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Additional records of Nesting Attempts of Leatherback Sea Turtle in the Northern Syrian Beaches (Eastern Mediterranean)

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ABSTRACT

Leatherback sea turtles were monitored along the northern coast of Syria during the nesting seasons from June 2022 to October 2024. Field surveys revealed the presence of the leatherback sea turtle (*Dermochelys coriacea*) in the area. Three incident cases of nesting attempts were also documented for the first time in the Syrian beach and in the Mediterranean basin as a whole. Climate changes and/or the instinctive behavior that necessitates rapid reproduction may be behind. Coastal and Marine Protected Areas are required to support the sea turtle species population in the region.

Key words: Leatherback sea turtle, Nesting behavior, Syrian coast, Turtle distribution, Sandy beach

1. INTRODUCTION

Three species of sea turtles are found in the Mediterranean Sea and on Syrian beaches: loggerhead sea turtles (*Caretta caretta*), green sea turtle (*Chelonia mydas*) and, the leatherback sea turtle (*Dermochelys coriacea*) (Rees *et al*., 2004; Casale *et al*., 2018; Jony, 2022). Only loggerhead turtles and green turtles are known to nest on Syrian beaches and in other parts of the Mediterranean (Ibrahim and Hussein., 2024; Rees *et al*., 2010, 2008; Margaritoulis *et al*., 2003; Kasparek *et al*., 2001).

Leatherback turtle is distinguished from other sea turtles by its very large body,the absence of horny scutes, and presence of a leathery skin with seven longitudinal ridges on the dorsal side. It is the largest living turtle species in the world (McClain *et al*., 2015), with weights reaching 916kg (Eckert and Luginbuhl, 1988). The leatherback turtle is classified by the International Union for Conservation of Nature as a critically endangered species (IUCN, 2023). Jellyfish arethe main food source for leatherback turtles (Fossette *et al*., 2011), which in turn are preyed upon by sharks (Long, 1996).

Leatherback sea turtles comprise seven groups distributed across the western and eastern Pacific Ocean, another group is found in the north-eastern and south-eastern Indian Ocean, and another group is found in the south-eastern, south-western and north-western Atlantic Ocean, with approximately 99% of the population distributed across the north-western Atlantic Ocean, including the Mediterranean Sea (IUCN, 2013). The main nesting sites in the Atlantic Ocean have been documented in French

Guiana and Suriname in South America, Trinidad in the southern Caribbean, and Gabon and Congo in Africa. There are also important nesting sites in several other locations in the Caribbean and Africa (Girondot and Fretey ,1996; Spotila *et al*., 1996; Eckert, 2006; Fretey, 1980; Fretey, 2001).

Leatherback turtles are found in the Mediterranean Sea, entering to feed (Casale *et al*., 2003), but not to nest (Casale *et al*., 2018; Caminas, 1998). This study documents unprecedented nesting attempts of this turtle species, recorded for the first time on the Syrian sandy beaches of the eastern Mediterranean.

2. MATERIALS AND METHODS

Field surveys were conducted intensively during sea turtle nesting seasons from June 2022 to October 2024. Observations focused on two main sites covering the entire northern coast of Latakia Governorate: Wadi Qandil beach (35°43'06"N 35°49'53"E) and Al-Basit beach (35°51'02"N 35°50'35"E), 25 km and 60 km north of Latakia city, respectively (Figure 1). The two beaches are sandy with some rocky patches and are well known as tourist hotspots with many tourist facilities, for each turtle, photos, videos and the required data were recorded .

