



APPRAISAL OF THE CURRENT FISH COMPOSITION, ABUNDANCE AND OPERATIVE FISHING GEARS IN TOMAS DAM DANBATTA, KANO STATE AND DABERAM DAM DAURA, KATSINA STATE

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The current study explores information on fish diversity and fishing gears used in Tomas Dam Danbatta, Kano State and Daberam Dam Daura, Katsina State. From the results 5 different species belonging to 3 families were found in Tomas dam, and these are; Tilapia zilli, Oreochromis niloticus and Sarotherodon galilaeus belonging to the Family Cichlidae, Clarias gariepinus from the Family Claridae and Lates niloticus from the Family Centropomidae. Whereas in Daberam Dam, 6 species belonging to 5 families were observed and these are: Oreochromis niloticus, Hemichromis bimaculatus (Family Cichlidae), Clarias gariepinus (Family Claridae) and Eutropius niloticus, Hyperopisus bebe and Alestes beramoze from the Family Shilbeidae, Mormyridae and Alestidae respectively. The research also revealed that, Cichlidae were the most dominant fish type in these two Dams with Oreochromis niloticus leading specie in Tomas dam, with 61% percentage abundance, while Hemichromis bimaculatus is the most abundant species in Daberam Dam having 85% percentage abundance. The types of fishing gears used in both Tomas and Daberam Dam are similar with triggered trap dominating the fishing site in each dam.

Keywords: Cast net, Daberam Dam, Hooks, Line net, Tomas Dam, Triggered trap.

INTRODUCTION

A fish is any member of a paraphyletic group of organisms which consist of all gill-bearing aquatic craniate animals that lack limbs with digits, or most precisely, the term "fish" describes any non-tetrapod craniates (i.e. an animal with a skull and in most cases a backbone) that has gills throughout life and whose limbs, if any, are in the shape of fins (Helfman *et al.*, 2009). Most fish are poikilothermic ("cold-blooded"), allowing their body temperatures to vary as ambient temperatures change, though some of the large active swimmers like white shark and tuna can hold a higher core temperature (Carey, and Lawson, (2001) and (Goldman, 1997). Fish are abundant in most water bodies. They can be found in nearly all aquatic environments. Fish exhibit greater species diversity than any other group of vertebrates, with over 32,000 different species worldwide, they exhibit enormous diversity in their morphology, in the habitats they occupy, and in their biology. Unlike the other commonly recognized vertebrates, fish are heterogeneous assemblage (Forese and Pauly, 1998) that occupied an extra-ordinary array of habitats. They can be found thriving in vernal pools, intermittent streams, rivers, dams, tiny desert springs, and the vast reaches of open oceans, deep oceanic trenches, cold mountain streams, saline coastal embayment, or nearly endless list of aquatic environments (Moyle and Cech, 1996). Fishes are important resource for humans worldwide, especially as food or as a source of income. This among others are the reason why fish diversity studies became important in almost every water body be it lentic or lotic water. This research was therefore aimed to

survey the fish composition, the types and abundance of fishing gears in operation in Tomas Dam Danbatta and Daberam Dam Daura . This will give up to date information on the nature of these two dam in terms of the composition and abundance of fish species and the general types of fishing gears used.

MATERIALS AND METHODS**Study Area**

This comprised of Tomas Dam, Danbatta, Kano State and Daberam Dam, Daura local Government area of Katsina State. Tomas Dam (although popularly known to be in Danbatta because of its closeness to the town, but is originally located within the vicinity of Makoda Local Government area of Kano State). It lies between geographical coordinates of $12^{\circ} 25' 0''$ N and $8^{\circ} 25' 0''$ E. The dam has its deepest point at about 60 metres. While its counterpart in Daberam is located between Daura and Dutsi local government areas of Katsina and lies within the geographical coordinate of $13^{\circ} 2' E$ and $8^{\circ} 21' N$. The climate is characterised by distinct wet and dry season, and the surrounding areas are mostly used by the farmers for cultivation. Daberam dam has the capacity of 12.5 million cubic meters covering about 400 hectares of land but because of siltation, only about 250 hectares is now fully been utilized. The area has an average annual rainfall of 600-640mm. The dam has Kigo and Riuyal rivers as its main source of water and Dannakola as its tributary. It has a crest length of 2,377.44 meters and its deepest point is 42.6 meters (Bala *et al.*, 2009).

Data Collection

The fishes were caught using cast nets, triggered trap, line nets and hooks with the assistance of local fishermen. The nets have average mesh size of approximately 2cm². Each catch was sorted by species and counted. The fishes were identified by their local names and later referred to fish guide (Holden and Reed, 1972; Mirza, 1970). Percentage species distribution was calculated to assess the relative abundance of each species in the dams.

