Research Paper

Volume : 2 | Issue : 12 | December 2013 • ISSN No 2277 - 8179

Length - weight relationship of *Schistura montanus* from Hinval freshwater stream of Garhwal Himalaya of Uttarkhand State, India

Zoology

KEYWORDS : Schistura, Garhwal, Length-weight, Stream

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ABSTRACT

Length-weight relationship was derived from Schistura montanus inhabiting Hinvel freshwater stream of Garhwal Himalaya. Sampling was done between March 2013 to June 2013.The result show that the 'b' is significantly more than 3.0. The species exhibit a allometric growth pattern.

Introduction:

Length - weight data are a useful and standard results of fish sampling programs. These data are needed to estimate growth rates, length and age structure, and other components of fish population dynamics. (Kolher *et al*. 1995). Length weight relationships provide basic information in fisheries biology and therefore, useful to determine the weight of an individual fish of known length (Forese,1998 & Kuotrakis and Tsikliras 2003). In the Indian hill streams, the member of 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 in this species hence, the present study presents estimate of the length - weight relationships for species of *Scistura montanus* from the streams of Srinagar Garhwal Himalaya of Uttarakhand, State.

Material and methods

Fish samples were collected from stream of Hinvel(Latitude 29^0 26'31^0 28' and longitudinal $77^{0\,99'}80^{0\,6'}$) between April, 2013 to June 2013 using different fishing gears (cast net, hand net and scoop net). A total length of each fish were measured to the nearest 0.01cm , and individual body weight was recorded to the nearest 0.01g.taken after draining water from buccal cavity and blotting out excess water on the fish. 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: LogW= loga + b logL (Le Cren,1951).

Results and discussion

A total of 53 specimens of *Schistura montanus* (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 logarithermic values. The values of the 'b' of length weight relationship of pooled data was

W= 2.41586 + 3.24046 Log L

$W= 0.8249\ L^{3.24046}$

The value of the exponent 'b' in *Schistura montanus* have been found to be 3.24046 clearly indicating that the species increase in weight is much more than the cube law. The values of the exponent was significantly higher than 3.24046 exhibited a positive isometric growth. Even though the change of b values depends primarily on the shape and fatness of the species, various factors may be responsible for the differences in parameters of the length weight relationships among season and year, such as temperature, salinity, food, sex, time of year and stage of maturity (Pauly, 1984, Sparre,1992). According to Goncalves *et al*. (1997), Ozaydin and Taskavak (2007), the parameter b, unlke the parameter a may vary seasonally, and even daily, and between habitats. Tesch (1968) reported that value of 'b' might be between 2.0 and 4.0. However, variation in 'b' value may occur due to different environmental factors. Negi and Negi (2009) reported that value of regression coefficient in *Puntius* was 3.0 from lake of Nainital India. Kumar and Lal (1994) have studied the length weight relationship in Nemacheilus multifasciatus in relation to their sex, place, season and year and reported the values of ,b' with regard to length and weight to ranged between 1.814 to 3.659.The result of the present study indicate that the value of 'b' is more than 3. Thus in the present study, weight in relation to total length and weight of pooled data follow isometric growth pattern.

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