as a High Sea Marine Protected Area by Öztürk (2009), but later proclaimed as Special Environmental Protection Area (SEPA) in the Official Gazette no: 28737 in 2013. Finike Seamounts SEPA (known as Anaximander Mountains Complex: Anaxagoras, Anaximander/ Finike and Anaximenes Seamounts) covers an area with no connections to the coastline approximately 1,222,885 hectare (Ministry of Environment, Urbanization and Climate Change 2022). Situated between the Hellenic and Cyprus Arcs, the depth

of the peaks range between 690-1120 m, and the base depths change between 1500-2010 m (Öztürk *et al.* 2015).

The region, which includes special ecosystems such as deep-sea, rare benches, and submarine mountains, is important in terms of serving habitats by rare ecosystems to various endangered species. Scientific studies in and around SEPA shed light on the life forms of the ecosystem in terms of biodiversity. For example, benthic region is home to small-sized bivalves belonging to Mytilidae, Vesicomidae, Thyasiridae and Lucinidae families and associated chemo-synthetic communities. Moreover, siboglinid tubeworms (*Lamellabrachia* sp.), amphipods, brachyuran crabs, echinoid sea urchins, galatheid squat lobsters, were also observed. It is among the spawning areas of swordfish, which is a highly migratory species (Tserpes 2008) and at the same time; is an important habitat for cetaceans such as striped dolphins and deep diving marine mammals including Cuvier's beaked whales and sperm whales (Öztürk *et al.* 2012; Güçlüsoy 2016). It is also in migratory routes for some seabirds (Onmuş *et al.* 2022). The aim of this study is to contribute to the knowledge on the pelagic fish in the biodiversity of the Finike Seamounts region by reporting the fish species observed at the sea surface during the scientific expeditions organized in the Finike Seamounts SEPA.

The study was carried out during two seasonal surveys in the Finike Seamounts and the adjacent waters from 11 to 25 May 2021, and from 18 to 30 September 2021 (Figure 1). A scientific observation team recorded pelagic fishes at sea surface together with cetaceans onboard the R/V YUNUS-S. Visual observations were initiated at 07:00 in the morning and continued until sunset. During the observations, research vessel speed was 8 knot, if the wind speed was higher than 3 Beaufort, observation was not carried out for healthy monitoring (see Dede *et al.* 2022 in this volume for more detailed information on the methodology).

The Mediterranean flyingfish (Beloniformes, Exocoetidae) leaping out of the water was observed at five points in the Finike Seamounts SEPA and the adjacent waters in May 2021: three points were outside and two points in the offshore waters inside of the SEPA (Table 1, Figure 1).

The flyingfish inhabit surface waters of open ocean as well as neritic and inshore areas (depth range 0-1 m). The fish have a typical counter-shading colour pattern with dark bluish green on top and light below to avoid being seen by predators and prey. It leaps out of the water with their long wing-like pectoral fins and pelvic fins in some species, often beating the lower caudal fin lobe in the water to extend the flight, and gliding for up to a distance of 300 m above the water's surface (Carpenter and De Angelis 2016). This behaviour is probably developed to escape from underwater predators (Bray 2022).

Table 1. Number of observations of two pelagic fishes in sea surface waters in the Finike Seamounds region and the adjacent waters in 2021

Species	May 2021	Sep. 2021	Total
Mediterranean flyingfish	5	-	5
Atlantic bluefin tuna	6	3	9

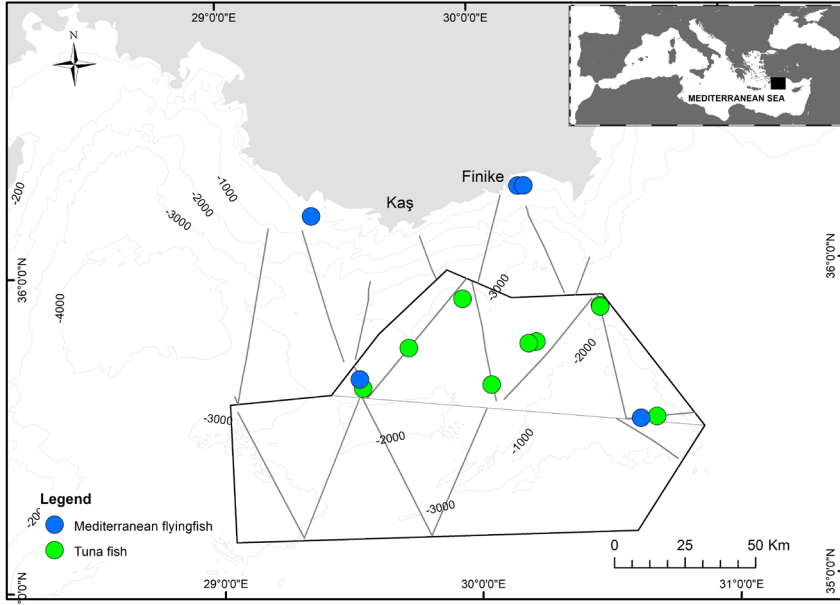


Figure 1. Locations of the Mediterranean flyingfish and the Atlantic bluefin tuna observed in the Finike Seamounds Region and adjacent waters in 2021

