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Occurrence of Blubberlip snapper, *Lutjanus rivulatus* (Cuvier, 1828) from Chilika lagoon, India

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The finding of Blubberlip snapper, *Lutjanus rivulatus* from a Ramsar site of India, Chilika lagoon (located along Odisha coast) is reported. This is recorded for the first time from the lagoon. Details of morphology, morphometric and meristic characters are also discussed.

[**Keywords:** *Lutjanus rivulatus*, Blubberlip snapper, Chilika, India]

Introduction

Chilika lagoon was the first Indian wetland designated as a Wetland of International importance under Ramsar convention in 1991 due to its rich biodiversity. Among ichthyo-faunal diversity, it harbors around 317 finfish species belonging to 207 genera in 88 families and 23 orders¹; 35 crab species of 24 genera in 9 families; 29 prawn species of 18 genera in 8 families and 2 lobsters of 1 genera in 1 family².

The snappers (Perciformes: Lutjanidae) are distributed in tropics to the temperate waters and forms an important fishery³. Globally, the family Lutjanidae comprises of 17 genera and around 110 species of which the genus *Lutjanus* forms the largest genus⁴. Barman *et al.* enlisted 45 species of 9 genera from India⁵. List was updated to 49 species in 10 genera⁶. Earlier workers reported only four species of snappers (Family: Lutjanidae) from Chilika those are, *Lutjanus argentimaculatus* (Forsskal, 1775), *Lutjanus indicus* Allen, White, Erdmann, 2013, *Lutjanus johnii* (Bloch, 1792), *Lutjanus kasmira* (Forsskal, 1775)^{1,2,7}. Present record of a Lutjanidae fish species, *Lutjanus rivulatus* is an addition to the ichthyo-faunal diversity of Chilika lagoon.

Materials and Methods

A single fresh fish specimen was collected from fishing boat, caught by hook and line in the outer channel sector of Chilika (85°441' E and 19°672' N) on 9 September 2015. After 3 months (9 December 2015), second specimen was collected from nearly

same location (85°442' E and 19°674' N) caught in trammel net with inner layer mesh 40 mm and outer layer mesh 130 mm. Immediately after collection, the specimen was washed with freshwater, photographed, length (mm) and weight (g) was measured onboard and then preserved in 10% formaldehyde in a plastic container with proper labeling. Specimen was identified using keys given by Fischer and Bianchi⁸. Morphometric and meristic characters were determined in the laboratory. Physic-chemical characters of sampling site were analyzed by following APHA⁹. One specimen was deposited in the fish museum of Wetland Research and Training Center (of Chilika Development Authority), Barkul, Khurda, Odisha with Regd. No: CDA/261/2015.

Results and Discussion

Systematics account: Order: Perciformes Bleeker 1859; Family: Lutjanidae Gill, 1861; Genus: *Lutjanus* Bloch, 1970; Type: *Lutjanus rivulatus* (Cuvier, 1828) (Fig. 1)



Fig. 1 —Specimen of *Lutjanus rivulatus* recorded from Chilika lagoon (CDA/261/2015).

The specimens collected from Chilika lagoon had total lengths of 101-120 mm and their weight 22-32 g. Each specimen is characterized by having a slender body, which is elongate to moderately deep and laterally compressed. Its body depth is 3 times in standard length (SL). Dorsal profile of head sharply sloped. Preorbital bone is broad, twice the eye diameter. The preopercular notch and knob is moderately developed. Posterior and inferior preopercular border is denticulate. Six transverse rows of scales are present on operculum. Frontal part of head is naked, bearing numerous ripple blue lines. Mouth is oblique and its maxillary reaching to below front border of eye or of pupil. Small teeth are present on vomer in a sharply dent band, in an elongate band on palatines. Scales beginning on occiput is with a distinct supra-temporal band. Longitudinal rows of scales above lateral line rising obliquely, ascending to dorsal profile, running horizontally below the lateral line. Around 48-52 transverse rows of scales are above lateral line and 45-49 below it. Dorsal spines are robust. First spine is half the length of second, which is shorter than third. Third, fourth and fifth spines are longest among other. Soft dorsal is rounded, as high as spinous part. First anal spine is scarcely less than half-length of the second, which is longer, stronger than the third, and equal to post orbital part of head. Soft part of anal fin is rounded; deeper than spinous part. Pectorals are one third of snout length shorter than head length. The ventral fins (without the filamentous prolongation of the first ray) are as long as head length without snout. Ventral spine is as long as snout. Caudal fin slightly emarginated. The morphometric measurements and their proportions to the major body parts along with detailed meristic counts are given in Table 1.

