



# Accidental stranding, rescue and release of Indo-Pacific Humpback Dolphin (*Sousa chinensis*) from a natural pool of the Mahi River, Vadodara District, Gujarat, India

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Short Communication

## Abstract

The Indo-Pacific Humpback Dolphin *Sousa chinensis* is one of the near threatened species enlisted in the IUCN red list category. On 28 December 2015, an Indo-Pacific Humpback Dolphin was found confined in a natural pool of the Mahi River near Umraya village, Padra Taluka, Vadodara District, Gujarat, India. A rescue was attempted and the dolphin was transported and released successfully at Kavi-Kamboi, Gulf of Khambhat. The release of dolphin appeared successful as it swam in a normal fashion soon after release and further there were no evidences of restranding from any of the nearby sites.

**Keywords:** Indo-pacific humpback dolphin, rescue, release, Mahi River, Padra, Gujarat.

## Introduction

The Indo-Pacific Humpback Dolphin *Sousa chinensis* (Osbeck, 1765) (henceforth, IPHD), is a Near Threatened (NT) species enlisted in the IUCN red list category inhabiting the coastal waters of eastern and western Indian Ocean; northwestern, southwestern, and western central Pacific oceans (Reeves

*et al.*, 2008). The species has been reported along the Indian coast and along Gujarat coast its presence has been reported from the Gulf of Kachchh, Saurashtra coast and Surat coast (Sutaria *et al.*, 2015). *S. chinensis* is known to prefer shallow, inshore waters ranging from minimum 0-10 m to maximum 21-30 m depth (Ross *et al.*, 1994; Sutaria and Jefferson, 2004). These dolphins have been reported to occupy a variety of habitats in the coastal areas which includes estuaries (Parsons, 1998; Muralidharan, 2013), mangrove islands (Cagnazzi *et al.*, 2011), enclosed bays (Karczmarski *et al.*, 1999; Chen *et al.*, 2009), shallow rocky reefs (Karczmarski *et al.*, 2000), whereas sometimes they enter rivers (Singh, 2003). While the information on various aspects of the dolphin are available, very little information is available on the accidental stranding, rescue and return of humpback dolphins along the Indian coast (Kasim *et al.*, 1994).

The present observation describes the rescue and release of an accidentally stranded IPHD which was found in the shallows of Mahi River, near Gambhira Bridge, Gujarat, India. This is the first formal report of rescue and release of this species from Gujarat coast done by local NGOs and naturalists with the help of Forest Department of Gujarat (Appendix I) and second report from India after the published report of Kasim *et al.* (1994).

## Material and methods

### Site of dolphin rescue and release

An IPHD was rescued from Mahi River (22° 16' 7.1652" N and 73° 1' 26.1264" E) near Umraya village which is located approximately 2 km away from Gambhira bridge of Padra Taluka, Vadodara District, Gujarat. The location of rescue site was about 90 km away from the release site. The IPHD was released to the nearest sea coast at Kavi-Kamboi, Jambusar, Bharuch District, Gujarat (22° 13' 0.5736" N and 72° 36' 59.2236" E) (Fig. 1). This



Fig. 1. Map of Gujarat showing the locations of past sighting and stranding records along with present rescue and release site of Indo-Pacific Humpback Dolphin *Sousa chinensis*.

is an estuarine region of Mahi River which has open mudflat with silty-clayey habitat without mangrove cover whereas lower intertidal area has flat plain with fine sand (Pandya and Vachhrajani, 2012).

## Results

### Dolphin rescue and release

On 28th December 2015, around 09.00 hrs, a volunteer notified the forest personnel that a dolphin was trapped by the falling tide of Mahi River (22° 16' 7.1652" N and 73° 1' 26.1264" E), approx. 2 km away from Gambhira Bridge, near Umraya Village, Padra Taluka, Vadodara District, Gujarat. Upon arrival at around 12.00 hrs, the Deputy Conservator of Forest and his team observed the dolphin trapped in about 1.2 m deep muddy waters of Mahi River approximately 215 m away from the river bed (Fig. 2A, B). Numerous people were gathered at the site to watch the dolphin and the rescue operation too. The behavioral observations revealed that the animal was restless and was sporadically swimming towards the riverbank near Umraya village (Fig. 2C). While assessing the stranding site it appeared that the dolphin would not be able to leave the river pool as the tide was continuously receding. Hence, around 16.30 hrs it was decided to rescue the animal.

After debriefing of the personnel involved in the rescue operation, the dolphin was encircled with three small fishing



Fig. 2. Indo-Pacific Humpback Dolphin *Sousa chinensis*: A & B- Stranding near Umaraya Village; C- Dolphin moving towards riverbank in low tide. Photo Credit: Kartik Upadhyay.

boats so as to restrain its movement. Soon 3-5 local fishermen encircled the dolphin with a nylon trawl net of large mesh size (about 40 mm) (Fig. 3A). Meanwhile a vehicle was arranged and brought to the rescue site for transportation of the dolphin. The base of the vehicle was layered with mud for 12-13 cm height. The layer of mud was placed as a cushion to avoid injuries to the dolphin during road transportation. As soon as the transportation arrangements were completed, the dolphin captured within the net was brought to the river bank and placed on a temporary collapsible water pool, which was made from thick water proof tarpaulin (4 x 5 m) with rope reinforced hem (Fig. 3B, C). While handling the animal, the rescue team was cautious not to hold the caudal section of dolphin to avoid injuries. Subsequently, the net surrounding the dolphin was removed carefully and the mud over animal's body was cleaned with the river water (Fig. 3D). The rescue operation lasted for almost five hours. Further, the general health assessment showed that the

dolphin was alert; there were no signs of bleeding over the body. The estimated total body length of dolphin was 290 cm and weight approximately 250 kg. However, the rescue team was unable to collect data on morphometry including the sex of the animal due to lack of facilities.

