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First Record of two Labroid fishes of the genera *Halichoeres* and *Cheilinus* (Perciformes : Labridae) from Northern Bay of Bengal

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Abstract

Two species of fishes belonging to the family Labridae, *Halichoeres zeylonicus* (Bennett, 1833) and *Cheilinus chlorourus* (Bloch, 1791), are reported for the first time from Digha coastal waters, Northern Bay of Bengal. Morphometric and meristic measurements were taken and the specimens were deposited in Museums of the ICAR-Central Institute of Fisheries Education, Kolkata Centre and Marine Fish Section, Zoological Survey of India, Kolkata. The present finding constitute occurrence and extension of the distributional range of these species to the north-eastern coast of India, earlier Indian records of which were confined to coral reef areas only.

Keywords: *Cheilinus*, First Report, *Halichoeres*, Labridae, North East Coast of India

Introduction

World's second largest marine fish family Labridae, commonly known as wrasses, comprises 71 genera and 519 species (Nelson *et al*., 2016). Gopi and Mishra (2015) reported occurrences of 85 labroid species from Indian waters. No wrasse species has been recorded from West Bengal coast till recent past (Yennawar *et al*., 2017; Kar *et al*., 2017). However, Pradhan and Mahapatra (2017) reported the only species, *Iniistius bimaculatus* (Rüppell, 1829), from West Bengal coastal waters as the single representative of the family. The present paper is intended to report two more species of the family, i.e., *Halichoeres zeylonicus* (Bennett, 1833) and *Cheilinus chlorourus* (Bloch, 1791), from West Bengal coast, India, northern Bay of Bengal.

Unlikely the earlier reported species, these two species are usually known as reef-associated fish but no reef area is reported at close proximity of West Bengal coast yet. However, occurrence of some reef-associate fishes like three species of angelfishes (Ray *et al*., 2012), unicornfish *Naso reticulatus* Randall (Mohapatra *et al*., 2013), three surgeon fishes (Ray *et al*., 2014) and four squirrel-fishes (Ray *et al*., 2015) has been recorded during recent past from this stretch of coastal waters. The present record of two labroid fishes adds to the list of reef associated and ornamental fish fauna from West Bengal coast indicating need of further study in habitat preference and faunal assemblage of these species.

Materials and Methods

Three labroid specimens were collected from the Digha Mohona fish landing centre, West Bengal, India. Fishes are collected from trawl net by fishermen in northern Bay of Bengal, about 60 km off the coast (21° 19′ 38″N and 87° 34′ 29″E), within the Indian EEZ and subsequently identified as *Halichoeres zeylonicus* (Bennett, 1833) and *Cheilinus chlorourus* (Bloch, 1791). After collection of specimens photograph was taken and then preserved in 5% formaldehyde. Those are deposited in the Museum of ICAR-Central Institute of Fisheries Education, Kolkata Centre and Zoological Survey of India, Kolkata Museum. Identification of the specimens was following standard literature (Jones and Kumaran, 1980; Gomon and Randall, 1984; Randall and Smith, 1982; Westneat, 2001; Allen and Erdmann, 2012; Victor, 2016; Froese and Pauly, 2018). Measurements and counts of the examined specimens

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follow Hubbs and Lagler (1964). All the measurements were done with Mitutoyo digital calliper to the nearest 0.01 mm (Table 1).

Material examined: ***Halichoeres zeylonicus*****:** CIFE/KOL/MW/F-0223, 1 ex., 169.22 mm SL, Digha Mohona, West Bengal, 21° 19′ 38′′N and 87° 34′ 29′′E, 09/04/2016, B.K. Mahapatra and Alakesh Pradhan.

Cheilinus chlorourus**:** ZSI/F12074/2, 1 ex, 143.6 mm SL, and collection details same as above; CIFE/KOL/MW/F-0224, 1 ex., 137.2 mm SL, collection details same as above.

Results

Taxonomic account of both the Labroid species thus collected from West Bengal coast are given hereunder.

Family LABRIDAE Cuvier, 1816
Genus ***Halichoeres*** Rüppell, 1835
Halichoeres zeylonicus (Bennett, 1833)

1833. *Julis zeylonicus* Bennett, *Proc. Sci. Corr. Zoo. Soc. London,* 1832 (2): 183 (Type locality: Sri Lanka).
2016. *Halichoeres zeylonicus*: Victor, *Journal of the Ocean Science Foundation*, **22**: 16.

