# LENGTH-WEIGHT RELATIONSHIP AND CONDITION FACTOR OF FOUR MORMYRID SPECIES OF ANAMBRA RIVER

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**ABSTRACT**

***The length-weight relationship and condition factor of four mormyrid species namely Mormyrus rume, Hyperopisus bebe, Campylomormyrus tamandua and Gnathonemus petersii from Anambra river were investigated from October 2002 to March 2004. In all, 400 species M. rume, 384 H. bebe, 417 C. tamandua and 335 G. petersii were sampled for the study. Length-weight relationship showed that the exponent "b,' were 3.067, 2.459, 3.201 and 3.114 for M. rume, H. bebe, C. tamandua and G. petersii respectively. The mormyrid species studied with exception of H. bebe exhibited isometric growth and the correlation coefficients were positive and highly significant (P < 0.05). The condition factor (k) varied from 0.69 ± 0.22 in G. petersii to 1.17 ± 0.59 in M. rume. There were no significant difference in the mean condition factor between the males and females in all the mormyrid species. The importance of condition factor in the breeding activities of the mormyrid species revealed that not much energy is diverted into gonad synthesis and maturation during the breeding cycle season.***

**Keywords:** Mormyrids, Length-weight relationship, Condition factor

## INTRODUCTION

Mormyrid species are widespread in Afro-tropical river ecosystems (Lowe-McConnel, 1972). Commonly known as 'Elephant snout" or "Elephant nose" fishes, mormyrids are well represented in Nigeria water with about thirty-one (31) different species belonging to eleven (11) genera (Olasoebikan and Raji, 1998). However, four species namely *Mormyrus rume, Hyperopisus bebe, Campylomormyrus tamandua and Gnathonemus petersii* inhabitants of Anambra river were studied in this report.

Mormyrid fishes are preferred by the inhabitants of Anambra area because they are readily available, tasty and relatively cheap. They account for a significant proportion of the total fish landing in most fresh fish landing sites in Nigeria (Reed *et al.,* 1967; Ita, 1978; Victor and Tetteh, 1988). Mormyrids are increasingly becoming important in the world aquarium business, aquaculture and neurological studies (Gosse, 1984). Works available on Mormyrids include those of King 1989, King 1996 a and b, Ikomi 1996 and Ezenwaji 2004. The present study is intended to add unto the existing information on the biology of Mormyrids with emphasis on the length-weight relationship and condition factor.

**Description of Study Site:** The Anambra River has its source from Ankpa highlands of Kogi State, Nigeria. It lies between latitude 6°10' and 7°20' and longitude 7°40' East of river Niger. There is a rainy season (April – September / October) and a dry season (October / November – March). From December to January / February, the basin is influenced by the harmattan, but its effect is not well marked (Ezenwaji 1989). The ranges of some key physico-chemical parameters of the water are: water temperature 21.19 – 28.40 °C, transparency 0.4-1.4m, water level, 4.70-6.76m, air temperature 19.89 °C – 27.02 °C and pH 6.0 – 7.4. The mean rainfall data was 109.58± 104.5 mm with the highest record of 280 mm in July. There was no rainfall from December to March.

The vegetation in the basin is guinea Savanna but the lentic water bodies are often fringed with macrophytes like *Pterocarupus spp, Jussiaea spp, Eupatorum odoratum, Pennisetum spp, Cynodon spp* and in some areas *Raphia hookeri*. Relevant human activities in the area are fishing sand mining, bathing, domestic washing, trading (mainly on food items) and rice processing.

## MATERIAL AND METHODS

Fish samples were collected monthly at Otuocha and Ogurugu water ports of Anambra river from October 2002 to March 2004 using gill, drag, drift and cast nets of mesh sizes between 70 to 120 mm. Baskets, traps and hook and line were also used. Fish collected were preserved in ice and transported to the laboratory for measurements. Each fish was weighed to the nearest 0.1 g, total and standard length were determined to he nearest 1 mm.

