

Occurrence and Distribution of Leatherback Turtle (*Dermochelys coriacea*) in the Coastal and Offshore Waters of Pakistan

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KEYWORDS

Leatherback turtles,
Dermochelys coriacea,
Entanglement,
Safe release,
Gillnets.

ABSTRACT

Although leatherback turtle (*Dermochelys coriacea*) has previously been reported from Pakistan but these were based on stranding of 4 dead specimens on beaches of Sindh and Balochistan. Unconfirmed nesting were also reported from sandy beaches at islands of Indus estuary, Cape Monz, Mubarak Village along Sindh Coast and Pushukan, Gwadar and Jiwani along Balochistan coast. Present paper reports confirmed occurrence of 8 specimens of leatherback turtles that were entangled in fishing gears. One specimen was found floating dead in Miani Hor which possible had a boat strike. All specimens entangled in gillnets were safely release except one entangled specimen which was found dead when heaved on the fishing boats. The records of leatherback turtles along Pakistan indicate that this species is widely distributed but have extremely rare occurrence. No marked seasonality of occurrence was noticed except that more sighting were made during winter months.

Introduction

Marine turtles of Pakistan have been studied since long. Murray (1884) was possibly the first to report marine turtles from Pakistan. He reported occurrence of olive ridley turtle (as *Couona olivacea*) and green turtles (as *Cheilonia virgata*) in Sindh. Shockley (1949) reported only green turtle (*Cheloniemydas*) from Jiwani, Balochistan. Minton (1966) reported five species of marine turtles from Pakistan coast including green turtle (*C. mydas*), loggerhead (*Caretta caretta*), hawksbill (as *Eretmochelys imbricata squamata*), leatherback (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*).

Murray (1884) mentioned green turtle nesting at Clifton and Gizri at Karachi with great quantities of eggs brought for sale during breeding season. Shockley (1949) while reporting green turtle (*C. mydas*) from Jiwani, Balochistan pointed out major feeding and nesting area for this species. Because of their abundance, the local were reported to call a part of the Jiwani Peninsula as "turtle cliff" (presently Daran).

Minton (1966) included loggerhead (*C. caretta*) and hawksbill (as *E. imbricata squamata*) in the list of species of marine turtles of Pakistan but he has not examined any specimens of these species and only speculated their presence in Pakistan. Although there have been records of occurrence of leatherback turtle (*D. coriacea*) in Pakistan but these were based either on photograph, dead specimens or on hearsay, therefore, most of these records cannot be ascertained.

It was Minton (1966) who for the first time reported leatherback from Pakistan which was based on a photograph taken in June, 1958 of an adult specimen that was stranded on Hawksbay, Karachi. Mortons (1969) reported this species from Pakistan based on report of Minton (1969). It was mentioned in Minton (1966) that according to fishermen, leatherback turtles nest on the islands near the mouth of the River Indus. Extensive surveys for the sandy islands at the mouth of the River Indus between Bundal Island and Sir Creek were made during last 30 years but no such nesting was observed (Niaz-Rizvi, personal communication).

During a survey conducted along Makran coast between 19 and 22 January 1987, Groombridge (1987; 1989) contacted someone in

Ormara who said that leatherback turtles (which he identified from photograph) were occasionally caught in nets, however, this could not be independently verified. *D. coriacea* is included among five other species of marine turtles have been reported to occur in the territorial waters of Pakistan (Ghalib & Zaidi, 1976), but they have not mentioned any specific record or any nesting from anywhere in Pakistan.

Firdous (1989; 2000) reported a dead male leatherback turtle beached on Sandspit, Karachi on 5 September, 1998. She attributed the death of this 2.134 m long (carapace length) turtle to possible shark attack as there was a prominent cut on the ventral side of the left rear flipper. She also collected another dead specimen on 25 April 1989 from Paradise Point, Karachi. There was a very big hole on the proximal end of right front flipper. Both of the back flippers were also damaged indicating the attack of shark. However, according to the Editor, IOSEA Marine Turtle MoU (mentioned in Firdous, 2006) carcasses reported by Firdous (1989; 2006) were in poor condition when washed ashore and the injuries attributed to shark attack, could have occurred after these turtles have died. Therefore cause of death cannot be attributed to shark attack and possibility of anthropogenic factors cannot be ruled out. Another freshly dead leatherback turtle was reported from in Pushukan near Gwadar in 2002 (Hasnain; personal communications).

