

**SHORT COMMUNICATION**

**Photographic documentation of tope shark,  
*Galeorhinus galeus* (Linnaeus, 1758), in the Istanbul  
Strait: Reoccurrence of a rare shark in troubled waters**

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**Abstract**

On 6 June 2021, a specimen of *Galeorhinus galeus* (Linnaeus, 1758), was sighted off Balat coast (Golden Horn, Istanbul Strait, Turkey). In the current IUCN Red List assessment of *G. galeus*, it is considered as a “Critically Endangered” species in the Mediterranean Sea. In accordance with the current fisheries law numbered 1380, *G. galeus* is under full protection in Turkish seas. Although the present encounter of tope shark in the Golden Horn confirmed the current existence of *G. galeus* in the Marmara Sea, one of the main threats to the sharks' survival in this marine region is habitat degradation. A non-invasive and non-destructive method for data collection, legitimating the reasonable use of alternative source of data, like video footage recorded by citizen scientists, is urgently needed for the research of endangered shark species such as *G. galeus*.

**Keywords:** Tope shark, *Galeorhinus*, Triakidae, Marmara, Istanbul, conservation

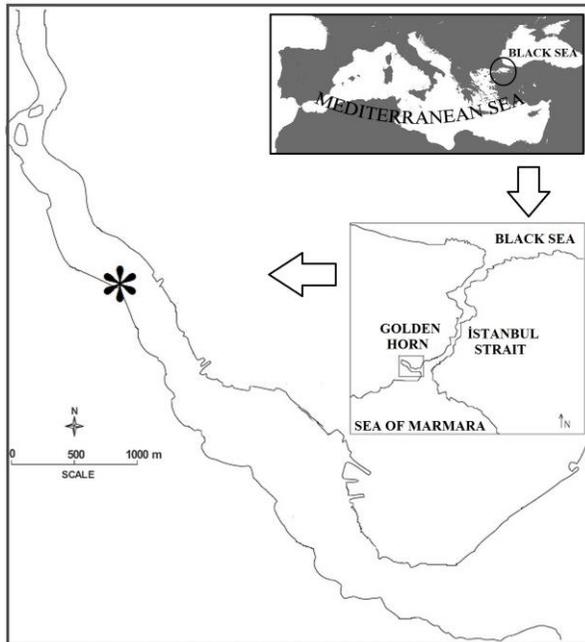
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Tope shark, *Galeorhinus galeus* (Linnaeus, 1758), is a coastal-pelagic shark of temperate continental and insular waters, at depths of 2-471 m (Ebert and Stehmann 2013). It is a wide-ranging triakid shark in the eastern Atlantic from Iceland to Senegal and the Mediterranean (Ebert and Stehmann 2013). According to Serena (2005), it is one of the rare species of Mediterranean sharks; moreover, Serena *et al.* (2020) stated that *G. galeus* has now become extremely rare in all subregions of the Mediterranean Sea.

Although the occurrence of tope shark in Turkish waters was confirmed recently (Kabasakal 2020), the presence of *G. galeus* in the Marmara Sea and further north in the Istanbul Strait has always been a point of debate. The presence of *G. galeus*