The length weight relationship of the fish was determined by the equation: W= $aL^b$, where W is weight in grams, L is standard length in centimeters, and a & b are regression constants. The logarithm transformed data gave thee straight line relationship: log W = log a ± b Log L.

The condition factor for each specimen was calculated using the method of Bagenal and Tecsh (1978) thus: K = W/L3 x 100/1; where K = condition factor, W = weight of fish in grams and L = length of fish in centimeters. The coefficient of variation (CV) was determined as: CV = ($S/\bar{x}$ x 100/1) % (King and Udo, 1996); where S = standard deviation and $\bar{x}$ = population mean.

**Data Analysis:** The average value of "b" for each species was tested to verify whether it was significantly different from '3' using t – test at 0.05 significance difference. The sexual and seasonal variations in condition factor were also determined using t – test while the coefficient of variations (CV) were tested using F – test.

## RESULTS

**Length-weight Relationship:** The length-weight relationship parameters of mormyrid species in Anambra River are presented in Table 1. The "b" values for male, female and combined sex for *M. rume* were 3.013, 3.114 and 3.076 respectively. For *C. tamandua*, the "b" values for males, females and combined sex were 3.014, 3.215 and 3.201 respectively. Similarly, the "b" value for *G. petersii* males, females and combined sex were 3.001, 3.235 and 3.114 respectively. *M. rume, C. tamandua and G. petersii* thus exhibited isometric growth pattern for both sexes. The situation was however different in *H. bebe* where the "b" values for males, females and combined sexes were 2.355, 2.062 and 2.459 respectively. *H. bebe* therefore exhibited allometric growth pattern. In all the mormyrid species studied, the 'b' values for the males were not significantly different from the females (t= 2.04 $df_{34,}$ p > 0.05).

**Condition Factor (K):** The monthly variations in the condition factors for the four mormyrid species are presented in Table 2. The annual mean value of the condition factor for *M. rume* (combined sex) was 1.117 ± 0.59. The mean condition factor for the male was 1.20 ± 0.09 while that of the female was 1.17 ± 0.08. There was no significant difference in the annual average condition factor for the males and females *M. rume* (t = 1.15 $df_{34}$, P > 0.05).

The dry season value of 1.39 ± 0.56 for *M. rume* (combined sex) was significantly different from that of the wet season value of 0.81 ± 0.44 (t = 3.23 $df_{16}$, P > 0.05). However, the average condition of the male *M. rume* in the wet season (April – October) 0.93 ± 0.70 was not significantly different from the dry season (November – March) value of 1.38 ± 0.84 (t = 2.06, $df_{16}$ P> 0.05). The interseasonal coefficient of variation (CV) in condition factor among the males for the dry (cv = 53.53%) and wet (cv = 49.68%) seasons were not significantly different (F = 1.86, P >0.05). However, the interseasonal variability in female condition factor for the dry (cv = 27.60%) and wet (cv=20.22%) seasons were not significantly different (F = 3.01, P> 0.05).
Female average condition factor for wet season (0.81 ± 0.46) significantly differed from that of the dry season value of 1.40 ± 0.63 (t =3.06 $df_{16}$ P <0.05).

Considering *H. bebe* (combined sex), the mean condition factor was 0.81 ± 0.41. There was no significant difference in the mean condition factor between the males (0.83 ± 0.61) and females (0.79 ± 0.11) during the period studied (t = 0.86 $df_{34}$ P > 0.05). The dry season value of 0.98 ± 0.40 for the combined sex was significantly different from the wet season value of 0.55 ± 0.27 (t = 3.83 $df_{16}$, P < 0.05). Among the male *H. bebe*, the average condition factor for the dry season (1.01 ± 0.73) was not significantly different from the wet season value of 0.55 ± 0.54 (t = 1.16, $df_{16}$, P >0.05). There was no significant difference in the interseasonal coefficient of variation in condition factor for the dry (cv = 51.89 %) and wet (cv = 53.75 %) seasons, (F = 2.98, P > 0.05). Among the female *H. bebe*, the mean condition for the dry season (0.95 ± 0.46) significantly exceeded the wet season value (0.35 ± 0.46) (t = 3.44 $df_{16}$, P < 0.05). The interseasonal coefficient of variation between the dry (cv = 22.2 %) and the wet (cv = 38.83 %) seasons were significantly different (F = 5.16, P < 0.05).

