Determination of Fecundity of Schizothorax esocinus from River Lidder Kashmir

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Abstract
A total of 53 specimens were collected from River Lidder Kashmir for a period of twelve months. The fecundity was determined by gravimetric method. Results observed indicated that the mean of relative fecundity was 1322.5 and standard deviation is149.97. Whereas the mean of absolute fecundity was 48 and standard deviation is 4.646. The P. value of relative fecundity was 0.9317 considered not significant. Whereas P.value of absolute fecundity was 0.37, which was considered as not significant.
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Introduction

Schizothoracines, the indigenous cyprinids also called snow trouts. They inhabit both lentic as well as lotic water bodies of Kashmir.The fish belongs to the family Cyprinidae and order Cypriniformes .Schizothoracines are highly valued fish, preferred to most other fish species. They feed on detritus, attached plant (including algal) coating of stones and rocks, and the associated invertebrate fauna. The fish population in the Dal lake has been declined to large extent due to encroachment, urbanization, agricultural activities, eutrophication and over fishing. Most fish species inhabiting the Himalayan region are small in size. Their distribution depends on environmental conditions such as velocity of water current, nature of substratum, and the availability of food. S.niger being a truly lacustrine fish does not show any spawning migration. Physiological responses of carp were made by Jan et .al.(2011)but less work is available on fecundity of S.esocinus. hence the current work has been undertaken.

Materials and Methods

The fecundity of S. esocinus was determined by gravimetric method (Nikolskie1965: Rain 1978: Sunder1986: Sunder and Subla 1984). In order to ascertain any differences in the number of mature ova in right and left lobe of the ovaries, the fecundity estimates of ovary were calculated separately for either lobe. Mature ovaries were considered for fecundity studies. After removing the surface moisture by a blotting paper, the number of mature ova visible to the naked eye from the weighed ovary samples was counted. From the number of ova obtained from the portions of ovary of known weight, the fecundity of the species was estimated (Lagler, 1956). To avoid any error, the fecundity was calculated from the counts of mature ova in three random sub samples of the ovary of known weight by using the formula:

$$F = \frac{W*(N_1 + N_2 + N_3)}{(W_1 + W_2 + W_3)}$$

N_3 and W_1, W_2 are the ova counts and the weight of each sub sample respectively. The portions of the ovary used for fecundity studies were kept overnight in the Gilson's fluid. (Jhingran et. al, 1967)

Results and discussion

The Mean of the relative fecundity (7a) of S.esocinus observed was 13.22.5.The standard deviation observed was 149.97and standard error of the mean was 74.986. The P. value is 0.9317 considered not significant. Variation among column means is not significantly greater then expected by chance.

The mean of the absolute fecundity (7b) of S.esocinus obtained was 41.The standard deviation obtained is 4.646 and standard error of mean is 2.33.The P.value is 0.37, considered not significant. Variation among column means is not significantly greater then expected by chance.

(a) The relative fecundity of S. esocinus from River Lidder Kashmir

Parameters	Results
Sample size	53
Mean of relative fecundity	1322.5
Standard deviation	149.97
Standard error of mean	74.986

(b) The Absolute fecundity of S. esocinus from River Lidder Kashmir

Parameters	Results
Time duration	12 months
Mean of Absolute fecundity	48
Standard deviation	4.646
Standard error of mean	2.33

Nikolskii (1965) stated that fecundity is a specific feature that arises during the evolution of a new species adapted to a certain environment and is directed to the continuance of the species. Nikolskii (1965) stated that there May be marked changes in the fecundity within a population for a given size due to fluctuations feeding conditions. The irregular fluctuations found in the relative fecundity of S. niger could not be attributed to any known environmental factor. The positive relation was found between the fecundity and length and weight of fish. Heidrich (1925) and Kestevan (1942) have showed that the total number of ova (absolute fecundity) holds some experimental relationship with the length of the fish in the same way as it does with the weight. Simpson (1951) found in place that the fecundity was related with the cube of the length and was thus directionally proportional to the fish weight. In S. niger the value of the exponent is higher (3.56) than the cube of the length as is also the case with the other species of the genus. But these values are not unique because value as low as 2.21 have been reported in Rita rita (Saxena, 1972) and as high as 5.48 in labeo calbasu (Pathak and Jhingran 1978).

Sunder and Subla (1984) have reported a steady increase in the absolute fecundity of S. niger. Age is reported to be a major factor in the determination of egg size (Nikolskii 1965). In the present fish the egg diameter showed a marked increase with age. increase in the total weight of the overly caused a decline in the number of ova produced per unit weight of the ovary Thus while there was an increase in fecundity with increase in the body weight, the number of ova per unit weight of the ovary shows decline. This is in live with the findings of Pivnev (1950) who reported a decline in the number of ova per unit ovary weight with increase in the diameter of egg. Bagarals (1978) assumption that fecundity and the egg size are negatively correlated is also true for Schizothorax niger.

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