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Relationship of Fecundity with Length and Weight of *Clarias batrachus* from Aurangabad (MS)

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Abstract: ***Fish is a divine Creation and plays an important role in the process of evolution. It has happened as the greatest source of information regarding the clock of the biological rhythm. The biological rhythm amongst other animals has much more affinities with the fish. As time passed, a tremendous progress in every aspect of life has been taken place. Various natural resources have also been utilized into coping with the increasing population. As agriculture techniques are developed, need of the food requirement is coped with. Similarly, due to increase in pollution level of all kinds, soil fertility and water quality have been adversely affected. To meet the food requirement man started exploiting the aquatic resources for food. Fish is rich in proteins and thus plays important role in nutrition. Length and weight are the most important parameters to study the reproductive capacity of fish that is the fecundity of fish. In present investigation the relationship of length and weight with respect to the spawning capacity has been taken into consideration.***

Keywords: Length, Weight, Fecundity

1. Introduction

Fecundity may be defined as the reproductive capacity of a female fish to lay the eggs in a single spawning season. The knowledge of fecundity however, adds in understanding of the progress of fishery development and exploitation on scientific and commercial endeavor. Study of fecundity is very significant to determine the number of ova in the ovaries released in a season. The fecundity, apart from the biological significance, analysis of fecundity data with size, age and weight of the fish has often been used to provide a reliable index of density dependant factors affecting the population size.

Fecundity varies with species and even within the species. Fecundity is also found varied with status of ovary, length, age, and weight of the fish. Various relationships have also been recorded between the length and fecundity of different species Clark (1934) concluded that, the fecundity in fishes increases in proportion to the square of the length. Farran (1938) observed that in Irish herring, fecundity increases at a rate of 4.5 power of the length. Hickling (1940) in the herring of Southern North Sea, that fecundity increases with the rate greater than the rate of third power of the length. Later on, Alien (1951) recorded his observation in the brown trout in different manner he showed that, in brown trout the relationship between fecundity and weight is curvilinear and between fecundity and fork length is linear.

Fecundity estimates and determine the average number of ova produced by the females in different species of fishes, Sarojini (1957), Piliay (1954), Hartman and Conkle (1960), Palekar and Bal (1961), Tandon (1961), Varghese (1966), Gibson and Ezzic (1978), Hoda and Akhtar (1985) and El Agamy (1987).

2. Material and Methods

In the present study, an attempt has been made to study the spawning behavior with respect to the fecundity in the fish Clarias batrachus. The fishes were collected from fresh water reservoirs of Aurangabad (MS). The total number of riped ova in ovary was counted along with the length and weight of ovary and fish.

3. Result and Discussion

During the present investigation, of ripped Clarias batrachus were selected for the fecundity study. All of them were in range of 500 to 1200 gm; weight and 15 to 14 cm length. In respect of fecundity; were in the range from 30,000 to 1, 72,000 with a mean of total 106313/female.

During present study, it is observed that the fecundity may vary with size and weight of fish.

Fecundity of fish may also fluctuates with the temperature, food availability and generic differences Bagenal (1968), Gibson and Ezzi (1978), Hoda and Akhtar (1985) and El Agamy (1987).

During the present investigation significance of fecundity was confirmed on regression equation calculated on the length and weight of fish with fecundity relationship. F = a + b log L
Where F = fecundity, a = constant, b = constant i.e.
F-5.13+356.91 W r-0.98
Thus the equation for the fecundity,
F-8.60 +53.48 OW - r-0.918
Where OW = Ovary weight. Table No I
Similarly the total length -fecundity relationship was calculated by regression equation.

Where 'r' stands for total weight of fish, and the relationship was calculated by regression equation is 0.98, near to 'l'. This indicates that, fecundity increases with increase in weight.

Similarly 'r' stands for weight of ovary and the relationship was calculated by regression equation, is 0.91, near to 'l'. This indicates that, fecundity increases with the increase in weight of ovary.

Similarly, for the length-fecundity relationship 'r' values the total length, and the concentrated value is, 0.85, also near to 'l', this indicates that, fecundity increases with the increase in length.

At the end of the study, it is noticed that, the egg laying capacity of wild catfish ***Clarias. batrachus*** found in satisfactory range and parameters prevails in the region enhances the breeding activity on positive line.

