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Research Article

Occurrence of the Pregnant and Young Thresher Shark *Alopias vulpinus* (Bonnaterre, 1788) (Lamniformes: Alopiidae) in the Northeastern Mediterranean Sea

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Abstract

Background and Objectives: *Alopias vulpinus* is one of the common large sharks recorded in various regions of the Mediterranean Sea. The objective of the present study was the first confirmed reports of the young and pregnant female *A. vulpinus* specimen with newborn four individuals first time photographed in the Northeastern Mediterranean coast of Turkey. **Materials and Methods:** On 09 March 2019, a young specimen of *Alopias vulpinus* with a total length (TL) of 2.5 m TL and 180 kg was captured by longline at a depth around 38 m off the Erdemli coast. Another specimen, which was a pregnant female caught (5.5 m and weight 400 kg) by a trammel net at a depth of 30 m in the vicinity of Taşucu (North-Eastern Mediterranean, Turkey) on 11 March, 2019. **Results:** This ichthyologic note presents a pregnant female and juvenile records of *A. vulpinus* for Mersin Bay, Mediterranean coast of Turkey. Measurements of the specimens given and the previous records information and geographical distribution of the sample of *A. vulpinus* in the Turkish Mediterranean waters were documented. Although, *A. vulpinus* has been distributed in the Mediterranean Sea coast of Turkey and reported from the eastern Mediterranean. **Conclusion:** If the necessary precautions are not taken, this species may be considered as "Endangered" in the Turkish Mediterranean waters soon. Thus, the required legal arrangements for the protection of these species in the region should be given priority.

Key words: Pregnant, newborn, shark, Mersin Bay, Eastern Mediterranean

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Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Thresher shark *Alopias vulpinus* (Bonnaterre, 1788) is a large shark, distributed worldwide, generally found in all temperate and tropical oceans¹. *Alopias vulpinus* is one of the common large sharks recorded in various regions of the Mediterranean Sea²⁻⁴. *Alopias vulpinus* is known as the common thresher shark in the world¹.

Thresher sharks are known to be incidentally captured by coastal nets from different localities (Black Sea, Marmara Sea, Aegean Sea and Mediterranean Sea) in the Turkish coastal waters⁴⁻⁸.

Nowadays, all members of genus *Alopias*, the thresher sharks, are listed as Vulnerable globally because of their declining populations¹. According to Ferretti *et al.*⁹ stated *A. vulpinus* populations highly declined (>99.99%) in abundance and biomass in the Mediterranean.

To date, about 45 specimens recorded of *A. vulpinus* incidentally captured by commercial fishermen between 1996 and 2018 in Turkish waters^{5-7,10}. However, a few numbers (n=3) of *A. vulpinus* specimens were recorded⁶⁻⁸ in Turkish Mediterranean waters during the last 22 years.

Although *A. vulpinus* has been distributed in the Mediterranean Sea and reported from the Mediterranean coast of Turkey. The present study is the first confirmed reports of the young and pregnant female *A. vulpinus* specimen with newborn four individuals first time photographed in the Northeastern Mediterranean coast of Turkey, Mersin Bay.

MATERIALS AND METHODS

Study area: The present study was recorded in Taşucu coast and Erdemli coast, Mersin Bay, Turkey (Fig. 1) during 09-11 March, 2019 to report two thresher shark, *A. vulpinus*.

Fish sampling: During the sea surveys, a young *A. vulpinus* was captured on 09 March, 2019 by long line at a depth of approximately 38 m, off Erdemli (Coordinate: 36°04'202"N, 34°35'219"E, city located in western Silifke and the young specimen was a female measuring 2.5 m in total length and weighing 180 kg (Fig. 2). Another female sample was captured in a trammel net at a depth of 30 m in Taşucu coast (Mersin Bay) on 11 March, 2019 (Coordinate; 36°18'394"N,

