

Length-weight, Length-Height, and Height-weight relationship of *Parresia corrugata* from Nanded Region

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ABSTRACT

The study of length-weight relationship of fresh water mussels, *Parresia corrugata* is the most important aspects of biological study of molluscs; Length of a shell of a mussel has a certain mathematical relationship with its weight, height, changes according to the stages of development of the mussels and useful to find out length, when the weight is known and vice versa. For this study 241 specimens of *Parresia corrugata* were collected from Naigaon dam dist. Nanded and were kept in laboratory for acclimatization, after acclimatization relationship between Length-weight, Length-height, and height-weight was estimated by using Cube-Law.

Study shows that fresh water mussels *Parresia corrugata* follows the cube law, and results obtained are shown in text.

Key words: Length, weight, height *Parresia corrugata*, Nanded.

The fresh water mussel *Parresia corrugata* is commonly found in fresh water resources like rivers, dams and reservoirs in the Nanded region of Maharashtra. The study of length - weight relationship is done because this analysis is very important in two ways, that is it describes mathematical relationship between length and weight and secondly if any one factor is known another can be useful for the estimation of population strength¹.

LaCrane⁵ suggested that changes in the length and weight are according to the habitat and stages in the life cycle. Nagbhushana and Lomte⁹; Narian¹¹; Nagbhushanam and Lohgaonkar¹⁰; Lomte and Jadhav⁶ and Moorthy *et al.*⁷. have studied and reported the length weight relationship in fresh water mussels.

Mudgiere *et al.*,⁸; studied the Allometry and condition index in the fresh water bivalve

Table-1. Showing Length-weight, Length-height, and Height-weight Relationship of *Parresia corrugata* from Nanded

Sr No.	Size Group (Gm)	No. of Mussels In This Group	Average Weight (Gm)	Average Length (Cm)	Average Height (Cm)	Log W (Y)	Log L (X)	Log H (Z)	Y ²	X ²	Z ²	YX	XZ	YZ	CALCULATED- Y X Z
1)	10 - 15	10	13.45	4.72	2.77	1.1287	0.6739	0.4425	1.2739	0.4541	0.1958	0.7606	0.2982	0.4994	-0.3701 0.4726 1.4806
2)	15 - 20	31	17.99	4.99	3.20	1.2551	0.6981	0.5051	1.5752	0.4873	0.2551	0.8761	0.3526	0.6339	0.078 50.5015 1.6664
3)	20 - 25	39	22.53	5.31	3.43	1.3528	0.7251	0.5353	1.8300	0.5257	0.2865	0.9809	0.3881	0.7241	0.4252 0.5338 1.7560
4)	25 - 30	52	27.44	5.43	3.66	1.4384	0.7348	0.5635	2.0689	0.5399	0.3175	1.0569	0.4140	0.8105	0.729 0.5454 1.8397
5)	30 - 35	60	32.57	5.75	3.94	1.5128	0.7597	0.5955	2.2885	0.5771	0.3546	1.1492	0.4525	0.9008	1.0384 0.5751 1.9347
6)	35 - 40	31	37.62	6.03	4.03	1.5754	0.7803	0.6053	2.4818	0.6088	0.3663	1.2292	0.4723	0.9535	1.2624 0.5998 1.9638
7)	40 - 45	16	42.14	6.27	4.11	1.6247	0.7973	0.6138	2.6396	0.6356	0.3767	1.2953	0.4893	0.9972	1.4389 0.6201 1.9890
8)	45 - 50	2	46.06	6.6	4.3	1.6634	0.8195	0.6335	2.7668	0.6715	0.4013	1.3631	0.5191	1.0537	1.5774 0.6423 2.0475
N = 8															
TOTAL =	241	239.8	45.1	29.44	ΣY =	ΣW =	ΣH =	ΣY ² =	ΣX ² =	ΣZ ² =	ΣXY =	ΣXZ =	ΣYZ =	ΣXYZ =	
					11.5513	5.9887	4.4945	16.9247	4.5	2.553	8.7113	3.386	6.5731	N ² Y ² =	
					-ΣY =	-ΣX =	-ΣZ =	Y ² =	-X ² =	-Z ² =	N ² X ² =	N ² Y ² =	N ² Z ² =		
					1.4439	0.7485	0.5618	2.0848	0.5602	0.3156	8.6460	3.3640	6.4894		

