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A STUDY OF SEX RATIO OF FISH *PUNTIUS TICTO* (HAMILTON, 1822) FROM GODAVARI RIVER, AT NANDED (MAHARASHTRA), INDIA

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ABSTRACT

The pesent study investigates the sex ratio of Puntius ticto from the Godavari River at Nanded region, Maharashtra State, with the objective of understanding its population structure and reproductive dynamics. Specimens were collected on monthly basis by local fisherman using traditional fishing gear i.e. cast net and drag net. The sex population of *Puntius ticto* found a significant sex ratio male 0.41 and female 0.58 and the percentage of male and female are 41.44% and 58.56%. The ratio was seen fluctuate during year. In general female seem to dominant in the population. The sex ratio was calculated and analyzed in relation to seasonal variations and size groups.

KEYWORDS: Sex ratio, Godavari river, *Puntius ticto.*

INTRODUCTION

A prior knowledge of sex population estimation in fishes is essential for the management practices of fishery sciences. It is important to ensuring a proportional fishing of two sexes. Sex population estimation is defined the abundance of any sex at a particular time or the population is in natural condition, abnormal condition. It is generally found that in a healthy population, the sex ratio should be 1:1. There are other several factors like temperature, water velocity, vulnerability of females to their predators, migratory phase and other ecological hazards, which possibly change the sex composition in stream and rivers. (Jameela Beevi and Ramachandrana 2005).

A prior knowledge of sex population estimation in fishes is essential for the management practices of fishery sciences. For commercial utilization of any fish species, it is highly essential to have a prior knowledge it spawning behavior, which includes months, frequency, sex ratio etc. (Verma, 2019 a). Many ichthyologists have worked on the fishes breeding biology, sex ratio and other aspects of different fishes biology. (Sobhana and Nair, 1976; Dobriyal et al., 2004, Kumar et al., 2006; Shende and Mani, 2009 and Bahuguna et al., 2009, Krishna et al., 2012, Verma 2013 b). The present study is continuation with earlier studies and is dealing with population sex ratio status of *Puntius ticto.*

MATERIAL AND METHODS

The total 502 fishes were captured on monthly basis during January 2024 to December 2024, from Godavari River at Nanded region with the help of local fishermen. Fish collected in fresh condition were numbered, weighed in total body weight (to the nearest gram, g) and measured in total body length (to the nearest centimeter, cm) then preserved in 5% formalin. To identify the sex of fish each fish was dissected and sex was identified bases on the macroscopic characteristics of gonads.

OBSERVATION

The monthly variation in the population sex ratio of *Puntius ticto* is showed in Table 1. The fishes were grouped in 3 cm size group and sex ratio was studied in relation to the different months and size group as shown in Table 1 and Table 2 respectively. From the months distribution of the two sexes it can be noted that the female occurring more in number. The ratio was seen fluctuate during the year. In general female seem to abundant in the population, the ratio being male 0.41 and female 0.58. table 2 shows that the sex ratio varies with the size of the fish. Sex ratio in relation to length groups in both sexes indicate that the percentage of female is higher in small size groups. The percentage of male and female are 41.44% and 58.56%. The ratio being 0.5856:0.4143 during the year.

RESULTS AND DISCUSSION

The study of minimum size at maturity is an important aspect of the fishery biology, as it helps in the conservation of the fish fauna. The younger fishes which did not have an opportunity to spawn even once, should be stopped from being caught by employing a fishing gear with a mesh large enough to allow them to escape. Nikolky (1863), stated that the size at first maturity is an important tool in the fishery management and would help to regulate in the

exploitation of the fishery management on the scientific lines to keep up constant yield by regulating the fishing gear.

Ovaries of 294 females were examined in order to determine the minimum size at maturity. All the specimens were grouped in 3 cm length groups and classified into stage I to V. Based on the ovarian condition the females were classified as resting, immature, maturing, mature and spent. It was observed that all the females below 10.5 to 13.5 cm in total length had immature gonads and it was only the next higher group, 13.6 to 16.5 cm, that immature and mature fishes appeared.

Fishes larger than 16.6 cm were mature in varying percentages. The fully mature fishes make their first appearance in 16.6 to 19.5 cm size group and find up to 25.6 to 28.5 cm. The spent female appears for the first time in the same size group 25.6 to 28.5 cm size group. The appearance of the mature and spent specimens in the same group may be attributed to the small size of the fish.

Larger numbers of fishes which have not even attained maturity are caught every year affecting the fish stock adversely. In order to stop the indiscriminate fishing, it is essential to regulate the size of mesh in relation to the minimum size of the maturity of *Puntius ticto*.

Table No. 1: Sex Composition of Puntius ticto in Different Months.

Sr. No.	Year and Months	Total no. of Fish Examined	Male		Female	
			Total no. of Male Examined	Percentage (%)	Total no. of Female Examined	Percentage (%)
1	January 2024	42	18	42	24	57
2	February 2024	42	15	35	27	64
3	March 2024	42	17	40	25	59
4	April 2024	40	26	65	14	35
5	May 2024	42	20	47	22	52
6	June 2024	42	13	30	29	69
7	July 2024	42	22	52	20	47
8	August 2024	42	16	38	26	61
9	September 2024	42	17	40	25	59
10	October 2024	42	18	42	24	57
11	November 2024	42	11	26	31	73
12	December 2024	42	15	35	27	64
	Total	502	208	41.44	294	58.56

Table No. 2: Sex Composition of Puntius ticto in 3 cm size groups.

Sr. No.	Size Group (cm)	Total no. of Fish Examined	Male		Female	
			Total no. of Male Examined	Percentage (%)	Total no. of Female Examined	Percentage (%)
1	10.5-13.5	98	64	46.93	34	34.69
2	13.6-16.5	226	92	40.70	134	59.29
3	16.6-19.5	64	15	23.43	49	76.56
4	19.6-22.5	85	27	31.76	58	68.23
5	22.6-25.5	20	08	40.00	12	60.00
6	25.6-28.5	09	02	22.22	07	77.77
	Total	502	208	41.44	294	58.56

CONCLUSION

Female seem to abundant in the population, the ratio being male 0.41 and female 0.58 shows that the sex ratio varies with the size of the fish. Sex ratio in relation to length groups in both sexes indicate that the percentage of female is higher in small size groups. The percentage of male and female are 41.44% and 58.56%. The ratio being 0.5856:0.4143 during the year.

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