RESULTS AND DISCUSSION

Table 1 shows the result of fish species composition in Tomas Dam, Danbatta. A total of 300 fishes were collected and sorted into families and species type. The totals of 3 families were identified and these are Family Cichlidae, Claridae and Centropomidae. Two hundred and eighty (280) members of the family Cichlidae were identified and these include 50 *Tilapia zilli*, 183 *Oreochromis niloticus* and 47 *Sarotherodon galilaeus*. Moreover, 12 members belonging to the Family Claridae were identified and they are all members of *Clarias gariepinus* and 8 species (*Lates niloticus*) of the Family Centropomidae were also identified. From the result obtained, fishes of the Family Cichlidae were the most abundant in Tomas dam while *Oreochromis niloticus* in particular was found to be the most dominant specie from that Family, their percentage distribution shows that the specie comprises 61% of the total sample population. *Tilapia zilli* and *Sarotherodon galilaeus* comprise 16.6% and 15.6% respectively. *Clarias gariepinus* and *Lates niloticus* were found to have the least percentage abundance with 4% and 2.66% respectively.

Table 2 shows the result of fish Composition and distribution in Daberam Dam, Daura. A total of 400 samples were observed and they belongs to 5 Families as follows; Cichlidae, Claridae, Shilbeidae, Mormyridae and Alestidae. Three hundred and forty eight (348) samples from the Family Cichlidae were identified; these include 8 *Oreochromis niloticus* and 340 *Hemichromis bimaculatus*. The Families Claridae and Alestidae have 4 representatives each and belonging to the species *Clarias gariepinus* and

Alestes beramoze respectively. Moreover, 8 fishes from the sample population of 400 belong to the Family Shilbeidae and the specie identified was *Eutropius niloticus*. Lastly 36 fishes from the Family Mormyridae were recorded and belonging to *Hyperoplus bebe*. The results agreed with the findings of Bala *et al.*, 2009, who found similar composition of fishes in Daberam dam.

The study showed that the Family Cichlidae were the most diverse and the specie *Hemichromis bimaculatus* in particular was the most abundant at Daberam Dam, Daura dominating about 85% of the sample population, this might be due high fecundity which is peculiar to cichlids and also known for their parental care to young ones (Bala *et al.*, 2009). While *Clarias gariepinus* and *Alestes beramoze* were the least accounting only 1% of the sample population.

Table 3 and 4 shows the types of fishing gears used in Tomas Dam, Danbatta and Daberam Dam Daura respectively. In Tomas Dam, a total of 4 different types of fishing gears were observed in active operation which includes cast net (Birgi), Hooks and line (Kuguya), Triggered traps (Mali) and Line nets (Kalli). Triggered traps were observed to be the most commonly and predominantly used fishing gear in this dam accounting about 80.6%, and the reasons according to the local fishermen was that, it is cheaply made and catches both small and large fishes and effectively used in both dry and rainy season, it is also simple in operation as it is set in the afternoon and observe in the morning of next day. It only requires the use of grinded millet, corn or their residues as bait. Cast net on the other hand was found to be the least gear in use accounting only 1.6% of the total gears observed and the reasons according to the local fishermen was that, it is more effective only during the dry season, it is made from nylon and thus expensive and also less effective in profound water. Cast net used in this dam had the mesh size of 1.9 to 2 inches. Similarly, in Daberam Dam, Daura, four types of fishing gears were found in active operation. Triggered traps were the commonly used fishing gear accounting 66.7%, while casts net and hooks record the least percentage abundance of 8.3% each.

Table 1: Fish Species Composition and Distribution in Tomas Dam, Danbatta.

S/N	Family Name	Local Name	Specie Name	Frequency	Specie Distribution (%)
1.	Cichlidae	Garagaza	<i>Tilapia zilli</i>	50	16.67
2.	Cichlidae	Karfasa	<i>Oreochromis niloticus</i>	183	61.00
3.	Cichlidae	Gargaza	<i>Sarotherodon galilaeus</i>	47	15.66
4.	Claridae	Tarwada	<i>Clarias gariepinus</i>	12	4.00
5.	Centropomidae	Giwar Ruwa	<i>Lates niloticus</i>	8	2.67
Total = 300				100%	

Table 2: Fish Specie Composition and Distribution in Daberam Dam, Daura.

