The Length weight Relationship and Condition Factor of the Banded Jewel Fish (Hemichromis fasciatus PETERS) from Kainji Lake, Nigeria

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ABSTRACT
The length weight relationship and condition factor of Hemichromis fasciatus from Kainji Lake was studied. One hundred and twenty seven fish samples of total length ranging from 6.50cm 15.50cm and weigh between 4.00g and 60.00g collected between August 2006 and June 2007 were analyzed. Results showed that a, b and r - values were 0.0042, 3.442 and 0.966 respectively, while the condition factor (CF) values varied from 0.67 2.42 with mean of 1.203. The fish exhibited positive allometric growth pattern. The condition of the lake is favourable for the survival of the fish species.
Keywords: *Length weight relationship, Condition factor, Banded Jewel fish, Kainji Lake, Nigeria*

INTRODUCTION

Fishes found in tropical and sub tropical water systems experience frequency growth fluctuations due to factors such as food composition changes, environmental changes, rate of spawning to mentioned but a few. Length weight relationship can be used to assess the influence of these factors in fish. Kulbicki *et al.* (1993) and King (1996a) reported that fish growth, mean weight of given body length of fish estimation and the relative well being in fish can be known through this relationship.

Length weight relationship studies have been done in different water bodies and on different fishes. Notably among these are the reports of King (1996a) on some Nigerian freshwater fishes, Taiwo and Aransiola (2001) on *Chrysichthys* species in Asejire Lake, Fafioye and Oluojo (2005) on five fish species in Epe Lagoon, Nigeria and Leleye (2006) on *Oreochromis niloticus* in Òcume River in Benin.

Hemichromis fasciatus is a common fish in African freshwaters (Ita, 1978; Loiselle, 1979). It is very important in many fisheries because of its great commercial values as food and aquarium fish. However, there is dearth of information on the length weight relationship of the fish species from the lake.

This study presents information on the length weight relationship and condition factor of this valuable fish species in order to aid its management in the lake.

MATERIALS AND METHOD

Fish samples were identified and collected monthly from fishermen catches using gill nets and malian traps between August 2006 and June 2007.

Total length (cm) and weight (g) were taken using measuring board and top loading balance.

Length weight relationship was calculated using the formula

$W = aL^b$

which was transformed to Logarithm of the form

Log W = Log a + b Log L

Using Instat Statistical Package

Where W = body weight of fish (g), L = total body length of fish (cm), a and b = values estimated by regression

The condition factor (K) was calculated using the formula

$K = \frac{100\ W}{L^3}$ (Pauly, 1984)

Where K = condition factor, L = Total body length of fish (cm)

W = Body weight of fish (g)

RESULTS AND DISCUSSION

A total of one hundred and twenty seven species of *Hemichromis fasciatus* were collected for the study. The

total length range between 6.50cm and 15.50cm with mean length of 11.10cm and weigh between 4.00g and 60.00g with 18.70g as mean weight (Table 1). This shows that the species used for the study were relatively mature.

Condition factor (CF), parameters of a, b and r of the length weight relationship of *Hemichromis fasciatus* is shown on table 2 and figure 1. The exponent (b) value of 3.442 shows that *Hemichromis fasciatus* exhibits positive allometric growth that is, as the fish increases in length it becomes heavier. Pauly (1983) reported that a slope greater than 3 denotes allometric growth. This is similar to the findings of Entsua Mensah *et al.* (1995) Volta River and King (1996a) in Mfangmfang pond that recorded b values of 3.22 and 3.23 respectively but contrary to that of King (1996a) in Adadama Lake (b = 2.61) and Imo River (b = 2.50), then Laleye (2006) in Oueme River (b = 2.95). This could be due to the condition of fish caught during the different seasons, location, sex, sample size and nature of the water body. Lagler *et al.* (1977) reported b values of 2.5 4.0, while that of Pauly and Gayannilo (1997) range from 2.5 3.5, which suggest that the findings of this study is valid.

