



Technical contribution

Length–weight relationships of nine fish species from Xingkai (Khanka) Lake, Heilongjiang, China

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Summary

In this study the length–weight relationships of nine fish species from Xingkai (Khanka) Lake in China belonging to three families and eight genera were analyzed. A total of 273 specimens were used to estimate the relationship parameters. Four of these species (*Chanodichthys dabryi*, *Hemibarbus maculatus*, *Tachysurus fulvidraco* and *Cyprinus carpio haematopterus*) had no previous estimations and one maximum length is new to science for inclusion in FishBase.

Introduction

Xingkai (Khanka) Lake is a large and shallow (4380 km², 4 m in depth on average) lowland lake in the Amur River basin on the border between Russia and China in Heilongjiang Province, Northeast China. The study provides the length–weight relationships (LWR) of nine species from this lake.

Materials and methods

Fish samples were collected monthly by trawl between July and October of 2007. In the laboratory sampled fish specimens were identified to species according to Meng et al. (1995), Chen et al. (1998) and Yue et al. (2000), and measured to the nearest 1 mm (Total length, *L*) with a sliding caliper, and weighed to the nearest 0.1 g (Weight, *W*). All scientific names were checked against FishBase.

The relationships between total length and weight were determined by linear regression. Within species, log-log plots

were done to remove outliers using SPSS 17.0 (SPSS Inc., Chicago, IL). The 95% confidence limits for *b* (CL_{95%}) were calculated to determine if the hypothetical value of isometry (3) fell within these limits (Froese, 2006).

Results and discussion

Descriptive statistics and estimated parameters of length–weight relationships for nine fish species from Xingkai Lake in China are shown in Table 1. The *r*² values for these species ranged between 0.937 and 0.984, and *b* values varied from 2.621 to 3.433, indicating that all parameters are safe to use within the indicated length range. Interestingly, *Cyprinus carpio haematopterus* measured here is a subspecies of *Cyprinus carpio* according to Wu (1964) and Yue et al. (2000). Therefore, one maximum length for *Cyprinus carpio haematopterus* is a novel record to FishBase. These results contribute to the knowledge on the species from the Xingkai Lake in China, where several species (*Chanodichthys dabryi*, *Hemibarbus maculatus*, *Tachysurus fulvidraco* and *Cyprinus carpio haematopterus*) were poorly known and had no previous estimates of LWR.

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Table 1
Descriptive statistics and estimated parameters of length–weight relationships in nine fish species, Xingkai Lake, China

Species	n	Length (cm)		<i>r</i> ²	Parameters		<i>a</i> CL _{95%}		<i>b</i> CL _{95%}	
		Min	Max		<i>a</i>	<i>b</i>	Lower Bound	Upper Bound	Lower Bound	Upper Bound
<i>Chanodichthys erythropterus</i>	52	28.5	75.5	0.972	0.0182	2.723	0.0110	0.0302	2.592	2.854
<i>C. mongolicus</i>	53	17.5	41.5	0.969	0.0221	2.729	0.0140	0.0348	2.592	2.866
<i>C. dabryi</i>	24	20.5	36.5	0.962	0.0349	2.621	0.0163	0.0752	2.390	2.852
<i>Hemibarbus maculatus</i>	33	18.5	30.9	0.937	0.0254	2.769	0.0072	0.0895	2.381	3.157
<i>Hemiculter leucisculus</i>	20	12.8	19.7	0.953	0.0020	3.433	0.0007	0.0057	3.056	3.811
<i>Leuciscus waleckii</i>	21	18.6	24.2	0.959	0.0190	2.890	0.0079	0.0462	2.603	3.176
<i>Tachysurus fulvidraco</i>	34	11.9	19.5	0.965	0.0116	2.945	0.0067	0.0203	2.744	3.145
<i>Cyprinus carpio haematopterus</i>	20	15.6	64.0	0.984	0.0247	2.860	0.0135	0.1346	2.677	3.042
<i>Siniperca chuatsi</i>	16	23.6	35.6	0.962	0.0430	2.670	0.0159	0.1159	2.368	2.972

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