

MARINE RECORD

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First documented record of the leatherback turtle (*Dermochelys coriacea*) from Djibouti waters



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Abstract

A subadult leatherback turtle was documented in the Gulf of Goubet (Djibouti) during a research expedition. This sighting confirms for the first time previous anecdotal observations of the occurrence of the leatherback turtle, *Dermochelys coriacea* (Vandelli, 1761), in Djibouti waters. Coupled with observations from fishers, this finding underlines the urgent need to carry out research programs to evaluate the species habitat use within Djibouti waters, and to review the species distribution in the Gulf of Aden. Although marine turtles are protected in Djibouti, illegal harvest and entanglement in fishing gear pose a threat to their survival, and conservation measures should be implemented.

Keywords: Marine turtle, Leatherback turtle, Djibouti, Upwelling

The leatherback turtle, *Dermochelys coriacea* (Vandelli, 1761), is the most pelagic and widely distributed marine turtle species (Marquez 1990), and is listed as ‘Vulnerable’ on the IUCN Red List of Threatened Species with a decreasing population (Wallace et al. 2013). Distribution of both juveniles and adults likely reflects the spatiotemporal abundance of zooplanktonic prey, and leatherback turtles have been observed aggregating in areas where jellyfish blooms occur (James et al. 2005). *D. coriacea* is globally distributed from tropical to subpolar waters, but the Gulf of Aden is not contained within the known geographic range of the Indian Ocean subpopulation (Wallace et al. 2013). Although suitable prey is seasonally abundant, the species has only rarely been documented from the Gulf of Aden, primarily in Yemeni waters (Hamann et al. 2006; Pilcher and Saad 2006). Anecdotal reports from fishers have reported sightings of leatherback turtles in Djibouti (Hamann et al. 2006), however none of these were accompanied by reliable documentation.

Within the Gulf of Aden, Djibouti is an important hot-spot for marine biodiversity due to the confluence of warm waters from the Red Sea and cold water from the Somali and Arabian regions that creates a unique marine ecosystem. The area is home to several endangered and poorly known species, such as the whale shark, *Rhincodon typus* (Rowat et al. 2007; Boldrocchi et al. 2020), and the Indian Ocean humpback dolphin, *Sousa plumbea* (Braulik et al. 2017). The Djibouti marine ecosystem also hosts several threatened marine turtle species, including the green, *Chelonia mydas*; hawksbill, *Eretmochelys imbricata*; and loggerhead *Caretta caretta* (PERSGA 2004), although no research currently takes place on any these species. Given the lack of knowledge on marine turtle biodiversity in Djibouti, and the wider Gulf of Aden, this note provides additional information regarding the distribution of the leatherback turtle in a poorly studied region of the world.

During a research expedition, on 02 December 2019, a leatherback specimen was documented for the first time in the Djibouti waters of the Gulf of Goubet (the far western region of the Gulf of Aden) (Fig. 1a). The turtle was spotted on the surface near the ‘La Faille’ dive site