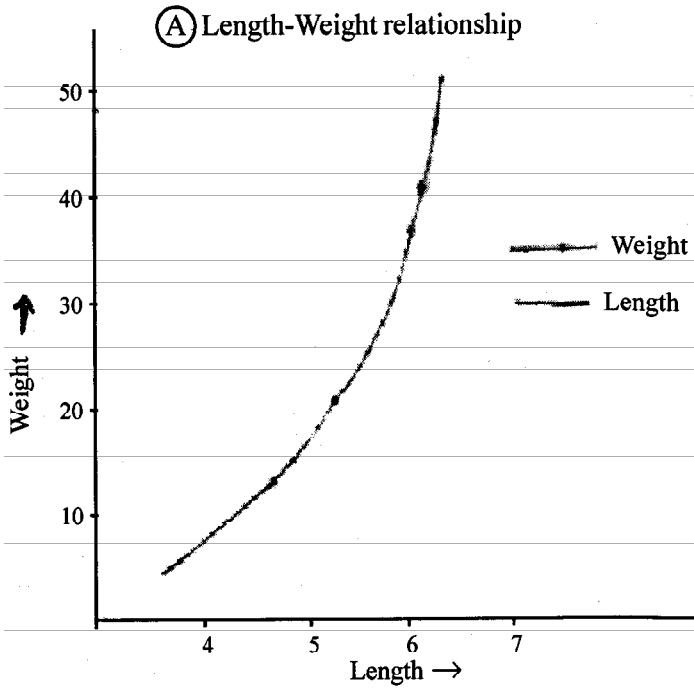
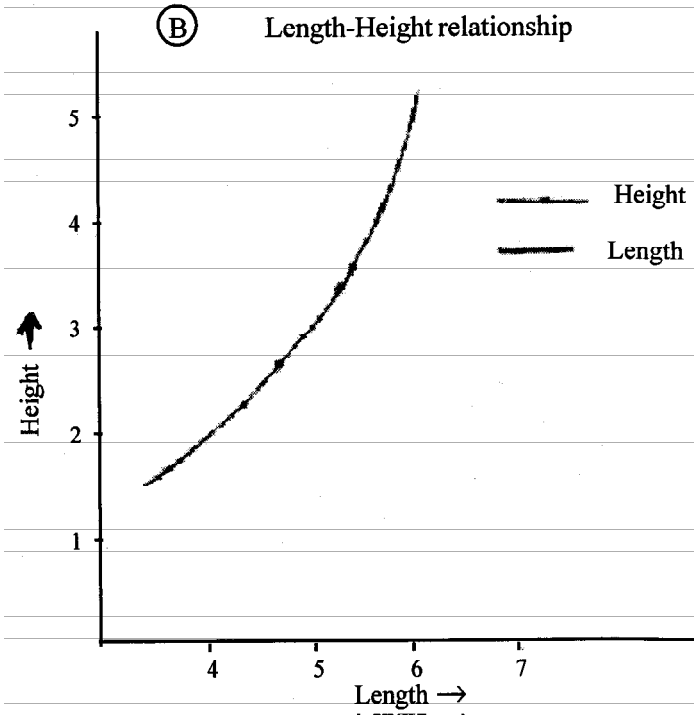
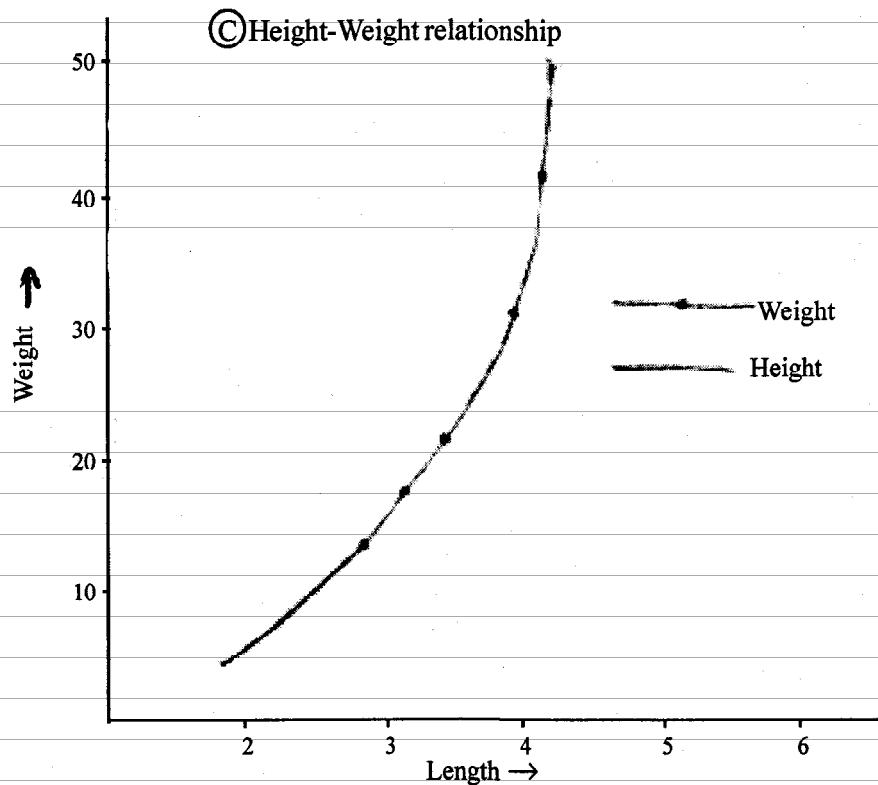


