

Notes on Length-Weight Relationship and Condition Factor of Fresh Water Fish, *Labeo boga* (Hamilton) (Cypriniformes: Cyprinidae)

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Labeo boga is a freshwater fish species commonly known as 'Bhangan bata' in Bangladesh. This freshwater fish is commonly found in streams, canals, beels, ponds and floodplains of Bangladesh (Rahman, 1989). Recently this fish is widely cultured throughout the Bangladesh.

The length-weight relationship is very important for proper exploitation and management of the population of fish species. To obtain the relationship between total length and other body weight are also very much essential for stabilizing the taxonomic characters of the species. Among the freshwater fishes, length-weight relationship of different fishes has been done by many researchers, viz., *Tilapia mosambica* (Dhoa & Dewan, 1967), *Puntius stigma* (Islam & Hossain, 1991-92), *Alia coila* (Alam *et al.*, 1994), *Chanda nama* and *Chanda ranga* (Iqbal *et al.*, 1995-96), *Botia lohachata* (Mortuza & Mokarrama 2000), *Rhinomugil corsula* (Mortuza & Tawfeequa, 2006).

The changes in weight in relation to length are generally not on the basis of specific gravity but due to changes in the form of volume because the density in the organism and that of the surrounding water. Such changes are analyzed by the condition factor or "Pondered index" (Le cren, 1951). The present work has been done on the morphometric aspects such as length-weight relationship and condition factor of *L. boga*.

A total of 550 specimens were collected for the morphometric analysis from different fish markets of Rajshahi city during the period of June 2006 to May 2007. The monthly collections were sexed and group in to respective size group (10 size group of 20 mm class intervals). The males were found to range from 91 to 286 mm in total length and total weight was ranged between 8 to 356 g. In case of females, the total length and weight were ranged from 92 to 290 mm and 10 to 450 g respectively. The mean total length for male was calculated as 190.15 ± 5.249 mm and the mean total weight calculated as 106.387 ± 6.716 g (N=168). For female, the mean total length and weight were calculated as 195.8091 ± 3.301 mm and 104.20 ± 4.286 g (N=332) respectively.

The length-weight relationship calculated as:

$$\text{LogW} = -73.60 \pm 1.001 \log L, r = 0.877 \text{ or}$$

$$W = 0.0004 \pm 0.5376L \text{ (male)}$$

$$\text{LogW} = -195.31 \pm 1.576 \log L, r = 0.846 \text{ or}$$

$$W = 0.0013 \pm 0.1559L \text{ (female)}$$

$$\text{LogW} = -144.98 \pm 1.313 \log L, r = 0.853 \text{ or}$$

$$W = 0.1242 \pm 0.5811L \text{ (unsexed)}$$

Hile (1936) and Martin (1949) observed that the value of the regression coefficient 'n' usually lies between 2.5 to 4.0 and for ideal fish maintain the shape $n=3$. The value of regression co-efficient is nearly equal for male (2.975) and slightly higher (3.289) in case of female and combined sexes (3.108.). The higher values of 'n' revealed that the length-weight relationships of this species followed the cube law and might be affected by the general condition of appetite and gonadal contents of fish. These factors are also responsible for the variation of condition factors and relative condition factors (Dhoa & Dewan, 1967).

The condition factor (K) was determined by two ways from observed values and from calculated values. For observed values in case of male it ranged from 0.831 to 2.687 with a mean as 2.1194 ± 1.9586 . In female, it was ranged from 1.827 to 1.568 with a mean as 1.1601 ± 0.2537 . For unsexed specimens, it ranged from 0.916 to 1.468 with mean as 1.3241 ± 1.1712 . The mean calculated condition factor (K) was 2.7223 ± 1.0829 with ranged of 1.543 to 4.214 in male, 0.352 to 4.263 with mean of 1.4436 ± 1.0265 for female. In case of combined males and females, the mean K was 1.4801 ± 0.5647 with a range of 0.423 to 2.895.

The relative condition factor (Kn) has been estimated by dividing the observed mean weight (TW) by the calculated weight TW. The Kn values ranged from 0.2232 to 1.8932 (male), 0.07991 to 1.4259 (females) and 0.14327 to 2.66784 (unsexed). The mean Kn was calculated as 1.050 ± 0.5005 , 0.5555 ± 0.3156 and 0.8865 ± 0.5647 for males, females and combined sexes respectively. The value of Kn showed fluctuations between the sexes. It may be due to several reason, such as feeding intensity, gravid condition of female or other factor (Shafi & Quddus, 1974).

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