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TYPES OF ANTHROPOGENIC ACTIVITIES IN GUBI RESERVOIR BAUCHI STATE, NIGERIA

Suleiman Maigari^{a*}, Hassan Bala^b Malami Abubakar Inuwa^c,

a. Department of Biological Science, Abubakar Tafawa Balewa University Bauchi, Bauchi State, Nigeria.

b. College for Legal And Islamic Studies Misau, Bauchi State, Nigeria

c. Nigeria Institute for Trypanosomiasis Research, Kano Liaison Kano

*Corresponding author's E-mail: suleimanmaigari50@gmail.com

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Abstract: This study is aimed at assessing the types of anthropogenic activities in Gubi Reservoir. It was carried out for a period of six months (October 2017 to March 2018). The populations of this study were the size of the respondents projected to be around 140. Six sampling sites have been established based on the reconnaissance visit in the study area; the data was collected using questionnaire to get information on the different types of anthropogenic activities around the water body in Gubi Reservoir. The types of anthropogenic activities carried out in the study area were include overfishing, farming, logging, waste disposal, washing, bathing and fish processing around the water, Conservation measures are encouraged.

Keywords: Impact, Anthropogenic activities, Gubi Reservoir, Bauchi State, Nigeria.

Postal Address: Department of Biological Science, Abubakar Tafawa Balewa University, Dass Road, P.M.B. 0248 Bauchi, Bauchi State, Nigeria. Phone: 07037380467

INTRODUCTION

Anthropogenic activities have physical, chemical and biological impact which modified the reservoir ecosystem (Ahmad and Hussain, 2001; Arharyya, 2005 and Bhagel *et al.*, 2005). Impact of anthropogenic forces most of the time on reservoir ecosystem is either equivalent or larger than natural forces. The significance of human environmental interaction studies are broadly documented in understanding the impact of human activities on reservoir ecosystem and therefore, require for protection of it further degradation (Abbas and Subramanian, 1984). According to Heywood and Watson (1995), aquatic ecosystem has been in serious risk and threat in African freshwater fish species including, pollution, eutrophication, indiscriminate fishing and overfishing. Fishing results in the selective removal of large fish species or individuals thus resulting in a decrease in the abundance of most vulnerable species (Bianchi *et al.*, 2000). These overfished species are usually top consumers of higher energy or trophic levels along the food

chain. The resultant effect of this is a change in the fish biomass, species composition and size structure of the impacted site. One of the major factor disturbing the organization and structure of fish communities has been connected to the fishing or removal of larger species having the highest commercial value (Hall, 1999). This resultant effect of fishing renders the over exploitation of a majority of fish stocks the world over. Pinnegar *et al.* (2002), pointed out that overfishing result in the fish assemblage being dominated by fast-growing small species mostly prey species comprising of lower biomass and short life spans.

Improved sedimentation and siltation in reservoir have been noticed due to erosion resulting from the huge number of deforestation within the African Great Lakes Region (Alabaster, 1981). Sedimentation has also increased turbidity and the light penetration will diminished thus affecting the rate of photosynthesis and can lead to algal succession. The introduction of non-native fish species had also been a common

practice in African freshwater systems (Eaffro, 1964). Statement of the problems: Anthropogenic Activities include, farming activities, logging and waste disposal bring about negative impact on the water quality in water Bodies (Heywood & Watson, 1995). So far, little is known about the influence of these activities in Gubi reservoir. Hence, the work is designed to contribute to knowledge in this regard. The aim of this study is to assess the types of Anthropogenic Activities in Gubi Reservoir, Bauchi State, Nigeria.

