

A Study of Sex Ratio of Fresh Water Fish *Puntius sarana* From Godavari River at Nanded Region, Maharashtra State (India)

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Abstract: The study estimated the sex ratio of *Puntius sarana* from the Godavari River at Nanded region, Maharashtra State. Fish were collected on monthly basis by local fisherman using traditional fishing gear i.e. cast net. The sex population of *Puntius sarana* found a significant sex ratio male 0.36 and female 0.63 and the percentage of male and female are 33.43% and 66.75%. The ratio was seen fluctuate during year. In general female seem to dominant in the population.

Keywords: Sex ratio, Godavari river, *Puntius sarana*.

1. 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. (JameelaBeevi and Ramachandran 2005). 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 sarana*.

2. MATERIAL AND METHODS

Study site and sample collection

The total 600 fishes were captured on monthly basis during April 2015 to March 2016, 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.

Results and Discussion

The monthly variation in the population sex ratio of *Puntius sarana* 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 0.36

and female 0.63. 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 33.43% and 66.37%. The ratio being 0.3667:0.6333 during the year.

Minimum size of maturity in the female

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 380 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 sarana*.

Table No.1: SEX COMPOSITION OF *Puntius sarana* IN DIFFERENT MONTHS

Sr. No.	Year and Months	Total no. of Fish examined	Male		Female	
			Total no. of Male examined	Percentage (%)	Total no. of Females examined	Percentage (%)
1.	April 2015	50	28	56	22	44
2.	May 2015	50	22	44	28	56
3.	June 2015	50	14	28	36	72
4.	July 2015	50	23	46	27	54
5.	August 2015	50	19	38	312	62
6.	September 2015	50	18	36	32	64
7.	October 2015	50	18	36	32	64
8.	November 2015	50	10	20	40	80
9.	December 2015	50	17	34	33	66
10.	January 2016	50	19	38	31	62
11.	February 2016	50	16	32	34	68
12.	March 2016	50	16	32	34	68
	Total	600	220	36.66	380	63.34

Table No.2: SEX COMPOSITION IN *Puntius sarana* IN 3 CM SIZE GROUPS

Sr. No.	Size Group (cm)	Total fish Examined	Male		Female	
			Total no. of Male Examined	Percentage (%)	Total no. of Female Examined	Percentage (%)
1	10.5-13.5	102	71	69.60	31	30.40
2.	13.6-16.5	263	79	30.03	184	69.97
3.	16.6-19.5	90	22	24.44	68	75.56
4.	19.6-22.5	100	37	37.00	63	63.00
5.	22.6-25.5	37	10	27.03	27	72.97
6.	25.6-28.5	08	01	12.5	07	87.5
	Total	600	220	33.43	380	66.57

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