ISSN 2348-313X (Print)
International Journal of Life Sciences Research ISSN 2348-3148 (online)
Vol. 12, Issue 2, pp: (9-11), Month: April - June 2024, Available at: www.researchpublish.com

Fecundity of Fish *Notopterus chitala* (Hamilton, 1822) from Godavari River, at Nanded (Maharashtra), India

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DOI: https://doi.org/10.5281/zenodo.11058942

Published Date: 24-April-2024

Abstract: **Fecundity is reproductive capacity of a fish determined by the number of eggs stored in each spawning season and its knowledge is extremely important in successful management and exploitation of its fishery.**

All together 10 specimen of Notopterus chitala were examined with a view to determine the average number of eggs produced by each species and also to find out the relationship between fecundity and variables such as total length, body weight, gonad length and gonad weight of the fish.

By using (Lacrane, 1951) equation follows the relationship between fecundity and variables are calculated.

The fecundity of Notopterus chitala is ranged from 133 to 1803.

Keywords: **Fecundity, Notopterus chitala.**

1. INTRODUCTION

Fecundity is reproductive capacity of a fish determined by the number of eggs stored in each spawning season and its knowledge is extremely important in successful management and exploitation of its fishery.

Studies on fecundity are receiving much attention as they play a key role in fish stock management. This is most important aspect of fishery biology.

The analysis of fecundity data in relation to size and weight of the fish has often been used to provide a reliable index of density dependent factors affecting the population of physico-chemical factors affects fecundity. Dense population of fish brings in intra and inters specific competitions for food and reproduction.

Fecundity indicates the number of ova produced by the fish to form the crop of season. The number of eggs produced may differ in different species with differences in size and age of fish.

Franz (1940) and Clark (1934) have observed that the fecundity in fishes increases in proportion to the square if the length. Hickling (1940), observed that the fecundity increased at a rate above the cube of the length in Herring of Southern North area. Simpson (1951) concluded that the number of eggs is related to the volume and consequently to the cube of the length. Lehman (1953), found straight relationship between the fecundity and length there is a direct proportional in fecundity with increase in length, weight and age of the fish.

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2. MATERIALS AND METHODS

Mostly sampling of normal, good, healthy and mature fish specimens of the *Notopterus chitala* were done for estimation of fecundity from river Godavari at Nanded. (Maharashtra State) from January 2023 to December 2023. Mature specimens were collected in the months of June to September 2023.

Altogether 487 specimens of *Notopterus chiltala* were collected during sampling from January 2023 to December 2023. From these 103 females, a sample of 10 fish was drawn randomly to determine fecundity. Specimens ranging from 22 cm to 31 cm in length in total body length, from the tip of snout to distal end of caudal fin were selected. Before dissecting the females, weighed carefully and weight noted. After dissecting the females, ovaries in stage IV were preserved in 10 % formalin. The ovaries after being hardened for few days, removed from formalin and surface moisture was blotted with blotting paper. The entire ovary was then weighed accurately to nearest milligram.

A small portion (1gm) from the middle region of the ovary was then teased on a slide and few drops of formalin were put on them and numbers of eggs were counted under the microscope. Care was taken to ensure that the ova were spread evenly in single layer. From the number of ova obtained from the small portion of ovary of known weight (1gm), the number of ova in the entire ovary was calculated on the basis of its total weight.

3. OBSERVATION AND RESULTS

The fecundity estimates of the entire specimens examined were made by egg counts and also from variables like weight of fish and weight of ovary. The females ranged between 22 cm to 31cm in length and 73.78 gm and 223.28 gm in weight, where as the weight of ovary varied between 1.30 gm and 11.41 gm & Length of ovary varied between 2.2 cm to 6.6 cm.

In *Notopterus chitala*, the total number of eggs varied from 133 to 1803 which has given an average of 125 numbers of eggs per gram body weight. (Table I).

4. DISCUSSION

Studies on fecundity are receiving much attention as they play a key role in fish stock assessment. Fecundity has been determined for many fishes which provide information of population and stock recruitment problems.

Different relationship has been found to exist between fecundity and various parameters. In *Catla* the fecundity is more closely related to weight of fish. The rate of total number of ova varied from 2,72,945 in a fish measuring 529 mm total length to 27,17036 in the fish measuring 824 mm total length. The minimum fecundity of *Catla* was 2,10,118 number of eggs in a fish measuring 504 in length and largest specimens of 840 mm had the maximum fecundity of 34.21,005 number of eggs (Sakhare,2000).

According to Chonder (1977) the number of eggs production depends upon the weight of ovary more closely as observed during present study of *Notopterus chitala*, also appears to be related more specifically to the ovary weight.

Table I. Fecundity of *Notopterus chitala* From Godavari River, at Nanded, Maharashtra. India

Sr. No.	Total Wt. of fish (gm)	Total length of fish (cm)	Length of ovary (cm)	Weight of ovary (gm)	Weight of part of ovary in (gm)	Number of eggs in part of ovary	Fecundity or Total observed number of eggs
1	103.22	23.00	3.6	2.08	1.00	102	212
2	117.87	25.01	3.9	1.91	1.00	104	198
3	138.68	26.03	4.3	7.11	1.00	147	1045
4	135.13	25.00	4.0	2.70	1.00	111	299
5	204.99	29.04	6.6	11.41	1.00	158	1802
6	73.78	22.00	2.2	1.30	1.00	102	132
7	105.30	24.00	3.7	3.97	1.00	125	496
8	223.28	31.00	6.5	9.89	1.00	150	1483
9	140.51	25.03	5.0	6.15	1.00	143	879
10	93.08	22.03	2.5	2.47	1.00	110	271

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