EXPERIMENTAL

Description of study site

Gubi reservoir has a total surface area of 590 km², a depth of 27m, top crest width of 10m, base width of 190m and has a total catchment area of

179 km². the surface of the water in Gubi reservoir is mainly coming from three tributaries namely, GubiRiver, tagway river, link with shadawanka and ran river, is located at firo a village about 12 km north east of Bauchi metropolis and 8 km off Bauchi Maiduguri road. The primary purpose of providing potable water to Bauchi and its environs. A part from improving water supply to the populace, it provides the bulk of fish consumed in the town as well as providing suitable sites for fadama farming resulting in the production of some highly favoured selected crops (Ezra and Nwankwo, 2001).The reservoir lies within the boundary of longitude 10^o 25' N to 10^o 26' N and latitude 9^o 51' E to 9^o 52' E (Wufem et. al., 2009).

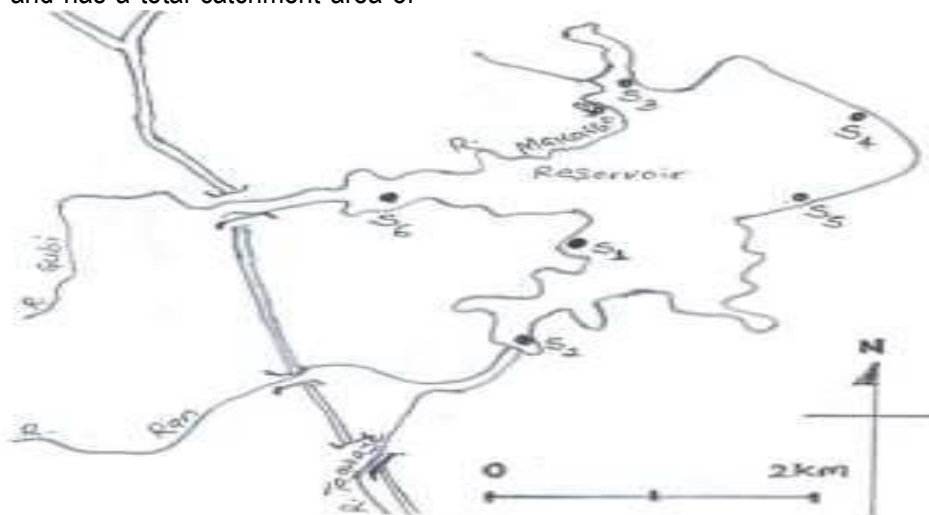


Figure 1.Gubi Reservoir with its four Feeding River

Population of the Study site

Population in research according to Njodi and Bwala (2004) refers to the entire members, respondents, or objects that possess the pertinent characteristics, attributes or information which the researcher desire for the investigation. The populations of this study were the size of the respondents projected to be around 140 which is adequate according to (Israel, 2013) where he pointed out that when the population of the study is 140 the sample size should not be less than 103.

Sample Collection

Six sampling sites have been established based on the reconnaissance visit in the study area. The established sampling sites are

- i. Site 1= Tatumare

- ii. Site 2= Kumi
- iii. Site 3= Baila
- iv. Site 4= Spillway
- v. Site 5= Babbankwata
- vi. Site 6= Kwatanyashi

Questionnaire

Data was collected using questionnaire to get information on the different types of anthropogenic activities around the water body in Gubi reservoir.

Statistical Analysis

The result obtained was analysed using descriptive statistics, at 0.05%.

RESULT AND DISCUSSION

The result on the impact of anthropogenic activities in Gubi reservoir is presented below:

Table 1. Types of anthropogenic activities in Gubi reservoir

Variable	Component Variable	Frequency	%
i. Farming			
Fertilizer	Inorganic Fertilizer	30	6.0
	Organic Fertilizer	10	2.0
Agro-chemicals	Herbicide and insecticide	60	12.0
ii. Fishing	Fish catch	100	20.0
iii. Logging	Anogeisusleicarpus and Others	73	14.6
	Anogeisusleicarpus, Parkiabiglobosa and Balaniteeagibtiaca	13	2.6
	Anogeisusleicarpus, Parkiabiglobosa and Adansoniadigitata	14	2.8
iv. Waste Disposal	Biodegradable Waste	60	12.0
	Non-biodegradable Waste	40	8.0
v. Domestic activities	Washing	50	10.0
	Bathing	30	6.0
	Fish processing	20	4.0
Total		500	100.0

