

## The first record of shark attack on the Indo-Pacific hump-back Dolphin, *Sousa chinensis* (Osbeck, 1765) in Mithapur coast, India

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Received 15 January 2015; revised 26 November 2015

Present report is the documentation of shark attack on Indo-Pacific humpback dolphin, which was washed ashore at Mithapur coast in Gujarat, India. The crescent shaped tooth impregnation on the deceased dolphin revealed it was attacked by shark. As the animal was injured only in seven places, perhaps, the attack was due to competitive interaction between shark and dolphin. Morphometric measurements and description of the wounds on the dolphin were recorded and documented. This is the first report of shark attack on Indo-Pacific humpback dolphin from Gujarat coast.

[Key words: dolphin, shark attack, Mithapur, Gujarat.]

### Introduction

Predation is a tactical event with the consequence that depends upon the behavior of both prey and predator<sup>1</sup>. It is the sequence that is usually divided into five stages such as detection, identification, approach, subjugation, and consumption<sup>2</sup>. On the other hand, the prey animal has everything to lose in a predation event and would be willing to commit any amount of energy toward escape<sup>1</sup>. Optimal foraging theory predicts that a predator should exploit the prey type most energetically advantageous in terms of net energy content minus search and handling cost<sup>1&3</sup>. It further predicts that the predator should be selected with the high quality of food that is abundant<sup>4</sup>. This appears to be the fundamental mechanism for adaptive behavioral responses in fish foraging<sup>5</sup>. The high level of foraging among the fish, especially in elasmobranch, sharks are more capable of the foraging decisions<sup>6, 7&8</sup>. Sharks are believed to be top predators in many marine communities, yet few studies have quantified or determined those factors influencing their distribution and hunting behavior especially during low light<sup>9&10</sup>. However, sharks bite both animate and inanimate objects for diverse reasons, including predation, aggression, defense, mating and investigation of novelty

<sup>11&12</sup>. Forensic reports of shark bite damage exist for submarine cables, marine turtles, seals, cetaceans, other sharks, surf boards, and humans<sup>12</sup>. Shark bites on soft objects, such as skin or blubber are typified by a series of ragged-edged, roughly parallel cuts that may overlap to form a crescent-shaped perimeter around a mass of tissue that may be completely removed<sup>12-14</sup>. Furthermore, interactions between sharks and dolphins are not limited to predator-prey interactions. Many sharks and dolphins feed largely on teleost fishes and cephalopods and there is a possibility of competitive interactions<sup>15</sup>.

Indo Pacific humpback dolphins, *Sousa chinensis* (Osbeck, 1765) are distributed from the Northern Australia and the Southern China in the east, through Indonesia, and around the coastal rim of the Indian Ocean to the Southern Africa. They are inhabitants of tropical to warm temperate coastal waters and they enter rivers, estuaries and mangroves<sup>16, 17</sup>. Gulf of Kachchh Marine National Park is one of the usual site for marine mammals including dugong (*Dugong dugon*), porpoise (*Neophocaena phocaenoides*), common dolphin (*Delphinus delphinus*) and Indo Pacific humpback dolphin (*Sousa chinensis*)<sup>17, 18</sup>. The present study was carried out to report shark attack on Indo Pacific humpback dolphin for the first time from Gujarat coast, Arabian Sea, based on the tooth impression of

shark on the deceased dolphin which was washed ashore at Mithapur coast of Gujarat

### Materials and method

Indo-Pacific humpback dolphin is regularly spotted along the coast of Gulf of Kachchh. A dead adult female Indo-Pacific humpback dolphin (*Sousa chinensis*) washed ashore on 16<sup>th</sup> October, 2014 morning at Mithapur coast (22° 25.137' N; 68° 59.482' E) and was identified with the help of FAO species identification guide, Marine mammals of the world by Jefferson et. al., 1993. Morphometric measurements, including total length, fork length; standard length (in cm) and other external morphological features of the deceased Indo-Pacific humpback dolphin were recorded and tabulated in table 1.

### Result

The animal was found injured in 7 places, including tail (Fig 1.). Crescent-shaped tooth impression on injured regions revealed that the dolphin was attacked by shark. The wounds were also measured and photographed for further analysis.

Table 1. Morphometric measurements of the deceased dolphin

Sl. No	Morphological features	Length (in cm)
1.	Total length	278
2.	Fork length	250
3.	Standard length	180
4.	Flipper	35
5.	Dorsal fin	35
6.	Upper rostrum	36
7.	Lower rostrum	36
8.	Urogenital opening	13 (diameter)
9.	Anus	5 (diameter)



Fig. 1. Deceased Indo-Pacific humpback dolphin, *Sousa chinensis*

There were totally 7 wounds which were measured to be with the mean circumference of 15 cm of six wounds on the posterior side and 24 cm of the wound at the flipper. The crescent-shaped perimeter around a mass of tissue wound reveals the dolphin was attacked by a shark.

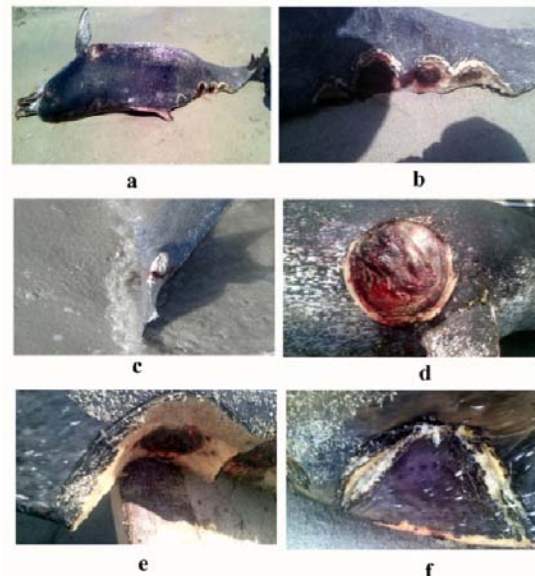


Fig. 2. Deceased dolphin with injuries. a) Injury between tail and fin, b) Injury near to tail, c) Injury at tail, d) Injury near to flipper e) and f) Injury at peduncle

### Discussion

According to Heithaus (2001), sharks are not always apparent predators of dolphins and porpoises but are also likely only to scavenge cetacean carcasses. Tiger sharks in Hawaii and Northeastern Australia, small (< 2.2 m) white sharks in the Atlantic and Pacific and sandbar sharks *Carcharhinus plumbeus* off South Africa feed on a variety of teleost fish, as do many dolphins and porpoises in these areas<sup>20, 21&22</sup> and other sharks species belong genus *Carcharhinus* have also been seen feeding with dolphins behind trawlers in Australia<sup>23</sup>. However, marine mammals were the most important prey of large juvenile white sharks, with dolphins making up the majority of the marine mammal prey<sup>22</sup>. The intension for the attack on the dolphin which was washed ashore at Mithapur coast may be due to competitive interaction between shark and dolphin, as major parts of the deceased dolphin were not damaged and it was attacked only at 7 places of the body (Fig 2).

### Acknowledgement

Authors would like to thank Dr. N. Marimuthu, NCSCM, Mr. P. T. Shiyani, Dwaraka (MNP) R F O, Mr. Kamalesh Chudasama, Forest Guard and fishermen who helped us during the survey.

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