



# First report of the crocodile shark *Pseudocarcharias kamoharai* (Matsubara, 1936) from Chennai, southeast coast of India

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Short Communication

## Abstract

This paper reports the occurrence of the crocodile shark *Pseudocarcharias kamoharai* in the waters off Chennai in the south-east coast of India and is a new locality record for the species, confirming its distribution in the Bay of Bengal. *P. kamoharai* is the only representative of the family Pseudocarchariidae and is the smallest known living mackerel shark (Order: Lamniformes). A single adult male specimen measuring 91 cm in total length and weighing 2.2 kg weight was collected from the landings by a deep sea trawler at Chennai Fisheries Harbour, caught in hook and line operations for yellow-fin tuna in the waters off the Chennai – Puducherry coast, at a depth of 300 m. Reported to occur as by-catch in Japanese yellow fin tuna long line fishery and Australian swordfish fishery, both in the Indian Ocean, it has been classified as “Near Threatened” by IUCN.

**Keywords:** Bay of Bengal, Chennai, crocodile shark, *Pseudocarcharias kamoharai*, South-east India.

## Introduction

The crocodile shark *Pseudocarcharias kamoharai* (Matsubara, 1936) is the only representative of the family Pseudocarchariidae and is the smallest known living mackerel shark (Order: Lamniformes). Known to be circumtropical in distribution, with its range extending from Eastern Atlantic Ocean to the

Pacific Ocean, its occurrence in the Indian Ocean has been reported from the Mozambique Channel, southwest of southern Madagascar while its distribution in the Bay of Bengal has been reported as doubtful (D’Aubrey 1964; Long and Seigel, 1997).

There is no known fishery for the species and it does not find much commercial significance on account of its rare abundance in well-exploited fishing grounds, small-size and low quality of meat. No data is available on the population status of this species and its abundance has been reported only in the Mozambique Channel in the Western Indian Ocean in the 1960s (Compagno, 2001). The present report records the occurrence of *P. kamoharai* in the waters off Chennai in the south-east coast of India and is a new locality record for the species, confirming its distribution in the Bay of Bengal.

## Material and methods

On February 10, 2011, a single specimen of the crocodile shark *P. kamoharai* was collected from the landings by a deep sea trawler at Chennai Fisheries Harbour. The specimen had been caught by hook and line operated for yellow-fin tuna in the waters off the Chennai – Puducherry coast, at a depth of 300 m. The specimen was identified and photographed and morphometric measurements were recorded. The liver was

measured and weighed separately. The specimen has been deposited at the National Biodiversity Referral Museum at CMFRI, Kochi (Accession No. GA.6.1.2.1.).

## Results and discussion

### *Pseudocarcharias kamoharai* (Matsubara, 1936) (Fig. 1)

Order : Lamniformes

Family : Pseudocarchariidae

Material examined: male (adult), 91 cm TL, 2.2 kg whole body weight

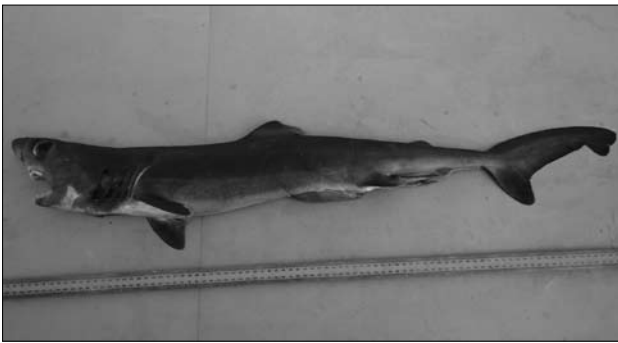


Fig. 1. Crocodile shark *Pseudocarcharias kamoharai* landed at Chennai



Fig. 2 The head of *P. kamoharai* showing the large eye and awl-like teeth

**Diagnosis:** A slender-bodied shark with a cylindrical trunk. Head short with moderately long bluntly pointed snout. Eyes large, nictitating eyelids absent. Five pairs of gill slits placed before pectoral fins, all gill slits highly elongate, extending onto dorsal surface of head. Gill rakers absent on internal gill slits. Large mouth placed ventrally on head and bearing large awl-like narrow teeth (Fig. 2); first dorsal fin small, low and angular, placed almost midway between snout and caudal tip; nonpivotable second dorsal fin placed far back near caudal peduncle, smaller than first dorsal but larger than anal fin; anal fin pivotable; pectoral fins small and broad; pelvic fins smaller than first dorsal fin and pectoral fins; caudal fin asymmetrical, not lunate, with moderately long upper lobe and short but strong lower lobe. Caudal peduncle slightly depressed; pre-caudal pits present; lateral keels on caudal peduncle low. SL 77.5% of TL; HL 18.1% of TL; eye diameter 20% of HL; second

