Fish Composition of Oni River in Ogun Water Side Local Government Area, Ogun State

Adetola Jenyo-Oni and Olute B. W.
Department of Aquaculture and Fisheries Management
University of Ibadan, Ibadan, Nigeria

ABSTRACT

Oni River in Ogun waterside Local Government area of Ogun State contributes immensely to the artisanal fishery of the state, fishing being the major means of livelihood of the people living along the river course. This study assessed the fish composition in order to obtain the fish species and harvest composition of the study area. The study was conducted by enumerating and identifying the fish species composition of the river through personal interview and direct assessment of fishermen's catches, fish length and weight were measured. Fish abundance and biomass were assessed and the length-weight relationships and the length–frequency of fishes determined. Twenty-eight fish species belonging to sixteen families were encountered in the study area, the mormyridae were the most abundant family with 25.0%, followed by Cichlidae with 10.71%. Tilapia zillii (11.82%), and Clarias spp. (8.28%) were the most abundant single species. Those with the least abundance in the study area were Sihiranodon anritus and Schilbe mystus each with 0.17% abundance. The Oni River is a highly productive river and should be managed on a sustainable level.

Key words: *Fish composition, Oni River, Fish abundance.*

INTRODUCTION

Africa is blessed with a large number of inland or freshwater lakes, rivers swamps and floodplains, of different sizes and forms. These, containing a wide variety of fish populations, have provided mankind with the opportunity to exploit fish for food, income and livelihoods in general for many centuries. Nigeria is blessed with a vast expanse of inland freshwater and brackish ecosystems. Their full extent cannot be accurately stated as it varies with season and from year to year depending on rainfall. However, these water resources are spread all over the country from the coastal region to the arid zone of the Lake Chad Basin (Ita, 1993).

Archaeological research has revealed that the local economy of Nigeria and other countries of the Lake Chad Basin over 2,000 years ago centred on an integrated system of farming and fishing on the influent rivers and floodplains. Today, the Lake Chad Basin produces over 100,000 tonnes of fish valued at US$50 million and contributes to the livelihoods of thousands of people (Neiland, 2005). It is estimated that the inland fisheries of Africa produce 2.1 million tonnes of fish, which represents 24% of the total global production from inland waters (FAO, 2004). In comparison to marine fisheries, inland fisheries production is relatively small, representing only 6% of global production. In Africa, marine fisheries production of 4.7 million tonnes is also much larger compared to inland fisheries production of 2.1 million tonnes. This simple comparison of gross production between marine and inland fisheries can be misleading, for it can be shown that inland fisheries in Africa generate a wide variety of benefits (such as income and food) and underpin the livelihoods of millions of people. This is the case in many countries because inland fisheries are diverse and widely distributed. They can be exploited quite easily using simple technologies, and are often well-integrated with farming and other economic activities. In other words, inland fisheries are a valuable and an integral component of the lives of many people throughout Africa. It has an important contribution to make to sustainable development, including economic growth and poverty reduction (Neiland *etal.* 2005). The annual yield potential of the inland and marine waters of Nigeria is estimated at 517 and 360 tonne per year respectively (Faturoti, 2000). However, there are concerns that inland fisheries in Africa are increasingly under threat from factors such as environmental change, both man-made and natural and overexploitation, due to over-fishing (Neiland *etal.*2005). There is also widespread recognition at all levels of society and government that measures need to be taken to

safeguard the flow of benefits from inland fisheries. An important first step must be for all stakeholders to build a common and strategic understanding of the importance of inland fisheries for Africa, one of which is to identify fish composition and abundance in the various water bodies, which will help in the formulation of management practices that will be specific to the water bodies.

Oni River is a tributary of Ogun River in Ogun state. It is a fresh water ecosystem which takes its source from Ile-Ife, Osun state and empties into the Lagos Lagoon. Ita (1993), reported that no major fisheries investigations have been carried out on this river systems. It supports various species of aquatic plants and animal such as fishes, water snails, shrimps, crabs, aquatic insects and amphibians (Arowomole 2000). This water body is therefore highly productive and is a major site for artisanal fisheries in the state. This paper reports the findings of a study carried out to examines the fish composition and abundance of Oni River with a view to providing a baseline data for the management of the fisheries of the water body.