Diagnosis: Body moderately deep, and compressed, covered with cycloid scales; depth at gill opening 3.11 in TL (Table 1). Head compressed to a sharp knife-like edge, extremely convex before eye; Head 4.06 in TL; Eye small and 4.9 in HL and 19.9 in TL; snout very steep and compressed, jaws prominent with 2 large canines situated anteriorly in each jaw; second upper canine teeth recurved. Dorsal fin continuous, but with a gap between second and third spines, the membrane there deeply notched but not to base of fin, origin behind a point midway between eye and pectoral fin base, with 9 spines and 14 soft rays; pre-dorsal length 6.86 in TL, dorsal fin base 1.64 in TL; anal fin with 1 spines and 11 soft rays; pre-anal length 2.24 in TL; pectoral fin well developed with 12 rays; pelvic fins with 1 spine and 5 rays; caudal fin asymmetrically rounded with 14 rays. Lateral lines continuous but steeply curved downward below posterior portion of dorsal fin, with 25 pored scales; 3 rows of scales between lateral line and dorsal fin origin. Cheeks without scales below the eye; operculam with 8 rows of rudimentary scales; breast scaled with moderate sized scales.

Colouration: Body pale grey to bright pink in colour, with a black spot on side beneath distal end of pectoral fin; light yellow colouration before the black spot; scattered orange-red dots on body, especially along lateral line; orange-yellow lateral stripe blue-edged, with narrow extensions; leading edge of head pale blue; snout region has tinge of yellowish in colour; dorsal fin tip darker pink in colour; caudal fin with pale blue or light orange-yellow coloured vertical lines and presence of numerous orange or pink dots; anal fin with a orange and pale blue line near base, the rest of fin pale yellowish, blue-edged spot at the upper portion of the pectoral fin base, and two similar blue-edged spots just anterior of the caudal peduncle above the lateral stripe. Black spot on lower side of third row of scales below lateral line present; scattered orange-red dots on body, especially along lateral line and caudal fin.

Figure 1. Goldstripe wrasse, *Halichoeres zeylonicus* from Digha, India (CIFE/KOL/MW/F-0223).

Distribution: It occurs throughout Indian Ocean (Red Sea, East Africa, Madagascar to western Indonesia up to Bali Island) (Froese and Pauly, 2018), but replaced by *Halicheres hartzfeldi* (Bleeker) in Western Pacific (Victor, 2016), from India it is reported from Lakshadweep and Gulf of Mannar (*see* Discussion).

Cheilinus Rüppell, 1835
Cheilinus chlorourus (Bloch, 1791)

1791. *Sparus chlorourus* Bloch, *Nat. Der. Aus. Fisc.* (Pl. 260) **5**: 24 (Type locality: Japan).
2012. *Cheilinus chlorourus*: Allen and Erdmann, *Reef Fishes of East Indies*, **2**: 642.

Diagnosis: Body moderately deep, body depth 3.6 (3.3) in SL, equal to or more than head length, body width 2.6 (2.9) in depth; head convexly curved in front of dorsal fin, then straight to tip of snout, head length 3.6 (4.0) in SL; orbit diameter 5.6 (4.9) in HL. Mouth protrusible; jaw prominent and subequal; 2 strong canines situated anteriorly in each jaw. Dorsal fin continuous with 10 spines and 9 soft rays; anal fin with 3 spines and 8 soft rays; pectoral fins with 2 unbranched and 10 branched rays; pelvic fin slightly filamentous; caudal fin rounded with 11 branched rays, the upper and lower rays forming elongate lobes. Lateral line interrupted below posterior portion of dorsal fin base with a total of 23 pored scales. Scales reached well onto bases of dorsal and anal fins; 6 scales in front of dorsal fin extending forward to above centre of eye; check and opercle with 2 rows of scales; lower jaw without scales.

Colouration: Body greenish brown with reddish brown fins; each scale on sides usually with a bluish spot, spots extending onto dorsal and anal fins; head with read spots, some joining form lines radiating from eye. Base and edge of the caudal fin whitish in colour, mid of caudal fin bluish black with bright bluish and whitish dots. Canine teethes in jaw bluish in colour.

Figure 2. Floral wrasse, *Cheilinus chlorourus* from Digha, India (ZSI/F12074/2).