The characteristics of fish body seen clearly in the picture were used for species identification according to Carpenter and De Angelis (2016). The species was identified as the Mediterranean flyingfish *Cheilopogon heterurus* (Figure 2) based on the following characteristics: elongate body; pectoral fins high on sides, strikingly long, extending beyond dorsal-fin origin; caudal fin deeply forked lower lobe longer than the upper, pelvic fins abdominal in position, reaching well beyond anal fin origin, inserted nearer to anal-fin origin than pectoral-fin insertion; dorsal fin without black spot, pectoral fins greyish, with indefinite pale triangular cross-band and narrow outer margin, pelvic fins unpigmented.

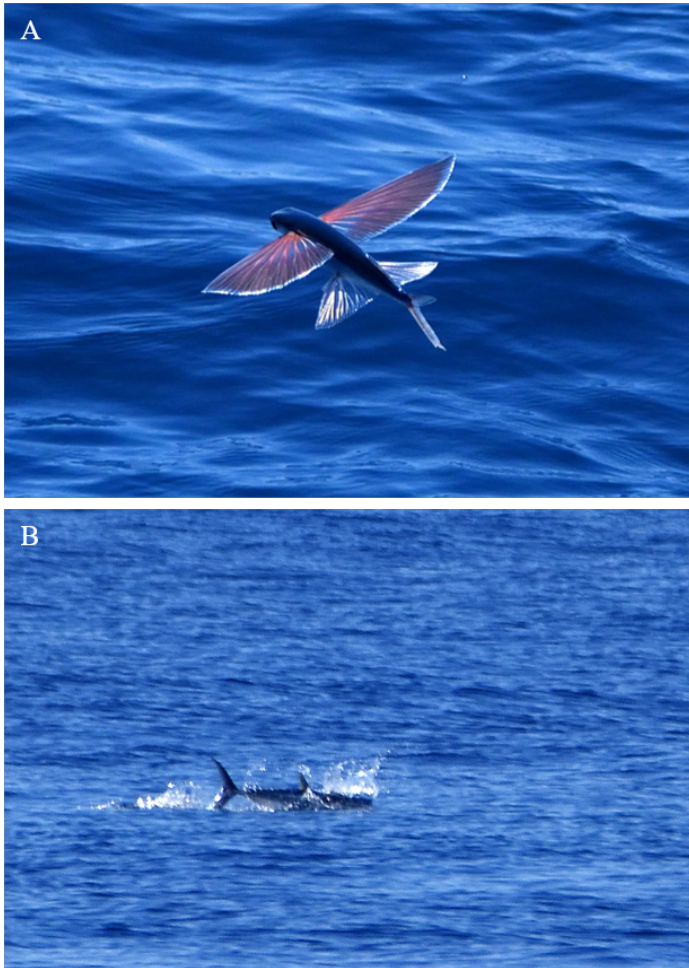


Figure 2. Observed pelagic fishes in the Finike Seamounts Region and adjacent waters in 2021. **A:** Mediterranean flyingfish, **B:** Atlantic bluefin tuna.

The second observed pelagic fish in the region was a highly migratory species, the Atlantic bluefin tuna *Thunnus thynnus* (Scombriformes, Scombridae) (Figure 2). It was observed at nine points inside of the Finike Seamounts SEPA in May and September 2021 (Table 1, Figure 1). The Atlantic Bluefin tuna is the largest tuna species. It has elongated fusiform and round body and short pectoral fins. Observed individuals in the present study were characterised by bright yellow finlets with black borders. The back was dark blue, while lower sides silvery white with colourless transverse lines or dots. The second dorsal fin was higher than the first one with reddish-brown. The dorsal finlets were yellow.

The Finike Seamounds SEPA, under effect of the Anaximander eddy, the Antalya eddy and the Rhodes Gyre, makes it one of most productive regions in the eastern Mediterranean Sea. This is why there are intensive seasonal fishing activities of Atlantic bluefin tuna along the Turkish coast from April to July (Yalçın 2019) (Figure 3). The fish in this region belongs to the eastern Atlantic population migrating to the spawning grounds and the juveniles aggregate where it is possible to overwinter due to the presence of suitable prey (Andrews *et al.* 2022).