MATERIALS AND METHODS

The study was carried out on the Ogun state section of Oni River which lies between latitude $6^{0}30^{1}$ and $6^{0}32^{1}$N and longitude $4^{0}22^{1}$ and $4^{0}25^{1}$E (FDI, 1987). It is a river that cuts across Osun, Ondo, Ogun and Lagos states. Four fishing camps namely Tabati, Igele, Sunmoge and Dakun communities located along the river bank were used in the study. Each of the camps had a fish landing site.

Primary data were collected direct assessment of fishermen's catches. Identification of fish to species level was done using Olaosebikan and Raji (2004). Fish were enumerated for length and weight measurements in line with guide and procedure of a metre rule graduated in centimeters for length and weighting scale graduated in grammes for the weight. Sampling and identification was carried out twice a month throughout the period of study. Identification was made to the lowest taxonomic level, fishes were counted, sorted and arranged into the different families and species. The study was carried out between January to March, 2008.

RESULTS AND DISCUSSION

Fish identification and abundance

A total of 592 fishes were assessed, making up twenty eight species belonging to sixteen families. Table 1 shows the list of identified fish by their families, genus and species. The mormyridae family was found to be the most abundant with a value of 27.5% by number. This is in contrast to the findings on other freshwater bodies by Akinyemi (1987) on Eleyele River and Asejire Lake and Olaniran (2000) on IITA Reservoir that recorded Cichlidae as the dominant family in their works. The mormyridae were closely followed by the cichlidae family with a percentage abundance of 27.2% while the least abundant family was the Schilbeidae with a percentage abundance of 0.34%. On the species level, *Tilapia zillii* had the highest abundance of 11.82%, followed by *Oreochromis niloticus* with 9.8%, *Clarias* spp. 8.28%, *Synodontis* 3.71%, and *Chrysichthys* 1.52%. These findings agree with the findings of Ita (1993) that *Tilapia* spp. dominated the Ogun and Oshun River basins. Those with the least abundance in the study area were *Siluranodon anritus* and *Schilbe mystus* each with 0.17% abundance. Fish families such as Distichodontidae, Gymnarchidae, Malapteruridae and Schilbeidae all with 3.57% were poorly represented in the study area, (Table 2).

Fish length and weight

The mean standard length of fish species sampled varied from 6.3cm to 47.8cm while the mean weight had a range of 16g to 3130g (Table 3). *Gymnarchus niloticus* had the highest value for total length measurement of 51.30 cm and of 812.50g by weight. *Heterotis niloticus* had a mean total length measurement of 51.16cm and a mean weight measurement of 3131.82g. The species with the lowest mean total length value of 7.50cm was *Schilbe mystus*. This is however higher than the value obtained by Olaosebikan and Raji (2004), who recorded 3.50cm maximum length for *S. mystus* in their identification guide to Nigerian Freshwater Fishes.

CONCLUSION

Oni River has a rich composition of fish species which is indicative of its high productivity. The presence of some priced ornamental fishes of export status such as *Gnathonemus abadii,* and *Pantodon buchholzi* highlight the export potential of the river. Fishing in this river is the source of income and livelihood for inhabitants of the area. It is imperative that effort should be made in exploiting the resources of the river on a sustainable level for the present and future generations. Properly management of the river, it would go a long way in boosting the economic status of the local community that depends on it, the State and the nation at large.

