Awareness on Fish Depletion and Fishing Practices among Fishermen around River Rima and Kware Lake, Sokoto Northwestern Nigeria

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Abstract
Human dependence on freshwater fish is significant, owing to the nutritional value provided by fish to populations particularly in the developing world. Fishes are overexploited or severely depleted as a result of excessive fishing quotas, illegal fishing practices and poor management of our freshwater resources. Fishermen around River Rima and Kware Lake were surveyed to investigate their awareness on fish depletion and fishing practices using structured questionnaire. The survey reveals that unawareness of fish depletion among the fishermen was 100% from both River Rima and Kware Lake. On fishing regularity, 80% of the respondents from River Rima fish every day, compared to those from Kware Lake that have 90%. Only 10% of the fishermen from Rima were subsistence, while 100% of Kware Lake Fishermen were local commercial Fishermen. Kware Lake Fishermen amounting to 10% were among those that use nets only during fishing, while the remaining 90% use other additional local gears apart from the net. On the other hand, 40% of the Fishermen around River Rima use nets only and other gears (60%). Fishing activities are regular and routine in these freshwater bodies, and the fishermen were encouraged by their customers due to their consistent patronage. But the awareness of fish depletion among them remains deficient. Therefore there is need to set laws and educate the Fishermen on fish depletion around the area.

Keywords: Awareness, Depletion, Fishing, Fishermen, Freshwater, Kware, Nigeria,

Introduction

Fishing is a human tradition, a traditional activity that involves hunting and gathering of aquatic fauna for food (Olaoye, 2012). Nigerian fisheries can be broadly classified into: Artisanal fisheries (85%), industrial fisheries (14%), and culture fisheries (1%) according to Federal Department of Fisheries (2005). Nigeria's demand for fish outstrips the local production and the country is one of the largest fish consumers in Africa and also among the largest fish consumers in the world with a record of over 1.5 million tons consumed annually. Surprisingly, Nigeria imports more than 900,000 metric tons of fish while its domestic catch is only450,000 metric tons per year (Ozigbo, 2013). Depletion of fish has been confused with the word overfishing; in defining depletion it must be recognized that the term represents a condition and must not be confounded with the cause (overfishing) that leads to this condition or with signs that identify it. Fish depletion is reduction, through overfishing, in the level of abundance of the exploitable segment of stock that prevents the realization of maximum productive capacity. In other words catches are well below historical levels, irrespective of the amount of fishing effort exerted, before depletion can be experienced. Overfishing may have serious implication on fish supply for the Nigeria population (UNDP,1998) because, when the fish resources are exploited intensively and frequently than what the water body can supply, even though it has the capacity to renew itself naturally, the water body will begin to deplete and income, sustenance will begin to be affected (Enaikele and Olutayo, 2010). In addition to an assortment of active and passive capture gears, traditional methods are being used by fishermen for decades (Reynolds, 1996). Some of these traditional gears do not select a size of fish to catch, therefore frequency of such type of fishing not just leads to depletion but even extinction of some species. In view of these, this paper aims to evaluate the status of fishing practices and awareness of fish depletion in River Rima and Kware Lake in Sokoto State, Northwestern Nigeria.

Methodology

River Rima, is located in Sokoto, Northwestern Nigeria, which lies between longitudes 4°8`E and 6°5`E, and latitudes 12°N and 13°58`N (Mamman, 2000). The climate of Sokoto is tropical continental, with much of the rains between June and September, while the long dry season is from October to May (Ita *et al.*, 1982). The River flows northwest to reach its confluence with River Niger. The plains around the river are widely cultivated and the river is used for irrigation and other domestic purposes. Kware Lake on the other hand is natural water that is fed primarily by underground water sources located at various places. It is situated 3 kilometers away from Kware local government area of Sokoto State and 20km north of Sokoto metropolis. The Lake is located on longitude 5°15` 58`E, latitude 13° 13` 20`N. It is flanked by River Shella to the northeast and River Rima to the east. It's also used primarily for fishing and irrigation among others. (Yahaya, 2009). The study drew predominantly on a descriptive survey using structured questionnaire and careful observation of the fishing practices and interviews with the fishermen in the areas under study. The study parameters assessed included fishing gears used, frequency of fishing, size of fish preferred, purpose of fishing and awareness of fish depletion.