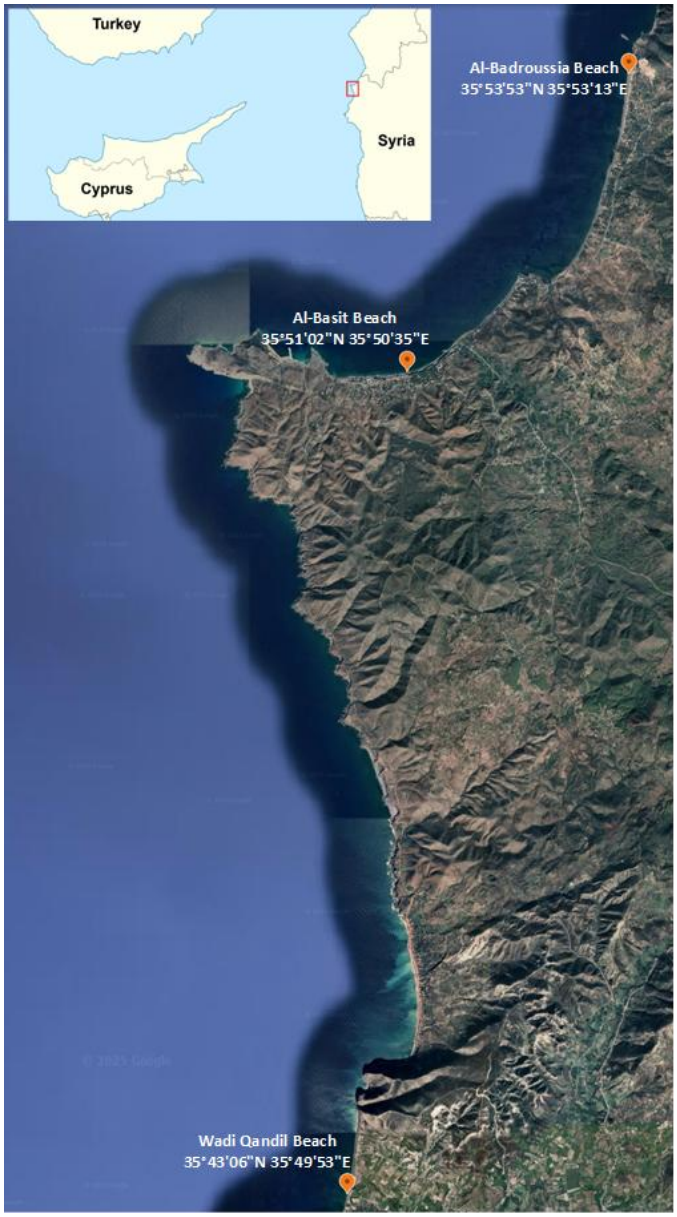

Figure 1. The study areas

3. RESULT AND DISCUSSION

During regular beach patrols on the northern coast of Syria during the nesting season, three separate incidences of leatherback sea turtle *Dermochelys coriacea* were recorded. They are presented below in order, according to the encounter date, as follows:

1) On June 22, 2024, at 10 p.m., we observed a leatherback sea turtle on the sandy beach to the north of Al-Basit area (at Al-Badroussia Beach, 35.898085° N 35.887172°E). It was excavating a ditch in the sand. The turtle was identified as a female: it did not have a long muscular tail and had a pink spot on its head (Figure 2). It was an adult: the curved carpace length was 160 cm, as leatherback turtles with a carapace length of less than 145cm are considered juveniles (Eckert, 2002). As tourists approached, it began to make loud noises and then left the area, heading toward the sea without completing the excavation or laying eggs. The movement of tourists and the surrounding lights may have prevented it from completing the process.

Figure 2. Overall view showing that the turtle is female due to its short tail.

The wounds on the neck and shoulder, along with the injuries on the right side of the lower jaw (Figure 3), indicate that the turtle had previously been entangled in fishing nets but managed to escape for some reasons.

(a) (b)

Figure 3. Side view showing the injury on the right side of the lower jaw (a), side view showing that the left side of the jaw is intact (b).

