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First record of deformity in Chinese Pomfret, *Pampus chinensis* (Euphrasen, 1788) from Indian waters

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The Chinese pomfret *Pampus chinensis* (Euphrasen, 1788) (Stromateidae) observed with deformity from fish landings at the Jegathapattinam fishing harbour along Palk Bay coast of Tamil Nadu. The abnormality owing to fractional dorsal fin may call as 'saddleback syndrome' and this may be due to any kind of physical injury during early stages or to a higher chance of predation and in due course, the wound healed and the individual survive even with extreme deformed condition. Such a deformity for this species of Pomfret has never been documented from Indian waters and this could be the first record in *Pampus chinensis*.

[Keywords: Chinese pomfret; Palk bay; Saddleback syndrome; Stromateidae]

Introduction

From 16th century onwards biologists have drivenattention towards the deformities in the fishes[1]. Many reports have been published, from time to time, on various forms of deformity in the wild fishes[2-10]. In most cases, the skeletal deformity was accounted as developmental anomalies, due to adverse environmental parameters[11,12] through contaminant[13,14] and of genetic mutation[15,16]. The environmental stress plays a vital role in skeletal deformities in the wild fish[4,7,10,13]. However, in fishes, fin deformity has not been explored in detail and also not well justified[17]. Al-Hassan[18] reported that malformation of the skeleton in *Pampus argenteus* in commercial catch from the Arabian Gulf area, which was collected at Sharjah fish market, U.A.E. Jawad and AL-Mamry[19] reported saddle back syndrome in the wild caught Silver pomfret, for the second time. The present paper is the documentation of the absence of pterygiophore supporting the dorsal fin in a wild-caught individual of chinese pomfret *Pampus chinensis* (Euphrasen 1788) from Indian waters.

Material and Methods

The specimen with deformity was observed during the routine analysis of trawl catch, from Jegathapattinam fishing harbour (Fig. 1), Palk Bay, Tamil Nadu (N 9.962134, E 79.185584) on 21st March 2017. Among the collected specimens of Chinese pomfret, a specimen lacking pterygiophore, was collected and brought to the laboratory for further examination. The species was identified using FAO species identification sheets, for fishing area 51. The fish was caught from Palk Bay, at a distance of 12 nm from the sea shore, at the depth of 28 m, in the southeast direction of Jegathapattinam by a trawler. Upon further examination of the specimen and literature survey, it was found that such deformity in Chinese pomfret has never been documented from Indian waters.

The morphological and meristic characters of the deformed as well as normal specimens were measured to the nearest 1 mm with digital Vernier caliper (Mitutoyo CD-6CSX) and the weight was measured to the nearest gm by a balance. Similarly the X-ray of the deformed and normal specimens was also taken for comparative analysis.

The deformed specimen has been deposited in the Marine Biodiversity Museum of Central Marine Fisheries Research Institute, Mandapam with the accession number MMM-CMFRI 17001.

Results

The general morphological features of the deformed specimen (SL 310 mm, body weight 1.417 kg) were compared with the normal specimen (SL 147 mm, body weight 221.76 gm) (Fig. 2A-B).Morphological

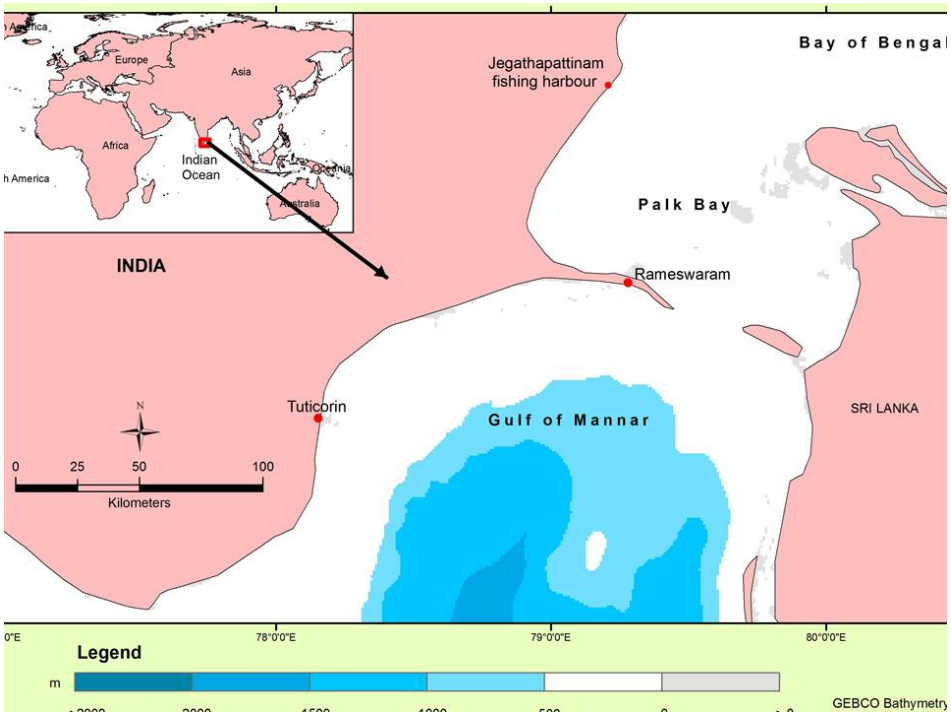

Fig. 1 — Location of deformed *Pampus chinensis* observed at Jegathapattinam Palk Bay, South east coast of India

