

Original Article

Green turtle (*Chelonia mydas*) nesting area and hatchlings released at Daran Beach, Jiwani District, Gwadar, Balochistan with some recommendations for its conservation

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Abstract: This study aimed to investigate the nesting area of green turtle, *Chelonia mydas*, and hatchlings released in Daraan Beach, Jiwani, Pakistan, with providing recommendations for their conservation. Survey trips were conducted along Daran Beach, Jiwani, for the current study from September 2020 to August 2021. We examined the nests, nesting turtles, hatchlings, and turtle tracks during this period. In addition, interviews were conducted with representatives of the local community, fishing industry, and wildlife service to obtain further information. On Daraan Beach, the three green turtle nesting locations (Rindani Taak, Dedalah Taak and Shaheed Taak) were recorded. The results showed that September had the fewest hatchlings and January had the most hatchlings, whereas, in the months of May, June, July, and August, there was no hatchling record. The results also revealed increasing hatchlings during our study during 2020-2021 due to the Wildlife department's efforts to protect and conserve green turtles at Daran Beach. The green turtle population in Jiwani is in danger due to human activities such as climate change, global warming, sea level rise, pollution, and poaching.

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Introduction

Pakistan enjoys a strategic location in South Asia, close to the Arabian Sea, Iran, Afghanistan, China, and India, with variable temperatures due to the arid and semi-arid environment (Khan, 1999). It has a 1050 km long coastline, starting from Sir Creek and ending at Jiwani, Balochistan. Balochistan has an 800 km coastline comprising two districts viz. Lasbela and Gwadar (Waqas et al., 2011). There is diverse marine life found along the coast of Pakistan, and to maintain the health of these coastal environments, marine fauna plays important role. The coastal waters of Pakistan have recorded five species of marine turtle. The green turtle, *Chelonia mydas*, is dominant among them and regularly breeds on Balochistan and Sindh's beaches. The

green turtle is a species at risk of extinction. July till December is often the most productive period for the green turtle's egg-laying. The eggs are placed in confined chambers that have been excavated out, with each clutch containing between 75 to 120 eggs (Sikandar et al., 2022).

Along the coast of Karachi, major nesting grounds of the green turtle can be found at Hawksbay and Sandspit coasts. Along the coast of Balochistan, the green turtle may be seen in Jiwani, Astola Island, and Ormara beaches. Approximately 600 km long Gowadar coast stretches from Ras Jiwani to Hingol River, comprised of Jiwani, Gowadar, Pasni and Ormara i.e. the Makran Coast (Begam et al., 2016). Sandy beaches of Jiwani are best owed with suitable nesting habitats for marine turtles. *Chelonia mydas*

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Figure 1. Map of the study area.

commonly, while *Lepidochelys olivacea* occasionally visit this coast for nesting (Waqas et al., 2011). Astola Island is also an important nesting site of *C. mydas*.

According to the IUCN Red List, sea turtles are considered endangered (IUCN, 2008). Under the Balochistan Wildlife Protection Act of 1975, it is explicitly stated that all species of sea turtles are legally protected. The Coastal Wetland of Jiwani is one of Pakistan's planned Ramsar sites (Waqas et al., 2011). This work aimed to study the nesting area of green turtles and hatchlings released in Daraan Beach, Jiwani, Pakistan, from September 2020 to August 2021, with providing recommendations for their conservation.

Materials and methods

The study area is the valuable beach of the Balochistan coastline, including the Daraan Village of Jiwani. (Fig. 1) The beach is the main nesting habitat for green turtles. The Daraan Beach is an eye-catching combination of golden sand and blue water located 15 km southeast of Jiwani town. Daraan village is the only residential area near the beach. It is considered one of the favorite beaches for marine turtle nests on the Balochistan coast. Green turtles move towards the beach to lay eggs, usually at night. Nests of green turtles on Daraan beach are protected by putting a wire cage in a circular pattern without disturbing the natural habitat and eggs of green turtles. Daraan beach is looked after by WWF-Pakistan, Balochistan Wildlife department, and local

communities.

The current study was done from September 2020 to August 2021 by excursions along Daraan Beach, Jiwani. We examined the nests, nesting turtles, hatchlings, and turtle tracks during this period. Furthermore, data were collected through interviews with local communities, fishermen, and members of the wildlife department. The nesting regions of green turtles were visited during the day.

Results

On Daraan Beach, the three green turtle nesting locations (Rindani Taak, Dedalah Taak and Shaheed Taak) were recorded based on observations from September 2020 to August 2021, and the monthly numbers of hatchlings released at each site are presented in Table 1. Regarding the number of released hatchlings, Rindani Taak in January had the highest record.

From September 2020 through August 2021, December had the greatest number of hatchlings released. At Dedalah Taak, no hatchlings were observed in the months of June, July, or August. Based on observations, September had the fewest hatchlings, and December and January had the most hatchlings. In May, June, July, and August, there was no hatchlings record.

Discussion

The current study concentrated to identify turtle habitat along Daraan Beach, Jiwani, outlining threats by suggesting recommendations for their

Table 1. Hatchlings released during the year 2020-2021 in three studied sites of Jiwani's Daran Beach.

