6.	Males are smaller than the females.	Females are more than two times larger than male.
7.	Average total length 20.57 cm.	Average total length 26.3 cm.
8.	Average head length 5.1 cm.	Average head length 6.13 cm.
9.	Average caudal peduncle length 6.26 cm.	Average caudal peduncle length 7.26 cm..
10.	Average maximum width 5.67 cm.	Average maximum width 7.26 cm.
11.	Average total weight 101.07 gm.	Average total weight 215.8 gm..

Research and P.G. Department of Zoology, Christ College, Irinjalakuda, Kerala

TESSY J. MANDY
N.D. INASU

REFERENCES

FISCHER W. 1974, *Eastern Indian Ocean and Western Central Pacific*, Fish species identifying sheets, Rome, F.A.O.

DAY F. 1958, *Fishes of India*, Today & Tomorrow's Book Agency, Delhi.

INASU. N.D. 1993, *Journal of Bombay Nat. Hist. Society* p. 523-24.

THOBIAS M.P. 1974, *Journal of the Inland Fisheries* Society of India p. 45-50.

NOTES ON CERTAIN SECONDARY SEXUAL FEATURES OF AN EDIBLE PERCH, *POMADASYS MACULATUS* (BLOCH)

ABSTRACT

A clear sexual dimorphism is present in *Pomadasys maculatus* (Bloch). Females are larger and heavier than the males of the same age group. The black blotches on the lateral side of the body are more clearly imprinted in males than in the females. The black basal spot present on the edge of the dorsal fin is more prominent in males than in the females. The dorsal fin in female is more filamentous and protruding. The width of the anterior rim of the opercle in female is broader than that in the male. Anterior part of the upper-Jaw is broader in females. Caudal peduncle is longer in male than that in the female. Females dominate the males in all morphological measurements.

STUDY on the sexual dimorphism is very important in taxonomy, fisheries and other research works. The present work deals with the sexual dimorphism of *Pomadasys maculatus* (Bloch), a marine perch. Day (1958) describes the genus *Pristipoma* with nine number of species. Later the genus *Pristipoma* was renamed as *Pomadasys* and four species of *Pomadasys* were described by W. Fischer (1974 F.A.O.). Sexual dimorphism was worked out in none of these species.

Authors are thankful to Rev. Fr. Jose Chittilappilly C.M.I. Principal, Christ College, Irinjalakuda, Kerala for giving the legal sanction to carry out our research in the research lab of Zoology Department of the college. We are greatful to Sri. Xavier Thanipilly, Marine Exporter, Munampam for providing necessary assistance in the Munampam Harbour for collecting specimens.

MATERIAL AND METHODS

About 100 specimens of adult *Pomadasys maculatus* (Bloch) were collected during the months January to December 1997 in fresh conditions from Munampam (Trichur district, Kerala). Total length, head length, caudal peduncle length, maximum width inter orbital space, diameter of the eye, inter nostril diameter and total weight of 60 specimen were recorded separately. The specimens were preserved in 7% formaldehyde solution.

Later the body cavity of each specimen was cut open and gonad was exposed and

examined. 28 specimens with male gonad, testis were arranged in one group and the 32 specimens with female gonad, ovary were arranged in another group. The morphological

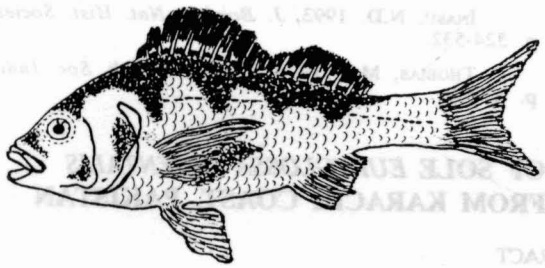

FIG. 1. *Pomadasys maculatus (bloch) Male*

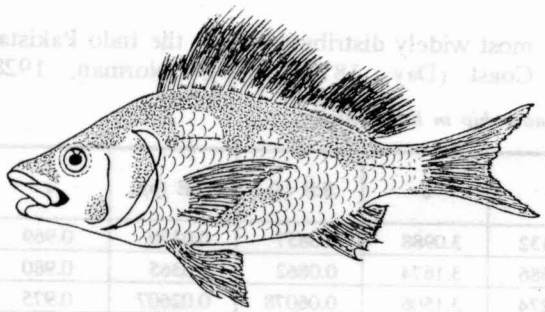

FIG. 2. *Pomadasys maculatus (bloch) Female*

differences between these two groups were studied and compared by selecting two identical sizes belonging to the two sexes, so that with the assumption that they belong to the same age group. They were caught from the same population. The Indian ink diagrams indicating the sexual dimorphism in *Pomadasys maculatus* (Bloch) were drawn and provided for better illustration.