Khan *et al.* (2010) reported leatherback nesting at Mubarak Village, Pishukan, and Jiwani. They reported nesting at Mubarak Village, Cape Monz near Karachi during June and July, at Pishukan during February and Jiwani during January and February. There was no evidence of juveniles or any adult specimen reported by Khan *et al.* (2010) and also no details of technique used for the identification of the nests was given. The information about their nesting in these area cannot be independently verified.

WWF-Pakistan has initiated a study to document presence of leatherback turtle in Pakistan in 2012 which reveals that this species is occasional found in Pakistan especially in the offshore waters. Present paper deals with the authentic records of leatherback turtles in Pakistan.

Material and Methods

Along the coast of Pakistan, a number of volunteers have been assigned to keep a vigil on record of any unusual animals including turtles and report it to WWF-Pakistan office located in Karachi. In addition, WWF-Pakistan has initiated a crew-based observers programme on board tuna gillnet vessels (Moazzam & Rab, 2017). These observers are record the instance of bycatch of megafauna including turtles. These observers are also trained to safely release any entangled turtles and other bycatch. These are two main sources of data on leatherback turtles which is presented in this paper.

Results

There are records of only four dead leatherback turtles over a period of more than 60 years. Present paper reports eight additional confirmed cases of occurrence of leatherback turtle from Pakistan. The details of all sightings, strandings or reports of occurrence/nesting of leatherback turtle from Pakistan are given in Table-I.

Table-I. Report of Occurrence of Leatherback turtle (*Dermochelys coriacea*) from Pakistan coast.

Date	Location	Status	Author	Remarks
June 1958	Hawksbay, Karachi	Stranded	Minton (1966)	Based on a photograph
19-20 January 1987	Ormara	Occasionally entangled in the net	Groombridge (1987, 1989)	Fishermen identified from Photograph
-	Territorial waters of Pakistan	Occurrence	Ghaliband Zaidi (1976)	Without any specific record
5 September 1988	Sandspit, Karachi	Dead stranding	Firdous (1989)	Male (2.13 m)
25 April, 1989	Paradise Point, Karachi	Dead Stranding	Firdous (1989; 2000)	1.25 m
2002	Pushukan, Gwadar	Dead Stranding	Hasnain Personal Communication	Reported by WWF
June and July	Mubbarak Village, Cape Monz, Sindh	Nesting	Khan <i>et al.</i> (2010)	Details of nesting not provided
February	Pushukan, Gwadar	Nesting	Khan <i>et al.</i> (2010)	Details of nesting not provided
January-February	Jiwani	Nesting	Khan <i>et al.</i> (2010)	Details of nesting not provided
16 April 2012	Sur Gwadar	Entangled in coastal monofilament net	Present Study	Male (1.3 m)
6 January 2015	4.5 n. miles from Gwadar (East Bay)	Entangled in coastal monofilament net	Present study	1.2 m. Safely released in the sea
17 February 2015	204 km southwest of Karachi (depth 1,285 m)	Entangled in the tuna gillnet	Present study	Slipped back in the sea while heaving (Iqbal Muhammad)
17 November, 2016	Miani Hor, Sonmiani	Dead floating in water	Present study	1.4 m. Signs of boat strikes visible.
30 December 2016	218 km southwest of Karachi (depth 1,354 m)	Entangled in the tuna gillnet	Present study	1.54 m. Dead, thrown back in the sea by fishermen (Muhammad Islam)
4 January 2017	Khori Great Bank about 70 km southwest of River Indus mouth (depth 64 m)	Entangled in the tuna gillnet	Present study	1.52 m. Safely released by fishermen (Saeed Badsha)
29 January 2017	122 km southwest of Karachi (depth 253 m)	Entangled in the tuna gillnet	Present study	Safely released by fishermen (Sher Zamin Khan) Not measured
21 April 2017	97 km from south of Malan, Balochistan (depth 2,975 m)	Entangled in the tuna gillnet	Present study	1.4 m. Safely released by fishermen (Muhammad Khan)

Records of Leatherback turtle since 2012

Leatherback turtle entangled at Sur, Gwader in April 2012.

