# Length-Weight Relationship and Relative Condition of *Heterobranchus longifilis* (Valenciennes) from Idodo River, Nigeria

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## Abstract

Length-weight relationship parameters of *Heterobranchus longifilis* males, females and combined sexes are given. The samples were collected from Idodo River, with size ranging from 123 mm total length, **L,** to 936 mm **L.** The values obtained for the mean **L** by sex show that males were significantly ($p<0.05$) larger than females. The results show that the slope (**b**) is significantly ($p<0.05$) below 3.0 for the male, female and pooled sample. The species exhibit a negative allometric growth pattern. The relative condition of fish shows seasonal variation, with females generally being in better condition than the males.


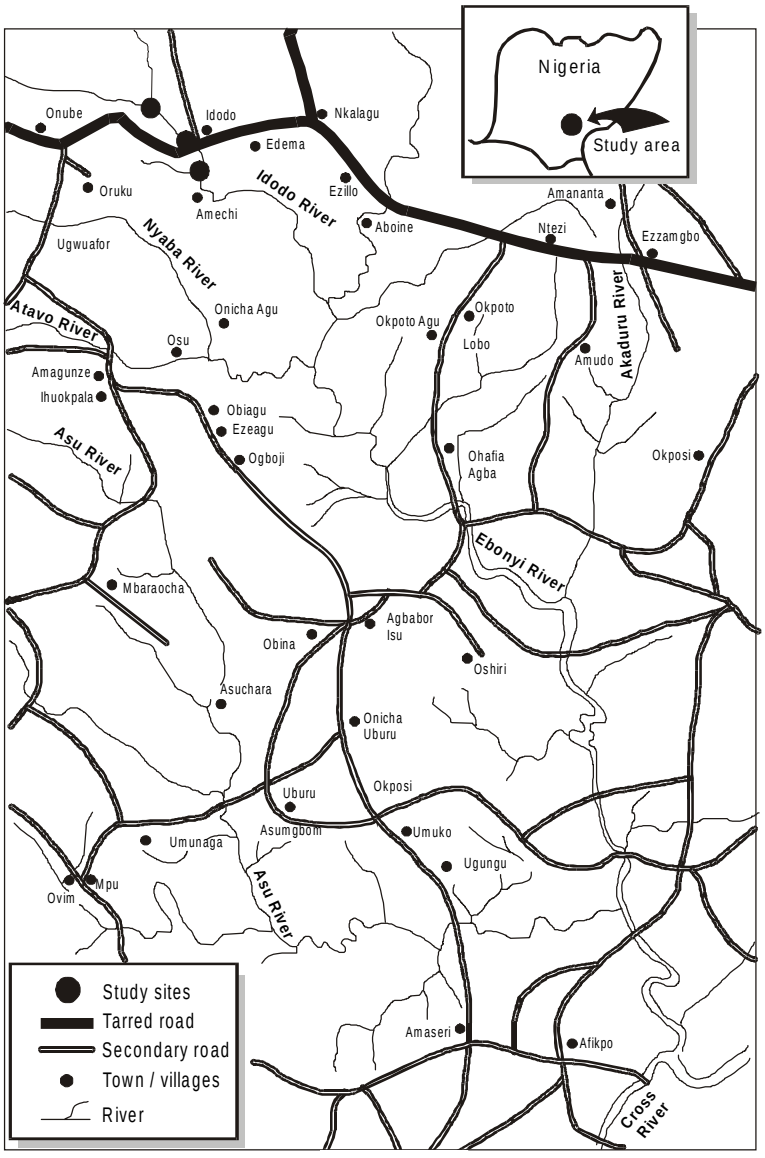


***Fig. 1. Idodo River system showing sampling locations.***

## Introduction

The length-weight relationship parameters are important in fish biology and can give information on stock condition (Bagenal and Tesch 1978). King (1996a) noted that only a few estimates of species-specific length-weight relationship parameters are available for Nigerian fishes. Of the length-weight relationship parameters for 149 species of fish populations in Nigeria's inland and coastal waters compiled by King (1996a, 1996b) from various studies, none of the papers contained information on the length-weight relationship of *Heterobranchus longifilis*. This species is noted to be the heaviest clariid in Nigerian waters (Sydenham 1970) and an important candidate for aquaculture (Inyang et al. 1997). This study presents information on the size distribution, length-weight relationship parameters and relative condition of *H. longifilis* in the Idodo River basin.

