

Original Research Article

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## First Record of Anophthalmic Large Scaled Terapon, *Terapon theraps* Cuvier 1829 in Trawl Landings from Versova, Mumbai, India

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### ABSTRACT

#### Keywords

Anophthalmia, *Terapont heraps*, Left eye, Growth, Physiology

#### Article Info

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Anophthalmia is recorded for the first time in *Terapont heraps*. The specimen was caught by trawl net at Versova, northwest coast of India. Mature female *Terapont heraps* weighing 58.78 gm and 13.06 cm total length. Comparison of anophthalmic specimen with a normal specimen could not show significant variation in morphometric and meristic traits and the deformity may be congenital which has not affected growth and physiology of fish

### Introduction

Terapontidae is a perciform family including 16 genera and about 48 fish species (Nelson, 2006), which are frequent in the marine coastal, brackish and freshwater of the Indian and West Pacific oceans. The large scaled terapon, *Terapont heraps* Cuvier, 1829 is widely distributed in Indo-West Pacific region such as East Africa to Southeast Asia. They are also found south to the Arafura Sea and western and northeastern Australia, Papua, and New Caledonia (Allen, 2011). Grows upto a size of 30 cm SL (Heemstra, 1986), adult

fishes inhabits coastal waters and brackish water (Talwar and Jhingran, 1991) and also reaches far offshore (Kuiter and Tonzuka, 2001). They feed on a variety of food organisms including *Halobates* Siphonophors, gastropods, small crustacean, polychaetes, fish eggs and fish (Senta *et al.*, 1993). Presently this fish is caught as a low-value by catch in trawlers along west coast of India along with other species in the group contributes about 2.4% of trawl catches (Mahesh *et al.*, 2014). Large scaled terapon has oblong compressed body with 4 dark brown horizontal stripes on lateral sides. This species distinguished from

others Spinous part of dorsal fin with a black blotch dorsally on membranes between 3rd or 4th and 7th or 8th spines and soft part of dorsal fin also seen with a black blotch top of anterior rays, caudal fin with median rays pigmented, both caudal lobes with dark tips and a transverse band. The species is considered under low value trawl catch category but large species about the size of 15cm and above are consumed fresh.

Anophthalmia in fishes is extremely rare and mostly found in culture systems. Dawson (1964, 1966, 1971) and Dawson and Heal (1976) have compiled a bibliography 1,499 reports in abnormal fishes and 63 of these reports (4.2%) revealed eye deformities. Abnormalities are believed to be caused by regular handling and protected systems which eliminate chance of predation on weak fishes (Tave, 1993).

Hence predation tends to limit survival of abnormal fishes in natural environment and occurrence of deformed fishes in nature is rare. Anophthalmia can be either heritable or environmental induced (Tave and Handwerker, 1994 and 1998).

Deformities can affect marketability of fish hence it is necessary to study the deformity, documentation of frequency and causative factors in both culture and natural systems. The purpose of this communication is to describe first record of *Terapont heraps* with absence of left eye collected in trawl net from Versova waters of the north-west coast of India (Fig. 1) and to compare some characters of its morphology with a normal specimen of similar size.

### **Materials and Methods**

The specimen was collected from Versova fish landing centre (Mumbai, Maharashtra) caught from single day trawler operated at a depth of