Table 1 shows the types of anthropogenic activities carried out around the sampling sites in study area. The identification of different types of anthropogenic activities in the study area were include farming activities, Overfishing, logging, waste disposal, domestic activities as well as waste generated during fish processing. Farming activities were observed and recorded in all the sampling sites, which include the application of fertilizer such as organic and inorganic fertilizer, had a frequency of 40 which accounted for 8%. While the used of agrochemicals by the respondents had the highest frequency of 60 which account for 12% of farming activities. Overfishing had a frequency of 100 which accounted for 20%. Logging is understood to be an indiscriminating felling of trees or exploitation or clearance of the forest at particular geographical locations without any effort at replacing them. Used of *Anogeisus leicarpus* and others tree species as domestic fuel by the respondents had a frequency of 73 which

accounted for 14.6%. While the used of *Anogeisus leicarpus*, *Parkia biglobosa*, and *Balanitee agibtiaca* by the respondents used as fuel energy had the frequency of 13 which accounted for 2.6%. While the used of *Anogeisus leicarpus*, *Parkia biglobosa*, and *Adansonia digitata* had a frequency of 14 which accounted for 2.8%. Waste disposal is said to be improper disposal of solid waste which include Biodegradable waste and Non-biodegradable waste. Biodegradable waste had a highest frequency of 60 which accounted for 12%. While Non-Biodegradable waste had a frequency of 40 which accounted for 8%. Domestic activities are those activities which carried out around the sampling sites in the study area which include washing, Bathing and Fish processing. Washing had a highest frequency of 50 which accounted for 10%. While bathing had a frequency of 30 which accounted for 6%. Fish processing carried out around the water had the lowest frequency of 20 which accounted for 4% as domestic activities.

Table 2. Distribution of Anthropogenic Activities by sampling Sites in Gubi Reservoir

Anthropogenic Activities	Tatumari	Kumi	Ba'ila	B/kwata	K/yashi	Spillway	Total	Rank
Farming Activities	+	+	+	+	+	+	6	1
Overfishing	+	+	+	+	+	+	6	1
Logging	+	-	+	-	-	+	3	3
Disposal of wastes	+	-	+	+	+	+	5	2
Domestic Activities	+	+	+	+	+	+	6	1

Table 2 shows the distribution of anthropogenic activities by sampling site in Gubi reservoir. Farming activities, overfishing and domestic activities which include washing, bathing having the highest ranked, were the

anthropogenic activities of the greatest impact of fish species which rank first. However disposal of waste to be the next which were carried out around the sampling sites as anthropogenic activities have an impact which ranked as second.

Logging found to be very rare in most of the sampling site was ranked to be third. The types of anthropogenic activities carried out around water body in the study area were include overfishing, farming, waste disposal, logging, washing, bathing and waste generated during fish processing around the water in Gubi Reservoir. So far these activities have negative impact on the quality of water (Wakili et al., 2017). The distribution of anthropogenic activities by sampling sites in Gubi reservoir in which Farming activities, overfishing and domestic activities which had the highest ranked were the anthropogenic activities of the greatest impact of reservoir which rank first. However disposal of waste to be the next which were carried out around the sampling sites as anthropogenic activities have an impact which ranked as second. Logging found to be very rare in most of the sampling site was ranked to be third, this agrees with the finding of (Wakili et al., 2017).

CONCLUSION

The types of anthropogenic activities include overfishing, farming, waste disposal, logging, washing, bathing, and waste generated during fish processing have been observed and identified around the sampling sites in Gubi reservoir, these activities could be a negative impact on the quality of water as well as other aquatic fauna in the reservoir.

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