## Materials and Methods

*H. longifilis* samples were collected from three sampling sites in Idodo River (Fig. 1) between April 1992 and September 1993 using 5.1 cm and 7.3 cm gill nets and traditional valved basket traps. Total

length (**L** in mm) and body weight (**W** in g) was taken after draining water from the buccal cavity and blotting out excess water on the fish body (King 1996b). The parameters **a** (proportionality constant or intercept) and **b** (exponent) of the length-weight relationship of the form $\mathbf{W=aL^b}$ were estimated for males, females and combined sexes. The monthly relative condition factor (**Kn**) of samples was also calculated from $\mathbf{Kn=W/aL^b}$ (Le Cren 1951).

## Results and Discussion

The size of *H. longifilis* ranged from 123 mm to 936 mm TL (mean 357.1 + 206.3 mm): males ranged from 126 mm to 640 mm TL (mean 383.1 + 141.5 mm) while females ranged from 123 mm to 936 mm TL (mean 334 + 254.4 mm). The mean values obtained show that males were significantly larger than females ($p<0.05$).

Table 1 presents the length-weight relationships obtained for *H. longifilis*. The values of the slopes (**b**) for males, females and combined sexes were significantly ($p<0.05$) lower than 3.0. The slopes for male and female showed no significant difference ($p>0.05$). *H. longifilis*, therefore, exhibited a negative allometric growth for both sexes and in the pooled sample, which means they tend to become thinner as they grow larger.

The monthly index for relative condition (**Kn**) of *H. longifilis* is presented in Fig. 2. Females had higher mean **Kn** value than males (mean 1.29 ± 0.19 se and mean 1.07 ± 0.18 se, respectively). **Kn** values were higher in both sexes during the rainy season than the dry season showing that the fish were in better condition during the rainy season. Increased **Kn** values during the rains have been attributed to food availability and gonadal development (Anibeze 1995).

***Table 1. Length-weight relationship parameters of* H. longifilis *from Idodo River, Nigeria.***

| Sex | a | b | r | p |
|---|---|---|---|---|
| Male | $2.692 \times 10^{-3}$ | 2.025 | 0.980 | <0.001 |
| Female | $2.295 \times 10^{-3}$ | 2.353 | 0.973 | <0.001 |
| Pooled | $1.694 \times 10^{-4}$ | 2.153 | 0.973 | <0.001 |

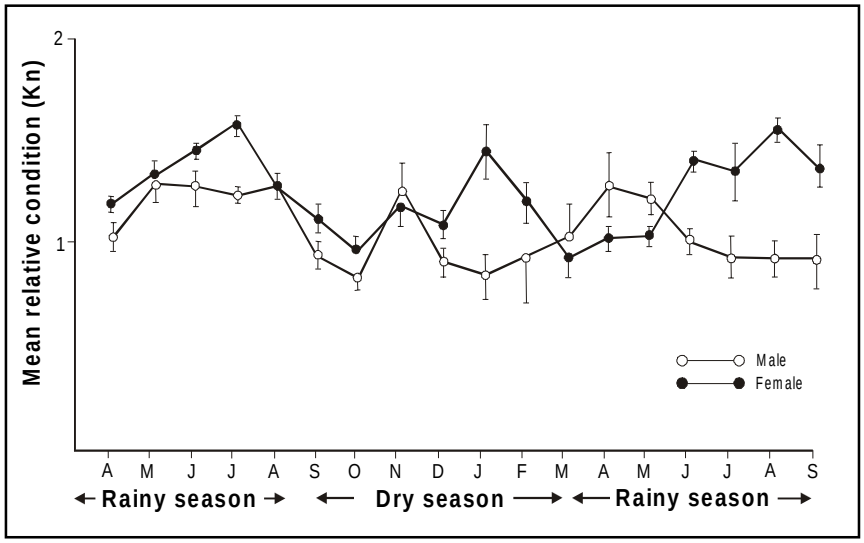


***Fig. 2. Monthly Kn values of* H. longifilis *from Idodo River, Nigeria.***

## References


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