Fig. 1. Shows (A) Length-weight, (B) Length-height, and (C) Height-weight Relationship of *Parresia corrugata* from Nanded Region.





Parresia corrugata (Muller) from river Kempuhole, India. The fresh water mussels plays an important role in food-web and food chain of aquatic animal, and they are also consumed by tribal people from this region. *Parresia corrugata*³ species is having medicinal value and it is one of the important mussels which can be used for the formation of pearl.

Considering the importance of fresh water mussels in aquatic ecosystem. Present work was undertaken to study the relationship between Length-weight, Length-height and height-weight.

A number of other workers^{6,7,9,11} have

also investigated various aspects of Fresh water mussels.

Fresh water mussel *Parresia corrugata* were collected from Naigaon lake, Nanded district, Maharashtra in December-2012, and kept in laboratory for acclimatization. Total length height was measured in centimeter and weight in grams by using scale and monopan digital balance. Length of these specimens were ranges from 4.6 to 6.7 cm and height from 2.6 to 5.3 cm where as weight was ranged from 10.98 to 46.98 gm. Length was measured from maximum antero-posterior distance; and height was from maximum distance *i.e.* hinge to ventral margin. After measuring length and

height, weight was taken individually in gm after the measurement Length-weight, Length-height, height-weight relationship was determined by using Cube-Law $W=aL^b$ of (Le-Cren 1951). The constant a and expand b was also calculated. Graph was drawn to show Length-weight, Length-height, height-weight relationship. (fig 1).

Length of 241 mussels ranged from 4.6 to 6.7 cm; and height from 2.6 to 5.3 cm; and weight from 10.98 to 46.98 gm; these values were converted in to logarithmic value; and were used to plot a graph. (fig. 1 and Table-1).

The average length weight and height of each size group was calculated according to their size group, and relationship was determined as per (Le-Cren 1951). Relationship between length-weight was $W=0.0002375L^{3.5489}$; length-height was $H=0.4644L^{1.1956}$; and weight-height was $W = 0.1673L^{2.9680}$.

Results reveal that there exists a relationship between Length-weight, Length-height, and height-weight of mussels. The earlier workers reported non linear relationship^{2,4} because they observed individual differences between length, weight and height of mussels. In our study we also observed individual differences in length, weight and height of mussels and this may be due to some unsuitable environmental conditions.

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