Among combined sex *C. tamandua*, the annual mean condition was 0.73 ± 0.29. There was no significant difference in the average condition between the males (0.67 ± 0.14) and females (0.79 ± 0.29) (t = 2.86, $df_{34}$, P >0.05). The mean condition factor for the combined sex in the dry season (0.88 ± 0.26) was significantly different from that of the wet season value of 0.49 ± 0.16 (t = 5. 15, $df_{16}$, P < 0.05). Among the male *C. tamandua* the average condition factor for the dry season (0.82 ± 0.49) was statistically similar to the wet season values of 0.44 ± 0.40 (t=2.06, $df_{16}$ P > 0.05). Similarly the interseasonal Coefficient of variation for the dry season (cv = 29.28%) was statistically similar to the wet (cv = 35.09%) season value, (F = 2.02, P > 0.05).

Among the female *C. tamandua* the mean condition factor for the dry season (0.95 ± 0.51) was not significantly different from the wet season value of 0.5 ± 0.39 (t = 2.16 $df_{16}$ P > 0.05). There was also no significant difference in interseasonal coefficient of variation between the dry (cv = 27.48%) and wet (cv = 28.27) seasons (F = 1.54, P > 0.05).

The annual mean condition factor for the combined sex of *G. petersii* was 0.69 ± 0.22. The annual mean condition factor for the males (0.62 ± 0.09) was not significantly different from those of the females (0.77 ± 0.06), (t = 1.02 df $_{16}$, P >0.05). The dry season mean value for the combined sex was 0.64 ± 0.21 and was not significantly different from the wet season value of 0.79 ± 0.22 (t = 2.07, $df_{16}$, P > 0.05). The male average condition factor for the dry season (0.55 ± 0.46) and wet season (0.72 ±

**Table 1: Length-weight relationship of Mormyrid species of Anambra river basin**

| Species | Sex | Number (n) | Length L (min) | Range (TL) L (max) | a | b | r | TL/SL |
|---|---|---|---|---|---|---|---|---|
| *Mormyrus rume* | F | 183 | 19.60 | 73.40 | 0.0338 | 3.013 | 0.988 | 1.060 |
| *Mormyrus rume* | M | 217 | 16.20 | 60.00 | 0.0310 | 3.114 | 0.977 | 1.080 |
| *Mormyrus rume* | M & F | 400 | 17.60 | 70.34 | 0.0240 | 3.076 | 0.969 | 1.186 |
| *Hyperopisus bebe* | F | 173 | 12.40 | 46.10 | 0.0035 | 2.062 | 0.965 | 1.043 |
| *Hyperopisus bebe* | M | 211 | 11.30 | 41.20 | 0.0137 | 2.355 | 0.954 | 1.054 |
| *Hyperopisus bebe* | M & F | 384 | 11.04 | 40.10 | 0.0235 | 2.459 | 0.976 | 1.105 |
| *Campylomormyrus tamandua* | F | 182 | 8.70 | 42.70 | 0.0570 | 3.014 | 0.997 | 1.132 |
| *Campylomormyrus tamandua* | M | 235 | 7.70 | 42.40 | 0.0194 | 3.215 | 0.947 | 1.145 |
| *Campylomormyrus tamandua* | M & F | 417 | 7.50 | 43.07 | 0.0381 | 3.201 | 0.966 | 1.144 |
| *Gnathonemus Petersii* | F | 179 | 13.50 | 30.06 | 0.0275 | 3.001 | 0.980 | 1.123 |
| *Gnathonemus Petersii* | M | 156 | 11.90 | 27.00 | 0.0086 | 3.235 | 0.999 | 1.120 |
| *Gnathonemus Petersii* | M & F | 335 | 11.09 | 33.40 | 0.0176 | 3.114 | 0.049 | 1.125 |