Fig.2 — (A) External morphology of Normal Chinese pomfret *Pampus chinensis*, (B) External morphology of fish with severe dorsal fin deformity

Table 1 — Comparison of morphological features (mm) of normal and abnormal specimens of Chinese pomfret *Pampus chinensis*

Parameters	Deformed specimen	Normal specimen
Total Length	380	185
Standard Length	310	147.40
Fork Length	305	150
Head Length	120	30
Eye Diameter	13	10
Snout Length	18	10
Upper Jaw Length	22	12
Body depth	185	110
Dorsal Fin Length	58.06	91.28
Dorsal Fin Base Length	54.38	87.03
Pectoral Fin Length	90	60
Pectoral Fin Base Length	30	18
Anal Fin Length	165	95
Anal Fin Base Length	175	9
Caudal peduncle Depth	40	25
Caudal peduncle Length	30	17
Pre Pectoral length	75	40
Pre Anal Length	16	60

characteristics of normal and abnormal specimens revealed variations in the count of dorsal fin ray (13 in deformed specimen and 42 in normal) (Table 1). The degree of deformity could further be understood from the longer and wider dorsal fin base of the normal specimen which account for 59.04 % in total

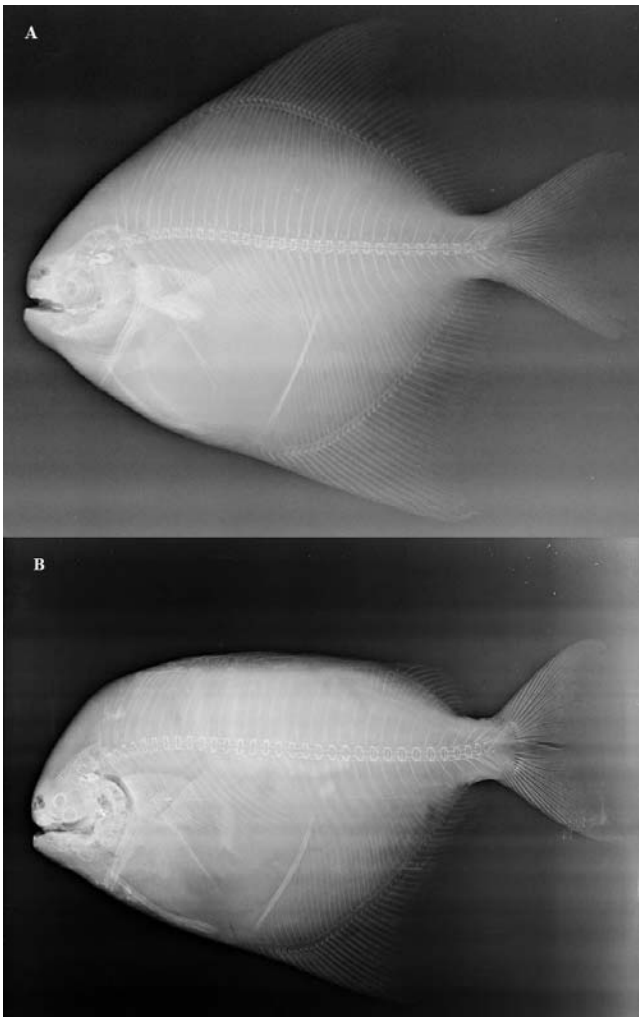

Fig.3 — (A) Radiograph of Normal Chinese pomfret *Pampus chinensis* (B) Radiograph of Chinese pomfret *Pampus chinensis*with severe dorsal fin deformity

length, whereas in the deformed individual, it was only 17.72 %. The X-ray also revealed deformity in pterygiophores which support the dorsal fin of abnormal fish (Fig. 3A-B).

Discussion

There have been numerous reports by several authors on various types of deformities in wild fishes. The deformities in the dorsal fin and caudal fin of silver pomfret, *Pampus argenteus* were recorded from Kuwait[20] and Arabian Gulf coast of Oman[19,21,22]. Jawad and Salarpouri[23] reported the anal fin deformity in long fin trevally, *Carangoides armatus* from Persian Gulf waters. The deformities like vertebral deformities in blue-spotted spine foot, *Siganus corallines*[24], genus *Pampus*[25] and musculoskeletal abnormalities in *Trachinotus blochii*[26] were also reported.

Dutta et al.[27] observed morphological and skeletal deformities in *Labeo rohita* in freshwater pond fish from Punjab. Koumoundouros[10] reported the absence of pterygiophores in parrotfish, *Sparisoma cretense* (L., 1758). Similar type of deformity in the dorsal fin was reported by Jawad and Al-Mamry[19] in silver pomfret but the deformity, in the present case, is more severe than that of Al-Mamry[21]. In general, deformity in fishes affects the routine performance like prey and predation phenomenon and courtship behaviour in fishes[10,28]. Koumoundouros et al.,[29] explained that lack of pterygiophore is the result of irregularities during ontogenetic changes in larval stages. Sometimes injuries due to distress in line with robust water current or some bird attack can also lead to deformity in fishes. There are many factors responsible for structural abnormalities in fish skeleton or fins, like genetic factors, inbreeding depression, nutritional deficiency, diseases, parasites, temperature fluctuation during early life stages, low PH, environmental pollution in both wild and cultured fishes[30-32] etc. In the absence of exact knowledge of cause of deformity, it is challenging to assign factor. However, in the present case it is hypothesized that the deformity must have occurred owing to physical injury or active predatory attack by a large predator on its dorsal side during early stages and later it healed and survived.

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