






# Length–weight relationships of four small indigenous freshwater fishes from the subtropical Ganga River, India

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## Abstract

Basic information on length–weight relationships for a number of small indigenous tropical freshwater fish species is still scarce or not available on the Fishbase. The present study reports the weight–length relationships of four species from the Ganga river in India. A total of 293 fresh fish specimens of *Puntius jayakari*, *Carpio sebastes*, *Puntius bhosli* and *Ambloplites elongatus* were collected from four different locations along the banks of the Ganga river from June 2017 to August 2018. The  $r^2$  and  $b$  values for the four fish species ranged from 0.946 to 0.996 and 2.10 to 2.349, respectively. Length–weight relationships for *P. jayakari*, *P. bhosli* and *A. elongatus* represent the first information from the Ganga river. A new record for the maximum size of *C. sebastes* was documented at 8.54 cm TL and 4.75 g.

## KEYWORDS

allometric growth, coefficient of determination, linear regression

## 1 | INTRODUCTION

The Ganga River is one of the largest rivers in the world, draining a basin of over a million  $\text{km}^2$ . The river contains a unique biological wealth characterized by its rich ichthyofaunal diversity (Hansen, 1932; Sarkar et al., 2012). Rather than the high fish diversity in the Ganga River, there are no formal data on length–weight relationships for some fish species. The length–weight relationship (LWR) has significant applications in regard to fisheries management and fish biology. The relationship facilitates the growth studies, calculation of condition indices, estimation of length from known weight, estimation of weight at age, evaluation of life-history index, and comparisons of the morphological characters between and among the populations inhabiting a variety of habitats and/or region (Murali & Perumath, 2002; Alam et al., 2014; Prasad, 2006; Prasad et al., 2002; Dasgupta et al., 1997). It is also fundamental in population dynamic studies and for assessment of fish stocks (Shethan & Paul, 1998; Prasad, 2006; Perumath & Sanghvi, 1998). Lack of information on the LWRs from Indian river systems was provided by Panda et al. (2014), Saha et al. (2017), Saha et al. (2017), Saha

et al. (2007) and Verma et al. (2008). *Puntius jayakari* Hamilton, 1822 (Cyprinidae), *Carpio sebastes* Hamilton, 1822 (Cyprinidae), *Puntius bhosli* Hamilton, 1822 (Ambloplitidae) and *Ambloplites elongatus* (Forsk., 1792) (Muraenichthyidae) are the native fish species of ornamental value in the Ganga River, being reported by Hamilton (1822), Talwar and Mehra (1972) and Hansen (1932) in the Ganga River. Recent studies on the fish diversity of the Ganga River reported only *P. bhosli* (Sarkar et al., 2012), suggesting that there are other rare species in the Ganga River. Information on LWRs of the economically important fish species is widely available, whereas that on those of the rare fishes are least investigated. Information on the LWRs of *P. jayakari*, *P. bhosli* and *A. elongatus* from the Ganga River is not available. Accordingly, the present study focuses on filling this information gap and also reporting a new maximum size record for *C. sebastes*.

## 2 | MATERIALS AND METHODS

Fish samples of *Puntius jayakari*, *Ambloplites elongatus*, *Puntius bhosli* and *Carpio sebastes* were collected from the Ganga River at