Clarias batrachus is one of the sturdiest and rich in food value can be cultured as equivalent to the cyprinid fishes like Indian Major Carps. In the study length-weight relationship with spawning behavior was done by Arup Buragohain , et.al (2014) on the fish *Clarias magur*

Table 1: Average fecundity of Clarias batrachus with respect to length and weight

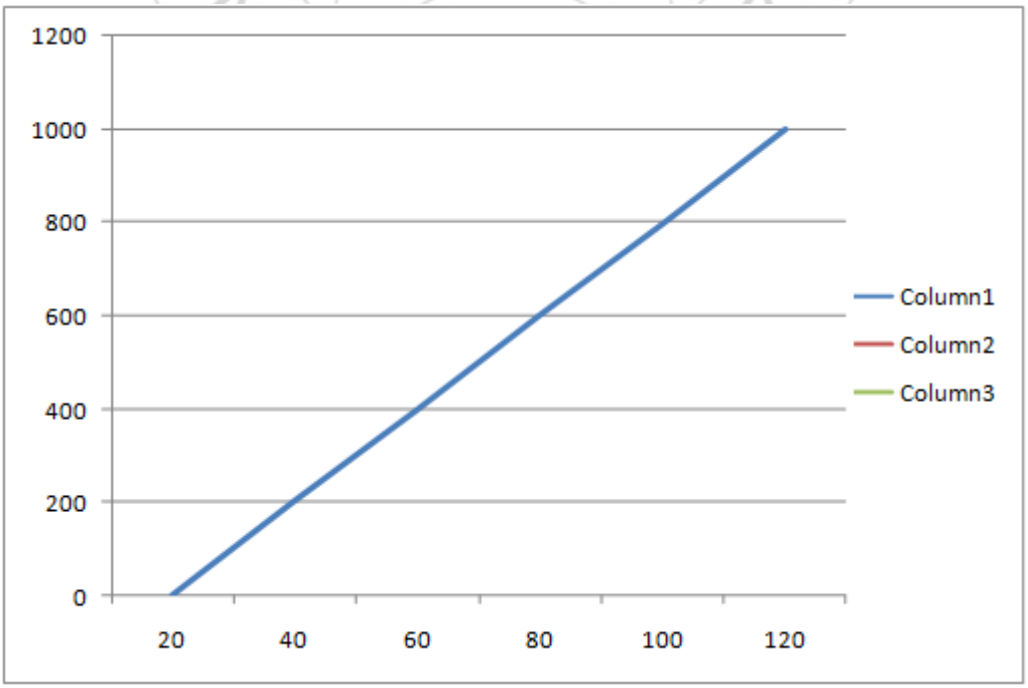
Sr. No.	*Length of fish in cms*	*Weight of fish*	*Weight of ovary in gms/*	*Fecundity F*
1	15.0	545	100	30.000
2	15.2	555	105	40.000
3	15.5	680	110	61.000
4	16.0	605	112	58.000
5	16.3	705	113	71.000
6	16.0	790	114	82.000
7	16.1	715	116	78.000
8	16.9	840	116	97.000
9	18.0	840	117	96.000
10	18.5	875	128	96.000
11	20.0	900	131	110000
12	23.0	940	133	113000
13	20.5	1000	134	122000
14	21.0	1075	138	132000
15	21.3	1040	150	130000
16	25.0	1075	175	148000
17	24.1	1100	180	140000
18	26.2	1130	190	142000
19	32.0	1140	192	140000
20	35.0	1150	195	160000
21	38.9	1190	200	162000
22	42.0	1200	210	170000
23	45.0	1200	220	172000

Mean = 106313

Table 2: Average fecundity of Clarias batrachus with respect to length and weight

Sr. No.	*Length of fish in cms*	*Weight of fish*	*Weight of ovary in gms/*	*Fecundity F*
1	14.0	548	113	29.000
2	13.2	560	106	40.000
3	12.5	682	112	61.320
4	15.0	670	115	58.110
5	15.3	750	117	72.000
6	16.6	710	119	83.000
7	16.8	715	116	79.000
8	16.1	845	117	97.200
9	18.2	844	119	96.110
10	19.5	850	125	95.000
11	21.0	950	130	110000
12	23.1	930	131	113400
13	21.5	980	132	125000
14	22.0	1080	134	154000
15	20.3	1020	155	132000
16	24.0	1075	174	148000
17	24.1	1112	182	1435000
18	25.2	1130	192	145000
19	30.0	1145	190	137000
20	31.0	1150	200	160000
21	38.9	1190	205	163000
22	42.1	1200	210	170000
23	46.1	1200	218	175000

Log F =1.87+ 2.85 log L.
r = 0.85
Graph I



Fecundity 1
Linear Weight of Fish *Clarias batrachus* (Female)

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