

Investigation on Age – Weight relationship and relative condition in *Catla catla* from Nawatoli Pond Medininagar, Palamu, Jharkhand.

By

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Abstract:- extreme discharge of sewage, drainage, domestic and other wastes flow of insecticides, pesticides with hazardous for aquatic animals. This politicians diamond the aquatic in ormond and cars depletion of dissolve oxygen of water bodies. Thus result in the increasement of BOD, COD, TS, TSS and pH of the water body. In the present research paper an attempt has been made to study the effects of different types of pollutants that are discharged in Nawatoli pond at different sites, on the growth of catla catla.

Keyword – Pollution, *Catla catla*, Nawatoli pond.

Introduction

Investigation of age – growth relationship is a very important tool in fish biology to determine the effects of pollution on the growth of fishies. Prediction of better yield and determination of proper size of fish to harvest for maximum commercial yields are directly related to weight of fish. There are various parameters to determine the influence of aquatic environment of the growth of fish among than rate of growth of fish is an important parameter.

In this paper an attempt have been made to determine the growth of *Catla catla* in Medininagar palamu, Nawa Toli Pond at different sites that are having different pollution load due to their characteristics surrounding during different reproductive periods. A large number of workers have studied the length – weight relationship in different aquatic environment. Sparre et al. (1989); Gulland (1983), Sarang (2012), and Ingll (2014), Johal and Tenden (1987), Rao and Rao, 1972; Hoda, 1987; Le eren, 1951; Sultan, 1981; Hile, 1936; Jhingran, 1968; Ray; (1987).

Material and methods

Fifty live specimen of *Catla catla* were captured from 3 different sites of Medininagar, Nawa toli pond using cast net. 3 different sites of Medininagar Nawa Toli Pond selected for the work are Nirwana Hotel site (considered as control sites) has been represented as site 1 and Mahindra showroom site have been considered as experimental sites due to inflow of pollutants and have been represented as site 2 and site 3 respectively. Although fish freely swim in water but by nature they stuck generally to those sites where they get adjusted to specific type of food available. Sensitive spring balance was used to weigh the captured fishes and was left in water there after.

Three different reproductive periods, pre breeding, breeding and post breedings were taken into account and data were collected during all the three reproductive periods.

Results and discussion

Analysis of the results show that, growth has been found relatively fast in breeding period especially at site 1 similar finding have been reported by Siva kami, 1987; Sultan and khan, 1981; Singh et. al.; 1977, 1979; Chakarborti et. al. 1973 and Gowda et. al. 1987.

In pre breeding period the difference is found insignificant ($P > 0.05$) when three different experimental sites are compared among one another (Chamberlain, 1931, Merrimann, 1941, Thomson and Went worth, 1942; Rao and Rao, 1972 and Walford, 1947).

In breeding and post breeding periods, difference in growth is found insignificant ($P > 0.05$) when site 1 and site 2 are compared among one another but the difference in growth is found significant ($P < 0.001$) when site 2 and site 3 are compared and site 1 and site 3 are compared among one another. Similar reporting have been made by Weymouth, 1931; Van Oosten, 1941; Gowda et. al. 1987; Majumdar 1971; Narshimham, 1980.

For a short duration after breeding period, growth rate of fish relatively slow down at all the three sites. This may be due to exhaustion during breeding (Singh et. al. 1977; Brown 1946).

After a short span of slow growth, growth again become relatively fast in post breeding period. The reason may be due to changes in hormone level in the body during and after breeding period (Thompson and Wentworth, 1942; frost, 1945).

Table : 1 Showing effects of different aquatic environment on the growth of *Catla catla* during different reproductive periods

All values are expressed in gram \pm standard deviation (SD)

| Reproductive Stages | Experimental Conditions | | |
|---------------------|----------------------------------|---------------------------------|-----------------------------------|
| | Site 1 (Control) | Site 2 | Site 3 |
| | Weight \pm SD | Weight \pm SD | Weight \pm SD |
| Prebreeding | 708.7 \pm 4.785 (690-715) | 698.2 \pm 4.289 (680-715) | 705.3 \pm 3.183 (685-710) |
| Breeding | 802.3 \pm 7.645 (790-815) | 801.8 \pm 7.969 (790-825) | 790.8 \pm 7.86 (790-815) |
| Postbreeding | 1368.5 \pm 5.52 (1300-1420) | 1360 \pm 3.354 (1280-1390) | 1292.5 \pm 4.565 (1225-1350) |

Number of observations in each case = 10; Range in parenthesis.