**TL = Total length, SL = Standard length, a = regression intercept, b = slope and r correlation coefficient*

**Table 2: Monthly variations in the condition factor (cf = w. 100/L3) of Mormyrid species in Anambra river basin**

| Months | Number | Male | Number | Female | Number | Male | Number | Female |
|---|---|---|---|---|---|---|---|---|
| | | *Mormyrus rume* | | | | *Hyperopisus bebe* | | |
| Oct. 2002 | 8 | 0.84 ± 0.06 | 12 | 0.86± 0.11 | 11 | 0.63 ± 0.04 | 11 | 0.61 ± 0.06 |
| Nov | 10 | 1.22 ± 0.08 | 9 | 1.11 ± 0.06 | 9 | 0.90 ± 0.19 | 10 | 0.70 ± 0.01 |
| Dec | 14 | 0.70 ± 0.03 | 11 | 0.64 ± 0.03 | 12 | 0.44 ± 0.83 | 12 | 0.64 ± 0.13 |
| Jan | 15 | 1.06 ± 0.04 | 10 | 1.93 ± 0.09 | 10 | 0.89 ± 0.71 | 9 | 1.20 ± 0.18 |
| Feb. 2003 | 15 | 1.11 ± 0.05 | 12 | 1.70 ± 0.03 | 13 | 0.77 ± 0.42 | 10 | 0.96 ± 0.09 |
| March | 15 | 2.47 ± 0.06 | 9 | 1.55 ± 0.16 | 13 | 1.87 ± 0.88 | 10 | 0.87 ± 0.05 |
| April | 9 | 0.85 ± 0.08 | 10 | 0.91 ± 0.15 | 9 | 0.53 ± 0.77 | 8 | 0.66 ± 0.020 |
| May | 12 | 0.33 ± 0.11 | 11 | 0.45 ± 0.11 | 13 | 0.22 ± 0.81 | 8 | 0.26 ± 0.13 |
| June | 15 | 0.55 ± 0.13 | 9 | 0.84 ± 0.02 | 13 | 0.30 ± 0.96 | 8 | 0.38 ± 0.04 |
| July | 10 | 0.52 ± 0.17 | 7 | 0.93 ± 0.03 | 11 | 0.20 ± 0.87 | 6 | 0.57 ± 0.19 |
| Aug. | 11 | 1.13 ± 0.18 | 13 | 0.71 ± 0.07 | 9 | 0.76 ± 0.11 | 10 | 0.34 ± 0.13 |
| Sept | 11 | 1.13 ± 0.13 | 11 | 0.93 ± 0.14 | 11 | 1.01 ± 0.90 | 11 | 0.77 ± 0.19 |
| Oct | 14 | 1.84 ± 0.06 | 11 | 0.90 ± 0.19 | 11 | 0.83 ± 0.45 | 11 | 0.88 ± 0.07 |
| Nov | 12 | 0.70 ± 0.03 | 9 | 1.21 ± 0.01 | 10 | 0.61 ± 0.71 | 7 | 1.16 ± 0.18 |
| Dec | 9 | 0.91 ± 019 | 9 | 1.20 ± 0.08 | 8 | 0.83 ± 0.71 | 10 | 1.08 ± 0.09 |
| Jan. 2004 | 12 | 1.95 ± 0.14 | 10 | 1.82 ± 0.04 | 19 | 0.99 ± 0.67 | 11 | 1.33 ± 0.04 |
| Feb | 15 | 1.52 ± 0.08 | 11 | 1.73 ± 0.03 | 16 | 1.03 ± 0.53 | 10 | 0.89 ± 0.01 |
| March | 10 | 2.68 ± 0.06 | 9 | 1.64 ± 0.06 | 13 | 2.17 ± 0.35 | 11 | 1.00 ± 0.31 |
| Rainy season | 90 | 0.93 ± 0.70 | 84 | 0.81 ± 0.40 | 88 | 0.55 ± 0.54 | 73 | 0.55 ± 0.46 |