Months	Hatchlings released during the year 2020 – 21		
	Rindani Taak	Dedalah Taak	Shaheed Taak
September 2020	102	289	213
October 2020	635	523	2313
November 2020	2720	1386	2983
December 2020	2266	1703	4008
January 2021	3210	1509	4274
February 2021	1243	1285	2176
March 2021	1047	779	2280
April 2021	520	918	930
May 2021	307	0	0
June 2021	0	0	0
July 2021	0	0	0
August 2021	0	0	0
Total	12050	8395	19177

conservation. Sea turtle survival, nesting, and conservation are all suitable in Pakistan's coastline. Five of the seven species of marine turtles are present along Pakistani coastlines. Balochistan's nearly 800 km of coastline, which is blessed with sandy beaches, makes it an ideal location for turtles to live. An important coastline beach of Balochistan is Jiwani's Daran Beach, where Rindani Taak, Dedalah Taak and Shaheed Taak were found nesting locations. There are few reports about the times and locations where marine turtles nest on the coast of Pakistan (Murray, 1884; Minton, 1966; Hirth, 1971; Ghalib and Zaidi, 1976; Frazier, 1980, Kabraji and Firdous, 1984; Firdous, 1985; Groombridge, 1985). Nesting takes place on the coast of Karachi from June to early November (Minton, 1966). Green turtles visit the beaches of West Pakistan all year long (Zwinnenberg, 1975). Ghalib and Zaidi (1976) provided information regarding marine turtles from the Karachi coast, but without species names. They recorded year-round breeding, with a surge between July and November. They observed a low nesting rate from November to March. According to Groombridge (1985), 5000 females nest at the Hawks Bay and Sands pit coasts yearly.

Based on the results, December had the greatest number of hatchlings released. In the nesting areas viz. Rindani Taak, Dedalah Taak and Shaheed Taak

on the Daran Beach, Hatchlings released were 12050, 8395, and 19177, respectively. According to Waqas et al. (2011), 5445, 7119 and 8784 hatchlings were released at Daran Beach in 2006, 2007, and 2008, respectively. However, this number has increased in our study during 2020-2021 due to the Wildlife department's efforts for the protection and conservation of green turtles at Daran Beach. However, the International Union for Conservation of Nature and Natural Resources considers sea turtles endangered due to their vulnerability to numerous anthropogenic and natural threats. Jiwani's endangered green turtles face challenges, including climate change, global warming, sea level rise, pollution, and poaching, etc.

Recommendations for Conservation: Pakistan started its marine turtle conservation program in 1979. However, currently, all marine turtles are protected and placed in Schedule-III (Protected Animals) of the Balochistan Wildlife (Protection, Preservation, Conservation and Management) Act-2014. Based on our field observations and collected data by interviews, the following recommendations are suggested for the conservation of endangered green turtles: (1) it requires public awareness and education regarding the role of green turtles in the ecosystem and biodiversity, and efforts have been made to spread the message through the media, (2)

National and International NGOs should be involved to increase awareness, education, and capacity building on marine turtle conservation among local communities and other stakeholders, (3) Research is required for protecting marine turtle populations and, particularly, for setting management objectives for preserving vital ecosystems, (4) training to fishermen is suggested for the safe release of accidentally trapped turtles, (5) protection of eggs and hatchlings from predators, (6) pollution is one of the main threats, so pollution should be controlled by the public and the authorities concerned, (7) petrol and diesel trade on Daraan Beach is a factor for its pollution. Therefore, illegal trades should be curbed for the protection of biodiversity, (8) Balochistan Wildlife Act 2014 should be implemented with its true essence, (9) regular patrolling and monitoring is a need of the time, and (10) manpower of Wildlife department should be enhanced for effective performance.

References

- Frazier J. (1980). Exploitation of marine turtles in the Indian Oceans. *Human Ecology*, 8(4): 329-370.
- Ghalib S.A., Zaidi S.S.H. (1976). Observations on the survey and breeding of marine turtles of Karachi coast. *Agriculture Pakistan*, 27: 87-96.
- Groombridge B. (1985). Indian Sea turtles in world's perspective. Symposium on endangered marine animals and marine parks, The Marine Biological Association of India. pp: 1-16.
- Hirth H.F. (1971). Synopsis of Biological Data on the green turtle *Chelonia mydas* (Linn.). *FAO Fisheries Synopsis*, 85(1): 1-8.
- Kabraji A.M., Firdous F. (1984). Conservation of turtles, Hawkesbay and Sandspit, Pakistan. *World Wildlife Fund Project*, 1451: 52.
- Khan M.S. (1999). Herpetology of Habitat Types of Pakistan. *Pakistan Journal of Zoology*, 31: 275-289.
- Khan, A. (2013). Pakistan wetlands programme's marine Turtle conservation efforts on Daraan Beach, Jiwani, Pakistan. *Indian Ocean Turtle Newsletter*. 26 p.
- Minton S.A. (1966). A Contribution to Herpetology of West Pakistan. *Bulletin of the American Museum of Natural History*, 134: 27-184.
- Murray J.A. (1984) *The vertebrate Zoology of Sind*. Richardson & Co, London. <https://doi.org/10.5962/bhl.title.11813>
- Sikandar A., Noreen M., Nasir I. (2022). The status and nesting sites of the marine turtles of Pakistan at Karachi and Makran coast: a literature review. *International Journal of Biology and Biotechnology*, 19(2): 259-264.
- Waqas U., Hasnain S.A., Ahmad E., Abbasi M., Pandrani A. (2011). Conservation of green turtle (*Chelonia mydas*) at Daran beach, Jiwani, Balochistan. *Pakistan Journal of Zoology*, 43(1): 85-90.
- Zwinnenberg A.J. (1975). The Green Turtle (*Chelonia mydas*), one of the reptiles most consumed by man, needs immediate protection. *Bulletin of the Maryland Herpetological Society*, 11(2): 45-63.