A large male leatherback turtle (Fig. 1) was caught in pelagic monofilament net along Sur (Gwadar coast) on April 16, 2012. The



Fig.1. Leatherback turtle entangled in monofilament gillnets at Sur, Gwadar in 2012

Leatherback turtle entangled at Gwader in January 2015.

On 6 January 2015, a group of fishermen operating a monofilament gillnet caught a 1.2 m large male leatherback turtle about 4.5 n. miles in the Gwadar East Bay (Fig. 3). This turtles got entangled in the net but could not be released at sea, therefore, brought to Gwadar Fish Harbour where it was freed from the net. The turtle was placed in the fishing boats and safely released at the site of its capture.



Fig. 3. Leatherback turtle entangled at Gwader (East Bay) after disentanglement from the net at Gwadar Fish Harbour in January 2015

Leatherback turtle Carcass at Miani Hor lagoon in November 2016.

A specimen of a leatherback turtle was found in Miani Hor lagoon near Sonmiani, Lasbela District, Balochistan on 17 November, 2016. The carcass was floating in the lagoon water which was photographed (Fig. 4). The turtle was measured to be about 1.4 m long and had peeled skin on its carapace which indicates that turtle might have died due to a boat strike, however, there may be other causes of the death.

turtle was about 1.6 m long. In order to free this turtle from their net, the fishermen beached it and the WWF-Pakistan staff helped released it back into the sea (Fig.2).



Fig.2. Leatherback turtle entangled at Sur, Gwadar was safely released



Fig. 4. Leatherback turtle carcass floating in Miani Hor lagoon near Sonmiani on 17 November, 2016

Muhammad Islam December 30, 2016 (23°26'N; 65°29'W)

A male leatherback turtle got entangled in the tuna gillnets on 30 December, 2016 about 218 km southwest of Karachi. The depth at the site of entanglement was about 1385 m. It was about 1.54 m long (Fig. 5-6). The specimen when hauled was already dead, therefore, after taking measurements, it was thrown overboard.



Fig. 5. Male Leatherback turtle caught southwest of Karachi on 30 December 2016 (Dorsal View)



Fig. 6. Male Leatherback turtle caught southwest of Karachi on 30 December 2016 (Ventral View)

Sher Zamin Khan, Off Tursian Creek December 2016

A large leatherback turtle got entangled in the tuna gillnets in December, 2016 off 12 km south Tursian Creek (Fig. 7). The depth at the site of entanglement was about 30 m. The specimen could not be measured but it was large about 1.5 m long. The specimen slipped from the net and swam away and could not be hauled overboard.



Fig. 7. Leatherback turtle entangled in tuna gillnet and safely released off Turshian Creek in December 2016.

Leatherback turtle safely released at Khori Great Bank in January, 2017

A leatherback turtle was safely released by a fisherman in Khori Great Bank near Indus Canyon (Swatch) on January 4, 2017. This 1.52 m long turtle was found entangled in the gillnet laid down for catching tuna about 100 nautical miles from Karachi (Fig. 8). Captain of the tuna gillnet vessel noticed this giant turtle entangled in the gillnet. He maneuvered the net to get the turtle safely released. After a struggle of about 20 minutes the turtle was able to swim away safely from the net.



Fig. 8 Leatherback turtle entangled in the tuna gillnet Khori Great Bank near Indus Canyon on January 4, 2017.

