

A Survey of the Ichthyofauna of Ogbese River, South West, Nigeria

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Abstract: An investigation into the ichthyofauna of Ogbese River, south west, Nigeria, was carried out between October 2010-February 2011. A total of 2,700 individual were caught during the study. Nine (9) species belonging to six (6) families were recorded during the period of study. However, six (6) species [*Clarias gariepinus*; (410), *Heterobranchus bidorsalis* (508), *Oreochromis niloticus* (508), *Oreochromis niloticus* (410), *Mormyrus rume*(227), *Mormyrus macrophythamus* (221) and *Malapterurus electricus*(341)], were dominant specie, *Hepsetus odoe* and *Parachanna obscura* were sub-dominant, while *Tilapia zillii* was rare. Claridae, followed by Mormyridae and Cichlidaewere the most dominant families (33.99%; 16.58%; 15.62%), while Hepsitidae, Channidae and Malapteruridae were sub-dominant. The highest percentage of relative abundance of the various fish species was recorded in October while the least was recorded in February 2011. The results of this survey showed that the river has low fish species composition and abundance, inspite of the size of the river. Considering this fact, there is need for further survey to cover more months. There is also a need to evolve strategies for effective utilization and proper management of the river, for optimum fish production.

Keywords: *Parachanna Obscura*, Diversity, Mormyridae, Abundance, Resources

INTRODUCTION

Nigeria is blessed with abundance of natural aquatic resources in marine, estuarine and fresh water environments. The numerous fresh water bodies in Nigeria (Fig. 1), with over 270 fish species, are the richest in fish diversity in West Africa (Tobor, 2002).The distribution of species in fresh water provides information on whether the fish species are pelagic or demersal, which will further inform the choice of fishing gear to be used. The information on habitat and abundance, amongst others, are very vital for fisheries development and management. The description of fish community of water body is important for consideration, not only the spatial, but also the diversity of fish species as well, because such knowledge can enhance the management of water resources.

A number of workers have worked on the fauna of freshwater environment in Nigeria (Achionye-nzehl and Isimaikaiye, 2010; Francis-Arimoro and Robert-Ikomi, 2007; Oso and Fagbuaro, 2004).The present study is a preliminary investigation of the fish fauna of Ogbese river. The objective of the study therefore, is to do a preliminary survey of the fish fauna and their

abundance in the river and also know the dominant fish species in Ogbese River, in order to provide a base-line information for further work on the river.

MATERIALS AND METHOD

The Study Area

This study was conducted in a stretch of Ogbese river (Fig. 2) in Ado-Ekiti Local Government Area, Ekiti State. Ogbese River lies between latitude and longitude 7° 45N and 5° 30E, within the tropical rain forest of Ekiti State. In terms of fisheries development, there is no stocking of the river, hence, the fish in the river are naturally occurring. The river is laced with farming activities.

Sampling of the Specimens

Sampling was done for a period of five months, between October, 2010 and February, 2011. Data for this study was based on the record of fish caught by local fishermen. The collection of samples was done once in a week from the landing site of the fishermen. The fishermen used different mesh size of set nets (5mm-22mm) and hooks.