dorsal fin height only 48% of first dorsal fin height. Detailed morphometric measurements are given in Table 1.

The large liver is known to be rich in squalene and is of potential value. The liver in the specimen described here was very oily in touch and gave off a pungent odour. It measured 42 cm in length (60% in the SL) and weighed 0.5 kg, accounting for 22.7% of the total body weight of the shark and occupying almost the entire body cavity (Fig. 3).

**Colour:** Dark greyish-brown dorsally, fading towards the ventral portion. Fins with dark margins lined thinly with

Table 1. Morphometric details of the crocodile shark *Pseudocarcharias kamoharai* (male) landed at Chennai

Dimensions	Measurements (mm)
Total length	910
Standard length	705
Distance from snout to origin of first dorsal fin	350
Distance from snout to origin of second dorsal fin	585
Distance from snout to origin of pectoral fin	210
Distance from snout to origin of pelvic fin	510
Distance from snout to origin of ventral fin	560
Distance from snout to first gill opening	165
Distance from snout to second gill opening	180
Distance from snout to third gill opening	193
Distance from snout to fourth gill opening	206
Distance from snout to fifth gill opening	216
Base of first dorsal	65
Height of first dorsal	58
Base of second dorsal	30
Height of second dorsal	28
Base of pectoral fin	40
Height of pectoral fin	32
Base of pelvic fin	45
Height of pelvic fin	45
Base of ventral fin	15
Height of ventral fin	24
Distance from snout to eye	65
Eye diameter	33
Distance from snout to mouth	45
Distance from snout to nostril	70
Internarial distance	28
Length of upper jaw	140
Length of lower jaw	105
Length of claspers	80
Length of gonad	85
Length of liver	420

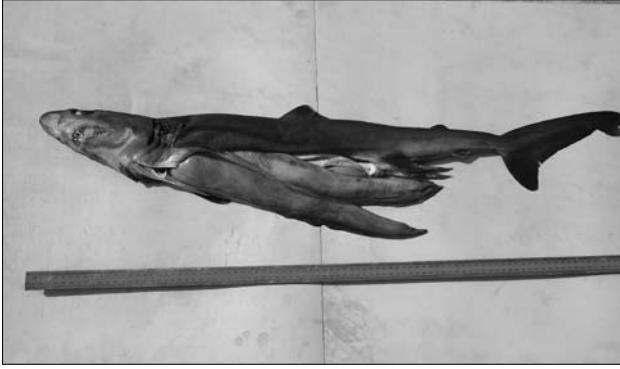


Fig. 3. A view of the shark showing the large liver inside the body cavity

whitish edge. A large whitish blotch present between corner of jaw and first gill slit.

Although no fishery importance is accorded to the crocodile shark, some of their life history characteristics like small litter size of four pups per litter (Fujita, 1981; White, 2007) and a tendency for in-utero oophagy (Fujita, 1981; Compagno, 2001) give reason for concern in the light of increasing reports of crocodile shark landing as by-catch of pelagic longline fishery in the south-western Indian Ocean, off Australia (Ariz *et al.*, 2006; Hender *et al.*, 2007). In spite of the distribution range attributed to the species, it has been reported to occur mostly from waters falling within the 20°C mean annual sea surface temperature isotherm, and seldom from the higher latitudes in the Indian Ocean (Romanov *et al.*, 2008). The present report thus confirms the occurrence of *P. kamoharai* in warmer waters of the Indian subcontinent.

Conservation status: *P. kamoharai* has been classified as Near threatened (NT) by International Union for Conservation of Nature (IUCN) (Compagno and Musick, 2000)

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