The Status and Prospects of Artisanal Fisheries of Lower Usuma Reservoir, Bwari, F.C.T. Abuja, Nigeria

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Abstract: Study on the status and prospects of Artisanal fisheries of Lower Usuma Reservoir, Bwari, F.C.T, Nigeria was investigated from July, 2009 to April, 2011. Artisanal frame and catch assessment surveys at the Reservoir. The only fishing village located around Lower Usuma Reservoir was Ushafa fishing village with a total of 47 migrant Hausa fishermen. All the gears employed in the reservoir were the monofilament type. Majority of the fishermen used the gill net (34.04%) with a catch per unit effort (c.p.u.e.) of 12.79Kg/canoe/fisherman. This was followed by the use of traps (29.79%) with c.p.u.e. of 1.04Kg/canoe/fisherman. While 14.89% used the Drag net having a c.p.u.e. of 12.23Kg/canoe/ fisherman, 12.77% used the cast net and those that used the hook/line were only 8.51% with a c.p.u.e. of 10.55 and 35.82Kg/canoe/fisherman respectively. The catch per unit effort was an indication that the Reservoir is productive and can compare favourably with other productive African reservoirs with future prospects.
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1. Introduction

The small - scale artisanal fishery sector remains the backbone of fish production in Nigeria, contributing at least 70% of the total fish production in the last decade (Solarin, 2003). In 2000, a total of 101,101 fishing units operated by 283,292 fishermen produced 325,100 tonnes of fish (Solarin, 2003). The bulk of fish production comes from the artisanal sector but because the local production is in adequate to meet the Nigerian demand, the country still imports about 49.5% of fish required (Okorie, 2003). Artisanal fisheries are complex in their multi - gear and multi - species aspects and also in there economic as well as there social activities. In many countries, fishing gears, crafts as well as catches by rural communities, who are often the main users of the resources are not reported in national statistics and in Nigeria a lot of work has been conducted on the status and prospects of small scale fishing gears (Kingdom and Kwen, 2009; Ambrose *et al*., 2001; Udolisa *et al*., 1994) but, there was no documented work on Lower Usuma Resrvoir. It is based on the above that the present study was undertaking to investigate the status of artisanal fisher folks of Lower Usuma Reservoir to serve as a base line material to aid Nigerian government in the decision making as it relate to the developmental potential of the reservoir.

2. Materials and methods

2.1 Study Area

Lower Usuma Reservoir is located in Bwari Area Council of FCT, Abuja. Abuja is located in the centre of Nigeria with a land area of 8,000 Square Kilometers. It lies between the Latitude of $8^0$25 and $9^0$25N and Longitude $6^0$45 and $7^0$45E. The Reservoir was constructed in 1987 and since then it has been the main source of drinking water for the city. The reservoir has a maximum capacity of 100 million m^3. The main Dam is 1,300 meters long with a saddle dam of 350 meters long. The maximum depth of the Reservoir and saddle is 45 meters and 10 meters respectively (F.C.D.A.2006).

2.2 Frame and Catch Assessment survey

The only landing site of the Reservoir was the Ushafa axis. Nineteen fishermen were chosen and assessed from July, 2009 to April, 2011 for frame and catch assessment. The total counts of fishing boats, fishing gear as well as the fishermen operating in the Reservoir were assessed in the frame. While the diversity as well as the catches of each gear was recorded. The actual counts and weights of fishes caught by the artisanal fishermen were also recorded.

3. Results

The only fishing village located around Lower Usuma Reservoir was Ushafa fishing village with a total of 47 migrant Hausa fishermen. All the gears employed in the reservoir were the monofilament type. The list and contribution of each gear employed in the reservoir is shown in Table 1. Majority of the fishermen used the gill net (34.04%). This was followed by the use of trap (29.79%). While 14.89% used the Drag net, 12.77% used the cast net and those

that used the hook/line were only 8.51% (Fig.1). The net range between ¾ - 2½" mesh sizes and was found out that as the catches reduces due to season, the net sizes also reduces. The various nets target species were members of the families Cichlidae and Cyprinidae. While the most commonly employed hook sizes were 7, 9 and 10" in order of application and the target species were members of the families Clariidae, Bagridae and Mochokidae.

Table 1: Frame Survey Data of Crafts and Gear in Lower Usuma Reservoir, Bwari.

Fishing Gears	Sizes(in)	No. of Canoe	No. of Fishermen
Gill Net	¾, 1 , 2, 2½	11	16(34.04%)
Trap Net	¾	13	14(29.79%)
Drag Net	¾ , 1, 2	7	7(14.89%)
Cast Net	¾, 2, 2½	4	6(12.77%)
Hook and Line	7, 9, 10	4	4(8.51%)
TOTAL		**39**	**47**

Thirty - nine of the 47 fishermen owned at least a wooden dugout canoe each, while 8 fishermen acted as helpers. There was relatively low density of fishermen that engaged in a daily fishing activities. Information gathered from Sarkin Ruwa (Chief of Water) confirmed that since the fishes were not in abundance and there sizes were relatively, small, a particular number of fishermen (20-25) were only allowed to fish on a daily basis, while others either stayed at home or become fish mongers by the Reservoir site.