Results and Discussions

Responses obtained from respondents shows that majority of the fishermen (80%) are considered to be subsistence fishermen at Kware Lake and River Rima (Table 1).The awareness of fish depletion among fishermen seems to be lacking, as only 10% of the fishermen at River Rima are said to be aware. This survey also found that 50% of the respondents at River Rima had no choice of specific species to catch and the number went up to 70%in Kware Lake. There were different practices among the fishermen on the fishing gear used. At River Rima (40%) used only net during fishing, while 10% are using the net at Kware Lake. The remaining using other fishing gears (Table 2). Most of the respondents go for fishing everyday at both River Rima and Kware Lake. This may result to overfishing and consequently a decline of species as reported by Mustapha (2010) and possible factors responsible to that decline include; reduced availability of food, overexploitation of the species, and low rate of breeding. Another serious problem in depleted water bodies is the extinction of populations, particularly those with high ages of maturity (Mayers and Maertz, 1998).

The choice of size to catch among the fishermen varied between River Rima and Kware Lake in which at Rima 60% of the respondents prefer adult fish while at Kware it was 50% (Figure 1). From the results obtained River Rima and Kware Lake have shown that fishing in these areas has contravene the laws and regulations of a community, State, country or even International agreement. It also undermines management efforts to conserve species and ecosystems as reported by Ekundayo *et al.* (2014). The major problem of fishing practices in the study area was the everyday fishing, which may contribute to existing problem of overfishing, jeopardizing future revenue, livelihoods and long term food security. It is also putting several species at risk of extinction and drastically altering the sensitive balance of water ecosystem. Similarly, this is also a problem because by-catch are not returned especially those that use net as a fishing gear, the fishermen were also encouraged by their customers due to their consistent patronage. These problems make the conservation and management of the fisheries resources impossible (Ekundayo *et al.,* 2014). It has also been observed that global wild fishing effectively masks the successive depletion of stocks and without decisive action to reduce fishing effort, many more stocks will suffer and undernourishment impacts for the major fishing of inland waters (Srinivasan *et al.,* 2012).

Table 1: Choice of Fish to Catch, Fish Depletion at River Rima and Kware Lake, Sokoto, Nigeria

Question	**River Rima**		**Kware Lake**	
	YES	**NO**	**YES**	**NO**
Awareness of fish depletion	0(0)	10(100)	0(0)	10(100)
Awareness of effect of fish depletion	1(10)	9(90)	0(0)	10(100)
Choice of species to catch	5(50)	5(50)	3(30)	7(70)

Footnote: Percentage in parenthesis.

Table 2: Fishing Practices of River Rima and Kware Lake, Sokoto, Nigeria

Question	Response	River Rima (%)	Kware Lake (%)
Purpose of Fishing	Selling	30	20
	Feeding	10	0
	Selling and Feeding	60	80
Fishing Gear used	Net	40	10
	Other Gears	60	90
Regularity of Fishing	Every day	80	90
	After two days	20	10

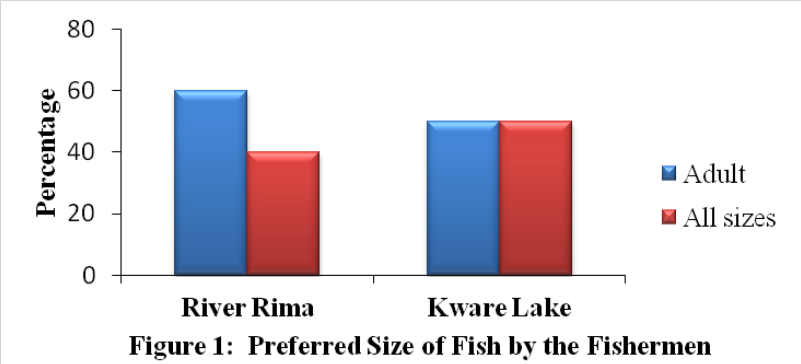

Figure 1: Preferred Size of Fish by the Fishermen

Conclusion and Recommendations

The awareness of fish depletion in River Rima and Kware Lake is lacking, even though little is known by Fishermen at River Rima. The fishing practices are against the law in most developed countries. Because they catch with net without returning by-catch (fingerlings etc), though some of the fishermen prefer the adult fish. Fishing activities are regular and routine in these freshwater bodies, and the fishermen were encouraged by their customers due to their consistent patronage. But the awareness of fish depletion among them remains deficient. For these reasons, there is need to set laws on fishing practices and educate the Fishermen on fish depletion around the area.

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