TABLE 1
Identified fish from Oni River by families, general and species

S/No.	FAMILY	GENUS	SPECIES
1	Anabantidae	*Ctenopoma*	*Ctenopoma kingsleyae*
2	Bagridae	*Chrysichthys*	*Chrysichthys nigrodigitatus*
3	Channidae	*Parachanna*	*Parachanna obscura*
4	Characidae	*Hydrocynus*	*Hydrocynus vittatus*
		Alestes	*Alestes spp*
5	Cichlidae	*Oreochromis*	*Oreochromis niloticus*
		Tilapia	*Tilapia zillii*
		Hemichromis	*Hemichromis fasciatus*
6	Clariidae	*Clarias*	*Clarias gariepinus*
7	Distichodontidae	*Ichthyborus*	*Ichthyborus monodi*
8	Gymarchidae	*Gymnarchus*	*Gymnarchus niloticus*
9	Malapteruridae	*Malapterurus*	*Malapterurus electricus*
10	Mochokidae	*Synodontis*	*Synodontis nigrita*
11	Mormyridae	*Hyperopisus*	*Hyperopisus bebe*
		Gnathonemus	*Gnathonemus petersii*
		Mormyrus	*Mormyrus rume*
		Mormyrops	*Mormyrops deliciosus*
		Petrocephalus	*Petrocephalus bane*
		Gnathonemus	*Gnathonemus abadii*
		Marcusenius	*Marcusenius psittacus*
12	Notopteridae	*Papyrocranus*	*Papyrocranus afer*
		Xenomystus	*Xenomystus nigri*
13	Osteoglossidae	*Heterotis*	*Heterotis niloticus*
14	Pantodontidae	*Pantodon*	*Pantodon buchholzi*
15	Polyteridae	*Erpetoichthys*	*Erpetoichthys calabaricus*
		Polypterus	*Polypterus senegalus*
16	Schilbeidae	*Siluranodon*	*Siluranodon auritus*
		Schilbe	*Schilbe mystus*

TABLE 2
Relative abundance of sampled fish in Oni river, Ogun state

S/N	FAMILY	SPECIES	Total No Sampled	% abundance of Species in relation to total no sampled	% abundance of families in relation to no of species	% species abundance within families
1	Anabantidae	*Ctenopoma kingsleyae*	8	1.35	3.57	100
2	Bagridae	*C. nigrodigitatus*	9	1.52	3.57	100
3	Channidae	*Parachanna obscura*	39	6.59	3.57	100
4	Characidae	*Hydrocynus vittatus*	11	1.86	3.57	68.75
		Alestes spp	5	0.84	3.57	31.25
		Sub Total	**16**	**2.70**	**7.14**	**100**
5	Cichlidae	*Oreochromis niloticus*	58	9.80	3.57	36.00
		Tilapia zillii	70	11.82	3.57	43.50
		Hemichromis fasciatus	33	5.57	3.57	20.50
		Sub Total	**161**	**27.20**	**10.71**	**100**
6	Clariidae	*Clarias gariepinus*	49	8.28	3.57	100
7	Distichodontidae	*Ichthyborus monodi*	3	0.51	3.57	100
8	Gymarchidae	*Gymnarchus niloticus*	8	1.35	3.57	100
9	Malapteruridae	*Malapterurus electricus*	7	1.18	3.57	100
10	Mochokidae	*Synodontis nigrita*	33	3.71	3.57	100
11	Mormyridae	*Hyperopisus bebe*	30	5.07	3.57	18.40
		Gnathonemus petersii	37	6.25	3.57	22.70
		Mormyrus rume	17	2.87	3.57	10.43
		Mormyrops deliciosus	4	0.67	3.57	2.45
		Petrocephalus bane	46	7.77	3.57	28.22
		Gnathonemus abadii	16	2.70	3.57	9.82
		Marcusenius psittacus	13	2.20	3.57	7.98
		Sub Total	**163**	**27.53**	**25.00**	**100**
12	Notopteridae	*Papyrocranus afer*	8	1.35	3.57	17.02
		Xenomystus nigri	39	6.59	3.57	82.98
		Sub Total	**47**	**7.94**	**7.14**	**100**
13	Osteoglossidae	*Heterotis niloticus*	11	1.86	3.57	100
14	Pantodontidae	*Pantodon buchholzi*	30	5.07	3.57	100
15	Polyteridae	*E. calabaricus*	12	2.03	3.57	70.60
		Polypterus senegalus	5	0.84	3.57	29.40
		Sub Total	**17**	**2.87**	**7.14**	**100**
16	Schilbeidae	*Siluranodon auritus*	1	0.17	3.57	50.00
		Schilbe mystus	1	0.17	3.57	50.00
		Sub Total	**2**	**0.34**	**7.14**	**100**
		TOTAL	**592**	**100.00**	**100**	