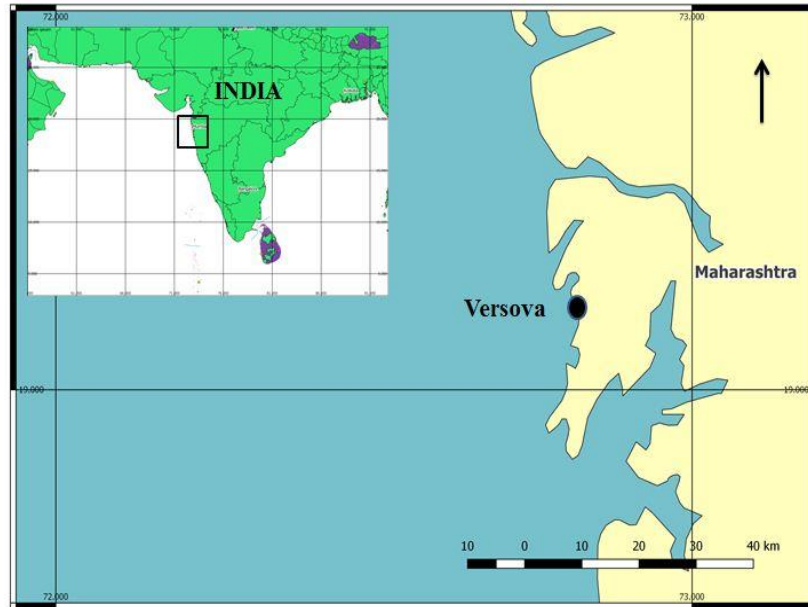
35m (Fig. 2) on October 2016. Species identification was made following the key described by Bianchi (1985) and De Bruin *et al.*, (1995). Relevant morphometric measurements were taken using a digital Vernier caliper with accuracy of 0.1mm. Morphometric and meristic characters were compared with a normal specimen (Fig. 3) and characters are listed in Table 1 and 2.

### **Results and Discussion**

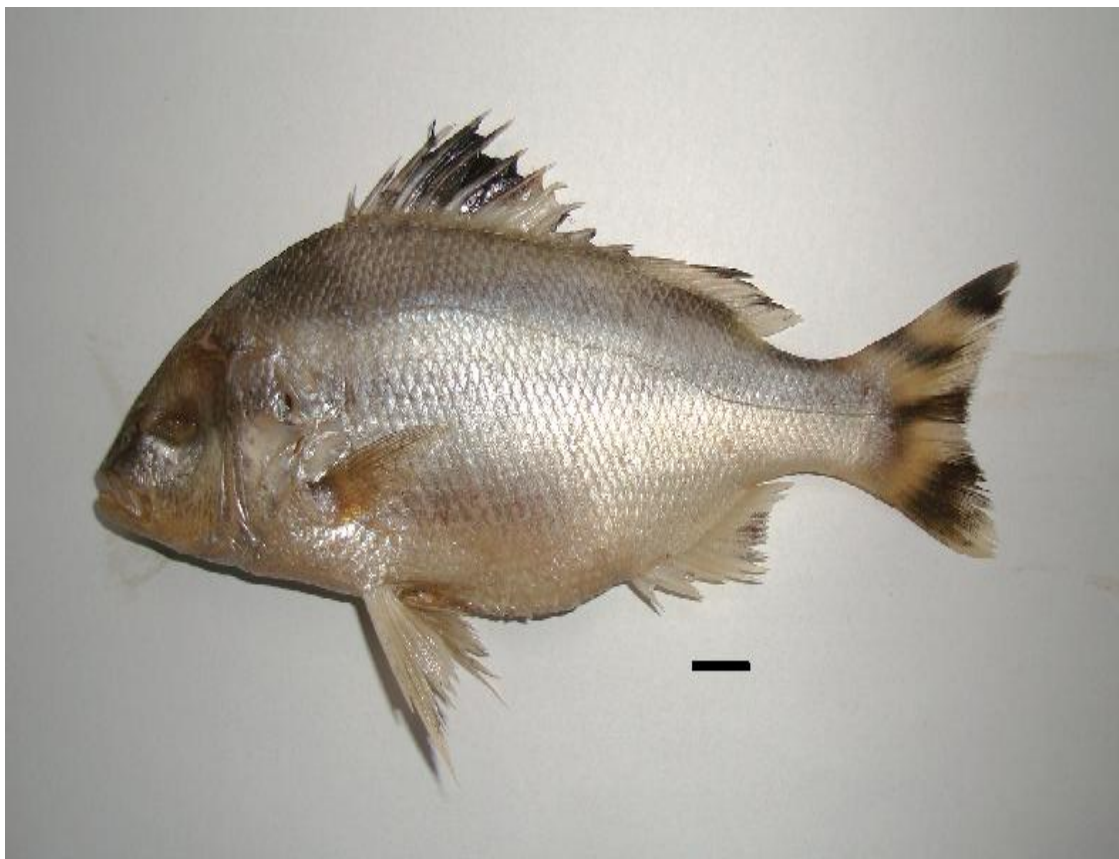
Meristic traits of the anophthalmic specimen are not too different than that of normal specimen (Table 1) but lateral line scale of anophthalmic specimen (59) is more than normal specimen (52). Percentage of morphometric traits with standard length was found to be lesser for anophthalmic specimen in case of head length, body depth and pre dorsal length. The specimen was found to be missing left eye and the facial bones shown deformity in structure. Pre-orbital, infra-orbital and frontal bones are deformed which confirms deformity occurred early stages or embryonic period. The fish was fully matured and a functional female and right side of eye was fully functional which proved that deformity of one eye has no effect on normal physiology. Included in a group of euryphagous carnivores, *Terapont heraps* need to consume frequently (Manoharan *et al.*, 2012)

