

SHORT COMMUNICATION

First record of leatherback turtle *Dermochelys coriacea* in the İstanbul Strait, Türkiye

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Abstract

This short communication reports an observation of a leatherback turtle *Dermochelys coriacea* in the İstanbul Strait (Bosphorus), Marmara Sea, on 9 July 2024. Leatherback turtles are occasionally reported in the Aegean and Mediterranean Seas of Türkiye. This is the northernmost record of the leatherback turtle in the Mediterranean Basin. As the importance of citizen science becomes more apparent and public awareness grows, access to observational information such as this will increase through digital technologies.

Keywords: Sea turtle, distribution, Marmara Sea, Bosphorus

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The leatherback turtle *Dermochelys coriacea*, the largest living turtle in the world, can be found in open oceans its entire life with the exception of the reproductive season (Bolten 2003). In addition, leatherback turtles regularly inhabit the Mediterranean throughout the year, with no distinct patterns of seasonal migration or emigration (Casale *et al.* 2003). Although the global status is VU-Vulnerable in IUCN Red List, actually seven subpopulations have been identified in the world seas (Wallace *et al.* 2013). Even two of these are DD- Data Deficient, four of them are CR-Critically Endangered and the Northwest Atlantic subpopulation including the Mediterranean is EN-Endangered (The Northwest Atlantic Leatherback Working Group 2019). Threats are described briefly as: bycatch, direct take, coastal development, pollution and pathogens, climate change (Wallace *et al.* 2013)

It is one of the three sea turtle species living in the seas of Türkiye together with the loggerhead turtle *Caretta caretta* and the green turtle *Chelonia mydas* (Türkozan and Kaska 2010). However, unlike other species, this species does not nest on the coasts of Türkiye. The leatherback turtle is considered a visitor species from the Atlantic Ocean, and limited strandings or sightings (n=12) of the species have been recorded in Türkiye since 1985 (Baran *et al.* 1998; Sönmez *et al.* 2008; Oruç 2001; Taşkavak *et al.* 2015; Candan and Canbolat 2018; Ergene and Uçar 2017; ACCOBAMS 2021). Two stranded leatherback turtles in Türkiye was originated to Trinidad, Caribbean Sea (Sönmez *et al.* 2008) and French Guiana (Roden *et al.* 2017) according to tag and genetic studies, respectively. The northernmost point where the species is recorded in Turkish waters is in Ören, Edremit Gulf, Aegean Sea (Baran *et al.* 1998), near Kavala and Alexandroupolis in Greek waters (Margaritoulis 1986).

Although there have been records of loggerhead and green turtles in the Turkish Straits System (TSS-Marmara Sea, İstanbul and Çanakkale Straits) and even in the Black Sea (Öztürk *et al.* 2011; Tonay and Oruç 2016; Özdilek *et al.* 2018; Zinenko *et al.* 2021), the leatherback turtle has not been recorded in the Turkish Straits System until now. The aim of this study is to report the first observation of a leatherback turtle in the İstanbul Strait, Marmara Sea.

According to the report received by the captain passing through the İstanbul Strait (Bosphorus), on 9 July 2024, an adult leatherback turtle was seen breathing, head facing south, on the surface off Paşalimanı (Figures 1 and 2). The footage (0'08'') and slowed-down version are available at; <https://youtu.be/aHOQOtfnlXY>

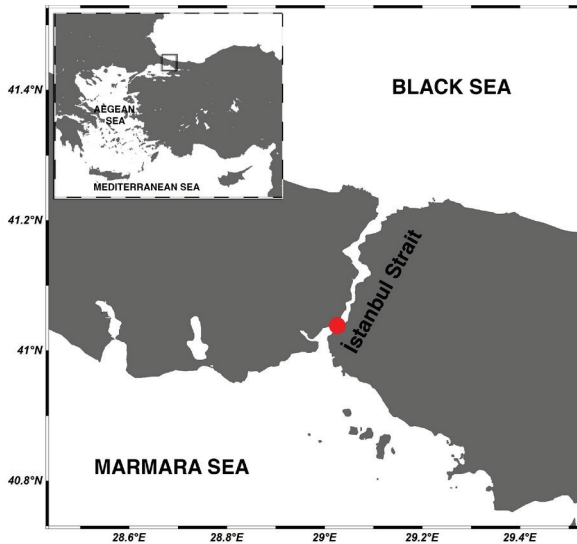


Figure 1. Location of the leatherback turtle sighting in the İstanbul Strait (red dot)

After the completion of the Neo-Euxine period, i.e. approximately 7000-8000 years ago, the last connection of the Black Sea with the Mediterranean Sea was realised through the TSS, and the salinization process started. This process, called Mediterraneanisation, is still continuing today, and Mediterranean species are moving towards the Black Sea (Zaitsev and Mamaev 1997; Oğuz and Öztürk 2011). Sea turtles respond to climate change with adaptive responses (Santidrián Tomillo and Spotila 2020). Some of these responses include phenological shifts, shifts in nesting, foraging, and wintering grounds, For example, sporadic nests and extensions of the nesting range of green and loggerhead turtles have already been reported from the Mediterranean (Başkale *et al.* 2018; Hochscheid *et al.* 2022; Cardona *et al.* 2023) including the climate change prediction models for sea turtle responses (Arslan *et al.* 2023; Mancino *et al.* 2023).