Soon the dolphin was placed in the vehicle, along with temporary water pool and was successfully transported to the nearest sea coast *i.e.*, Kavi-Kamboi, Jambusar, Gujarat (22° 13' 0.5736" N and 72° 36' 59.2236" E) where the Mahi river opens into Gulf of Khambhat forming Mahi river estuary. During transportation, the dolphin was closely monitored for any signs of stress and dehydration. Further, up on reaching the release site, again the animal's general health assessment was carried out which showed no signs of stress. The dolphin was quickly taken out from the vehicle on a tarpaulin stretcher and release procedure was carried out with the assistance of a trawler-type motor boat. The dolphin was released on 29 December 2015 at around 05.30 hrs



Fig. 3. *S. chinensis* rescue procedure at Umraya village: A- Encircling the Dolphin to restrain its movement; B- Tarpaulin with rope reinforced hem; C- Dolphin brought to the riverbank; D- DCF removing net and examining the dolphin prior to transportation and release. Photo Credit: Kartik Upadhyay.

after considering the favorable oceanographic and logistic conditions. The release procedure lasted overall for four hours. After release, monitoring from land began at about 05.45 hrs till the dolphin went into deep waters and was not visible. The release appeared successful as the dolphin swam away in a normal fashion in the waters of Kavi-Kamboi. Later, fishermen and volunteers residing near the stranding site were contacted periodically to report any information regarding the animal but no evidences of re-stranding were reported.

In the present stranding observation, one speculation on the entrapment of IPHD in the Mahi River was the topographical obstacles in combination with falling tide. The extraction of sand and gravel, construction of dams and bridges, placement of electricity pylon within the river basin area are few reasons for uneven river bed which results into formation of river pools during low tide (Boudaghpour and Monfared, 2008; Tariro, 2013; Deng and Deng, 2016). Once the animal is entrapped in these pools during falling tide, it becomes difficult for them to find their way.

## Discussion

The cause of cetacean stranding depends on interactions of physical and biological conditions of the animal (Cordes, 2011). There are many postulates put forward by researchers to explain the reasons for stranding which include alterations in the geomagnetic topography (Klinowska, 1985), ill health and neuropathy caused by parasitic infection (Parson and Jefferson, 2000), fishing gear entanglement (Jefferson *et al.*, 2006), sonar-related stranding (Rommel *et al.*, 2006) and

stranding due to injuries caused by predators (Wcisel *et al.*, 2010). In Gujarat, strandings of IPHD have been documented due to net entanglement at Veraval coast (Kizhakudan *et al.*, 1998) and shark attack at Mithapur coast (Adhavan *et al.*, 2016) whereas the causes of stranding at Devka and Udwada coast (Joglekar *et al.*, 1977) and Gulf of Kuchchh (Sutaria and Jefferson, 2004) were unknown.

All the stranding records throughout Gujarat coast were based on dead specimens whereas along Indian coast there is only one record of rescue and release of IPHD (*Sousa chinensis*) at Tuticorin Harbor area (Kasim *et al.*, 1994). The present case, we considered the procedure adopted by the rescue team was adequate in the absence of cetacean rehabilitation facilities in India. In addition to this, the speculations regarding entrapment of IPHD in the Mahi River is analogous to that reported by Geraci and Lounsbury (1993) who concluded that falling tides and topographical obstacles are one of the reasons for cetacean stranding. Brabyn and McLean (1992) also stated that changes in the coastal topography may lead to stranding of marine mammals. However, each stranding condition must be treated as a unique event which has to be dealt carefully depending upon the condition of the animal, availability of information and resources especially concerning rescue and release facilities (Geraci and Lounsbury, 1993; Motta and Silva, 2005).

Along the Indian coast, the rescue and release of live stranded cetaceans are still poorly documented, resulting in few published data that serves as a base for conducting rescue operations of these animals. All data collected during such occasions are extremely important to improve our knowledge on handling live cetacean stranding, rescue and release, especially for those species which are categorized by IUCN as "near threatened".

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**Appendix I.** List of key-people involved in the rescue and release of Indo-Pacific Humpback Dolphin *Sousa chinensis* at Umraya village, Padra Taluka, Vadodara District, Gujarat.

Sl. No	Name	Designation
1.	V. K. Saxena	Dy. Conservator of Forest, Social Forestry, Vadodara circle, Vadodara
2.	Ashok Pandya	Range Forest Officer, Padra
3.	Raju Vyas	Zoo Inspector, Sayaji Baug Zoo
4.	Kartik Upadhyay	Naturalist & Wildlife Photographer
5.	Piyush V. Saxena,	Naturalist
6.	Manoj Thakar,	Naturalist & Wildlife Photographer
7.	Rocky P. Maharaj	NGO, Volunteer, Padra
8.	Pravin Arya Maharaj	NGO, Volunteer, Padra
9.	Shailesh Raval	Rescuer, Forest Department, Vadodara circle
10.	Jignesh Parmar	Rescuer, Forest Department, Vadodara circle
11.	Bhautik R. Desai	Naturalist & Wildlife Photographer
12.	Rakesh Vadhvana	Member of Crocodile Group Charitable Trust
13.	Pratik Lakadawala	NGO, Volunteer, Vadodara
14.	Sarpanch & Fishermen	Umraya Village

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