Body colour olive-brown to blackish dorsally and faded gradually towards ventral, which is silvery white. A chalky white spot surrounded by black margins is located on the lateral line just below the junction of spiny and soft dorsals. Three black longitudinal bands present on body before the chalky spots of which the first band is running before the dorsals and along the neck and is deep black while other bands are often faded. Upper part of spiny dorsal is reddish, while the top of both dorsal rays and anal fins is yellowish. The pelvic and anal fins are deep black whereas the pectorals are completely yellow in colour.

The fish inhabits shallow inshore flats of coastal waters within 50-100 m depth. The juveniles often

Table 1 —Morphometric measurements and meristic characters of *Lutjanus rivulatus* from Chilika lagoon

Parameters	Measures
Total length (mm)	101
Fork length (mm)	97.04 (96.44 % TL)
Standard length (mm)	85.82 (84.97 % TL)
Measurements (mm)	
Head length	32.4 (32.08 % TL)
Body depth	35.68
Eye diameter	8.19
Length of 1 st dorsal spine	4.46
Length of 4 th dorsal spine (longest)	13.72
Dorsal fin base length	49.92 (49.46 % TL)
Pectoral fin length	25.84 (25.58 % TL)
Anal fin length	24.19 (23.95 % TL)
Caudal fin length	19.45 (19.26 % TL)
Dorsal fin base length	12.69 (25.42 % DFL)
Pectoral fin base length	6.48 (25.08 % PFL)
Anal fin base length	14.25 (58.9 % AFL)
Caudal fin height	18.44 (18.25 % TL)
Pre-dorsal length	37.28 (36.91 % TL)
Pre-pectoral length	29.62 (29.33 % TL)
Pre-pelvic length	30.08 (29.78 % TL)
Pre-anal length	55.64 (55.09 % TL)
Horizontal eye diameter	8.24 (25.43 % HL)
Counts	
Dorsal spines	10
Dorsal fin rays	15
Pectoral spines	0
Pectoral fin rays	15
Pelvic spines	01
Pelvic fin rays	05
Anal spines	03
Anal fin rays	08
Caudal fin rays	18
Gill rakers on upper arm of 1 st arch	05
Gill rakers on lower arm of 1 st arch	8+5
Body weight	21.72 g

Abbreviations: TL, total length; HL, head length; DFL, dorsal fin length; PFL, pectoral fin length; AFL, anal fin length

visit near freshwater run-off. Collected specimen are small in size (may be consider as juveniles) encountered from Chilika from sandy bottoms (sand, clay, silt) with water depth of 217-257 cm, transparency 68-154 cm, pH 8.44-8.81, salinity 10.4-12.9 ppt, total alkalinity 76-110 ppm, dissolved oxygen 5.8-6.4 ppm and water temperature 29.7-31.9 °C.

Globally the species has been well distributed in the Indo-pacific region i.e., from East Africa to Tahiti and northern Japan to South Australia. In the east coast of India, the species have been reported from Chennai coast of Tamil Nadu⁶, Digha coast of West Bengal^{5,10} and Gulf of Mannar^{11,12}.

Lutjanus rivulatus appearance closely matches with that of *Lutjanus stellatus*, which also occur in coastal waters of India. Morphological difference between these two species is the presence of many blue wavy lines on head of former while entirely absent in later species. In addition, presence of a white (chalky) spot on the lateral line in case of *L. rivulatus* and in *L. stellatus*, the spot is above the lateral line.

It is presumed that the fish has migrated from its main habitat, the Bay of Bengal to the lagoon through outer channel (new mouth) and dwell in the channel up to Satapada area. As the specimens have been recorded two times, in the months of September and December of 2015, this finding can be conclude that the species has well established population in coastal waters of Odisha and in Chilika lagoon. The collected site may be feeding ground for the species as the collected specimen are relatively in small sized. It has also been found that majority of fishes that migrated from sea to the lagoon is for the purpose of feeding or breeding. Therefore, the population characteristics of the species can be studied to ascertain the abundance, distribution and occurrence of the species in Chilika lagoon. However, the present occurrence of *Lutjanus rivulatus* from Chilika lagoon is an outcome of its post restoration effect as many fish species has been recorded from the geographical boundary of the lagoon in recent years.

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