Socio-Economic Characteristics and Lake Disease Observation of Fish and Fishermen in Alau Lake, Maiduguri

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Abstract: *The socio-economic characteristics and practices of fishermen towards fish health management were carried out in Alau Lake Maiduguri. The aim was to know the social characteristic of fishermen and disease observation in the lake. A total of 50 questioners constituting eight questions on the socio-economic and four questions on lake disease observation mortality were made and distributed to 50 respondents within Lake Alau environment. The result reveals that 100% of the people involved in fishing are men with 72% out of them were married. More than 50% (62%) fishers family members involves in the fishing activities. 46% of the fishers presents 4-8kg as their catch per day. For the lake disease observation, 78% of the fishermen observed fish death during fishing with 50% of the death mostly noticed during the rainy season.*

Key words: *Socio-economic, characteristic, Observation, Fishermen, Disease.*

INTRODUCTION

Fish is very rich in essential amino acids, vitamins and minerals (FAO, 2015). Fish is also very important in term of employment income generation, poverty alleviation, foreign exchange earnings and provision of raw materials for the animal feed industry (FDF, 2010). Fish consumption in Nigeria is high, annually reaching 1.2 million metric tons (FDF, 2010). Inland fisheries are clearly important to local food supplies, apart from the export of a few tones of fish. The overall inland production is consumed in the region representing nearly one-half of the local supplies (with import excluded). Kenya, Nigeria, the united Republic of Tanzania, Uganda and Zaire are sub-Saharan Africa's top fresh water-fish producing countries, contributing 70% of total harvest. Fresh water fisheries are almost all artisanal and proper management is urgently needed as most fishing grounds now show sign of intensive exploitation. Capture fisheries play an important role in many sub-Sahara African countries as a major contributor to animal protein, foreign exchange earnings and a generator of rural employment. An estimated 8 million people are directly or indirectly employed in the sector (FAO, 1996). In recent years, many research have been carried out by many authors such as Shettima *et al*. (2014), Dogondaji *et al.,* (2009), Faruk *et al.* (2004), Ogunlade (2007), Ibemere

and Ezeano (2014), Ajana (1995), Ifejika and Ayanda (2005) to ascertain the socio-economic and knowledge of fish diseases in the capture fishing. Despites all the efforts, lack of knowledge, proper practice towards fish disease and low income coupled with higher house hold size has pose serious problem in fish capture in the wild. This study is tending to produce information on the socio-economic and disease observation fish by fishermen towards fish management in Lake Alau.

MATERIALS AND METHOD

Study Area
This study was carried out in Lake Alau North-East Nigeria. It is Located between latitudes 12^0 N and 13^0 N and longitude 11^0 E and 13^0 E with the total surface area of $56Km^2$ (CBDA, 1986). The climate is Sahel with two distinct seasons. The rainy season start from June to October with mean annual rain fall about of 600mm (Bankole *et al.,* 1994). The dry- hamattan season start from November to February with very low temperature between ($16-19^0$C) occur in the night while 26 and 29^0C during the day time. (Idowu *et al*. 2004).

Sampling frame technique
A multi- stage random sampling technique was used to select respondents. A total of 50 questioners constituting eight questions on the socio-economic and four questions on the Lake disease observation were made and distributed to 50 respondents within Alau community. To ensure that the sample was an unbiased representation of the population targeted, the cluster/random sampling techniques was used in choosing the respondents.

Data analysis
Data obtained from the primary questioners were subjected to descriptive statistic; the descriptive statistics used include percentage and frequency. SPSS version 16 was used as a package.

