

Sex ratio of *Crossocheilus latius* (Ham.) from Subansiri River

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Abstract : The study on sex ratio of *Crossocheilus latius* (Ham.) from Subansiri River was conducted from 2008 to 2009 of which 659 were male and 497 were female fishes were caught with the help of cast net and gill net. The fishes were ranged from 8-15 cm, 16-25 cm and 25-31 cm for combined sex respectively. In the present study in most of the months, the male outnumbered the females. An equal ratio too recorded in October.

IndexTerms - Keywords: Stock size, sex ratio, outnumbered, segregation, reproductive potential.

I. INTRODUCTION

The sex ratio signifies basic knowledge in estimating stock size in fish populations. The overall sex ratio in nature is very close to 1:1 which is taxonomically very important. A variation was found among the *Crossocheilus latius*, but in river Subansiri it may be attributed to some environmental factors, temperature and non-availability of food due to dam construction in the river. Earlier studies attribute sex viability inherent to the stock and sexual segregation differentiation on the growth rate between sexes can cause an imbalance proportion since the sex presenting a faster growth rate. During segregation, slight fluctuations occur in between the male and the female in the river which is almost nearer to the ratio of 1:1. The extensive works have been done, Nikolsky (1963), Vazzoler (1996), Aburto Orpeza et al., (2000), Schultz (1996), Pandiass (1987), Sinha (1984) and Pawar and Mane (2006). The present study aims at providing information on the sex ratio of the male and female relationship of *Crossocheilus latius* in river Subansiri.

II. Materials and Methods



Fig.1. *Crossocheilus latius*

Regular sampling with the help of cast net and gill net to segregate male and female and their body sizes (length) taken in cm. Soon after the collection, the specimens were preserved in 10% formalin. The length of the fishes was recorded. The monthly collection was sexed and grouped into respective size grouped. The total length of each fish was taken from the tip of the snout to the extended tip of the caudal fin using a measuring board.

III. RESULTS

The seasonal data indicating variations in the sex ratio of *Crossocheilus latius*. In June there was a significant difference in the ratio of male and female fishes with a value of 1.85:1 (table 1), which is considered as the highest ratio. It was observed that summer season is the peak for male: female 1.85:1 (table 1)

The ratio of male and female was formed to be lowest in winter with the value of 0.97:1 (table 1). It was observed in the present study that the male population is dominated over the female population for month wise as well as seasonal distribution with the few exceptions to female dominance.

The overall ratio was found to be 1.33:1.0, which showed that the males dominate over females (table 1). The highest percentage of males recorded 64.95% during June in the length group of 18-19 cm. During October, the females recorded a high of 52.00% in the range group of 26-27 cm outnumbering males. The overall percentage of males (57.01%) and females (42.99%) respectively (Table 1). In the present observation, it was found that male and female populations fluctuated slightly and it is not significantly different from the expected ratio 1:1.

Table 1: Sex ratio of *Crossocheilus latius* (2008-09)

Month	Length Group (cm)	Number		Percentage		Ratio
		Male	Female	Male	Female	
January	8-9	76	45	62.81	37.19	1.69:1
February	10-11	76	61	55.47	44.53	1.25:1
March	12-13	53	50	51.46	48.54	1.06:1
April	14-15	35	36	49.30	50.70	0.97:1
May	16-17	85	73	53.80	46.20	1.16:1
June	18-19	63	34	64.95	35.05	1.85:1
July	20-21	74	48	60.66	39.34	1.54:1
August	22-23	65	51	56.03	43.97	1.27:1
September	24-25	32	19	62.75	37.25	1.68:1
October	26-27	12	13	48.00	52.00	0.92:1
November	28-29	39	24	61.90	38.10	1.63:1
December	30-31	49	43	53.26	46.74	1.14:1
Total		659	497	57.01	42.99	1.33:1

The overall sex ratio is 1.33:1

IV. DISCUSSION

The overall sex ratio in nature is very close to 1:1 which is taxonomically very important. The sex ratio signifies stock size in the fish population. From the earlier studies of Kumthekar (1988), Pawar and Mane (2006) give sex viability inherent to the stock and on sexual segregation. Sex ratio very close to 1:1 in the fish population in different size groups indicates good populations and taxonomically very important as normal population, but variations were found among the *Crossocheilus latius* in river Subansiri.

Nikolsky (1963) reported that when food is abundant, female ratios predominate. Departure from the ratio 1:1 is not expected for some fishes although these differences may be attributed to various causes (Schultz, 1996). Sex ratio and size structure constitute information basic in assessing reproductive potential and estimating the stock size population. (Vazzoler, 1996). Most studies available on this subject were done in temperate zones (Abyrto-Orpeza et al., 2000). Differentiation in the growth rate between sexes can cause an imbalance proportion since the sex presenting a faster growth rate. Additionally, if male sex differed from that of a female, the mean fish size for commercial fisheries would be displaced towards one direction resulting in differentiated captures of a determines sex and modifying the stock sexual composition (Nikolsky, 1963). Some research has reported that females required better environmental conditions than males, suffering in their development when environmental conditions

deteriorate. Nikolsky (1963) cited the example of perca fluviatilis which apparently under which served as food for several faster-growing individuals of some species. The monthly and year wise sex ratio did not depart from equality which indicates that males and females are distributed equally in the Subansiri river.

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References :

- [1] Nikolsky, G.V. (1963). The zoology of fishes, 6th ED Academic Press , London, 355.
- [2] Vazzoler, A. E. A.M. (1996). Reproduction biology of teleostean fishes: Theory and practice Maringa, EDUEM, **Brazilian Society of Ichthyology**, 169 (in portuguese).
- [3] Aburto Oropeza, O., Sale, E and Sanchez Ortiz. C., (2000), Feeding behavior, habitat use an abundance of the anglerfish *Holacanthus passer* (pomacanthidae) in the southern sea of Cortes. **Env. Biol. Fish.**, 57: 435-442.
- [4] Schultz, H. (1996) drastic decline of the proportion of males in the roach (*Rutilus Rutilus L.*) of Bautzen Reservoir (Saxony, Germany): result of direct and indirect effects of bio manipulation, *Limmologica*, 26:153-164.
- [5] Pandian, T.T. (1987). Techniques to regulate sex ratio and breeding in tilapia. *Curr.sci* 56:337-343.
- [6] Sinha, M. (1984). Sex ratio, size at first maturity and fecundity of the canine cat fish eel *Plostosus canius* (Hamilton), **Indian Journal Animal**, sci. 54 (12):1151-1158.
- [7] Pawar, B.H. and U.H. Mane (2006). Sex ratio of **Macrones bleekeri** (Bleeker) from Sadatpur lake, Ahmednagar District, Maharashtra. **J. Aqua. Biol.** 21 (2): 182-185.

