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SHORT PAPER

Incidental Catch of Whale Shark (*Rhincodon typus* Smith, 1828) at Cuddalore Coast, India

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Abstract

The ocean's largest extant elasmobranch fishwhale shark (*Rhincodon typus)* has been wedged accidentally in gillnet by fishermen off the coast of Cuddalore, southeast coast of India. The paper also discusses conservative measures to protect the diversity of Whale shark.

Introduction

The whale shark *Rhincodon typus* is the largest filter feeding shark in the oceans and it inhabits the tropical and warm temperate waters of the world (Rowat & Brooks 2012). That occurs from the intertidal zone down to above 200 meter depth. This species is highly migratory and its movements depend on their food availability (e.g. Dense of zooplankton, school of small fishes and squids). The International Union for Conservation of Nature (IUCN) was listed the Whale sharks as "Vulnerable" but, presently moved on to endangered (Pierce & Norman 2016).

The major reason for whale shark fishery is for its liver oil and fin. Most of the countries like US, Australia, India, Belize, Honduras, Mexico, Taiwan, Maldives, Philippines and Thailand have banned whale shark catch. Although in some countries poaching and illegal fishing of this species is still continued. The tendency of surface swimming, slow moving and transboundary migratory behaviour makes whale shark under thread. By-catch and accidental are the major causes of mortality (Li *et al.* 2012).

India was also a major hunter of whale sharks until 2001 later; the shark fishery was banned by the government of India. Presently, the Whale shark is given the highest protection; it is included under the Schedule-1 of the Wildlife Protection Act, 1972. Earlier, Pravin (2000) reported that a sum of 1974 whale sharks has been landed in Indian coast during the period of 1889 to 1998. The Gujarat state accounted the highest (94.6 %), followed by Tamil Nadu (2%) and Andhra (1%). Most of the whale shark landings in Gujarat were by intended fishing, but catches of rest of the states are incidental. There is no domestic value for the whale shark's meat in India. So, whale sharks are not intensively captured in India. However when the adult fish incidentally get entered in the net, the net gets damaged occasionally and so on to compensate the loss the fishermen sold the fishes.

The present paper discusses the incidental catch of whale shark landed at southeast coast of India. This paper also suggests some of the important safety measures to prevent the unintentional catch for the conservation of *R. typus.*

Methods

A dead adult whale shark landed on 14th October 2017 morning at Cuddalore coast (11° 43' N; 79° 49' E; south-east coast of India) and was identified with the help of FAO species identification guide and (Ebert, 2014). Morphometric measurements and other external morphological features of the specimen were recorded.

Results and Discussion

Specimen Examined

The whale shark, *Rhincodon typus* Smith 1828, is the only valid species of the family Rhincodontidae. Total length of the present specimen was 315 cm and circumference was ca. 186 cm, and it was weighing 1200 kg (Figure 1). Selected measurements and present of TL of the measurements are presented in Table 1 and Table 2.

Whale sharks are known to occur in the west and east coast of India (Pravin 2000). Frequent observation was made at Maldives New Zealand, India, Brazil, and Taiwan (Rohner *et al*. 2013) the regular migration of whale shark in those location leads to regular incidental by-catch. The cause of death is found to be incidental captures in a gillnet fishery. Incidental catch of whale sharks is a matter of concern worldwide. Incidental catch is one of the main threats for all the endangered species living in the marine environment Elasmobranch in particular. Among numerous kinds of fishing gears used, Gill nets, longlines and trawls are major reason for the highest annual catch of global elasmobranch (Molina & Cooke 2012). In India, there are several reports on the accidental death of whale shark due to unintentional catch (Pravin 2000, Krishnan 2014 and Sreekumar 2016). Hence, effort must be taken to prevent the accidental death of the whale shark while fishing in India.

The present paper recommended the following research needs and management requirements for the conservation of this species: (1) creating awareness to the fisher folk regarding the need of conservation of this species and providing training to secure release of this species while incidental catch (if the net damage or any other loss during the release government could give compensation to fisher men); (2) Development of eco-tourism will prevent the catch and protect this species; (3) Strict implementation of existing rules for prohibiting incidental mortality; (4) investigate feasible modification or alternative fishing methods to reduce the incidental catch; and (5) obtain accurate information about whale population and their possible seasonal migratory pattern. Furthermore, Extensive research needs to be carried out to explore possible by-catch reduction methods for the conservation of endangered fishes. Globally, the *R. typus* population has significantly reduced over the past 2 decades. The developmental biology, breeding season, breeding places of this species remains unidentified. At present, 'critical' breeding habitats have yet to be defined, with only two locations, off India's (Whale Shark Conservation Project;

Figure 1. Shows the incidentally captured dead fish of whale shark (*Rhincodon typus*) field image at Cuddalore fishing harbour, Southeast coast of India.

Table 1. Morphometric measurements of *Rhincodon typus*

Dimension measured	Measurement value with units
Total length	315 (cm)
Head length	67.5 (cm)
Trunk length	112.5 (cm)
Tail length	135 (cm)
Width dorsal	103 (cm)
Head width	65.5 (cm)
Trunk width	54.2 (cm)
Tail width	35.3 (cm)
Weight (approx.)	1200 (kg)

Table 2. Morphological measurement of *Rhincodon typus*

Height measurement of fins	Measurement value with units
First dorsal fin	30.3 (cm)
Second dorsal fin	17.2 (cm)
Pectoral fin	39.5 (cm)
Pelvic fin	14.5 (cm)
Caudal fin	68.4 (cm)

https://www.youtube.com/watch?v=yJz51i6Prmg), and Taiwan's coast (Schmidt *et al*. 2010), are the known places where new-born pups or pregnant sharks can be found.

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