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Studies on Relationship Between Length and Weight of Fish *Punctius sarana sarana* (Hamilton) From Godavari River, at Nanded (Maharashtra)

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ABSTRACT

The length weight relationship is the most important aspect in biological studies of fishes. Length of a fish has certain mathematical relationship changes at different life phases of fish & useful to find out length when the weight is known & vice versa. For these 50 specimens of *Punctius sarana sarana* (27 male & 23 female) was observed. By using cube law method for determination of relationship between length & weight of fish was employed.

Key words: *Punctius sarana,* Fish, Godavari river.

INTRODUCTION

Punctius sarana sarana is fresh water fish commonly known as 'PUNCTI' found in Godavari river at Nanded (Maharashtra).

The study on length weight relationship is the most important aspect in biological studies of fish. Such studies were carried out in different fishes previously by Lacrane[3]. Brown[1] & Goswami[2]. During studies present investigation were conducted to determine length weight relationship in the fish P*unctius sarana sarana.*

The present study was carried out during April, May 2013. Total length of fish was measured in cm. weighted in gm. Individually, after removing surface moisture with blotting paper. The mean length & mean weight was calculated by arranging them 05 groups of 02 cm. class intervals. The length weight relationship was determined by using general parabolic form of equation.

$W = aL^b$

$W = \log a + b \log L$

Where W is the weights in gms 'L' is the length in cms 'a' is a constant & 'b' is an exponent.

The average length (L) & the average weight (W) in each size group were calculated & the relationship was determined, on the size group average with the help of the formula by Lacrane[3].

$W = AL^B$

W = Average weight of fish in gms.

L = Average length of fish in cms.

RESULT AND DISCUSSION

Out of 50 samples of fish length of the male ranges from 15 to 24 cm, while weight from 50 to 215 gms. In case of female fish the value ranges from 17.3 to 24 cm. while weight from 80 to 218 gms. These values were then converted to logarithmic values & obtained statistical data & illustrated as an arithmetic plot. Procedure of calculations for length & weight relationship in *Punctius sarana sarana* (Table1)

$\bar{x} = 1.2931$, $\bar{y} = 1.6461$

$\Sigma x = 6.4656$, $\Sigma x^2 = 8.54$, $\Sigma xy = 11.92$

$\Sigma y = 8.2306$, $\bar{x} = 1.2931$, $\bar{y} = 1.6461$

$$B = \frac{\Sigma xy - N\bar{x}\bar{y}}{\Sigma x^2 - N(\bar{x})^2}$$

$$= \frac{11.92 - 5\,(1.2931)(1.6461)}{8.54 - 5(1.2931)^2}$$

$B = 7.11$

Table 1: Length weight relationship of *Punctius saran sarana*

Size group (cm)	Average length (cm) 'L'	Average weight 'W'	Log L (x)	Log W (y)	X^2	Xy	Calculated Y
15.1-17.0	15.98	63.97	1.2036	1.8060	1.44	2.17	3.77
17.1-19.0	17.99	93.49	1.2551	1.9707	1.75	2.47	4.07
19.1-21.0	19.37	130.60	1.2891	2.1158	1.66	2.72	4.29
21.1-23.0	21.62	——	1.3349	——	1.78	1.33	4.64
23.1-25.0	24.15	217.85	1.3829	2.3381	1.91	3.23	5.00
Total			$\Sigma x = 6.4656$	$\Sigma y = 8.2306$	$\Sigma x^2 = 8.54$	$\Sigma xy = 11.92$	

$$a = \frac{\Sigma y - B\Sigma x}{N}$$

$$= \frac{8.23 - 5(6.4656)}{5}$$

a = - 4.81

= Antilog a = 0.6457

y = a + Bx

- 4.81 + 7.11 (x)

Expressing this in terms of W and L the equation will be,

$W = aL^B$

$W = -4.81\ L^{7.11}$

In the present study the exponent value was obtained with in this limit. It indicates that weight of fish is higher in relation to its length. The logarithmic values observed length & weight are given in Fig.1.

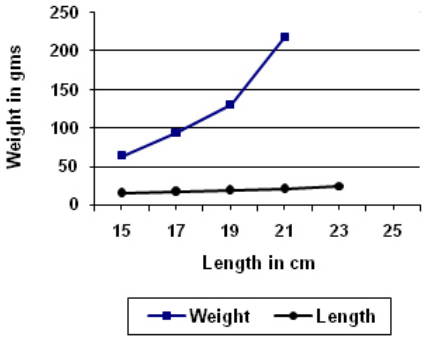

Fig.1: Length weight relations ship in *Punctius saran sarana.*

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