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FECUNDITY OF FISH PUNTIUS TICTO (HAMILTON, 1822) FROM GODAVARI RIVER, AT NANDED (MAHARASHTRA), INDIA

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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. This review aims to provide an overview of the concept of fecundity in fish, its measurement methods and factors influencing it. All together 20 specimen of *Puntius ticto* 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 *Puntius ticto* is ranged from 150 to 1917 eggs.

Keywords: Fecundity, *Puntius ticto*

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.

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. 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.

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.

Materials and methods:

Mostly sampling of normal, good, healthy and mature fish specimens of the *Puntius ticto* were done for estimation of fecundity from river Godavari at Nanded. (Maharashtra State) from January 2024 to December 2024. Mature specimens were collected in the months of June to September 2024.

Altogether 502 specimens of *Puntius ticto* were collected during sampling from January 2024 to December 2024. From these 294 females, a sample of 20 fish was drawn randomly to determine fecundity. Specimens ranging from 19 cm to 26 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 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.

Observation:

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 19 cm to 26cm in length and 62 gm and 197.8 gm in weight, whereas the weight of ovary varied between 3 gm and 6.5 gm & Length of ovary varied between 5 cm to 8.7 cm. In *Puntius ticto,* the total number of

eggs varied from 150 to 1917 eggs which has given an average of 167 numbers of eggs per gram body weight. (Table I).

Results & Discussion:

Fecundity has been determined for many fishes which provide information of population and stock recruitment problems. Studies on fecundity are receiving much attention as they play a key role in fish stock assessment. Different relationship has been found to exist between fecundity and various parameters. According to Chonder (1977) the number of eggs production depends upon the weight of ovary more closely as observed during present study of *Puntius ticto*, also appears to be related more specifically to the ovary weight.

Table I. Fecundity of fish Puntius ticto (Hamilton, 1822) 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	183.50	23.68	8.30	5.60	1	245	1372
2	78.60	20.35	5.60	3.45	1	83	286
3	102.40	21.10	6.40	3.90	1	121	472
4	167.60	22.92	7.80	5.00	1	220	1100
5	149.10	22.05	7.20	4.55	1	175	796
6	158.70	22.65	7.60	4.90	1	197	966
7	190.10	23.87	8.40	5.80	1	258	1496
8	62.20	19.60	5.00	3.00	1	50	150
9	123.70	21.85	6.80	4.25	1	142	604
10	174.90	23.40	8.20	5.45	1	239	1302
11	152.80	22.25	7.40	4.70	1	189	888
12	64.10	19.95	5.20	3.15	1	64	202
13	98.30	20.70	6.20	3.75	1	108	682
14	117.50	21.40	6.60	4.10	1	139	570
15	197.80	25.50	8.70	6.50	1	295	1917
16	171.30	23.28	8.00	5.20	1	236	1227
17	133.20	21.98	7.00	4.40	1	153	673
18	75.10	20.20	5.40	3.30	1	77	254
19	92.70	20.58	6.00	3.60	1	96	345
20	195.20	24.60	8.50	6.25	1	264	1650

Conclusion:

In *Puntius ticto*, the females ranged between 19 cm to 26cm in length and 62 gm and 197.8 gm in weight, where as the weight of ovary varied between 3 gm and 6.5 gm & Length of ovary varied between 5 cm to 8.7 cm. The total number of eggs varied from 150 to 1917 eggs which has given an average of 167 numbers of eggs per gram body weight.

References:

Clark,F.N. 1934 Maturity of California Sardine (Sardinella caerulea) determined by ova diameter measurements. Calif. Dept. Fish and Game Fish Bull.,42:1-49.

Chondar,S.L. 1977. Fecundity and its role in racial studies of Gadusia chapra.Proc.Indian Acad.Sci.,B86: 245-254.

Franz, Victor 1910. Dia epiproduction der scolle, Meeresunter suchugen N.E.Bed. Abth.Wiss. Helgolandi, 2:59-141.

Hecklings, C.F. 1940. The fecundity of Herring of the South-North Sea J.Mar.Biol. Ass. U.K.24:619-632.

Khedekar, G.D., et al. (2014). A dual role of dams in fragmentation and support of fish diversity across the Godavari river basin in India. Ecohydrology, 7, 1470.

Kumar, A., & Singh, A. K. (2014). Fecundity and reproductive biology of L. rohita (Ham) from the Godavari river, India. Journal of Fisheries and aquatic science, 9(1), 1-10.

Lehman, B.A. 1953. Fecundity of Hudson River Shad.U.S. Fish and Mid Life Service Res. Report,33.8.

Pillay, T.V.R. (1958) – Biology of the Hilsa lisha (Ham) of the River Hoogly. Indian J. Fish. 5 (2): 201 – 257.

Prabhu, M.S. (1963) – Maturation of intra ovarian eggs and spawning periodicities in some fishes. Indian J. Fish. 3: 59 – 90.

Sakhare, V.B. 2000. Fecundity of Catla (Hamilton) from Yeldari Reservoir, Maharashtra J.Aqua Biol.15(1&2): 50:51.

Simpson, A.C. 1951. The fecundity of Plaice, Fishery. Invest Land.,Ser2,17(5):27.

Sindhe, V. R., & Kulkarni, R. S. (2004). Fecundity and reproductive indices in Notopterus notopterus. Journal of Environmental biology, 25(3), 365-368.