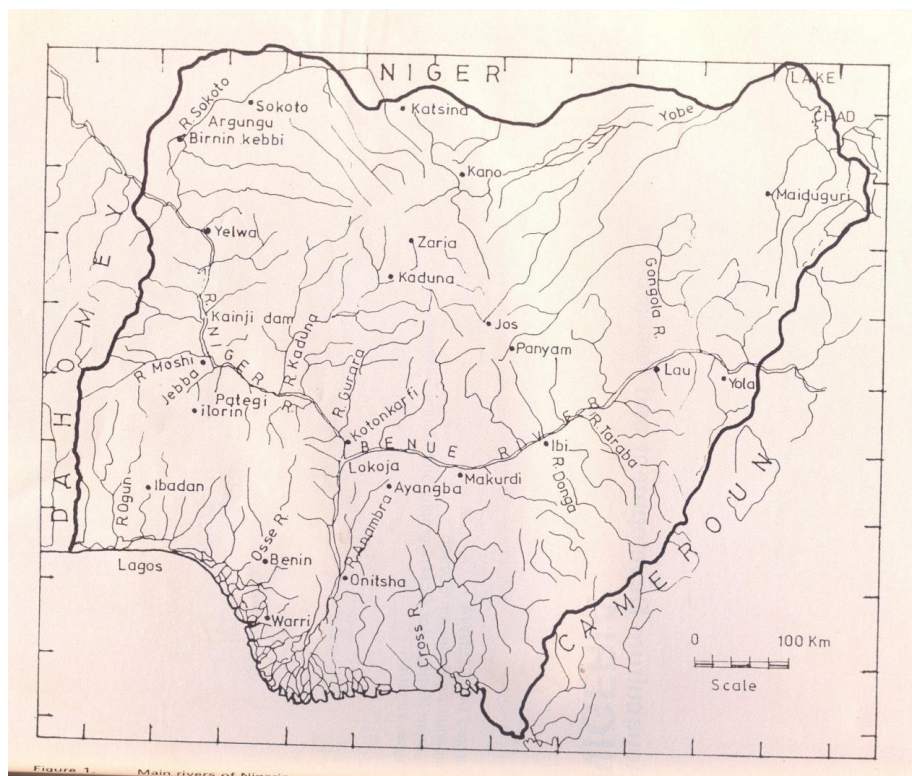


Fig. 1: A map of the numerous streams and rivers in Nigeria

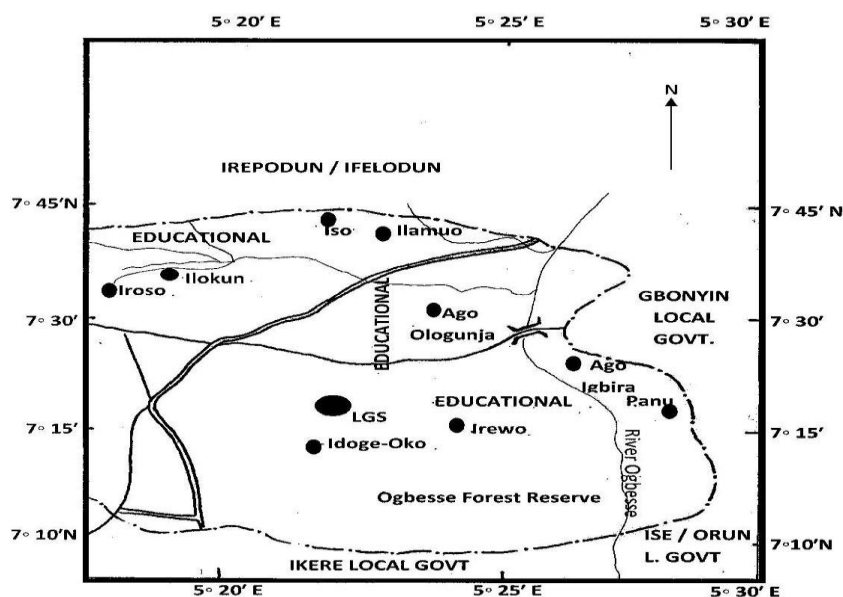


Fig. 2: Map showing River Ogbese

The setting of these gears was mostly done in the evenings by 6.00pm and left overnight, till 6.30 a.m. The catches were collected, sorted into species and families on the field, collected into ice coolers and transported to the laboratory, where they were

preserved in 40% formalin for further examination.

Fish Identification

Most of the species caught by these fishermen at the river were sorted into various families and counted. The

identification was done both on the field by fishermen and in the Zoology laboratory using identification guide (Babatunde and Raji, 1998 and Idodo-Umeh, 2003).