S/N	Family Name	Local Name	Specie Name	Frequency	Specie Distribution (%)
1.	Cichlidae <i>niloticus</i>	Karfasa	<i>Oreochromis</i> 8	2	
2.	Cichlidae <i>bimaculatus</i>	Buruku	<i>Hemichromis</i>	340	85
3.	Clariidae <i>gariepinus</i>	Tarwada	<i>Clarias</i>	4	1
4.	Shilbeidae <i>niloticus</i>	Ramfai	<i>Eutropius</i>	8	2
5.	Mormyridae <i>bebe</i>	Lamsa	<i>Hyperopisus</i>	36	9
6.	Alestidae <i>beramoze</i>	Kurusa	<i>Alestes</i>	4	1
				Total = 400	100%

Table 3: Operational Fishing Gears in Tomas Dam, Danbatta.

S/No	Type of Fishing Gear	Number Counted	Fish Size	Effectiveness
	English Name	Local Name		
1.	Cast Net	Birgi	1	Small to medium
2.	Hook and Line	Kuguya	6	Small to medium
3.	Triggered Trap	Mali	50	Small to large
4.	Line net	Kalli	5	Small to large
				62

Table 4: Operational Fishing Gears in Daberam Dam, Daura.

S/No	Type of Fishing Gear	Number Counted	Fish Size	Effectiveness
	English Name	Local Name		
1.	Cast Net	Birgi	10	Small to medium
2.	Hook and Line	Kuguya	10	Small to medium
3.	Triggered Trap	Mali	80	Small to large
4.	Line net	Kalli	20	Small to large
				120

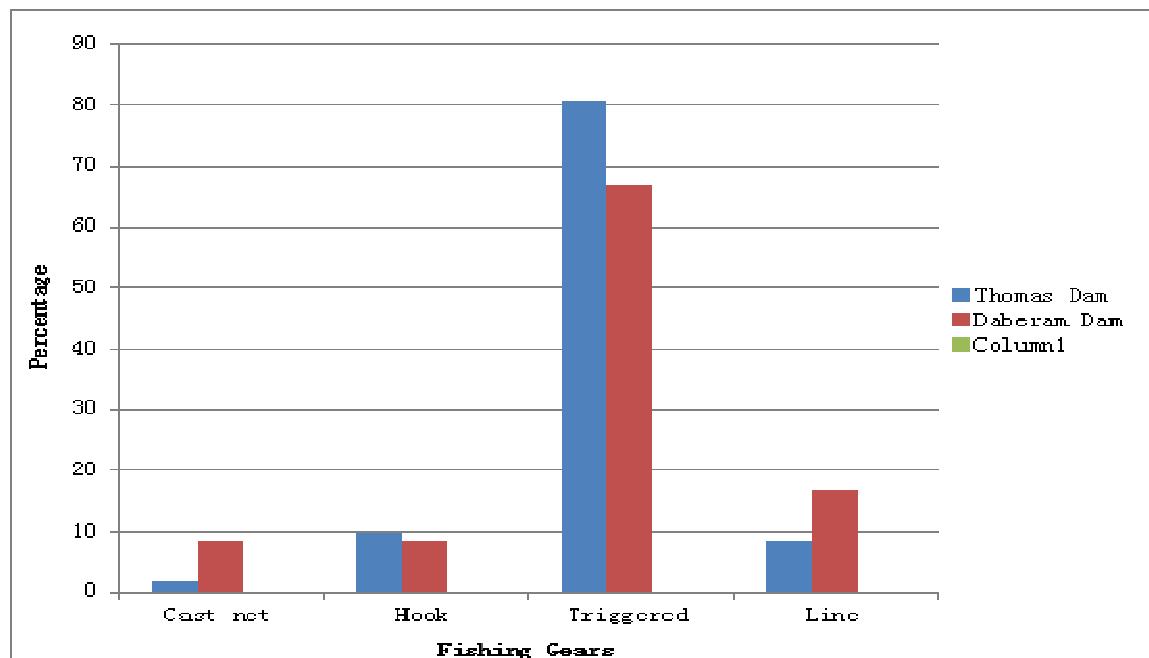


Figure 1: Percentage Distribution of Fishing Gears at Tomas Dam and Daberam Dam

CONCLUSION

The predominant or leading type of fishing gear used in Tomas and Daberam fishing sites are triggered traps and the reasons behind this as stated by the fisher men includes its simplicity in operation and less expensive than others. The research also revealed that, five (5) different fish species were observed in

Tomas Dam, in which *Oreochromis niloticus* was found to have the highest percentage abundance. While six(6)different species of fish were found at Daberam Dam and *Hemichromis bimaculatus* was found to be the leading specie in term of number in that dam.

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