| Dry season | 127 | 1.38 ± 0.84 | 99 | 1.40 ± 0.63 | 123 | 1.01 ± 0.73 | 100 | 0.95 ± 0.46 |
| Annual mean | 13 | 1.20 ± 0.09 | 11 | 1.17 ± 0.08 | 12 | 0.83 ± 0.61 | 10 | 0.79 ± 0.11 |
| | | *Campylomormyrus tamandua* | | | | *Gnathonemus petersii* | | |
| Oct. 2002 | 12 | 0.66 ± 0.03 | 8 | 0.72 ± 0.02 | 9 | 0.44 ± 0.06 | 10 | 1.00 ± 0.07 |
| Nov | 13 | 0.49 ± 0.15 | 11 | 0.52 ± 0.71 | 16 | 0.49 ± 0.71 | 11 | 0.84 ± 0.14 |
| Dec | 14 | 0.89 ± 0.11 | 9 | 0.99 ± 0.11 | 12 | 0.37 ± 0.04 | 12 | 0.79 ± 0.13 |
| Jan. 2003 | 12 | 1.02 ± 0.03 | 9 | 1.14 ± 0.02 | 5 | 0.88 ± 0.02 | 9 | 1.01 ± 0.02 |
| Feb | 18 | 1.09 ± 0.22 | 10 | 1.11 ± 0.07 | 8 | 0.63 ± 0.02 | 8 | 0.81 ± 0.11 |
| March | 15 | 0.45 ± 0.51 | 8 | 0.52 ± 0.01 | 8 | 0.94 ± 0.24 | 12 | 0.61 ± 0.01 |
| April | 25 | 0.32 ± 0.26 | 20 | 0.42 ± 0.11 | 9 | 0.99 ± 0.53 | 7 | 0.01 ± 0.01 |
| May | 16 | 0.19 ± 0.01 | 13 | 0.33 ± 0.20 | 8 | 0.79 ± 0.01 | 12 | 0.89 ± 0.05 |
| June | 9 | 0.49 ± 0.03 | 6 | 0.66 ± 0.14 | 10 | 1.00 ± 0.06 | 7 | 1.03 ± 0.07 |
| July | 10 | 0.59 ± 0.02 | 7 | 0.61 ± 0.32 | 7 | 0.63 ± 0.02 | 9 | 0.88 ± 0.01 |
| Aug | 12 | 0.36 ± 0.08 | 10 | 0.51 ± 0.60 | 11 | 0.71 ± 0.07 | 14 | 0.98 ± 0.09 |
| Sept | 8 | 0.50 ± 0.06 | 9 | 0.47 ± 0.20 | 7 | 0.58 ± 0.08 | 6 | 0.69 ± 0.04 |
| Oct | 9 | 0.62 ± 0.13 | 10 | 0.80 ± 0.62 | 8 | 0.33 ± 0.01 | 13 | 0.57 ± 0.08 |
| Nov | 12 | 1.07 ± 0.02 | 13 | 1.14 ± 0.80 | 6 | 0.24 ± 0.01 | 10 | 0.46 ± 0.05 |
| Dec | 11 | 1.04 ± 0.42 | 9 | 1.11 ± 0.91 | 5 | 0.60 ± 0.09 | 10 | 0.64 ± 0.06 |
| Jan. 2004 | 16 | 0.71 ± 0.1 | 10 | 1.20 ± 0.09 | 9 | 0.53 ± 0.01 | 8 | 0.57 ± 0.04 |
| Feb | 13 | 0.94 ± 0.08 | 11 | 1.22 ± 0.01 | 9 | 0.42 ± 03 | 10 | 0.53 ± 0.04 |
| March | 10 | 0.63 ± 0.18 | 9 | 0.80 ± 0.23 | 9 | 0.54 ± 0.20 | 11 | 0.63 ± 0.02 |
| Rainy season | 101 | 0.44 ± 0.40 | 83 | 0.54 ± 0.39 | 69 | 0.72 ± 0.49 | 78 | 0.86 ± 0.41 |
| Dry season | 134 | 0.82 ± 0.49 | 99 | 0.95 ± 0.51 | 87 | 0.55 ± 0.46 | 101 | 0.72 ± 0.41 |
| Annual mean | 14 | 0.67 ± 0.14 | 11 | 0.79 ± 0.29 | 9 | 0.62 ± 0.09 | 10 | 0.77 ± 0.06 |