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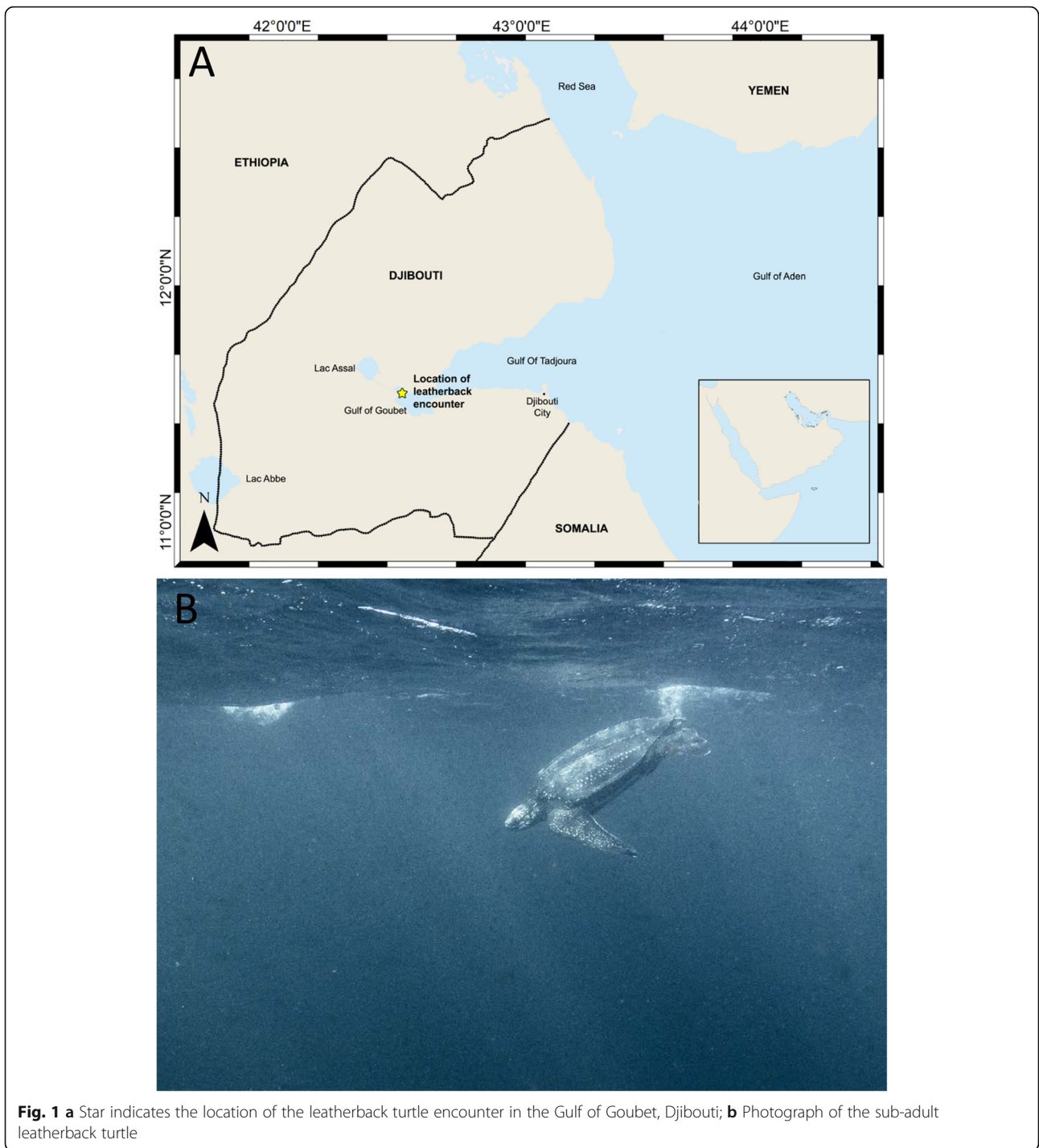


Fig. 1 a Star indicates the location of the leatherback turtle encounter in the Gulf of Goubet, Djibouti; **b** Photograph of the sub-adult leatherback turtle

(11°34'45.1"N 42°31'25.2"E), and at < 1 m estimated curved carapace length it was judged to be a sub-adult (Stewart et al. 2007) (Fig. 1b). This sighting confirms at minimum the occasional presence of this species in Djibouti.

Globally, satellite telemetry suggests that leatherback movements are directed to areas that show seasonally persistent densities of prey (Ferraroli et al. 2004; Hays

et al. 2004; Witt et al. 2007). In Djibouti, the southwest monsoon induces eastward movement of surface water and enhances upwelling of nutrient rich waters in the Gulf Goubet (Omar et al. 2016), with a consequent increase of the zooplankton population in October–December (Boldrocchi et al. 2020). The leatherback sighting described here occurred during the upwelling season, when the Djibouti marine ecosystem

experiences a peak in zooplankton biomass (Boldrocchi et al. 2020). The southwest monsoon upwelling is notably enhanced within the Gulf of Goubet, which not only retains more nutrients than other bays but also blooms of comb jellies, consistent with the soft-body prey preferred by *D. coriacea* (Boldrocchi et al. 2020). This increase in prey availability may represent an important driver for the leatherback presence in the neritic waters of Djibouti during this time of the year.

At present, information remains too limited to determine whether Djibouti is a permanent foraging site or simply a transit area for leatherback turtles. However, our observation, with reports from fishers in Djibouti, Yemen (Saad 2002; Pilcher and Saad 2006) and Somalia (Van de Elst 2006), suggest that the Gulf of Aden may be more important habitat for *D. coriacea* than previously recognized. Although national laws protect marine turtles in Djibouti, illegal harvest for meat and ornamental carapace collection is still widespread (Hamann et al. 2006), and other anthropogenic threats, such as entanglement in fishing gear, cause additional mortality (PERSGA 2004). Considering the minimal regulatory oversight in this region, and the threats that undermine marine turtle conservation, population monitoring programs should be carried out.

Authors' contributions

GB, JVS and DPR made the observation described here, interpreted the data and generated the manuscript. DPR took the photograph in Fig. 1b. All authors approved the final manuscript.

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