2) The second encounter was on 26 June 2024. Turtle tracks were observed on the beach near a river estuary in the Al-Badroussia area. The nest was about 30m from the sea, its sides were 176cm apart, and the nest cavity was 178cm in diameter and 65cm deep. sand was dug in search of eggs, but none were found, possibly for the same reasons mentioned above, that the turtle did not feel secure enough to lay its eggs (Figure 4).

(a) (b)

Figure 4. The track left by the leatherback sea turtle (a) and the nest made by the turtle (b).

3) The third encounter occurred on 3 July 2024, just after midnight, on Wadi Qandil beach (35.729416°N 35.833480°E). As the turtle emerged from the sea, tourists immediately gathered around it. The turtle remained in place for half an hour before returning to the sea (Figure 5) ,without being able to complete the process of nesting and laying eggs. Perhaps the presence of people around and the artificial lights caused a state of fear that prevented the turtle from laying eggs.

Figure 5. Leatherback sea turtle returning to the sea.

Analysis of the documented photos and videos revealed that the turtle individual, which appeared in Al- Badroussia area, is the same one that was previously noticed on sand in Wadi Qandil area on 3/7/20249 (Jony, 2025), as it has the same size and the same marks on its body (a femal individual, wounds on the shoulder and neck, injuries on the right side of the lower jaw and undamaged left side) (Figure 6). This indicates that the same individual female turtle came onto the sandy beach at two different locations, north of Al-Basit/Al-Badroussia and Wadi Qandil which are 22km apart, and with an interval of 10 days between the two occurrences. This

indicates that this female turtle came out to nest in the area, as the sea turtles may lay several clutches of eggs in a single nesting season at intervals of 10 - 14 days (Hart, 2010). Leatherback turtles are capable of laying 6 or 7 clutches per season (Boulon *et al.*, 1996; Girondot & Fretey 1996; Miller, 1997). In this study indicates that this turtle came around to nest twice during the study period.

(a) (b)

Figure 6. Side view showing injury to the right side of the lower jaw (a), overall view showing that the turtle is female due to the absence of a long muscular tail (b).

Previous studies on leatherback turtles in Syria over the last decades (Ibrahim and Hussein, 2024; Jony and Rees, 2022; Rees *et al.*, 2004), any nesting attempt of the species has never been reported. To data, no nesting sites of this species have ever been reported in the Mediterranean so far, which confirms that the current paper reports for the first time three cases of nesting attempts on the Syrian beaches and along the entire Mediterranean basin.

These unprecedented nesting activities of leatherback turtle on the Syrian beach may be a result of the rise in Mediterranean seawater temperatures caused by climate change (Pastor *et al*., 2020; Ibrahim *et al*., 2019). Additionally, the injured sea turtle may have exhibited instinctive behavior necessitating rapid reproduction to prevent species extinction (Cassill and Watkins, 2022; Jessop et al., 2004).

4. CONCLUSION

This paper reports nesting attempts of the leatherback sea turtle for the first time in Syria and in the Mediterranean as a whole. This may be attributed to the warmer water favored by climate change and/or the instinctive behavior which necessitates rapid reproduction, in reaction to the injuries, to prevent species extinction. A comprehensive survey along Syrian beaches represents a constructive effort to enhance our understanding of leatherback sea turtle nesting behavior. Marine and coastal protected areas are thus necessary to support the sea turtle species population in the region.

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Author contributions

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Conflict of Interest

The authors declare that they have no conflicts of interest, competing financial interest or personal relationship that could have influenced the work reported in this paper.

Informed consent

Not applicable.

Ethical approval & declaration

In this article, the animal regulations are followed as per the ethical committee guidelines of Fisheries Resources Department, Higher Institute of Marine Research, Lattakia University, Syria; the authors observed the Nesting Attempts of Leatherback Sea Turtle in the Northern Syrian Beaches (eastern Mediterranean). The Animal ethical guidelines are followed in the study for species observation, identification & experimentation.

Data and materials availability

All data associated with this study will be available based on the reasonable request to corresponding author.

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