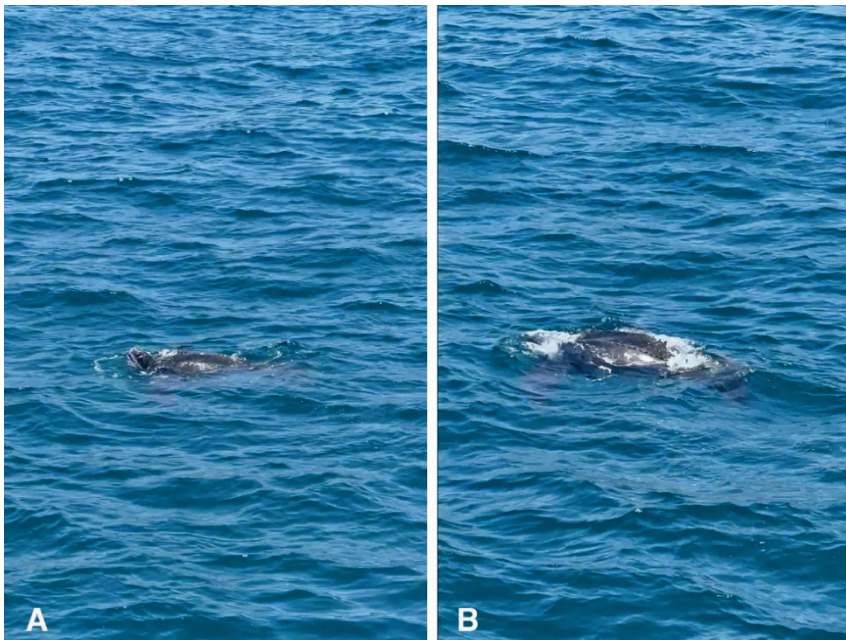


Figure 2. The leatherhead turtle observed in the İstanbul Strait, A) head B) dorsal view

Sea surface temperature (SST) is one of the important variables affecting the distribution of sea turtles and strongly influences sand temperature on beaches (Hays *et al.* 2021). Interannual and interdecadal variability of the SST using linear trend analysis provided some insights. Compared to the North Aegean Sea ($0.050^{\circ}\text{C yr}^{-1}$) and the western Black Sea ($0.060^{\circ}\text{C yr}^{-1}$), the Marmara Sea shows the largest positive SST annual mean trend ($0.064^{\circ}\text{C yr}^{-1}$) between 1980 and 2021, meaning that all regions in the basin are experiencing a stable warming trend (Tokat and Beşiktepe 2023). In conclusion, the northernmost record of the leatherback turtle in the Mediterranean Basin, can be an adaptive response to changing climates. Similarly, due to climate change and anthropogenic causes,

jellyfish populations are increasing dramatically, spreading to new areas, and blooming (Purcell *et al.* 2007; Boero 2013). Naturally, the TSS and Black Sea are also affected (İşinibilir *et al.* 2010, 2015, 2022; Boero 2013; Öztürk and Sümen 2020). Since its main food is jellyfish, perhaps the search for food may brought the leatherback turtle to the İstanbul Strait. This is the first observation of a leatherback turtle, in the TSS, and the occasional occurrence of this species within the Aegean and the Mediterranean Sea requires further investigation.

Nevertheless, it is surprising to see this species in the İstanbul Strait, one of the narrowest straits and one of the busiest waterways in the world. In similar cases (this study and Göcek, Fethiye, Muğla 21.08.2021 (Anadolu Agency 2021), the importance of citizen science becomes more apparent, and with the increase in public awareness, access to observational information via digital technologies will increase.

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Author contributions: O.T. and A.M.T followed the event and planned the study. They wrote the initial manuscript together.

Deri sırtlı kaplumbağanın *Dermochelys coriacea* İstanbul Boğazı'ndaki ilk kaydı

Öz

Bu kısa bildirim, 09 Temmuz 2024 tarihinde İstanbul Boğazı, Marmara Denizi'nde deri sırtlı kaplumbağa *Dermochelys coriacea* gözlemini bildirmektedir. Bu, deri sırtlı kaplumbağanın Akdeniz Havzası'ndaki en kuzey kayıdır. Vatandaş biliminin önemi daha belirgin hale geldikçe ve kamu bilinci arttıkça, dijital teknolojiler aracılığıyla bunun gibi gözlemsel bilgilere erişim artacaktır.

Anahtar kelimeler: Deniz kaplumbağası, dağılım, Marmara Denizi, Boğaziçi

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