Data Analysis

All fish species collected were counted to determine species abundance. The relative abundance (%) of each species was calculated by the formula of Benechet.al. (1983):

$$R.A. = \frac{S.A}{T.A} \times 100$$

Where R.A. =Relative abundance of each species;
S.A. =Species abundance
T.A. =Total Abundance for all species

The relative dominance of each species, over the months, was also determined qualitatively on a scale of 1-4 indicating whether the species abundance was dominant, sub-dominant, occasional or rare.

RESULTS AND DISCUSSIONS

Ichthyofauna

The fish fauna encountered in Ogbese River and the monthly relative abundance are shown in Table 1. A total of 2,700 individual of 9 species, belonging to six families; Clariidae, Mormyridae, Cichlidae, Hepsetidae, Malapteruridae and Channidae were recorded in this study. The highest number of individuals and relative percentage abundance, were observed in three families; Clariidae (33.99%), followed by Mormyridae (16.85%) and Cichlidae (15.63%). These three families also had the highest number of species. Hepsetidae and Malapteruridae were sub-dominant, while Channidae was found to be rare.

In terms of the species number (Table 1), *Heterobranchus bidorsalis* (Geoffrey Saint-Hilaire 1809), *Clarias gariepinus* [Burchell 1822] and *Oreochromis niloticus* [Linnaeus 1758] were dominant species and *Malapterurus electricus* [Gmelin

1789] (12.6%), *Hepsetus odoe* [Bloch 1794] (11.11%) and *Parachanna obscura* [Teugels and Daget 1984] (10.4%) were sub-dominant species. The relative abundance of the fish species and families is shown in Fig. 2 and 3. The clariidae family and *H. dorsalis* were the dominant family and species respectively, while Channidae family was caught occasionally and the species *Tilapia zillii* [Gervais 1848], was rarely caught.

The primary objective of a sampling survey of this nature is to attempt to find out what fish species exist in Ogbese river and perhaps look at the factors governing their abundance. Fish community studies are not generally equivalent to *Ichthyocoenoses* because the description of any fish community is a biased image arising from the sampling of a group of fishes in a particular environment at a given time. The use of gear and sampling strategies are the usual source of these biases. In River Ogbese, the types of fishing gear used were the same throughout the study period and so gear selectivity cannot be considered as a valid reason for the monthly differences observed. The influence of habitat or water quality variable on fish can determine abundance. Land use and other human activities influence fish species diversity and abundance in water bodies (Victor and Dickson, 1998).

The relatively low species composition in this study, compared with other similar studies with high species richness such as Nwadaro (1998) in Orogo River, Nigeria, could be due to the use of multiple gears in those sites. Allison *et.al.* (1997) suggested a multiple gear approach as the best way to obtain comprehensive ichthyofauna samples for such studies. *C. gariepinus* and *H. bidorsalis* belonging to family Clariidae were recorded as abundant species followed by *O. niloticus* (Cichlidae) and Mormyridae. Ezenwani (2004) also observed similar trend of high abundance of these species in the lower Anambra River.

Table 1: Checklist of the fish fauna in Ogbese river, showing monthly abundance from October, 2010 – February, 2012.

Family/Species	Months					Total	Score
	Oct.	Nov.	Dec.	Jan.	Feb.		
Clariidae							Dominant
<i>C. gariepinus</i>	96	95	92	67	60	410	Dominant
<i>H. bidorsalis</i>	128	120	98	90	72	508	Dominant
Cichlidae							Dominant
<i>O. niloticus</i>	120	93	60	67	62	402	Dominant
<i>T. zillii</i>	10	5	3	2	0	20	Rare
Mormyriidae							Dominant
<i>M. rume</i>	68	71	29	32	27	227	Occasional
<i>M. macrophthalmus</i>	70	68	32	27	24	221	Occasional
Hepsetidae							Sub- dominant
<i>H. odoe</i>	64	74	49	60	53	300	Sub- dominant
Channidae							Occasional
<i>P. obscura</i>	61	60	53	54	43	271	Rare
Malapteruridae							Sub-dominant
<i>M. electricus</i>	90	80	65	52	54	341	Sub-dominant
Total	707	666	481	451	395	2700	
Monthly R. Abundance (%)	26.2	24.7	17.8	16.7	14.2		