TABLE 3
The Length and weight measurement of sampled fish

S/No.	SPECIES	Mean Total length (cm)	Mean Standard length (cm)	Mean weight (g)
1	*Ctenopoma kingsleyae*	14.33	11.91	130.00
2	*Chrysichthys nigrodigitatus*	17.68	14.52	150.00
3	*Parachanna obscura*	30.39	25.88	574.36
4	*Hydrocynus vittatus*	3.57	25.38	368.18
5	*Alestes spp*	8.42	8.08	16.00
6	*Oreochromis niloticus*	22.29	17.93	543.81
7	*Tilapia zillii*	23.94	19.13	495.71
8	*Hemichromis fasciatus*	17,63	14.97	61.97
9	*Clarias gariepinus*	23.15	20.92	145.31
10	*Ichthyborus monodi*	12.63	10.57	26.67
11	*Gymnarchus niloticus*	51.30	47.75	812.50
12	*Malapterurus electricus*	14.29	12.17	82.86
13	*Synodontis nigrita*	20.60	16.00	180.00
14	*Hyperopisus bebe*	12.92	11.15	55.00
15	*Gnathonemus petersii*	17.60	15.44	57.35
16	*Mormyrus rume*	20.00	18.12	102.32
17	*Mormyrops deliciosus*	28.68	26.13	200.00
18	*Petrocephalus bane*	11.15	9.69	24.34
19	*Gnathonemus abadii*	18.64	16.25	133.12
20	*Marcusenius psittacus*	19.51	17.82	66.92
21	*Papyrocranus afer*	42.50	39.64	785.00
22	*Xenomystus nigri*	12.68	12.21	18.40
23	*Heterotis niloticus*	51.16	46.41	3131.82
24	*Pantodon buchholzi*	14.57	13.83	20.00
25	*Erpetoichthys calabaricus*	18.69	17.98	25.00
26	*Polypterus senegalus*	15.88	15.46	20.00
27	*Siluranodon auritus*	12.00	11.50	20.00
28	*Schilbe mystus*	7.50	6.30	60.00

REFERENCE

Akinyemi, O. (1987). Management of Lake Eleyele and Lake Asejire Fisheries. Application of bionomic models. A Ph.D Thesis submitted to the Department of Wildlife and Fisheries Management, University of Ibadan. 138p

Arowomole A. (2000). Impact of socio-economic Activities on Biodiversity of coastal wetlands of Lagos State. A Ph.D Thesis submitted to the Department of Wildlife and Fisheries Management, University of Ibadan. 326p

Food and Agricultural Organisation (FAO) (2004). The State of World Fisheries and Aquaculture. Technical Report. (http://www.fao.org).

Food and Agricultural Organisation (FAO) (2003). Review of the State of World Fishery Resources: Inland Fisheries. FAO Fish Circular No.942. Rev.1.

Food and Agricultural Organisation (FAO) (2000). FAO Fisheries Department. Fishery Country Profile Nigeria (English) FID/CP/NIR FAO, Rome. 142p.

Federal Department of Information (FDI) (1987). Pocket map of the Federal Republic of Nigeria. Design and Produced by the Federal Department of Information, Domestic Publicity Division, Ikoyi Road, Lagos State Nigeria. 23-25

Ita E. O. (1993). Inland Fishery Resources of Nigeria. CIFA Occasional Paper No. 20. Rome, FAO. 120p.

Neiland, A.E. (ed) (2005) Incorporating Fish Market and Trade Information into Policy-Making for Sustainable Livelihoods and Poverty Reduction: Methods and Lessons from the Lake Chad Basin. Report. Sustainable Fisheries Livelihoods Programme. Rome: FAO. 189- 208

Neiland, A.E., Chimatiro, S. , Khalifa, U., Ladu, B.M.B., and Nyeko, D. (2005). Inland Fisheries in Africa. Key Issues and Future Investment: Opportunities for Sustainable

Development. Technical Review Paper – Inland Fisheries. NEPAD-*Fish for All* Summit 22-25 August 2005 Abuja, Nigeria 77p

Olaniran T. S, (2000). Ecological Evaluation and Sustainable Management of Fish Production in International Institute of Tropical Agriculture (IITA) Lake, Ibadan, Nigeria. A Ph.D Thesis submitted to the Department of Wildlife and Fisheries Management, University of Ibadan.196p

Olaosebikan, B., D. and Raji A (2004). Field guide to Nigerian Freshwater Fishes. Federal College of Freshwater Fisheries Technology, New Bussa, Nigeria 111p.

Tobor, J.G. (1990). The Fishing Industry in Nigeria, Status and Potential for self-sufficiency in Fish production. NIOMR Tech Paper. No 54.