

BIOLOGICAL ASPECTS OF SOME FISH SPECIES FOUND IN OGUN RIVER, ABEOKUTA, OGUN STATE

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ABSTRACT

Fish is a high-quality food rich in protein. A total of 130 species of *Marcusenius senegalensi*, *Chrysichthys nigrodigitatus*, *Schilbe intermedius*, *Clarias gariepinus* and *Elops lacerta* were obtained from Ogun river in Abeokuta. Fishing was by the means of gill and cast nets. The length-weight measurement, condition factor, stomach content analysis of the fish samples collected was studied. The result of the study showed that *Clarias gariepinus* had the highest length and weight range of 20.4-65.6cm and 89-108 g respectively while *Elops lacerta* had the lowest length and weight range of 9.5-15.3cm and 10.9-37.5g respectively. The highest condition factor of 3.42 was found in *Marcusenius senegalensi* while the lowest of 0.69 was found in *Clarias gariepinus*. The regression coefficient indicated an allometric growth for all the fish species except for *Clarias gariepinus* in which the b-value was above 3. The stomach content analysis indicated that majority of the fish species are omnivores that feed on any available prey such as flagellates, insects, fish and some aquatic plant parts among others. *Nymphaea odorata*, *Eichhomia crassipes*, *Pistia stratiotes*, *Pennisetum pedicellatum*, *Crassocephalum crepidioides*, *Digitaria abyssinica* and *Pennisetum purpureum* were some of the plants identified in the near the river body. The study indicates that majority of the fish species are in a state of well-being however, the pollution of the river can be better managed as this will improve the quality of the aquatic life of the river,

Keywords: Condition factor, Fish, Length - weight measurement, Stomach content

1. INTRODUCTION

Fish is a high-quality food, rich in protein and vitamins with variable amount of fat and calcium. In Nigeria, there are abundant natural water bodies with high quantity of fish resources and it has been reported that freshwater bodies in Nigeria are the richest in West Africa as regards to abundance of fish (Meye and Ikomi, 2008). A comprehensive understanding of the conditions of fish species in a water body is an important management tool for a sustainable exploitation of the fishes. Regular biological surveys of fish species are thus very important in the management of fisheries (Oladipo, Mustafa, Suleiman and Anifowose, 2018).

Water bodies such as rivers, lakes and dams are valuable resources that serve many human needs and thus enhance our lives by providing many opportunities. Water bodies also serve as a source of animal protein and family income to many (Bolarinwa, Fasakin and Fagbenro, 2015). The condition factor shows the degree of the well-being of the fish in their habitat (Pervin and Mortuza, 2008). The study is aimed at determining the length-weight measurement, condition factor, stomach content of the fish species and the identification of flora found in Ogun River.

2. MATERIALS AND METHODS

A total number 130 of five different species belonging to five families were sampled from commercial catches of fishermen in Ogun River. The gears used in this study site were gill and cast nets. Immediately after the capture of the fishes, they were all taken to the laboratory. Each specimen was identified by means of identification key. The total length and standard length of the specimen were measured using a measuring board graduated in centimeters. The weight of the specimens was also recorded in grams using a weighing balance graduated in grams. The fishes were measured to the nearest centimeters and the weight to the nearest 0.1 grams, thereafter the fishes were dissected.

The condition factor was calculated using the equation;

$$K = \frac{100W}{L^3} \quad (\text{Bagenal, 1967})$$

Where K = Condition factor

W = weight in grams

L = Length in centimeters

Each specimen of fish was dissected with the aid of dissecting set at the ventral side, starting from the anus to the beginning of the operculum. The gut was removed and the content of the stomach was carefully pressed out using forceps into a Petri dish. The content was carefully placed on a slide and observed under the microscope. Some large organisms in the gut were however identified without the aid of a microscope.

3. RESULTS AND DISCUSSION

Table 1: Frequency and percentage composition of fish species captured at Ogun River

Sample	Fish species	Family	Frequency	Percentage
A	<i>Marcusenius senegalensis</i>	Mormyridae	14	10.7
B	<i>Chrysichthys nigrodigitatus</i>	Claroteidae	43	33.1
C	<i>Schilbe intermedius</i>	Schilbeidea	26	20.0
D	<i>Clarias gariepinus</i>	Clariidae	28	21.5
E	<i>Elops lacerta</i>	Elopidae	19	14.7
	Total		130	100

Table 2: Length-weight relationship and correlation coefficient of the fish species