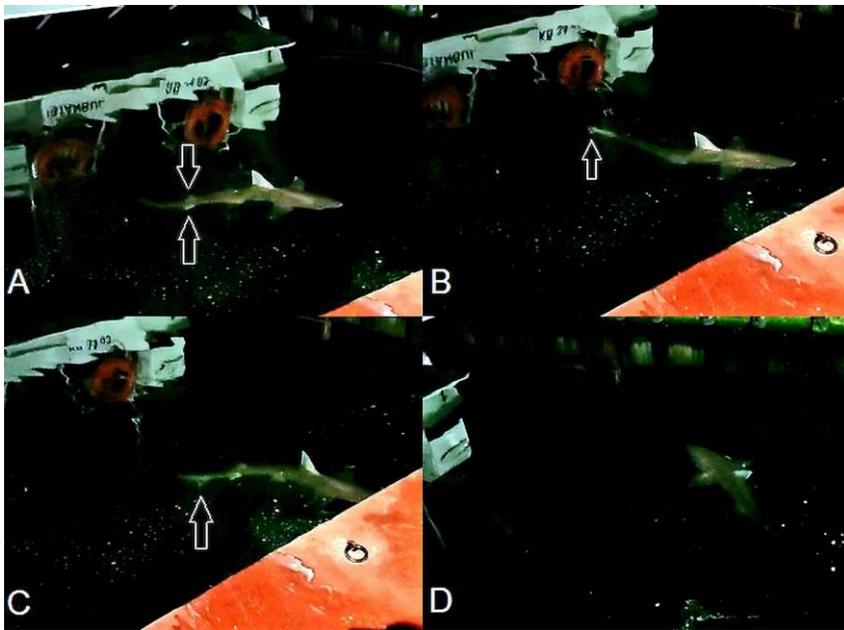
in the waters off Istanbul was cited in two historical ichthyological inventories (Ninni 1923; Deveciyan 1926); however, these geographical records can only be considered as a strong assumption, since these studies examined fish species throughout the Ottoman Empire. Moreover, *G. galeus* has not been included in the ichthyological inventories of the Marmara Sea and Istanbul Strait, which were published in the following years (Erazi 1942; Kocataş *et al.* 1993; Mater and Meriç 1996). Despite this remarkable chronological gap in the historical inventories, in a relatively recent study, Keskin and Eryılmaz (2010) included *G. galeus* in the ichthyological inventory of the Marmara Sea, as a rare species. The authors, however, did not give information on the capture locality of the examined specimen(s) of tope shark in the study region, or any specific reference indicating previous records of the species from the Marmara Sea, which makes the geographical record of the species in the Marmara Sea rather doubtful. Finally, in a quite recent review on the shark biodiversity of the Marmara Sea, Kabasakal and Karhan (2015) concluded that *G. galeus* appears to be absent in the region.



**Figure 1.** Approximate locality of sighting (\*) of the present tope shark, *Galeorhinus galeus*, in Golden Horn, Istanbul

On 6 June 2021, a specimen of *G. galeus*, of which the total length (TL) estimated to be  $\geq 150$  cm, was encountered near the marine police station in Balat, Golden Horn, Istanbul Strait (Figure 1). A short video recorded by a marine police officer with a smartphone was sent to the first author for species identification. The following features were observed in the shark seen in the video footage (Figure

2): a slender body with a long snout and oval eyes (Figure 2a), two dorsal fins; 1<sup>st</sup> dorsal fin is broadly triangular and its origin is over free rear tip of pectoral (Figure 2a,b); 2<sup>nd</sup> dorsal fin is much smaller than the 1<sup>st</sup> one, and anal fin is approximately equal in size to 2<sup>nd</sup> dorsal fin (Figure 2a), caudal fin with a subterminal notch (Figure 2b), the lower lobe is larger than the upper one (Figure 2c), dorsal surface is grayish brown, and narrow whitish bands adjacent to posterior margin are seen (Figure 2a). The observed features are well coincided with the descriptions presented by Branstetter (1984), Lythgoe and Lythgoe (1992), Lipej *et al.* (2004), Serena (2005) and Ebert and Stehmann (2013). The present shark specimen, thus, was identified as *Galeorhinus galeus* (Linnaeus, 1758) (Figure 3).

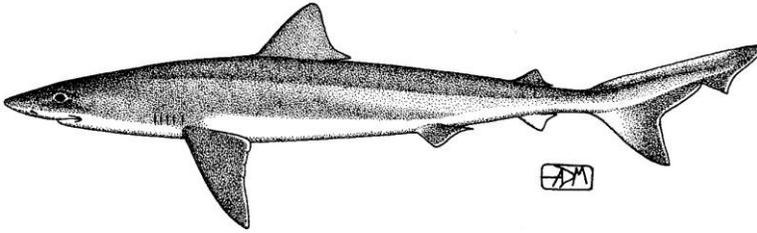


**Figure 2.** Captured image of the sighted specimen of *Galeorhinus galeus*.

(A) Lateral view of the specimen depicting 2<sup>nd</sup> dorsal and anal fins; (B) Lateral view of the specimen depicting upper caudal lobe and subterminal notch; (C) Lower caudal lobe; and (D) Dorsal view of head and snout.

Despite the urgent need for the intensification of the data collection of sharks from Turkish waters (Öztürk 2018), the dramatic decline of shark populations shown in the Mediterranean (Ferretti *et al.* 2008; Dulvy *et al.* 2016), calls for alternative and non-destructive ways to collect data on species distributions. A non-invasive and non-destructive method for data collection, as emphasized by Kabasakal and Bilecenoğlu (2020), legitimating the reasonable use of alternative source of data, like video footage recorded by citizens, is urgently needed for the research of endangered shark species such as *G. galeus*. Such an approach in extracting

scientific information from the mentioned citizen-provided sources, requires a certain standardization of best practice.