**Table 3: Seasonal variation in condition factor and coefficient of variation (CV) among four mormyrid species of Anambra river**

| Species | Condition factor | | | Coefficient of Variation | | |
|---|---|---|---|---|---|---|
| | Dry season | Wet season | T -value | Dry season | Wet Season | T-value |
| ***Mormyrus rume*** | | | | | | |
| **M** | 1.38 ± 0.84$^{a}$ | 0.93 ± 0.70$^{a}$ | 2.06 | 53.53$^{a}$ | 49.68$^{a}$ | 1.86 |
| **F** | 1.40 ± 0.63$^{a}$ | 0.81 ± 0.46$^{b}$ | 3.06 | 27.60$^{a}$ | 20.22$^{a}$ | 3.01 |
| **M & F** | 1.39 ± 0.56$^{a}$ | 0.81 ± 0.44$^{b}$ | 3.23 | 29.56$^{a}$ | 28.74$^{a}$ | 2.02 |
| ***Hyperopisus bebe*** | | | | | | |
| **M** | 1.01 ± 0.73$^{a}$ | 0.55 ± 0.54$^{a}$ | 1.16 | 51.89$^{a}$ | 53.75$^{a}$ | 2.98 |
| **F** | 0.95 ± 0.46$^{a}$ | 0.35 ± 0.46$^{b}$ | 3.44 | 22.20$^{a}$ | 38.83$^{b}$ | 5.16 |
| **M & F** | 0.98 ± 0.40$^{a}$ | 0.55 ± 0.27$^{b}$ | 3.83 | 30.40$^{a}$ | 31.40$^{a}$ | 3.34 |
| ***Campylomormyrus tamandua*** | | | | | | |
| **M** | 0.82 ± 0.49$^{a}$ | 0.44 ± 0.40$^{a}$ | 2.06 | 29.28$^{a}$ | 35.09$^{a}$ | 2.02 |
| **F** | 0.95 ± 0.51$^{a}$ | 0.50 ± 0.39$^{a}$ | 2.16 | 27.48$^{a}$ | 28.27$^{a}$ | 1.54 |
| **M & F** | 0.88 ± 0.26$^{a}$ | 0.49 ± 0.16$^{b}$ | 5.15 | 26.60$^{a}$ | 25.80$^{a}$ | 2.02 |
| ***Gnathonemus petersii*** | | | | | | |
| **M** | 0.55 ± 0.46$^{a}$ | 0.72 ± 0.49$^{a}$ | 2.60 | 38.19$^{a}$ | 35.12$^{a}$ | 2.01 |
| **F** | 0.72 ± 0.41$^{a}$ | 0.86 ± 0.41$^{a}$ | 2.04 | 24.41$^{a}$ | 18.99$^{a}$ | 3.11 |
| **M & F** | 0.64 ± 0.21$^{a}$ | 0.79 ± 0.22$^{a}$ | 2.07 | 27.60$^{a}$ | 26.40$^{a}$ | 2.47 |