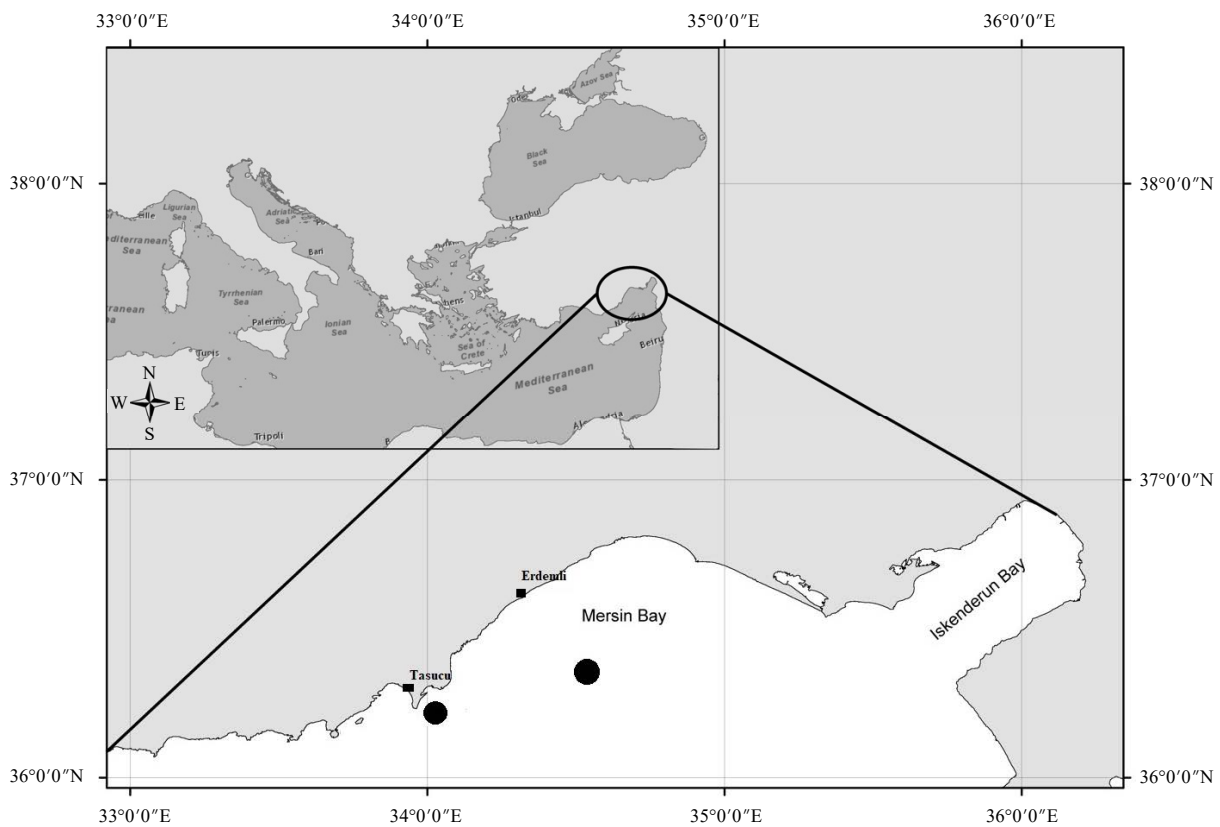


Fig. 1: Incidental captured localities (●) for *A. vulpinus* from Mersin Bay

Source: Ayas *et al.*²⁹



Fig. 2: Young female specimen of *A. vulpinus* from Erdemli coast (N.E. Mediterranean, Turkey)



Fig. 3: A pregnant female *A. vulpinus* from Taşucu coast (N.E. Mediterranean, Turkey)

34°03'204"E) (Fig. 3). This specimen was a pregnant female with a total length of 5.5 m, weighing 400 kg and also 4 newborn individuals were taken out of the abdomen and photographed (Fig. 4).

Morphological examination: Two fresh specimens were measured as total length (TL in cm) and weighed as total weight (TW in g) on a flat surface. All diagnostic characteristics and color patterns agree with the descriptions of Compagno^{11,12}.

RESULTS AND DISCUSSION

The main characteristics of *A. vulpinus* are the body usually relatively slender and very long upper caudal lobe (close to half-total length). *Alopias vulpinus* can be easily distinguished from *Alopias superciliosus* by its broadhead, but without deep grooves extending along each side of head and no horizontal groove and eyes, relatively small¹².

