

Length–weight relationships of two Nemacheilid fish species [*Schistura fasciata* Lokeshwor and Vishwanath, 2011 and *Schistura reticulofasciata* (Singh and Bănărescu, 1982)] from Simsang River, Meghalaya, India

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Summary

Length–weight relationships (LWRs) are presented for two fish species: *Schistura fasciata* Lokeshwor and Vishwanath, 2011 and *Schistura reticulofasciata* (Singh and Bănărescu, 1982), sampled from the Simsang River in Meghalaya, India. Fishes were caught seasonally from January to December 2015, with cast nets (10–15 mm mesh size) and electrofishing devices. The *b* values in the LWRs were determined as 3.09 for *S. fasciata* and 3.318 for *S. reticulofasciata*.

1 | INTRODUCTION

Length–weight relationships (LWRs) are generally applied in order to make fish stocks and population assessments (Ricker, 1968). Consequently, LWRs have been used frequently to estimate weight from length because direct weight measurements are time consuming in the field (Sinovic, Franicevic, Zorica, & Ciles Kec, 2004). The Simsang River of Garo Hills district, Meghalaya covers an area of about 290 km² of the entire stretch from its origin (near Nokrek Biosphere reserve) to Baghmara (downstream) in India. The river is also known as the Someswari River in Bangladesh. The two loaches, *Schistura fasciata* and *S. reticulofasciata*, belonging to the Nemacheilidae family, commonly occur in moderate to fast-flowing hill streams (Kottelat, 1990; Lokeshwor & Vishwanath, 2011), and have a commercial as well as very high ornamental value. The present study provides length–weight data for these two fish species collected from the

Simsang River, which are not yet represented in FishBase (Froese & Pauly, 2016). Hence, the present findings attempt to provide baseline information and important contributions for future research on these species.

2 | MATERIALS AND METHODS

Fish samples were collected seasonally from January to December 2015 from three sites: Nokrek Biosphere Reserve (90°23'59"E; 25°31'21"N), Romagre (90°34'21"E; 25°32'41"N), and Williamnagar (90°39'43"E; 25°27'36"N) in the Simsang River, Meghalaya, India. Fishes were preserved in 10% formaldehyde solution for further study in the laboratory. Identification followed Lokeshwor and Vishwanath (2011), and Vishwanath, Nebeshwar, Lokeshwor, Shangningam, and Rameshori (2014). Total length (TL) was measured with the help of

TABLE 1 Descriptive statistics and estimated length–weight relationship parameters for two fish species, *Schistura fasciata* Lokeshwor & Vishwanath, 2011 and *Schistura reticulofasciata* (Singh & Bănărescu, 1982), from Simsang River, Meghalaya, India

Species	N	TL (cm)		BW (g)		Regression parameters		Confidence limits		<i>r</i> ²
		Min.	Max.	Min.	Max.	<i>a</i>	<i>b</i>	95% CL of <i>a</i>	95% CL of <i>b</i>	
<i>Schistura fasciata</i>	69	4.2	7.1	0.50	3.23	0.005	3.090	0.005–0.009	2.908–3.277	.972
<i>Schistura reticulofasciata</i>	131	3.4	6.1	0.17	1.47	0.003	3.318	0.002–0.006	3.145–3.492	.957

N, sample size; TL, total length; BW, body weight; *a*, intercept; *b*, slope; *r*², coefficient of determination; **Bold**, new TL (max).

a digital slide calliper (Mitutoyo, CD-8" CSX) to the nearest 0.01 mm and the values converted into centimetres. Body weight was taken with an electronic balance (TP 303, Denver Instrument, Germany) to the nearest 0.01 g. The relationships between total length and weight were determined through linear-regression equation of $\log TW = \log a + b \log TL$. Log-log plots within species were done to remove outliers using SPSS 17.0 (SPSS Inc. Ltd., Sacramento, California). The 95% confidence limits for b (CL 95%) were calculated to determine if the hypothetical value fell between these limits (Froese, 2006).

3 | RESULTS

Descriptive statistics and estimated LWR parameters for the two fish species from Simsang River are shown in Table 1. A total of 200 specimens ($S. fasciata = 69$, $S. reticulofasciata = 131$) were used to estimate the LWRs.

4 | DISCUSSION

No LWR data are available for either of the two species in FishBase (Froese & Pauly, 2016). The 'b' values for $S. fasciata$ and $S. reticulofasciata$ (calculated as 3.09 and 3.318, respectively) were within the expected range of 2.5–3.5 (Froese, 2006). Comparing the results for the two species against the Bayesian approach, parameter 'a' was found to be within the expected range for elongated fish species (i.e. 0.0018–0.00842 95% range of a) (Froese, Thorson, & Reyes, 2013).

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