

Note

Sexual dimorphism in the silverbelly *Leiognathus brevisrostris* (Valenciennes)

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Abstract

Sexual dimorphism in the silverbelly *Leiognathus brevisrostris* (Val.) is reported. Females grow larger and heavier than males. In the former, both caudal fin lobes are tinged pale yellow. But in males, the lower lobe is more yellowish. Similarly, in females only the anterior $\frac{3}{4}$ portion of the anal fin is coloured yellow. But in males the anterior region as well as the entire margin of the anal fin is coloured bright orange yellow. Females overcome males in all morphometric measurements also.

Sexual dimorphism is wide spread in nature and can be influenced by sex specific natural selection resulting from ecological differences between the sexes (Reimchen and Nosil, 2004). Many fish species show sexual dimorphism, a condition where males and females are different in colour and or form, thus sexes can be detected externally. The phenomenon has been reported in *Tetradon travancoricus* (Inasu, 1993), *Priacanthus hamrur* (Tessy and Inasu, 1998a), *Ompok bimaculatus* and *Horabagrus brachysoma* (Molly and Inasu, 1977), to mention a few.

The silverbellies, locally called *Mullen* in Malayalam, *Karal* in Tamil, *Karlu* in Telugu support an important fishery along the Indian coast (Murty *et al.*, 2003). Though nearly 21 species of silverbellies are recorded from Indian waters, only 16 of them have been found to occur in the fishery along the Kerala coast. *Leiognathus brevisrostris* is one among the four species that contribute to the bulk of the landings. The sexual dimorphism in the species is reported here.

Materials and methods

Two hundred and fifty two adult specimens (males - 180, females -72) were collected in fresh condition during January to May 2005 from Munambam and Chettuwa fish landing centres in Kerala. The colour pat-

tern in sexes were noted in fresh condition itself before preserving then in 5% formalin for morphometry. Various measurements in mm viz. total length, head length, maximum width, caudal peduncle length, inter-orbital space and eye diameter were taken for each fish using a Vernier caliper. The total weight (g) of each fish also was recorded.

Results and discussion

Eventhough the males and females of *L.brevisrostris* look alike, a close observation and the morphometry showed existence of sexual dimorphism (Tables 1 & 2). The females dominated in the dimensions of the body. Females are larger and heavier than the other sex of the same length group. No female fish in 70-89 mm length with a developing ovary were observed. At the same time 32 males with developing gonad were observed in the same length group. Similarly, no males were recorded in the highest size group 130-139mm, as against 4 females. These females showed fully ripe/spent ovary. Maximum number of males belonged to 100-119mm size group.

In *L.brevisrostris*, the males are more ornamental than females, especially during the breeding season. In females the margin of both the upper and lower caudal fin lobes are tinged pale yellow. But in males, the lower caudal fin

Table 1. Average morphometric details of *L.brevisrostris*

Measurements (mm)	Average (mm)		Range (mm)	
	Male	Female	Male	Female
Total length	108	119	75.0-124.0	90.0-134.0
Maximum width	42.2	51.1	40.0-48.0	44.0-55.0
Eye diameter	7.4	7.7	6.0-8.0	6.0-10.0
Inter orbital space	7.1	7.8	6.0-8.0	6.0-9.0
Caudal peduncle lt	6.4	7.6	6.0-7.0	6.0-8.0
Head length	32.5	35.0	30.0-38.0	31.0-39.0
Total wt (g)	11.8	16.9	4.1-20.8	8.1-28.3

Table 2. Average length (mm) and weight (g) of *L.brevirostris*

Size group (mm)	Sample size		Av. Lt (mm)		Av.wt (g)	
	Male	Female	Male	Female	Male	Female
70-79	2		76	-	4.3	-
80-89	30		86	-	7.3	-
90-99	45	5	94	95	8.7	10.1
100-109	65	20	103	105	13.5	15.4
110-119	32	28	111	116	16.5	18.3
120-129	6	15	120	125	18.1	20.9
130-139	-	4	-	132	-	24.2

Fig. 1. Male and female *L. brevirostris*

lobe is more yellowish (Fig.1). Similarly in females only the anterior $\frac{3}{4}$ portion of the anal fin is coloured yellow. But in males the anterior region and the entire margin of the anal fin are coloured bright orange yellow.

In the bullseye, *Priacanthus hamrur* and *Pomadasys maculatus*, the females have been found to dominate the males in morphometric measurements (Tessy and Inasu, 1998a and 1998b). The present study on *L.brevirostris* also indicated that the females overcome the males in all body measurements.

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References

- Inasu, N.D. 1993. *J.Bombay Nat.His.Soc.*, 90:523-524.
- Molly Kurian and N.D.Inasu. 1977.. *J.Inland fish Soc. India*, 29(2):34-39.
- Murty, V. Sriramachandra, K.K.Joshi and J.Rekha Nair. 2003. Silverbellies. In: Mohan Joseph, M. and Jayaprakash,A.A. (Eds.). *Status of exploited marine fisheries of India*. Central Marine Fisheries Research Institute, Kochi, India. p.127-132.
- Tessy J Mandy and N.D.Inasu. 1998a. *J.Bombay Nat.His.Soc.*, 95(1):132-134
- and —————. 1998b. *Ibid.* 95 (3):514-517

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