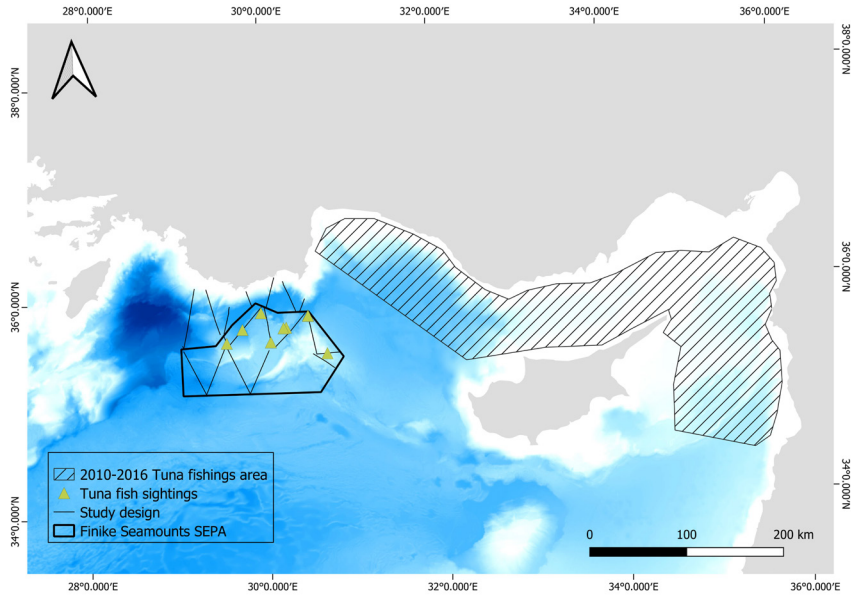


Figure 3. The study area, sightings of this study and the fishings area of the Atlantic bluefin tuna between 2010-2016 (Yalçın 2019)

Conclusion

The study presents that the Mediterranean flyingfish and the Atlantic bluefin tuna are habitants of pelagic habitat in the Finike Seamounds SEPA and the adjacent waters. While we are seeing that the Atlantic bluefin tuna is given crucial commercial importance and has been well studied, the flyingfish have only been treated as a mere beautiful species –not given enough importance by researchers. One of the reasons for this can be that these flyingfishes have no commercial interest in the Mediterranean riparian countries.

The recent studies over flyingfish proved that they react swiftly to changes in sea surface temperature, and changing oceanographic features that are typically warmer is an important predictor both for the distribution and for the abundance (Lewallen *et al.* 2018). At the same time, the top predators (preferably consume

flyingfish in the pelagic ecosystem while the flyingfish mainly feeds on zooplankton (Parin 1986; Carpenter and De Angelis 2016). Considering these two points, meaning that its place in the ecosystem and its change in abundance and distribution, the Finike Seamounts SEPA provides a good opportunity for monitoring and studying of the Mediterranean flyingfish and other pelagic fishes. Such observations have been reported during the aerial surveys in 2018-2019 by ACCOBAMS (2021) as well.

Atlantic bluefin tuna, on the other hand, suffered stock decline between 1990s to early 2000s due to the overexploitation, and quotas were established by ICCAT (International Commission for the Conservation of Atlantic Tunas) in 2003 (Karakulak and Yıldız 2016; Andrews *et al.* 2022). As a result of conservation and fisheries management effort, their numbers are gradually increasing; and proper management and preserving measurements in the Finike Seamount SEPA can benefit to this situation.

Acknowledgment

This study was funded by the Turkish Ministry of Environment, Urbanisation and Climate Change (TMEUC). The authors would like thank to Bayram Öztürk, the leader of the expedition. The crew of the R/V YUNUS-S and volunteer observers worked devotedly throughout surveys, the authors thankful for their labours.

Doğu Akdeniz, Finike Denizaltı Dağları ÖÇKB'si ve çevresinde pelajik deniz yaşamına katkılar

Öz

Bu makale 2021 yılında Fenike Denizaltı Dağları üzeri ve çevresi açık deniz bölgesinde setase gözlemleri sırasında kayda alınan pelajik balıklar üzerine yazılmıştır. Uçanbalık, *Cheilopogon heterurus* (Rafinesque, 1810) ve Maviyüzgeçli ton balığı, *Thunnus thynnus* (Linnaeus, 1758) su yüzeyindeki uçma/sıçrama hareketleri sırasında gözlemlenmiş ve kayıtları tutulmuştur. Bu verilerin bilimsel paylaşılmasının Fenike Denizaltı Dağlarının pelajik yaşamın zenginliğine vurgulaması bakımından önem taşımakta ve bölgenin Özel Çevre Koruma Alanı (Special Environmental Protection Area -SEPA) olarak ilan edilmesinin önemine vurgu yapmaktadır.

Anahtar kelimeler: *Cheilopogon heterurus*, *Tunnus thynnus*, açikdeniz gözlemleri, Finike Denizaltı Dağları ÖÇKB, Anaximander Denizaltı Dağları

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