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Short Communication

First report on the occurrence of two marine ornamental fishes (Acanthuriformes) from Northern part of the Bay of Bengal, India

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The present paper reports two marine ornamental fishes, *Acanthurus xanthopterus* Valenciennes, 1835 and *Zanclus cornutus* (Linnaeus, 1758), for the first time from the coastal waters of West Bengal and Odisha, Northern part of the Bay of Bengal, India. The present study provides detailed taxonomic information on morphometric measurements, species characteristics, and distribution of reported fishes.

[**Keywords**: Acanthuridae, Bay of Bengal, First report, Northeast coast, Odisha, Zanclidae]

Introduction

There are numerous studies carried out so far on the ichthyofaunal diversity of West Bengal[1-9] and Odisha coasts[10-18]; however, these studies did not report the occurrence of Yellowfin surgeonfish *Acanthurus xanthopterus* Valenciennes, 1835 of family Acanthuridae and Moorish idol *Zanclus cornutus* (Linnaeus, 1758) of the family Zanclidae. The Acanthurids are usually associated with coral and rocky reefs in tropical and subtropical waters worldwide, comprising of 85 species under six genera[19]. In India, 40 species of Acanthurids have been recorded under five genera[20]. The family Zanclidae includes only one genus and one species worldwide *i.e.*, *Zanclus cornutus* (Linnaeus, 1758)[21]. It is usually associated with coral reefs, although specimens have been caught at depths of 1 – 180 m (Froese & Pauly[22]). Both species are very attractive owing to their colour patterns in live conditions and unique shapes for which these can be well utilised as marine ornamental fishes. These fishes have a huge potential market value in live marine ornamental fish trading.

Materials and Methods

Fish specimens in the current study were collected from the trawl net fishery catch landed at Digha Mohana fish landing centre, West Bengal and Chandipur fish landing centre, Odisha. Post-collection, the specimens were photographed and preserved in 10 % formalin. Morphometric measurements were done using a digital calliper with an accuracy of 0.1 mm. Four specimens (*A. xanthopterus* = MARC/ZSI/F8356; MARC/ZSI/F3045 and *Z. cornutus* = MARC/ZSI/F8358; MARC/ZSI/F3800) are submitted to the National Zoological Collection (NZC) repository at the Zoological Survey of India, Marine Aquarium and Regional Centre, Digha, West Bengal, India.

Results

The details of morphometric measurements and meristic counts of the reported species are presented in Table 1.

1. *Acanthurus xanthopterus* Valenciennes, 1835

Common name: Yellowfin Surgeonfish

1835. *Acanthurus xanthopterus* Cuvier and Valenciennes, Histoire naturelle des poissons. Tome dixième. Suite du livreneuvième. Scombéroïdes. Livredixième. De la famille des Teuthyes. Livreonzième. De la famille des Taenioïdes. Livredouzième. Des Athérines. v. 10: i-xxiv + 1-482 + 2 pp., Pls. 280-306.

Material examined: Two specimens; SL 189 – 244 mm; location: Digha Mohana, collection date: July 21, 2018 (MARC/ZSI/F8356); Chandipur, collection date: June 14, 2013 (MARC/ZSI/F3045).

Diagnostic characters: D: IX+26, A: II+25, P: I+14, LL: P, GR: 17-19. Body oblong, compressed (Fig. 1), its depth 2.12 – 2.19 in SL. Head profile convex, head length 0.26 in SL. Mouth terminal, eye diameter 0.23 – 0.25 in HL; interorbital space convex and 0.21 – 0.34 in HL. Violet grey coloration with a yellow stain on the eyes and snout; distal part of the pectoral fins yellow. High and compressed body. A folding spine on both sides of the caudal peduncle. Pelvic fin rays I, 4. Long and high dorsal and anal fins. Mouth small, teeth fixed and in a single row.

Colour: Body blue grey with irregular dark grey lines vertically; a dull yellow area behind and in front

Table 1 — Morphometric characters and meristic counts of reported marine ornamental fishes (Acanthuriformes)

Morphometric Characters (in mm)	*A. xanthopterus* Valenciennes, 1835		*Z. cornutus* (Linnaeus, 1758)	
	Specimen 1	Specimen 2	Specimen 1	Specimen 2
Total length	285	248	172	119
Standard length	244	189	148	90
Body depth	111	89	122	80
Head length	64	51	47	29
Pre dorsal length	84	69	87	67
Pre pectoral length	62	51	54	31
Pre pelvic length	84	68	70	41
Pre anal length	113	93	98	57
4th dorsal spine height	32	29	-	-
2nd anal spine height	28	21	-	-
Pectoral spine	58	50	34	31
Pelvic spine length	24	20	24	25
Soft pelvic length	41	34	35	29
Head depth	75	71	78	47
Head width	23	21	18	14
Eye diameter	15	13	12	09
Pre orbital length	37	28	37	14
Post orbital length	51	41	49	23
Inter orbital space	22	11	13	12
Upper jaw length	10	09	05	05
Lower jaw length	09	06	04	03
Maxillary width	14	12	08	08
Snout length	36	27	29	15

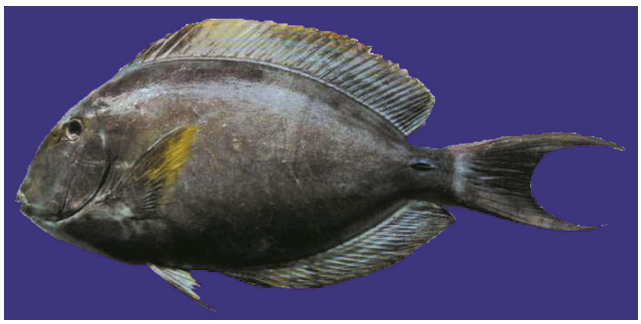

Fig. 1 — *Acanthurus xanthopterus* Valenciennes, 1835

of eye; caudal fin bluish-grey; dorsal and anal fins with alternate yellow and blue stripes; outer third of pectoral yellow.