**Figure 3.** Lateral view of the tope shark, *Galeorhinus galeus* (Linnaeus, 1758)  
(Illustration: Courtesy of Alessandro De Maddalena)

Despite the current weaknesses of such a methodological approach, use of visual evidences for the documentation of rare sharks' occurrences in Turkish waters is also supported by previous researches. For example, following an image recorded at a depth of 1214 m off Tekirdağ on October 2002, it was determined that the bramble shark, *Echinorhinus brucus* (Bonnaterre, 1788), which was supposed to be extinct, still occurred in the Marmara Sea (Kabasakal *et al.* 2005). Again, the presence of the spinner shark, *Carcharhinus brevipinna* (Müller and Henle, 1839), in Turkish waters was reported based on an underwater photograph taken by amateur divers in Boncuk Bay (South Aegean Sea, Turkey), in August 1998 (Filiz and Kabasakal 2015), and the contemporary existence of the species was confirmed in the following years (Kabasakal and Bilecenoğlu 2020). Recently, non-fatal attacks on commercial divers by several sandbar sharks, *Carcharhinus plumbeus* (Nardo, 1827), which were provoked due to the presence of dead fish in the vicinity of an aquaculture cage in the eastern Mediterranean, were also documented by underwater footage and species identification was also based on photographic evidences (Ergüden *et al.* 2020). Thus, proper images, both still and movie, recorded by citizen scientists, can obviously allow an increased research effort at low cost in research of sharks, in a non-destructive way, as in the case of present study.

In the current Red List assessment, *Galeorhinus galeus* is listed as a “Critically Endangered” species in the Mediterranean Sea (Walker *et al.* 2020). In accordance with the current fisheries law numbered 1380, *G. galeus* is under full protection in Turkish seas (Öztürk 2018; Kabasakal 2020). In an extensive research on the reproductive biology of *G. galeus* in the southern Mediterranean waters, Capapé *et al.* (2005) reported that the tope shark (aka. school shark) is commonly captured off the Maghreb shore, based on 517 specimens collected for more than 20 years. Since the sampling period of this remarkable study was between 1970 and 2000, the reported commonness of *G. galeus* in the southern Mediterranean (Capapé *et al.* 2005) can only be supposed a story of a long-

forgotten abundance. This situation is supported by the annual number of captured specimens, about 17 tope sharks per year, based on Capapé *et al.* (2005) during the mentioned period, which is further underlining the current alarming decline of the species in the Mediterranean Sea (Serena *et al.* 2020).

The alarming scarcity of tope shark in Turkish waters was also emphasized in a recent review on large elasmobranchs of Turkish waters, in which only two specimens were recorded (Kabasakal *et al.* 2017). Although the present encounter of tope shark in the Golden Horn confirmed the current existence of *G. galeus* in the Marmara Sea, one of the main threats to the sharks' survival is habitat degradation (Camhi *et al.* 1998). Considering the increasingly deteriorating habitats in both the Marmara Sea and Istanbul Strait, it is not possible to be optimistic about the survival of this shark recorded in the Golden Horn, which can be extended to all shark species in the Marmara Sea.

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## ***Galeorhinus galeus* (Linnaeus, 1758) türü köpek balığının İstanbul Boğazı'nda bulunurluğu üzerine bir not**

### **Öz**

6 Haziran 2021'de Balat kıyısında (Haliç, İstanbul Boğazı) *Galeorhinus galeus* (Linnaeus, 1758) türü köpek balığına yüzeyde gezinirken rastlandı. *G. galeus*'un mevcut Kırmızı Liste değerlendirmesinde, Akdeniz'de "Kritik Tehlike Altında" bir tür olarak kabul edilmektedir. 1380 sayılı yürürlükteki balıkçılık kanununa göre *G. galeus* Türkiye Denizleri'nde yüzde 100 koruma altındadır. Haliç'teki karşılaşma *G. galeus*'un Marmara Denizi'ndeki mevcut varlığını doğrulamasına rağmen, köpek balıklarının hayatta kalmasına yönelik ana tehditlerden biri habitat bozulmasıdır. Müdahaleci olmayan ve can kaybına yol açmayan bir veri toplama yöntemine duyulan acil ihtiyaç, köpek balığı araştırmasında vatandaşlar tarafından kaydedilen video görüntüleri gibi alternatif veri kaynaklarının makul kullanımını meşrulaştırmaktadır.

**Anahtar kelimeler:** Camgöz, *Galeorhinus*, Triakidae, Marmara, İstanbul, koruma

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