Abnormalities in fishes may resulted from various causes, but are usually believed to originate from mutations and from teratogenic effects of adverse environmental factors (Longwell *et al.*, 1992; Lien, 1997) and these deformities are developed in embryonic stage or in young individuals (Vogel, 2000). There are also evidence shown that deformities can occur due to water temperature (Milton 1971), dissolved oxygen (Turner and Farley, 1971), or parasite infestations (Brown and Nunez, 1998).

**Fig.1** Capture location of *Terapont heraps* Cuvier 1829 (Versova landing centre)



**Fig.2** Anophthalmic specimen of *Terapont heraps* Cuvier, 1829. TL= 13.06cm SL= 11.25cm  
scale-bar: 1cm



**Fig.3** Normal specimen of *Terapont heraps* Cuvier, 1829. TL= 13.75cm SL= 11.94cm



**Table.1** Comparative morphometric and meristic traits of anophthalmic and normal *Terapont heraps* Cuvier, 1829 collected from Versova, Mumbai

Morphometric / meristic traits	Anophthalmic specimen	Normal specimen
total length	13.06	13.74
standard length	11.25	11.94
pre dorsal length	3.55	4.16
pre pectoral length	3.03	3.21
pre pelvic length	3.77	3.89
maximum body depth	3.73	4.32
head length	3.11	3.74
pelvic fin length	2.37	2.72
pectoral fin length	2.12	2.53
first dorsal fin spine length	0.47	0.61
eye diameter	0.68	0.94
dorsal fin	XII 9	XII 9
pelvic fin rays	I 5	I 5
pectoral fin rays	15	15
anal fin	III 8	III 8
lateral line scales	59	52
caudal fin	14	14
weight	58.78	64.21
sex	Female	Female

**Table.2** Morphometric traits as percentage of standard length in both anophthalmic and normal specimen of *Terapont heraps* Cuvier, 1829

Morphometric traits	Anophthalmic specimen	Normal specimen
pre dorsal length	31.55 %	34.84 %
pre pectoral length	26.93 %	26.88 %
pre pelvic length	21.06 %	22.78 %
maximum body depth	33.15 %	36.18 %
head length	27.64 %	31.32 %
pelvic fin length	21.06 %	22.78 %
pectoral fin length	18.84 %	21.18 %
eye diameter	6.04 %	7.87 %

The study revealed that there are no significant variation between anophthalmic and normal specimen of *Terapont heraps*. Therefore it is concluded that anophthalmia has no effect on growth and physiology of the specimen studied.

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