Distribution: Indo-Pacific, East Africa, Eastern Pacific[23]; Red Sea, Persian Gulf[24]; and Eastern Coast of Somalia[25]. From Indian coastal waters, this species is reported from Andaman and Nicobar Island[26], Andhra Pradesh[27], Tamil Nadu[28], Kerala[29], Karnataka[30], Maharashtra[31] and Lakshadweep[32].

2. *Zanclus cornutus* (Linnaeus, 1758)

Common name: Moorish Idol

1758. Linnaeus, Systema Naturae, Ed. X. (Systemanaturae per regna trianaturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Tomus I. Editiodecima, reformata) Holmiae. v. 1: i-ii + 1-824.

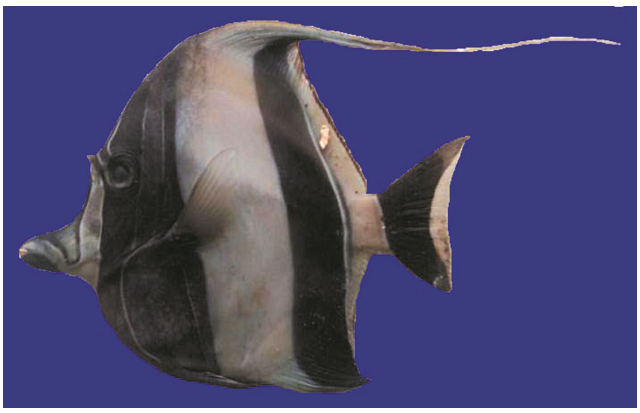

Fig. 2 — *Zanclus cornutus* (Linnaeus, 1758)

Material examined: Two specimens; SL 90 – 148 mm; location: Digha Mohana, collection date: July 21, 2018 (MARC/ZSI/F8358); Chandipur, collection date: July 5, 2013, (MARC/ZSI/F3800).

Diagnostic characters: D: VII+42, A: III+33, P: 19, PL/V: I+5, GR: 10. Body very deep and compressed (Fig. 2). Its depth 0.82 – 088 mm in SL. Snout narrow and protruding, its length 3.65 – 4.10 mm in HL. Mouth small with slender and uniserial teeth. A bony projection present in front of eye. First dorsal spine extremely long and filamentous. Snout protruding and its pre-maxilla protractile. Caudal spine and keels absent on caudal peduncle. Dark black vertical bands present on body.

Colour: Body anteriorly white, posteriorly yellow, with alternate transverse broad white and 2 broad black vertical bands present. The first black band nearly encloses eyes in its anterior part and broadens ventrally to include the chest, pelvic fins, and half of the abdomen. Second black band is on the posterior half of the body, edged posteriorly with single white and black lines, and extends into both dorsal and anal fins. A black-edged orange saddle-like marking present on snout; chin black; caudal fin largely black incorporating a 3rd black band, its posterior margin is with white band; dorsal fin white except for intrusion of upper part of second black bar and a yellow zone posterior to it.

Distribution: Indo-Pacific: East Africa to Rapa and Ducie Islands, north to Southern Japan and the Hawaiian Islands, south to the Lord Howe Island. Eastern Pacific: Southern Gulf of California to Peru[22]. From Indian coastal waters, this species was previously reported from Andaman and Nicobar Island[33], Tamil Nadu[28], Kerala[29], Karnataka[30] and Lakshadweep[34].

Discussion

During the survey, it was observed that the Yellowfin surgeonfish and Moorish idol, as well as several ornamental fishes of different families, are found in huge quantities in the northern part of the east coast of India; but due to lack of interest and awareness of local fishermen along with unsuitable infrastructures for live culture and selling, a huge quantity of marine ornamental fishes are treated like trash. Thus, the present study demands an urgent need to increase awareness among the fishermen and develop infrastructure (FRP tank, quarantine tank, water filtration, etc.) for a live culture of such type of highly commercial ornamental species. The well-established marine ornamental fish industry may increase the socio-economic status of the local fisher folk population. Further exploration and regular monitoring may assist in enriching the fish faunal diversity of these coastal states.

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Conflict of Interest

Authors declare no competing or conflict of interest.

Ethical Statement

The authors declare that no live organisms were harmed during the study. The consent of all the authors of this paper has been obtained for submitting the paper to the "Indian Journal of Geo-Marine Sciences".

Author Contributions

JP, DR & SB: Sample collection, preservation, identification, manuscript preparation and Critical evaluation of the manuscript.

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