

Length Weight Relationship of *Schistura rupecola* (McClelland) from Song River of Garhwal Himalaya of Uttarkhand State, India

R. K. NEGI

Department of Zoology and Environmental Sciences
Gurukula Kangri University, Haridwar
India

Abstract:

Length – weight relationship was derived from Schistura rupecola inhabiting Song river of Garhwal, Himalaya. Sampling was done between April, 2012 and June, 2012. The result shows that the 'b' is significantly more than 3.0. The species exhibit an isometric growth pattern.

Key words: Length, *rupecola*, Song, Uttarkhand, Garhwal

Introduction:

Length-weight relationships provide basic information in fisheries biology, being helpful to determine the weight of an individual fish of known length or total weight from length-frequency distribution, and to compare specific growth among different regions (Forese 1998; Koutrakis and Tsikliras 2003). This relationship is also helpful to study ontogenetic changes (Teixeira-de Mello et al. 2006).

In the Indian hill streams, the member of the family Balitoridae, subfamily Nemacheilinae and genus *Schistura* (McClelland) which includes the loaches, inhabiting in different water bodies, plays a significant role in maintaining the ecological balance of hill streams. A perusal of literature has revealed that no work has been carried out on this species

hence, the present study was carried out to estimate the length– weight relationships for species of *Scistura rupecola* from Song river of Garhwal Himalaya, of the Uttarakhand State.

Material and methods

Fish samples were collected from Song river (Latitude 30° 19'48.93" and Longitude 78° 6'34.64") between April, 2012 and June 2012, using different fishing gears (cast net, hand net and scoop net). A total length of each fish was measured to the nearest 0.01cm, and individual body weight was recorded to the nearest 0.01g. All length weight relationships were calculated using the least square fitted method to log transformed data using the function $w=aL^b$, where W is the total weight of the fish in grams, L the total length in cm, a is a coefficient related to body form, and b is an exponent indicating isometric growth. The parameters a and b were estimated by linear regression on transformed equation: $\text{Log}W = \text{log}a + b \text{log}L$ (Le Cren 1951).

Results and discussion

A total of 33 specimens of *Schistura rupecola* (McClelland) was collected and subjected for the length– weight relationships study. The curvilinear relationship was observed when original weight was plotted the respective total length of the fish. However, linear relationship was obtained when the values were converted to logarithmic values. The values of the 'b' of length weight relationship of pooled data was

$$W = 6.97686 + 3.92377 \text{Log } L$$

$$W = 3.05309 L^{3.92377}$$

The value of the exponent 'b' in *Schistura rupecola* has been found to be 3.92377, clearly indicating that the species increase in weight, which is much more than the cube law. The values of the exponent were significantly higher than 3.92377, exhibiting

a positive isometric growth. According to Allen (1938) an ideal fish which maintains a constant shape, the value of 'n' will be 3. Hile (1936) and Martin (1949) were of the opinion that it may vary between 2.5 to 4.0. Negi and Negi (2009) reported that the value of the regression coefficient in *Puntius* was 3.0 from Lake of Nainital, India. The result of the present study indicates that the value of 'b' is more than 3. In the present study the value of exponent 'b' was observed to be well above 3. This indicates that the weight of the fish was higher as compared to the cube of its length, which shows an isometric growth of hill stream loaches.

BIBLIOGRAPHY:

- Allen, K.R. 1938. "Some observations on the biology of the trout (*Salmo trutta*) in Windermere." *J. Anim.Ecol.* 7:333-349.
- Forese, R. 1998. "Length-weight relationships for 18 less-studied fish species." *J. Appl. Ichthyol.* 14: 117-118.
- Gonclaves, J.M.S., L. Bentes, P. G. Lino, J. Ribeiro, A. V. M. Canario, and K. Erzini. 1997. "Weight-length relationships for selected fish species of the small-scale demersal fisheries of the south and southwest coasts of Portugal." *Fish. Res.* 30: 253-256.
- Hile, R. 1936. "Age and growth of the cisco, *Leucichthys artedi* (*Le Suer*) in the lakes of the northeastern highland, Wisconsin." *Bull. U.S. Bur.ZFish* 48: 311-317.
- Koutrakis, E.T. and A.C. Tsikliras. 2003. "Length-weight relationships of fishes from three northern Argean estuarine systems (Greece)." *J. Appl. Ichthyol.* 19: 258-260.
- Le Cran, E.D. 1951. "The length-weight relationship and seasonal cycle in gonad weight and condition in Perch (*Perca fluviatitus*)." *J.Anim.Ecol.* 20:201-219.
- Masrtin, W.R. 1949. "The mechanics of environment control of body form in fishes." Univ. Toronto stud. Biol. 58, *Ont. Fish.Res.Lab.*70:191.

Negi, R.,K. and T. Negi. 2009. "Lengthweight relationships of *puntius conchonius* from lakes of Kumaon Himalaya Uttarakhand State, India." *Pb.univ. Res. J (Sci.)* 59:71-75.

Teixeira-de Mello, F., C. Iglesias, A. I. Borthagaray, N. Mazzeo, J. J. Vilches, D. Larrea, R. Ballabio. 2006. "Ontogenetic allometric coefficient changes. Implications of diet shift and morphometric attributes in *Hoplias malabaricus* (Bloch) (Characiforme, Erythrinidae)." *J. Fish. Biol.* 69: 1770-1778.