	Length		Weight		Condition Factor	Regression coefficient	Correlation coefficient(R ²)
	Range	Mean	Range	Mean			
A	10.5 - 15.73	11.85	49.3-74.2	61.83	3.42	Y= -0.650 + 0.976X	0.903
B	9.7 -19.1	15.88	21.0-54.5	49.34	1.19	Y= 0.037 + 0.704X	0.988
C	10.0-17.4	16.03	46.8-103.3	82.59	1.95	Y=-0.208+0.726X	0.989
D	20.4-65.6	25.90	89-108	100.05	0.69	Y=-8.626+5.095X	0.746
E	20.4-65.6	11.87	10.9-37.5	20.91	1.27	Y= 0.594 + 0.368X	0.990

A-*Marcusenius senegalensis*, B-*Chrysichthys nigrodigitatus*, C-*Schilbe intermedius*, D- *Clarias gariepinus* and E-*Elops lacerta*

Table 3: Percentage of stomach contents of the fish species

Fish Species	Percentage of stomach with food (%)	Percentage of stomach without food (%)	Stomach content
A	58.8	41.2	Fish, insect and insect larvae, eggs, algae
B	90	10	Crustaceans, insect parts, mollusks and some unidentified aquatic parts
C	75	25	Flagellates, diatoms, green algae, arachnids, some fish parts
D	78	22	Copepods, broken insect parts, some aquatic plant parts.
E	45	55	Green algae, diatoms, chloropytes and some unidentified plant parts

A-*Marcusenius senegalensis*, B-*Chrysichthys nigrodigitatus*, C-*Schilbe intermedius*, D- *Clarias gariepinus* and E-*Elops lacerta*

A total of 130 fish species were caught during the sampling period. Five fish species namely; *Marcusenius senegalensi*, *Chrysichthys nigrodigitatus*, *Schilbe intermedius*, *Clarias gariepinus* and *Elops lacerta* were identified belonging to Mormyridae, Claroteidae, Schilbeidae, Clariidae and Elopidae families respectively. Table 1 shows the frequency and percentage of the fish species identified during the course of the study. The most abundant of the fish species were *Chrysichthys nigrodigitatus* which constituted 33.1% of the total percentage, followed by *Clarias gariepinus* with a percentage of 21.5%, while *Chrysichthys nigrodigitatus* was the least abundant with a percentage of 10.7%.

Condition factor is also a useful tool for monitoring of feeding intensity, age and growth rates in fish species (Kumolu-Johnson and Ndimele, 2010). However, it is strongly influenced by both biotic and abiotic environmental factors and can be utilized as an index for the assessment of the status of the aquatic ecosystem in which fish live (Anene, 2005). The condition factor (k) of the fish species in this study ranged between 0.69 and 3.42. *Clarias gariepinus* had the least condition factor of 0.69 while *Marcusenius senegalensis* had the highest condition factor of 3.42. Table 2 indicates that *Marcusenius senegalensi*, *Chrysichthys nigrodigitatus*, *Schilbe intermedius* and *Elops lacerta* have condition factor greater than 1. This means that the condition or environment in which the fishes reside is favorable, however, the condition factor of *Clarias gariepinus* was lower than 1. It has been reported by Nazeef and Abubakar, 2015 that condition factor of fish species is not constant but subject to variations at different points in time. All the fish species have a regression coefficient value less than 3 thus they showed positive allometric growth which means there is an unequal growth rate in different portions of the body that gives rise to the final shape.

Stomach content of the investigated fish species were tabulated in table 3. They include aquatic plant parts, copepods, broken insect parts, green algae, chlorophytes, crustaceans, sand particles, fish and fish parts. Some stomach contents were also macerated and the prey items could not be properly identified under the microscope. *Nymphaea odorata*, *Eichhomia crassipes*, *Pistia stratiotes*, *Pennisetum pedicellatum*, *Crassocephalum crepidiodes*, *Digitaria abyssinica* and *Pennisetum purpureum* were some of the plant identified in the near the river body.

4. CONCLUSION

In conclusion, this study has provided information on the wellbeing of the commercial fish species in Ogun river. Majority of the fishes assessed had allometric growth pattern. The condition factor also indicated that majority of the fishes were responding well to various ecological factors while the stomach content of the fish species showed they were feeding well. Although, the information provided in this study could serve as a preliminary information compared to an all year round intensive study to shed more light on the other biological aspects of the fish species such as reproductive biology, aging and growth determination and many more. It is however recommended that the water quality of the river body should be improved as it was highly polluted by anthropogenic activities and this can have an effect on the well-being of the aquatic life residing in it.

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