Distribution: Widely distributed in Indo-Pacific from East and South Africa, east to Wake Atoll and Marshall Island in Western Pacific, further eastward to Hawaii, Marquesas and Galapagos Island in east Pacific, north to southern Japan, south to New Caledonia and Rapa (Froese and Pauly, 2018). Along Indian coast this species is reported from Andaman Islands, Lakshadweep, Tamil Nadu and Kerala.

Table 1. Morphometric measurements (in % SL and % HL)

Characters	***H. zeylonicus* (Bennett)**	***C. chlorourus* (Bloch)**
Total length (mm)	194.76	166.4-173.5
Standard length (mm)	169.22	137.2-143.6
% SL		
Body depth	18.04	27.95-30.51
Body width	6.96	10.28-10.83
Head length	18.64	24.82-27.34
Snout length	4.66	7.65-9.32
Orbit diameter	2.73	4.83-5.06
Interorbital width	5.22	6.23-6.47
Upper-jaw length	5.31	6.82-7.42
Caudal-peduncle depth	7.40	11.43-11.81
Caudal-peduncle length	7.66	9.57-9.84
Predorsal length	12.71	26.80-26.92
Preanal length	18.79	46.33-46.60
Prepelvic length	18.13	26.29-27.48
Base of dorsal fin	37.21	37.35-40.87
First dorsal spine	4.66	4.66-4.92
Second dorsal spine	4.76	6.05-6.72
Third dorsal spine	3.75	6.79-7.09
Base of anal fin	20.58	17.34-18.35
First anal spine	3.78	5.64-5.70
Second anal spine	4.05	7.89-8.51
Third anal spine	13.18	11.11-12.04
Pectoral-fin length	11.82	15.21-16.25
Pelvic-fin length	10.23	17.41-17.90
Pelvic-spine length	5.55	9.37-9.93
Caudal-fin length	8.38	17.03-17.98
% HL		
Snout length	24.98	30.84-34.10
Orbit diameter	14.65	17.68-21.33
Interorbital width	27.99	22.77-26.09

Discussion

In Indian waters, the name of *H. zeylonicus* was first appeared in the list of fishes from Minicoy, Lakshadweep (Nagabhushanam and Rao, 1972) as *Halichoeres bimaculatus* Ruppell (name only), a synonym of *H. zeylonicus* (Bennett) (Parenti and Randall, 2000), without any taxonomic information. Photographic evidence indicates its occurrence at Tuticotin, Tamil Nadu (Randall's Tank photo) and Visakhapatnam, Andhra Pradesh (photograph by Pramod Ganapathiraju in FishBase). Victor (2016) documented occurrence of *H. zeylonicus* from Gulf of Mannar India, at a close proximity of its type locality, Sri Lanka, supported by photographic as well as molecular evidence. Usually this species is known to inhabit open sandy and rubbly areas of seaward reefs (Lieske and Myers, 1994). However, the present record of *H. zeylonicus* from West Bengal coast with material evidence is more interesting as no reef area known to present nearby West Bengal coast, where the water have low salinity and high turbidity. Victor (2016) provided several photographs of *H. zeylonicus* and discussed distributional identity of species with similar colour pattern and confirmed it being an Indian Ocean species replaced by *H. hartzfeldii* in Western Pacific.

As mentioned earlier, *Cheilinus chlorourus* has been reported from Lakshadweep Islands (Kavarathi and Minicoy) (Jones and Kumaran, 1980), from Gulf of Mannar (Joshi *et al*., 2016) and Andamans (Rao *et al*., 2000), all reef areas. Report from Kerala coast (Bijukumar and Raghavan, 2015) mainly included fishes captured far from the cost in Lakshadweep Sea in most of the cases, and so, possibilities are more for it being captured from near a reef. *C. chlorourus* can easily be distinguished from all other species of the genus *Cheilinus* in having X dorsal fin spines and 9 soft rays (vs. D IX, 9-11 in other species). Pale spots on caudal and anal fin and absence of white-black streaks on body scales distinguish it from its similar looking congener, *Cheilinus trilobatus* Lacepede (1801).

It is interesting to find two reef associate labroid fishes, *H. zeylonicus* and *C. chlorourus*, combined with other reports as mentioned in the introduction. The authors feel, if an underwater topographic survey undertaken, one may find a ridge having reef associated benthic organisms as also seen near Gopalpur, Odisha coast (Roy *et al.,* 2017). The present report of *H. zeylonicus* and *C. chlorourus*, forms its first record from northern Bay of Bengal with extension of distributional range along Indian coast.

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