Condition factor relates to well being and degree of fatness of fish (Pauly, 1984). The calculated c.f values range from 0.67 2.42 with mean of 1.203. This value is greater than 1, which is an indication that the fish is doing well in the environment, but less than 2.9 to 4.8 documented by Bagenal and Tesch (1978) for mature freshwater fish fresh body weight. This could be due to difference in weight of individual fish sampled and period of sampling.

CONCLUSION

The results of this study show allometric growth pattern and the condition of the lake is favourable for the survival of *Hemichromis fasciatus*..

Hemichromis fasciatus from Kainji Lake

Table 1: Size ranges of

Parameters		Minimum	Maximum	Mean	SD
Total Length (cm)		6.50	15.50	11.10	1.84
Weight (g)		4.00	60.00	18.70	10.31

Table 2: Length weight relationship and condition factor of *Hemichromis fasciatus* From Kainji Lake

Parameters	Values
a	0.004
b	3.442
r	0.966
Mean condition factor (C.F)	1.203

a, b = regression co efficient; r = correlation co efficient

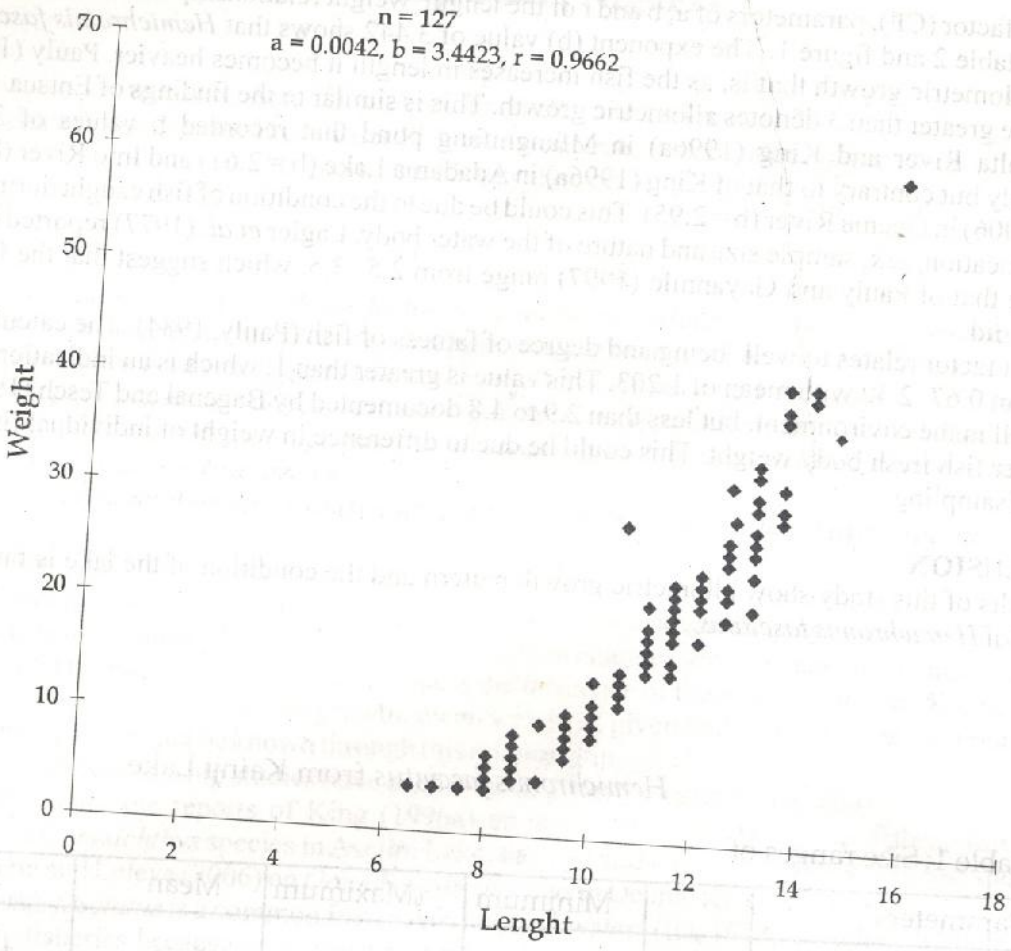

Figure 1: Length weight relationship of *Hemichromis fasciatus* from Kainji Lake

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