Results and discussion
Social Characteristics of fishermen in Lake Alau
The socioeconomic characteristics of fishermen shows that the entire respondent were males. This indicates that 100% of the fishing activities were done by males which show that women do not participate in the fishing activities in the study area. This further implies that male fisher folks dominate the fishing activities while the females might mostly be involved in processing and marketing of the captured fishes. The result was in total agreement with that of Shettima *et al.,* (2014) who reported 100% males fishing activities in Alau Lake, Nigeria. Marital status (72.0%) were married men which may be due to the nature of the environment, where people in rural areas get married earlier. This result is in close agreement with the findings of Shettima *et al.,* (2014) who observed that 80.5% were married while only 19.5% were singles. The level of education of fishermen reveals that majority 48.0% of the fishermen had no formal education; these include Qur'anic education among others while 44% had primary education, 8.0% had secondary education, and none (0.0%) had tertiary education. This findings disagree with the report of Dogondaji *et al.,* (2009) who reported that majority of the fishermen 54.0% had Islamic education while only 6.0% had tertiary education. Majority 54.0% of the correspondents in this study had less

than (4) persons as family members, 36.0% had 4-8 and 6.0% had 9-12 household while only (4.0%) had 12 and above. This partially agrees with the work of Shettima *et al.,* (2014) were their family members were not involved in fishing activities confirmed the testimony of the respondent, that they also want their children to acquire knowledge and become responsible and influential persons in the society. Regarding the sources of fishing equipments, the fishermen actually purchase their equipment because 76.0% were sourcing the equipment themselves, 22.0% obtain support from association while only 2.0% received assistance from government, which shows that government had no interest in the welfare of the fisher folk. Average catch per day from the result, placed the majority of the fishermen catches at 46.0% that support domestic consumption while very few 2.0% support commercial purpose and 24.0% support both commercial and domestic purposes. This may not be unconnected with the availability of fish or catch per day unit effort or even numbers of hours spent fishing. Table 1 presents the socio-economic status of the fishers within Alau

Table 1: Socio-economic status of fishers in Maiduguri and its environs.

Socio-economic	Frequency	% Responses
Gender		
Male	50	100
Marital Status		
Single	14	28.0
Married	36	72.0
Level of Education		
No Formal Education	24	48.0
Primary	22	44.0
Secondary	4	8.0
Household Size		
Less than 4	27	54.0
4 – 8	18	36.0
9 -12	3	6.0
12 and above	2	4.0
Are family members involved in fishing activities?		
Yes	19	38.0
No	31	62.0
Location of lending site		
Langeri	50	100
Source of fishing equipment		
Government	1	2.0
Self	38	76.0
Association	11	22.0
Average catch per day		
Less than 4kg/day	14	28.0
4 – 8kg/day	23	46.0
9 – 10kg/day	12	24.0
10kg and above	1	2.0

Lake Disease Observation

The finding of lake diseases/death of fish unveils that majority 78.0% of the responses shows evidence of fish death. The fishermen also reported that most 50.0% of the fish death occurs during the rainy season, while only (20.0%) reported their observation to be all year round. The fishermen mostly 62.0% use the death fish as bait while only 34.0% of the fishermen dried the fish and sell, and in their opinion 62.0% concluded on natural death while 38.0% were reported to have blame water quality. Lake disease observation/mortalities were low and the few death was believed to occur during rainy season, where most fishermen dry and sell death fish. This implies that death fish due to diseases may be transmitted to consumers because the fishermen are not knowledgeable on health implication associated with eating diseased/infected fish. Table 2 presents the lake disease observes in Lake Alau.

Table 4.5: Observation of lake diseases of fish by fish farmers in Maiduguri and its envions

Fish Practice	Frequency	% Responses
Do you observe fish death?		
Yes	39	78.0
No	11	22.0
If Yes, when?		
Raining season	25	50.0
Hot season	15	30.0
All year round	10	20.0
What do you do when you see fish death?		
Dried and sold	17	34.0
Used as fish bait	31	62.0
In your opinion, what causes the fish death?		
Natural death	31	62.0
Water quality	19	38.0

Conclusion

The socio economic and lake disease observation in Akau lake is very crucial in order to know the level of education and knowledge of fishermen toward disease and mortality observation in the lake for sustainable fish production. The majority of fishermen in Alau Lake were men with poor educational background. The fishermen mostly practices artisanal fishing with poor and local fishing gear and other fish processing facilities. With the higher percentage of mortality and disease infection, there is the need for the intervention of government and other stakeholders in provision of fishing and fish processing facilities to majority of the fishermen in Lake Alua to increase fish production in the area.

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