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RELATIVE CONDITION FACTOR OF AN ASIAN STINGING CATFISH *HETEROPNEUTES FOSSILIS* (BLOCH)

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The present investigation deals with a study of determining the seasonal changes in their relative condition factor and the change in relative condition under different length groups. This factor in turn expresses the robustness of the fish in age and growth studies, measure the effect of environmental improvement and indicate the suitability of an environment for a species.

Key words: *Heteropneutes fossilis*, condition factor, GSI.

INTRODUCTION

A study of relative condition factor can yield information regarding inter seasonal variations causing changes in weight in relation to length corresponding to the cyclic physiological changes that the species undergoes in the matter of reproduction and nutrition. The change can be great or small progressive intermittent or cyclically related to breeding. This factor inurn expresses the robustness of the fish in age and growth studies measure the effect of environmental improvement and indicate the suitability of an environment for a species. Studies on the condition cycle of this species are rare. Sarkar & Pramanik (1984) have given short account about this species. Hence, the present study was undertaken with a view to determining the seasonal changes in their condition factor and also under different length groups.

MATERIALS AND METHODS

Live specimens of *H. fossilis* for this study were collected from Veli lake near Trivandrum. The study is based on the monthly examination of 100 specimens of each sex in the size range of 10.7 -29.50 cm. The specimens were brought alive to laboratory. In the laboratory fishes were sexed and sorted according to their stage of maturity following the methods established by Qayyum & Quasim (1964). The total lengths of fish were recorded to the nearest millimeter from the tip of the snout to the tip of the tail. Weights of the fish were recorded to the nearest gram using digital weighing device (Tanita, KD-160) sensitive to 1g. After the measurement of specimens, the fishes were preserved in 10% formalin as quickly as possible. The relative condition factor (Kn) was calculated following Le Cren (1951).

RESULTS AND DISCUSSION

The monthly mean values of the relative condition factor are given in Table I. It can be seen that Kn values of females show an increase from July to August and falls down up to October after which it gradually rises to a high value in March and then declines. Kn values records its highest values in March (1.20) and lowest value in October (0.74). In males there is similar trend with the difference that the highest recorded value of Kn is in November (1.35) and lowest in October (0.78). A comparison with Gonadosomatic Index (Table I) reveals that as GSI increases the condition of the fish also show a corresponding increase. The condition shows an increase in August November and March and GSI also

shows a corresponding increase with respect to those months. High values of Kn as an evidence of active breeding has been explained by Khan & Jhingran (1975). The feeding rate (Table II) on the other hand shows a decrease during the breeding season. The feeding rate is low during June, July and August and high during September/October and in March. The seasonal changes in relative condition factor and GSI shows a negative relationship where as in males a positive relationship is manifested between feeding and relative condition- the values of high feeding intensity showing high condition and vice versa.

The relative condition factor for each length groups is presented in Table 111. From the table it is seen that both sexes show almost the same pattern. In females, the highest Kn values was obtained in 20.3-22.1 mm length group and lowest in 27.6-29.38 mm length group. In the case of males, the highest Kn value is observed in 10.7-12.58 mm length group and the lowest in 12.6- 14.46 mm length group. It is observed that in males there is an increase in Kn values from 12.6-20.1 mm length group. Thereafter an irregular pattern of Kn values suggest that they are most active than females and may be involved in breeding activities whereas on the other hand the increase in Kn(16.7-22.1) in females shows that these size groups are actively involved n breeding. The condition, thereafter, shows declining trend suggesting that breeding activity in females retards after 23.9 mm length group

Table I : Average Monthly Relative Condition Factor in *H. fossilis*

Months	Males	Females
June	1.06	1.06
July	0.99	0.98
August	1.11	1.19
September	0.80	0.89
October	0.78	0.74
November	1.35	0.99
December	0.97	0.94
January	1.18	1.07
February	1.00	1.11
March	1.02	1.20
April	1.20	1.12
May	1.06	1.04

Table II : .Average monthly gonado-somatic index and feeding intensity in *H. fossilis*.

Months	GSI	Feeding intensity
June	3.4	20.0
July	4.3	16.6
August	6.5	14.2
September	4.2	20.0
October	2.7	25.5
November	2.4	16.6
December	2.1	23.3
January	3.0	23.3
February	2.2	25.0
March	2.6	28.0
April	3.4	11.5
May	3.4	20.0

Table III : Relative condition factor in the different length groups of males and females of *H. fossilis*

S. No	Males	Females
1	10.7-12.58-1.29	13.0-14.82-1.19
2	12.6-14.46-.0.75	14.9-16.64-0.99
3	14.5-16.34-1.02	16.7-18.46-0.97
4	16.4-18.22-1.01	18.5-20.23-1.03
5	18.3-20.10-1.07	20.3-22.10-1.18
6	20.2-21.98-0.96	22.2-23.92-0.98
7	22.2-23.586-1.06	24.0-25.74-1.01
8	23.9-25.74-1.00	25.8-27.56-0.90
9	25.8-27.62-1.02	27.6-29.38-0.72
10	27.7-29.50-1.13	29.3-31.20-0.99

The seasonal fluctuations in the relative condition of the fish have been attributed to a variety of reasons (Qasim, 1957). The changes in relative condition of the fish have been associated with breeding in certain fishes, a decline after a peak indicated the onset of spawning Bhatnagar (1963), Krishnamoorthy (1971). Qasim (1957) explained this on the basis that the increase and decrease of condition is due to general building up and loss of reserves, respectively.

In *H. fossilis*, the rise in Kn values in August and in November may be ascribed to active breeding during this period. The fall in Kn values from August is due to the loss of gonadal products during spawning. The rise or decline in the level of condition prior to and during spawning and thereby raising or lowering the metabolic activity is due to the influence of the intensity of feeding or the availability of food and other environmental condition (Rao, 1967). In this species, a rise in relative condition is observed in March which may be due to the high rate of feeding as evident from the food analysis studies. Hickling (1945) in the case of *Sardine plicardius* found the condition low before spawning and high after it, which was explained by him as due to sexual cycle and the availability of food, respectively. Similar observations were made by Bhatt (1970) in *H.fossilis* and *Mystus* species as well as in several species of fish by earlier workers (Jhingran, 1972; Baura *et al.*, 1988; Gupta,1988; Dhanze, *et al.*, 2005).

The present study indicates that the overall condition of the fish seems improved towards maturity and the low condition from September to December indicates that females spawn during these months and therefore the breeding stock should be protected in order to maintain the sustainable exploitation of the stock.

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