The total length and weight of two female thresher shark specimens caught were measured. These values are shown in



Fig. 4: Four newborn individuals taken from the abdomen of a pregnant female of *A. vulpinus*

Table 1: Recent data on some information of *A. vulpinus* in the Turkish Mediterranean waters

Date	Depth (m)	Locality	Caught method	Sex	Length (cm)	Weight (kg)	References
11 March, 2006	-	Karataş, Eastern Mediterranean	Trammel net	Male	500	320	Kabasakal <i>et al.</i> ⁶
29 April, 2014	33	Iskenderun Bay, Eastern Mediterranean	Purse seine	Male	395	180	Ergüden <i>et al.</i> ⁷
17 July, 2015	-	Antalya Bay, Western Mediterranean	Longline	Female	450	226	Gökoğlu <i>et al.</i> ⁸
09 March, 2019	38	Erdemli, North-Eastern Mediterranean	Longline	Female	250	180	This study
11 March, 2019	30	Silifke, North-Eastern Mediterranean	Trammel net	Female	550	400	This study

Table 1. Also, a few number of thresher shark, *A. vulpinus* captured in the Turkish Mediterranean waters between 2006 and 2019 were given in Table 1.

Alopias vulpinus is epipelagic, usually swims close to the surface, but was recorded at 350 m¹³. It is viviparous, with oophagy and a gestation period of nine months¹⁴⁻¹⁸. Ovoviviparous, embryos feed solely on the ova produced by the mother after the yolk sac is absorbed (oophagy), 2-4 or 6 young in a litter^{11,13}.

Alopias vulpinus is most abundant found at a depth in 1-366 m. However, young individuals often close inshore and in shallow bays¹⁹. The size at birth is 117-155 cm¹⁵ and the typical total length of the species is usually 400 cm²⁰. Females mature at about 549 cm and males at about 573 cm^{20,21}. They reach maturity at the age of 3-8 years. Maximum life span is 45-50 years¹³.

The thresher shark primarily feeds on pelagic schooling^{22,23} fish such as bluefish, juvenile tuna and mackerel, which they are known to follow into shallow waters, squid and cuttlefish. Crustaceans and occasionally, seabirds are also taken^{13,21}.

Sharks are considered as top predators and may have an essential role in the regulation of marine ecosystems at lower trophic levels²⁴. Thresher sharks use their long tails to stun prey²⁵. As a result, they are often caught by the tail on recreational and longline fishing gear. They have small mouth stomach the size of their prey and are no threat to humans.

Today many of the thresher sharks have become the indirect or direct targets of commercial and recreational fisheries in the Mediterranean. According to Cosandey-Godin and Morgan²⁶, all sharks are increasingly taken as bycatch of fisheries targeting other species of commercial value.

To date, there is inadequate information on incidental captures of thresher sharks in the Eastern Mediterranean region. This situation can be explained by the lack of a dedicated specific scientific monitoring in this area.

All the thresher shark species were reported as vulnerable A2bd+3bd+4bd for global assessment by The IUCN Red List Threatened Species Category and Criteria²⁷. Moreover, The thresher shark *A. vulpinus* has been assessed as a vulnerable species and placed on the International Union for Conservation of Nature (IUCN) Red List of the in the Mediterranean²⁸.

During the present study, a young thresher shark and pregnant female with 4 newborn individuals were first time reported from Mersin Bay²⁹. The Bay is the spawning and breeding area for many fish species due to the broad continental shelf. Also, in this area, the presence of mature female individuals in the same region may indicate that they came for breeding purposes. However, the present data is not sufficient to make explicit judgments on the reproductive biology and breeding season of thresher sharks in the Eastern Mediterranean. Therefore, continuous studies are needed in this region for further investigation and monitoring of these species.

CONCLUSION

Although *A. vulpinus* is reported to be a high priority species for conservation action in the Mediterranean Sea currently, there are no regulatory measures sufficient regarding the fishing of the species implemented in the Turkey fisheries. The study suggested that this species may be considered "Endangered" in the Turkish Mediterranean waters shortly and immediately identified as a high priority for conservation of this species in the region. This research will make a significant contribution to many researchers working in this field in the future.

SIGNIFICANCE STATEMENT

This study indicates also critical to identify and to assess the status of the main nursery for most of the shark species and discover the possible nursery and breeding areas of thresher shark specimens that can be beneficial for shark studies in this field. This study will help the researchers to determine the new distribution areas of some shark species. Thus this information contains highly useful data for researchers and fishery management for future studies and conservation actions on this species.

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