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STUDY ON THE GONOSOMATIC INDEX OF *CHANNA PUNCTATUS* (FEMALE) COLLECTED FROM THE CHACHAI DAM, SHAHDOL DIVISION, CENTRAL INDIA

Zoology

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ABSTRACT

Study on Gonosomatic index (GSI) of female *Channa punctatus* were studied during one year from January 2017 to December 2017. Fish samples were collected from Chachai dam of Chachai, 36 km away from the Shahdol district. The experiments were conducted during all three seasons of fish reproduction, pre spawning, spawning and post spawning. After measuring morphometric parameters, gonads were dissected out and preserved in bouin's fluid for 24 hours for further experiment. Simultaneously GSI also calculated using formula (Brooks et al., 1997). After observation we concluded that GSI value were high during June (7.14) to August (4.49) and even to September (3.63), the spawning season of *Channa punctatus* to fall between June to September when environmental temperature also were high.

KEYWORDS

GSI, *Channa punctatus,* Reproduction, Chachai Dam, spawning.

INTRODUCTION

Channa punctataus fish called "snakehead" fishes because of their head shape which looks similar as snake. Other common name of this fish is "saur". *Channa punctataus* [2] belonging to the family Channidae of order Perciformes and has accessory respiratory organs that help the fish to survive in oxygen deficient water bodies. It prefers stagnant water in muddy streams. This species is distributed in Afghanistan, Pakistan, India, Bangladesh, Myanmar, Japan and China [5].

These are economically important fishes for their high nutritional and medicinal value. The development and growth of gonad simultaneously takes place in the fish. It will be beneficial to know about the reproductive biology related information such as gonadosomatic index and fecundity of these fishes to initiate artificial breeding as well as conservation. Gonadosomatic index of fish provides information as breeding season and reproductive health.

Fish body weight and weight of gonad gives the gonadosomatic index (GSI). Fish grows; the GSI is high[1].The gonadosomatic index is a good indicator of reproductive activity, being used to determine the stages of gonadal maturation[4]. This fish is used as a food fish, eaten fresh and dried.

MATERIALS AND METHODS

Experimental fish *Channa punctatus* were collected from Chachai dam of chachai, 36 km away from the Shahdol district. Sampling started in January to December 2017. The experiments were conducted during all three seasons of fish reproduction, pre spawning, spawning and post spawning. After measuring morphometric parameters, gonads were dissected out and preserved in bouin's fluid for 24 hours for further experiment.

In laboratory before dissection and removal of gonads Total body weight in gram (g) and Length of fishes in centimeter (cm) were recorded. After measurement an incision was made on ventral side of the abdomen and gonads were separated carefully. Immediately the weight and length of gonads also were measured.

Gono-somatic Index of fish was calculated according to the formula[3].

GSI=Weight of gonad (g)/Total body weight (g) x 100

RESULTS & DISCUSSION

Body Weight

At the start of experiment in January the mean body weight was 54.16g, the body weight started increasing gradually and reached 85.82g in June, when the ovaries were fully developed (Table 1)

Gonad weight

The weight of Ovary (1.00g) was the lowest in December, while the highest values (4.50) were encountered in June (Table 1).

Gonadosomatic index (GSI)

The main GSI value of females was increased gradually from April (3.736) at the onset of spawning period and reach a maximum value in Jun (5.243).Thereafter in the month of July (4.730) declined sharply which continued up to September (2.648) indicating the spawning period. After spawning, the mean GSI value was gradually decreased in October (1.846) to January (2.400) indicating the post spawning period. The mean GSI was gradual increased again in February (2.395) and March (2.536) indicating the pre spawning period. The monthly distribution of gonadosomatic index (GSI) of female *Channa punctatus* is given in Table-1 and Figure-1.

The ovaries of sample fishes were paired elongated lying ventral to the alimentary canal and the swim bladder. They were attached to the body cavity by the mesenteries.

TableNo.-1

Month	Water Temperature	Average Weight of female fish (grm)	Average Weight of ovary (grm)	Average GSI of female fish %
January	21.5	54.16	1.30	2.400
February	22.3	55.10	1.32	2.395
March	22.8	55.19	1.40	2.536
April	23.5	56.20	2.10	3.736
May	23.8	60.89	2.98	4.894
June	24.4	85.82	4.50	5.243
July	24.5	83.50	3.95	4.730
August	24.6	80.30	3.78	4.632
September	23.8	79.30	2.10	2.648
October	22.2	60.10	1.11	1.846
November	21.7	51.11	1.10	2.152
December	20.9	50.10	1.00	1.996

Fig.: 1 Photograph of Channa punctatus showing its external features.

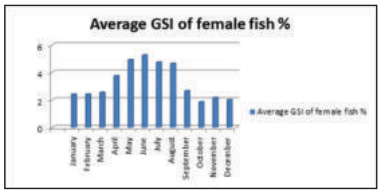

Fig.: 2 Histogram showing GSI of female fish during month of experimental year

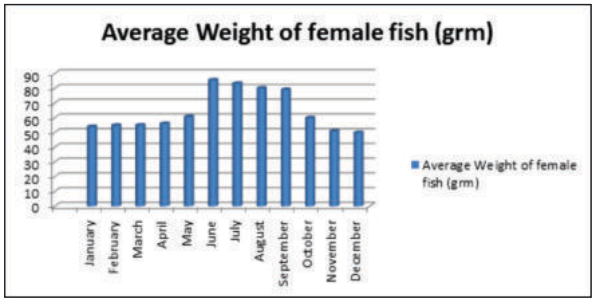

Fig.: 3 Histogram showing average weight of female fish (gm) during different months of experimental year

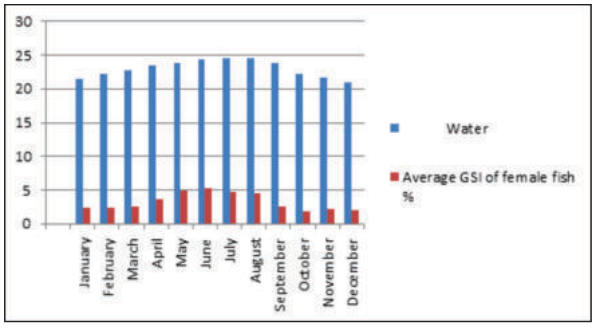

Fig.:4 Histogram showing average water temperature during different months of experimental year.

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