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Scientific Note

Notes on length-weight relationship and condition factor of *Cirrhina reba* (Hamilton) (Cyprinidae: Cypriniformes)

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Cirrhina reba (Ham.) is a commonly known as "Raikhor" or "Aikhor". Although the fish is rarely available in the eastern part of Bangladesh, but it is abundantly available in the western and north-western part of the country: The length-weight relationship is a 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 species has been done by many researchers, viz, *Tilapia mossambica* (Doha and Dewan, 1967), *Alia coila* (Alam *et al*.,1994), *Chanda nama* and *Chanda ranga* (Iqbal *et al* 1995-1996) *Euryglossa orientalis* (Atiqullah and Hoda 1997), *Cyprinus carpio* (Akther and Bhuiyan, 2003), *Botia lohachata* (Subba *et al,* 2000), *Rinomugil corsula* (Mortuza and Tawfeequa, 2006). The changes in the form of volume, are analyzed by the "Condition factor" or "Ponderal index" (Le cren, 1951). Condition is the general term for the analysis of the length-weight relationship as an indicator of the well - being of the organism in terms of numerical expression Atiqullah (2001), Mortuza and Mokarrama (2000). The present work has been done on the morphometric aspects such as length-weight relationship and condition factor of *C.reba.*

A total of 1100 species were collected randomly during the period from September, 2004 to July, 2005 on monthly basis from the different fish markets in Rajshahi. Just after collection the specimens were washed and preserved in 10% formalin solution in separate jars on monthly basis for the study of morphometric characters. Lengths were measured with the help of a "measuring board" fitted with a "meter scale". A fine point divider was used to measure the smaller lengths. The weight of the fish was taken with the help of a "pan balance".

The monthwise size frequency distribution of 1100 specimens of *C. reba* for 11 months are given in (Fig.l). The smallest specimen of *C. reba* was obtained in the months of September to November'04; whereas the largest specimen of *C. reba* was recorded in the months of June and July'05. The smallest male was 73.27mm and the smallest female was 74.13mm. The largest specimens were 183.29mm (male) and 186.45mm (female). All the specimens were grouped into 12 size groups of 10 class intervals. The size frequency distribution of *C. reba* in the present study revealed that the 90-100 mm size group of the females dominated most of the months and next 80-50 mm size group (Fig.l). In case of males 80-90 mm class monthly dominated and the next dominating group was 90-100 mm groups (Fig.l).

A total of 1100 specimens of *C.reba* were examined for the present study. The mean value of total length of male was calculated as 128.8±35.69mm and mean total weight was 22.64±18.12g (N=427). In case or female, the mean total length and total weight were calculated as 130.36±35.86 mm and 23.96±18.67g (N= 673) respectively. The mean value of total length and of total weight of combined sexes were also recorded as 129.58±35.77 mm and 22.65±17.98g, (N=1100).

The relationships between TL and TW were computed as individually and combinedly (Table 1) for both the sexes and the equation obtained as:

Log TW = - 2.4263+1.0792 Log TL (male)
Log TW = - 2.5473+1.1194 Log TL (female)
Log TW = - 2.8846+1.1782 Log TL (combined sexes)

Table-1. Length-weight (TL /TW) relationship of males, females and combined sexes of *C.reba(* N=1100)

Sex	N	Value of Log a	Value of 'n'	Value of 'r'
Male	427	-2.4263	1.0792	0.985
Female	673	-2.5473	1.1194	0.988
Combined	1100	-2.8846	1.1782	0.987

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Hile (1936) and Martin (1949) observed that the value of the regression co-efficient “n” usually lies between 2.5 and 3.0 only and ideal fish maintain the shape n = 3. The value of regression co-efficient is nearly equal for male (1.0792) and slightly higher (1.1194) incase of female and combined senes (1.1782) In this study ‘n’ values found as above 1 and below 2 (Table-1) therefore *C. reba* does not follow the cube law exactly.

The condition factor (k) was determined by two ways from observed values and from calculated values. For observed values in case of male mean as 0.844±0.068 and mean of calculated value was 0.981±0.589. In case of female the mean value of observed was 0.891±0.123 and calculated value of 0.994±0.585. For the combined sexes it was 0.853±0.103 (obs) and 0.970±0.553 (cal).

The above observations revealed that there are marked fluctuation in the Kc values of females and combined sexes. Such variations in the “Kc” values were also recorded by various workers, like Doha and Dewan (1967), Das (1977), Bhuiyan and Biswas (1982) etc.

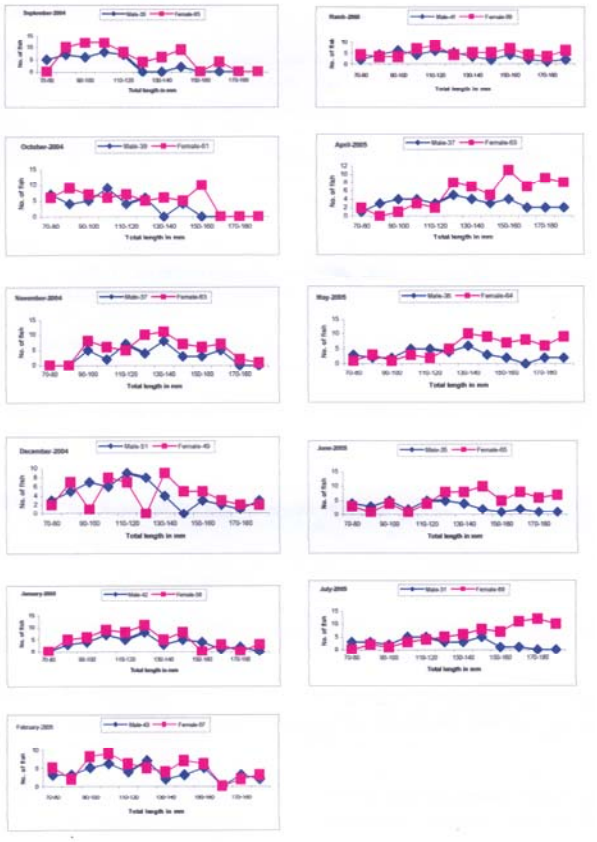

Fig. 1. Monthly size frequency distribution in males and females of *C. reba*.

The relative condition factor (Kn) has been estimated by dividing the observed mean weigh (TW) by the calculated weight (TW). kn values ranged from 0.384 to 2.394 (mean 1.173±0.666) in males 0.509 to 2.280 (mean 1.171±0.621) in females and 0.468 to 2.281 (mean 1.136±0.599) combined sexes respectively. The values of Kn showed fluctuation between the sexes. The fluctuation of Kn values may be due to several reasons such as feeding intensity, gravid condition of the female or other factors (Iqbal *et al,* 1995-96), (Islam and Hossain, 199l-1992), Shafi and Quddus, 1974,1975).

A knowledge of this is very useful in fisheries management and population analysis and therefore of great biological interest. The present observations (after calculation of relative condition factor kn values) an being used to find out the reproductive periodicity of this species elsewhere.

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