



THE CORRELATION BETWEEN FECUNDITY WITH LENGTH AND WEIGHT OF *MACROBRACHIUM DAYANUM* (HALL) FROM THE RIVER PADMA, RAJSHAHI, BANGLADESH

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Macrobrachium dayanum (Hall) is the second largest freshwater prawn found abundantly in Bangladesh, India and Pakistan in rivers. It is a boneless, tasty and lucrative food item. Very few works are available on the fecundity, metamorphosis and hatching of *M. dayanum* (Jalihal and Sankoli 1975, Katre and Pandian 1972). This lead to the present study.

A total of 100 specimens of *M. dayanum* were collected from the river Padma in Rajshahi during the period from May to July, 2006. After collection, the specimens were washed, sexed and preserved in 5% formalin solution in separate jars in the Fisheries Research Laboratory, Department of Zoology, University of Rajshahi. For counting the eggs, actual counting method was followed. The total length was measured with the help of a measuring board fitted with a meter scale. The weights of the specimens were taken with the help of an electronic balance. Total length (TL) of the specimens was taken by putting it on the measuring board horizontally, fixing its snout tip to zero cm then the measurement was taken up to its tail tip nearer to one cm. For weight measurement electric balance was used. For establishing the relationship between fecundity with total length and total weight, the following formulae were followed: $Y = a + b X$, where, $Y =$ Fecundity, $X =$ Total length (TL) and $F = a + b TW$, where, $F =$ Fecundity, $TW =$ Total weight .

The result of the mean total length, mean body weight and mean number of eggs is given in Table 1.

Table 1. Showing the total length, body weight and mean no. of eggs of *M. dayanum*.

No. of specimens Length Frequency	Highest no. of eggs	Lowest no. of eggs	Specimen no. (N=100)	Mean total length (cm)	Mean body weight (g)	Mean no. of eggs
1-10	138	57	11	5.66	2.59	103.4
11-20	119	87	9	5.75	2.335	101.0
21-30	141	64	8	5.83	2.10	100.8
31-40	124	79	13	5.225	2.141	97.6
41-50	151	43	12	5.57	1.759	86.7
51-60	141	72	8	5.70	1.885	102.8
61-70	113	81	10	5.60	2.138	98.8
71-80	119	70	16	5.28	1.499	81.6
81-90	195	64	9	5.61	2.003	112.1
91-100	125	93	4	5.95	2.48	110.5
Mean				5.6175	2.093	99.53
Mean(±)SD				5.6175(±) 0.2127	2.093(±) 0.3123	99.53(±) 8.93

Estimation of fecundity

The fecundity study of 100 specimens of *M. dayanum* showed that the number of eggs in this species ranged from 43 to 195. The smallest size sample was 4.3 cm with body weight 1.18 g and the fecundity was 67 while the largest specimen with a total length of 7.1 cm and body weight 3.73 g had the fecundity of 95. The mean fecundity of 100 females was recorded as 99.53 ± 8.93 eggs with a mean total length of 5.6175 ± 0.2127 and mean body weight of 2.093 ± 0.3123 .

Relationship between Fecundity (F) and total length (TL)

The relationship between the fecundity and the body length of *M. dayanum* was established which is as follows: $F = a + b X$, ($a = -51.47$, $b = 22.72$, $r = 0.556$)

Relationship between (F) and body weight (W)

The relationship between the total number of eggs and body weight of *M. dayanum* was established.

The result is: $F = a + b TW$, ($a = -134.39$, $b = 41.23$, $r = 0.566$)

The calculated t value of 27.09 at 5% level of significance for 99 degrees of freedom is larger than the tabulated value 1.987 for the same degree of freedom. The r-value is of simple significance.

The knowledge of fecundity is used to assess the abundance and reproductive potential of the spawning stock. Almost no work is available on fecundity of prawns and shrimps but some workers have studied the fecundity of some fishes and fishery items in Bangladesh. Among them are Islam and Hossain (1984); Hossain *et al.* (1992). Bhuiyan *et al.* (2000) studied the fecundity and sex-ratio of Thai silver barb *Barbodes gonionotus*. In another study Bhuiyan *et al.* (2006) worked on the fecundity and ovarian characteristics of *Puntius gonionotus*. The fecundity varied with the length and body weight in freshwater crab species, *Cancer pagurus* (Rahman *et al.* 1991). Similarly the number of eggs and the length of the female body were found to be positively correlated in the case of *M. dayanum*. In case of the West African freshwater crab *Potamonautes dybowskii* the fecundity was 100 only (Camberlidge and Reed 2003). This finding is almost similar to the finding of the present investigation.

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