Leatherback turtle entangled in gillnet on April 21, 2017 near Malan

While operating on 21 April, 2017 about 97 km from south of Malan (24° 27' N; 64° 52' E), a large leatherback turtle with a length of about 1.4 m got entangled in the tuna gillnet (Fig. 9). The depth at the location was about 2,975 m. The turtle was heaved on board and measured and released. The specimen was in healthy condition and was safely released. Sex of the turtle could not be determined.



Fig. 9. Leatherback turtle entangled in the gillnet off Malan on 21 April, 2017

Discussions

Presence of leatherback turtles is now well authenticated through a number of antecedent records as well as by the live specimens that interacted with fishing gears, as reported in present paper. In most cases the entangled leatherback turtles were safely released. The records further indicate that this species is predominantly found during the winter months between September through April except one record made by Minton (1966) in June 1958.

It was observed that leatherback turtle is widely distributed along the coast of Pakistan (Fig. 10) with the main reports are from four areas i.e. Gwadar Jiwani area including Surbundar (4 specimens); Malan Sonmiani area (3 specimens); Karachi (4 specimens) and Great Khori Bank- Indus Canyon offshore area (4 specimens), however, future reports may help in determining their spatial distribution pattern along the coast of Pakistan.



Fig. 10. Map showing distribution of leatherback turtle along Pakistan Coast.

Khan *et al.*, (2010) reported nesting of leatherback turtle during June and July at Karachi, February at Pushukan and Gwadar and during January and February at Jiwani, however, the procedure for identification of the nesting were not described. The authors have been visiting these beaches regularly for many years but neither any record of leatherback nesting, eggs or baby turtles was ever noticed from any of these beaches, nor coastal communities residing in these areas ever noticed leatherback turtles or their nesting.

Literature Cited

- Firdous, F. 1989. Male leatherback strands in Karachi. *Marine Turtle Newsletter*. 47: 14-15 pp.
- Firdous, F. 2000. Sea Turtle conservation and education in Karachi, Pakistan. In 'Sea turtles of the Indo-Pacific: Research, management and conservation'. (Eds Pilcher N. and Ismail G.) 45-59 pp. (ASEAN Academic Press: Sarawak).
- Firdous, F., 2006. Status of leatherback turtles in Pakistan. *Indian Ocean – South-East Asian Leatherback Turtle Assessment IOSEA Marine Turtle MoU – 2006*. 1-4 pp.
- Ghalib, S. A. and Zaidi, S. S. H. 1976. Observations on the survey and breeding of marine turtles of Karachi coast, Pakistan. *Agriculture Pakistan*. 24: 87-96 pp.
- Groombridge, B. 1987. Mekran Coast: A newly explored habitat for marine turtles. *WWF-Pakistan Newsletter*. 6: 1-5 pp.
- Groombridge, B. 1989. Aerial survey of the Baluchistan Coast Pakistan. *Marine Turtle Newsletter*. 46: 6-9 pp.
- Khan, M. Z., Ghalib, S. A., and Husain, B. 2010. Status and new nesting sites of sea turtles in Pakistan. *Chelonian Conservation and Biology*. 9: 119-123 pp.
- Mertens, R. 1969. *Die Amphibien und Reptilien West-Pakistans*. *Stuttgarter Beiträge zur Naturkunde*. 197: 1-96 pp.
- Minton, S. A. 1966. A contribution to the herpetology of West Pakistan. *Bulletin. American Museum of Natural History*. 134: 27-184 pp.
- Moazzam, M., and Nawaz, R. 2017. Arabian Humpback and Baleen Whale sightings along the Pakistan Coast: Information Generated through WWF Pakistan's Fishing Crew Observer Programme. *International Whaling Commission*. SC/67A/CMP/05: 1-4 pp.
- Murray, J. A. 1884. *The Vertebrate Zoology of Sind*. Richardson, London.
- Shockley, C. H. 1949. Herpetological notes for Rasjjanri, Baluchistan. *Herpetologica*. 5: 121-123 pp.