Table : 2 Variation of 't'-test value in the growth of *Catla catla* Medinagar among different experimental sites during different reproductive periods

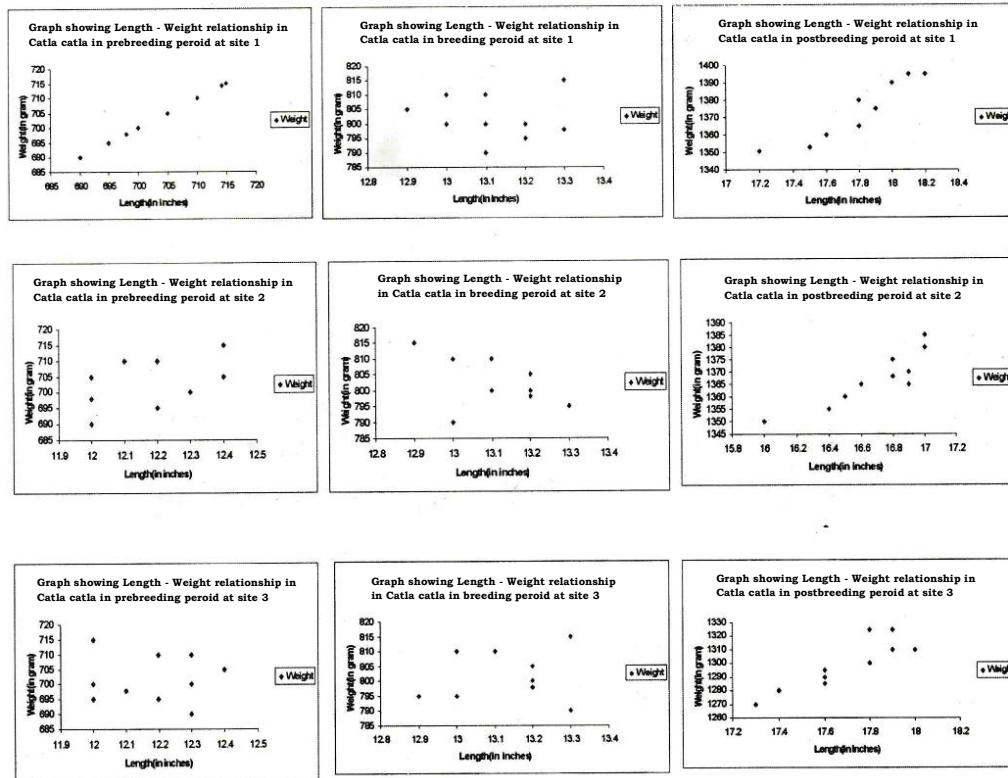
| Experimental Conditions. | Sex | Reproductive Stage | | |
|--------------------------|--------|--------------------|-----------|--------------|
| | | Prebreeding | Breeding | Postbreeding |
| Site 1 Vs Site 2 | Length | 0.469 | 0.177 | 4.400 |
| | Weight | 0.246 | 0.143 | 0.349 |
| Site 2 Vs Site 3 | Length | 0.177 | 0.530 | 1.961 |
| | Weight | 1.040 | 4.060 *** | 3.033 *** |
| Site 1 Vs Site 3 | Length | 0.625 | 0.354 | 0.424 |
| | Weight | 0.721 | 4.765 *** | 3.352 *** |

Number of observations in each case = 10; Range in parenthesis

$P < 0.05$; ** = $P < 0.01$; *** = $P < 0.001$ (Student's 't'-test)

Site 1 – Nirwana Hotel (Control site), Site 2 – Mahendra Showroom, Site 3 – Near Pond.

Fig: Graph showing Length- Weight relationship in *Catla catla* during different reproductive Prebreeding periods Breeding periods Postbreeding period



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