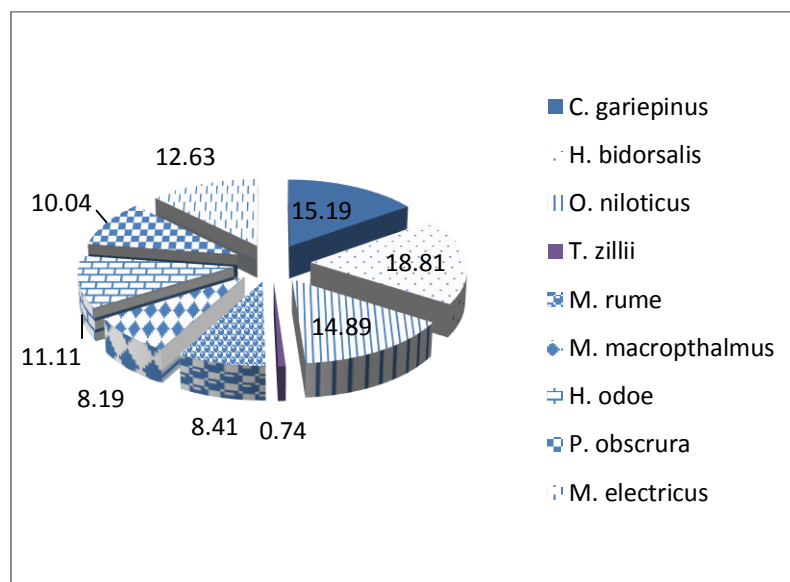


Fig. 2: The relative abundance of the fish species in the river

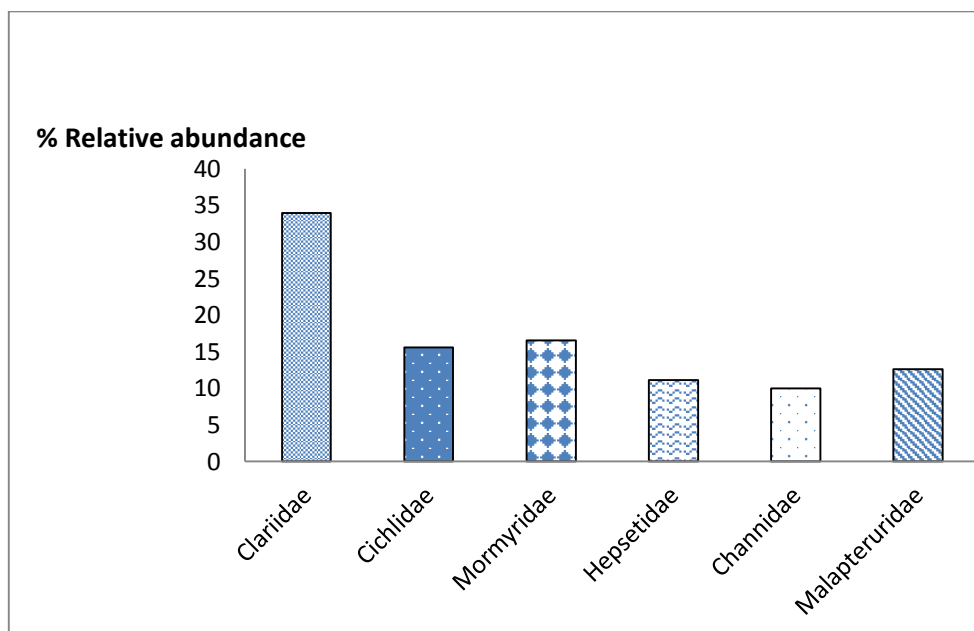


Fig. 3: The relative abundance of the fish families in the river

The discrepancy could also be due to the short period of survey that excludes extensive seasonal variation in catch. This study is in agreement with Sikokiet.al.(1998) in terms of numbers of families and species, but vary in kind of species. The highest, monthly relative abundant catch was recorded in October while the least was recorded in January. This is probably due to seasonal variations that determine food organism abundance in slightly rainy October, compared with the dry month of January.