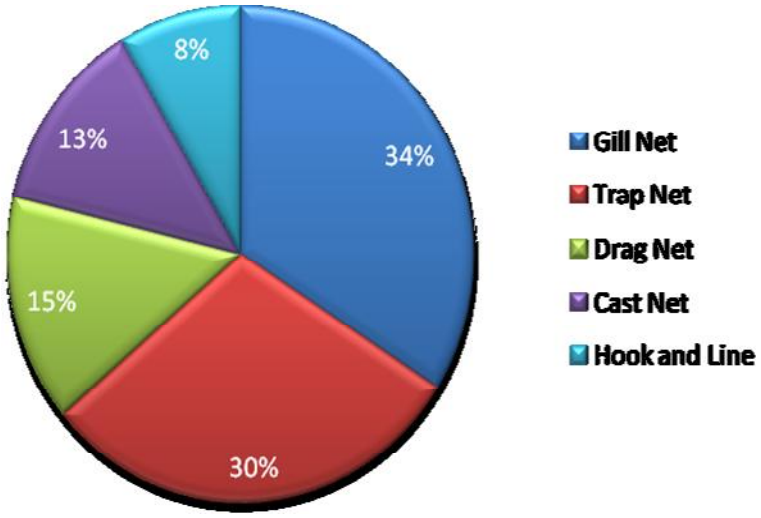

FIG 1: Percentage contribution of Gears in use by the fishermen in Lower Usuma Reservoir

3.1 Catch assessment

Fish landing at the Ushafa fishing village and the estimated catch per fishing canoe is shown in Table 2. Nineteen fishermen were assessed within the period of survey. Three fishermen used the hook/line with mean catch of 35.82Kg per canoe. Five fishermen used the gill net with mean catch of 12.79Kg per canoe. Others were those that used the Drag netting methods

with mean catch per canoe of 12.23Kg.While, three of them that used the Cast nets and the three that used the trap netting methods had 10.55 and 1.04Kg mean catches per canoe respectively.

Table 2: Fish landings at Ushafa fishing village and the estimated catch per fishing canoe.

S/n of Canoe	Gear	Total No of Fish	Total weight of Fish (kg)	Mean catch per canoe (kg)
1	Cast Net	336	11.16	
2	’’	297	8.31	
3	’’	269	12.19	
Sub total		**902**	**31.66**	**10.55**
4	Drag Net	565	15.81	
5	’’	571	19.17	
6	’’	246	14.15	
7	’’	457	7.06	
8	’’	318	4.94	
Sub total		**2157**	**61.13**	**12.23**
9	Gill Net	362	25.14	
10	’’	319	14.91	
11	’’	247	5.37	
12	’’	189	11.64	
13	’’	341	6.89	
Sub total		**1458**	**63.95**	**12.79**
14	Hook and line	7	72.00	
15	’’	7	7.20	
16	’’	15	28.25	
Sub total		**29**	**107.45**	**35.82**
17	Trap Net	103	0.92	
18	’’	160	1.55	
19	’’	73	0.66	
Sub total		**336**	**3.13**	**1.04**
Grand total		**4882**	**267.32**	**14.07**

4. Discussion

A total of 47 artisanal fishermen were counted in the present study. Majority of the fishermen used the gillnetting method (34.04%) with catch per unit effort (c.p.u.e) of 12.79Kg/canoe/fisherman. Gillnetting methods are widely used in artisanal fisheries in developing countries because they are efficient, relatively inexpensive and capable of catching higher amount of commercially valuable species than other peasant gears (Valdez-pizzini *et al*., 1992). The most commonly employed fishing gear in Lower Usuma Reservoir is the Gillnet and this agreed with Adeyemi *et al*. (2009) in their study of Gbedikere Lake in Kogi State. Solarin *et al.* (2003), reported gill nets as constituting the most abundant Small- Scale fishing gear in Nigeria. Gill net was the commonest gear in River fishing in the Niger Delta in Nigeria (Scot, 1966). In the Bonny estuary, gill net constituted more than 50% of the gear deployed by Fishers (Chindah and Osuamkpe, 1994).

Those that used the trap netting method represent 29.79% with a catch per unit effort of 1.04/Kg/canoe/fisherman in the present study. While 14.89% used the Drag net, 12.77% used the cast net and those that used the hook/line were only 8.51% with a catch per unit effort of 12.23, 10.55 and 35.82Kg/canoe/fisherman respectively. The types, designs and mode of operations of the traditional and modern fishing gear employed in the Inland and coastal waters of Nigeria have been fairly described (Reed *et al.*, 1967; Udolisa *et al*., 1994). Balogun and Auta (2001) recorded 50 fishermen using mainly Cast netting method in Kangimi Lake with catch per unit effort of 8.2Kg/canoe/fishermen.

The basic operational fishing unit is the canoe in artisanal fisheries. Thirty-nine of the 47 fishermen recorded in the present study owned at least a V-shape unmotorized wooden dugout canoe. The canoes are easily design to satisfy the restriction requirement of the management of the Reservoir. Kwei (1961) observed the attachment of outboard motors to the dugout canoes to present quite a problem. Ambrose *et al.* (2001), observed that the design and construction of an ideal fishing craft is an illusive idea, because the condition for an ideal craft so varied and depends on array of factors such as people’s culture, fishing gear, water body and motorization. Emmanuel (2010) reported the Monohull (single hull) wooden dugout

canoes, Planked canoes and Planked dugout canoes as the main fishing craft in Lekki Lagoon, Nigeria.

5. Conclusion

The original objective of constructing the Reservoir was for domestic water supply. Fishing is an unintended output of the reservoir but has assumed prominent dimension in the livelihoods of the Ushafa communities. With Community-based Reservoir Fisheries Management, by which the fishers will learn on utilization and management of their resources the future prospect is high.

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