RESULTS AND DISCUSSION

An ideal sexual dimorphism is present in *Pomadasys maculatus* (Bloch). Females are larger and heavier than the males of the same age group. The anterior dorsal part of the upper jaw in female is broader than that in the male. (Fig. 1 & 2). The width of the anterior rim of the opercle in female is broader than that in the male. The inter orbital space and eye diameter of the female is larger than the females. Dorsal fin in female is more filamentous and protruding. The black basal spot present on the edge of the dorsal fin in male is more prominent than that in the female. The black bloches on the lateral side of the body are more clearly imprinted in males than those in the females. The female dominate the male in all morphological measurements (Table 1). Comparison between males and females of the same size also proved the dominance of the females in morphological characters.

TABLE 1. Sexual features-*Pomadasys maculatus* camparison of morphological features in males and females

Males	Females
Males are small	Females are large
Average total length 15.56	Average total length 16.93
Average head length 4.14	Average head length 4.77
Caudal Peduncle length 4.75	Caudal Peduncle length 5.17
Average total weight 52.5	Average total weight 81.72
Average inter orbital space 1.14	Average inter orbital space 1.46
Average eye diameter 1.01	Average eye diameter 1.303
Average inter nostril gap 1	Average inter nostril gap 1.03

The nature of sexual diamorphism in fishes follow mainly two patterns. In some fishes the males will be larger than the females and males will be more ornamental than the females of the same age group. The above mentioned pattern of sexual dimorphism was observed in puffer fish *Tetraodon travancoricus* (Hora and Nair), Inasu (1973) and in filament barb, *Puntius filamentosus* Thobias (1974). But in marine perch *Pomadasys maculatus* (Bloch) females are larger than the males of the same age group.

Research and P.G. Department of Zoology, Christ College, Irinjalakuda, Kerala

TESSY J. MANDY
N.D. INASU

REFERENCES

FISCHER W. 1974, 'Eastern Indian Ocean and Western Central Pacific'. Fish species identifying sheets. Rome F.A.O.

DAY. 1958. 'Fishes of India'. Today & Tomorrow's Book Agency, Delhi.

INASU, N.D. 1993, *J. Bombay Nat. Hist. Society* p. 524-532.

THOBIAS, M.P. 1974, *J. Inland Fish. Soc. India* p. 45-50.

LENGTH WEIGHT RELATIONSHIP OF SOLE *EURYGLOSSA ORIENTALIS* (BL. & SCHN.) (FAMILY: SOLEIDAE) FROM KARACHI COAST, PAKISTAN

ABSTRACT

The length weight relationship of *Euryglossa orientalis* (Bl. & Schn.) collected from commercial landings at Karachi Fish Harbour and Korangi creek between April 1987 to June 1988 showed linear relationship. Separate equation for describing the length weight relationship for male and females are justified.

THE FLAT FISH *Euryglossa orientalis* (Bloch and Schnider) (Soleidae: Pleuronectiformes) is the most widely distributed along the Indo Pakistan Coast (Day, 1878, 1888); (Norman, 1928;

Table 1. *Length-weight relationship in E. orientalis.*

Sex	N	TL range (mm)	Weight range (g)	a	b	S.E (a)	S.E (b)	r
Male	456	87-315	8.3-532.9	-5.0132	3.0988	0.0857	0.0370	0.969
Female	289	103-350	16.0-900	-5.1586	3.1674	0.0862	0.0365	0.980
Combined	745	87-350	8.3-900	-5.1274	3.1506	0.06078	0.02607	0.975

Table 2. *Analysis of covariance for comparison of regression lines of length-weight relationships of males and females of E. orientalis*

S.V.	d.f.	Σxi^2	$\Sigma x^2 y^2$	Σyi^2	Reg. Coeff.	d.f.	Deviation from regression	MS
Male	455	2.5002	7.7465	25.5630	3.0984	454	1.5615	0.000964
Female	288	1.4464	4.5813	15.0664	3.1674	287	0.5557	0.001936
						741	2.1172	0.002900
Pooled	743	3.9466	12.3278	40.6294	3.1237	742	2.1217	0.0028594
		Difference between slope				1	0.0035	0.0035
Total	744	4.2750	13.4691	44.5952	3.1507	743	2.1591	0.002906
		Difference between adjusted means				1	0.0374	0.037400

$$\text{Comparison of slopes } 'F' = \frac{0.0035}{0.002900} = 1.2069 \text{ (d.f. 1,741)-not significant}$$

$$\text{Comparison of elevation } 'F' = \frac{0.0374}{0.002900} = 13.081 \text{ (d.f. 1,742) significant p (<0.001)}$$