Only nine species were encountered during the period of study. This does not mean that there are no other species in Ogbeseriver. Ufodikeet al.(2001) reported that hooks and net are essential in maximizing fish catch.They may not be encountered due to the type of gear used and the short period of the study, which has not taken care of seasonal variations.

CONCLUSION

The result of this present study has provided base-line information on the ichthyofauna ofOgbeseRiver.Like most other water bodies in Nigeria, the river has an enviable potential for fisheries exploitation. Considering its fairly low fish species composition and abundance, there is need for further survey tocovering many months. There is also a need toevolve strategy for effective utilization and proper management of the river for optimum fish production.

REFERENCES

[1] Achionye-Nzehi, E and K.O. Isimiakaiye (2010).Fish and fisheries of the coffer-dammed right channel of the River Niger at Kainji.In:KainjiStudies in Ecology,(edVisser, S.A),Ibadan University Press, Ibadan. 246pp.
 [2] Allison, M.E.;U.U, Gabriel;M.B, Inko-Tariah;O.A. Davies and B.Udeme-Naa (1997).The fish Assemblage of Elechi creek,

River State, Niger Delta.*Biologia*.2(1): 90-96.
 [3] Babatunde, O.O. and A.Raji(1998).*Field Guide to Nigeria Freshwater Fishes*.Federal College of Freshwater Fisheries. 50p
 [4] Ezenwani, O. (2004). Fish distribution in Ethiope River, Southern Nigeria.*Tropical FreshwaterBiology*.4:54-64.
 [5] Francis, A.G and O. Robert-Ikomi (2007).A study of the fish fauna of Urie Creek at Igvide, Niger Delta.*The Zoologist*. 6: 69-80. <http://dx.doi.org/10.4314/tzool.v6i1.41356>
 [6] Idodo-Umeh, G. (2004). Dielvariations in the fish species of River Ase, Niger Delta, Nigeria. *Tropical FreshwaterBiology*. 12/13:63-76 <http://dx.doi.org/10.4314/tfb.v12i1.20876>
 [7] Nwadaro,C.S.(1998). Ichthyofaunaof Lake Oguta, a shallow lake in southern Nigeria.*Archive Hydrobiologia*. 115(3):463-475.
 [8] Oso, J.A, and T.Fagbuaro (2004).Fish fauna of Ero Reservoir, Ekiti State, south western Nigeria.*Journalof Biology and Physical Science*.3: 20-23.
 [9] Sikoki F.D., S.T.Goured, and N.Zabbey (1998). Environmental gradient and benthic community of middle reaches of Imo River, south-eastern Nigeria. *Environmental Ecology*.24(1): 32-36.
 [10] Tobor, J.G. (2002).Fin and Shell fish of conservation interest in Nigeria. *Research Techniques*.79pp.
 [11] Ufodike, J.T., O.S. Potson, Y.R. Francis and R.B. Ikomi(2001)..Ichthyology:The study of Fishes.John Wiley and Sons Inc.New York and London.545pp.
 [12] Victor, R. and D.T.Dickson (1998).Macroinvertebrates of a perturbed stream in southern Nigeria.*EnvironmentalPollution.Series.A*.38: 99-107. [http://dx.doi.org/10.1016/0143-1471\(85\)90070-4](http://dx.doi.org/10.1016/0143-1471(85)90070-4)