

# LENGTH-WEIGHT RELATIONSHIP AND CONDITION FACTOR OF *LABEO ROHITA* FROM BHAGWANPUR FISH POND ROORKEE UTTARAKHAND, INDIA

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## ABSTRACT

Length – weight relationship was derived from *Labeo rohita* inhabiting Bhagwanpur fish pond. Sampling was done between April 2012 to June 2012. The result show that the ‘b’ is significantly more than 3.0. The species exhibit a isometric growth pattern.

**Key words:** *Labeo rohita*, Bhagwanpur, Length-weight.

## INTRODUCTION

Length-weight relationship is very beneficial in fisheries biology and environmental assessment studies; to estimate weight of individual fish from its length and vice-versa, to compare morphology of populations belonging to different geographical areas (Petrakis and Stergiou, 1995). This relationship is also useful to obtain information on the growth condition of the fish and to find out whether the growth is isometric or allometric (Le Cren, 1951; Ricker, 1975). A perusal of literature has revealed that no work has been carried out in this species hence, the present study presents estimate of the length weight relationships for species of *Labeo rohita* from Pond ecosystem in Roorkee, Uttarakhand, State.

## MATERIAL AND METHODS

Fish samples were collected from Bhagwanpur fish pond between April, 2012 to June 2012 using different fishing gears (cast net, hand net

and gill net). A total length of each fish was measured to the nearest 0.01cm, and individual body weight was recorded to the nearest 0.01g. All length - weight relationships were calculated using the least square fitted method to log transformed data using the function  $w=aL^b$ , where W is the total weight of the fish in grams, L the total length in cm, a is a coefficient related to body form, and b is an exponent indicating isometric growth. The parameters a and b were estimated by linear regression on transformed equation:  $\text{Log}W = \text{log}a + b \text{log}L$  (Le Cren, 1951).

## RESULTS

A total of 33 specimens of *Labeo rohita* was collected and subjected for the length- weight relationships study. The curvilinear relationship was observed when original weight was plotted the respective total length of the fish. However, linear relationship was obtained when the values were converted to logarithmic values. The values of the ‘b’ of length -weight relationship of pooled data was

$$W = 2.060 + 3.109 \text{ Log}L$$

The value of the exponent 'b' in *Labeo rohita* have been found to be 3.109 clearly indicating that the species increase in weight is much more than the cube law. The values of the exponent was significantly higher than 3.109 exhibited a positive isometric growth. Weatherley (1972) stated that even among the members of one population, sampled on the same single date, there may be considerable variation in condition with length. In the present investigation the value of condition factor was recorded 1.324.

Length–weight relationship of Indian major carp has been discussed by Chakrabarty and Singh (1963), Natarajan and Jhingan (1963), Kamal (1971) from different localities of India. Khan (1972) found the high value of exponent in *Labeo rohita* in the riverine populations as compared to moat population. Pantalu *et al* (1966) found minimum value from reservoir population. Charabarty and Singh (1963) stated that rivers have high value of exponent followed by reservoirs, lakes (Srivastava and Singh, 1964 and Laxma Reddy, 2013). Mraz (1964) described that the length–weight relationship is useful for the comparison of different fish species from different water bodies. Negi and Negi (2009) reported that value of regression coefficient in *Puntius* was 3.0 from lake of Nainital India. The result of the present study indicates that the value of 'b' is more than 3. In the present study the value of exponent 'b' was observed to be well above 3.

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