*a and b indicate significant corresponding means at P = 0.05*

0.49) were not significantly different ($t = 2.60$, $df_{16}$, P > 0.05. There was no significant difference in interseasonal coefficient of variation between the dry (cv = 38.19 %) and the wet (cv = 35.12 %) seasons ($F = 2.01$, $P > 0.05$). Among the females, the average condition factor for the dry season (0.72 ± 0.41) and wet (0.86 ± 0.41) seasons were not significantly different ($t = 2.06$ $df_{16}$, $P > 0.05$). The interseasonal coefficient of variation for the dry (cv = 24.41 %) and wet (cv = 18.99 %) seasons were not significantly different ($F = 3.11$, $P > 0.05$).

Comparing the mean condition factor for the combined sexes of the mormyrid species, *M. rume* (1.17 ± 0.59) significantly differed from that of *H. bebe* (0.81 ± 0.41), ($t = 2.95$ $df_{34}$, $P < 0.05$), *C. tamandua* (0.73 ± 0.29) ($t = 3.97$, $df_{34}$, $P < 0.05$) and *G. petersii* (0.69 ± 0.22) 9t = 4.52, $df_{34}$, $P < 0.05$). The value for *H. bebe* (0.81 ± 0.41) was not significantly different from that of *C. tamandua* (0.73 ± 0.29) ($t = 0.97$ $df_{34}$, $P > 0.05$). The annual mean condition factor for *C. tamandua* (0.73 ± 0.29) was not significantly different from that of *G. petersii* (0.69 ± 0.22) ($t = 0.62$, $df_{34}$, $P > 0.05$).

## DISCUSSION

Length-weight relationships of fishes are often used to study the indication of fatness, general well-being or gonad development. It is also assumed that heavier fish of a given length are in better condition. Venu and Kurup (2003) noted that for an ideal fish, which maintain dimensional equality, the isometric value of b would be 3. The estimates of b values (2.062 – 3. 235, x = 2.905 ± 0.63) obtained in this study fall within the limits reported by Largler *et al.* (1977), 2.998, King (1996a, 1996b) 3.012 & 2.912, Anibeze (2000) 2.153, Stergiou and Moutopoulos (2001) 2.989, Venu and Kurup (2003) 3.021 and Ezenwaji and Inyang (1998) 2.970. The mean value, 2.905 is approximately 3 thus indicating isometric growth pattern.

Information on condition factor (K) is relevant for ascertaining the fish optimum environmental requirements, feeding regime and stocking density (Tsadu and Adebisi, 1997). The result of the present study also indicated that among the mormyrid species studied, *M. rume* had the best condition (1.17 ± 0.59) with about 55.6 % f the male and 50% fo the female attaining a condition factor above 1.0 while *G. petersii* was in the worst condition (0.69 ± 0.22) with 94.4% of the males and 77.7 % of the females attaining condition factor less than 1.0.

There was no significant difference between the mean condition factor of the males and females of all the mormyrid species. The non-significant difference noted between the mean condition factors of males and females in all the Mormyrid species probably indicates that not much energy was diverted by the females during breeding activities.

This result is similar to the report of Olatunde (1978) on the male and female Schilbeid species of lake Kainji Nigeria and Ikomi (1996) for *Brienomyrus longionalis* in the upper Warri River Nigeria but differed from Anibeze and Inyang (2000) report for male and female *Heterobranchus longifilis* from Idodo River, Nigeria, and Fawole and Adewoye (2002) report for male and female *Clarias gariepinus* in Oba reserviour, Ogbomosho Nigeria.

Except for *G. petersii*, there was seasonality difference in the condition factor among the combined sexes of the mormyrid species. This agrees with the report of Anibeze and Inyang (2000) on *H. longifilis* at Idodo River but contrasted the report of Ezenwaji and Offiah (2003) for *Pellonula leonensis* of Anambra river, Nigeria.

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