FISH RESOURCE EXPLOITATION IN THE RIVER YOBE BASIN, NORTH EAST NIGERIA

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Abstract

The future prospect of any natural resource depends on the present pattern of exploitation. The case of fish resource exploitation is no exception, as its sustainability can only be guaranteed under the right mix of utilization and management. This paper examines the future prospects of fish resources under the present pattern of exploitation in the Yobe basin around Gashua. The study covers four major fishing communities from the confluence of rivers Hadejia and Katagum down to Gashua town in Yobe state. The main field survey for the purpose of data collection commenced in 2012 and subsequently updated. Two separate questionnaires were designed and administered to 77 fishermen and 15 dry fish sellers respectively to form the primary sources of data while qualitative data were also obtained through Focus Group Discussions (FGD) usually headed by the Sarkin Ruwa. The study reveals that over the past years fish species in the Yobe basin declined from over 20 different species to 10 common ones. That a measure of dry fish sold for only 20 Naira in the local market consists of 150 fingerlings made up of 9 different species. Thus poverty and the absence of regulatory laws have resulted to indiscriminate exploitation of fingerlings. The implication of over exploitation is a long term devastating consequence on the sustainability of fish resource. The paper suggests improvements on the traditional practices and formulation of regulatory laws for fishing activities and an extension of poverty alleviation programmes to the indigenous fishermen.

Key words: Fishermen, Fingerlings, Fish, Exploitation and Resource.

Introduction

Nigeria today is facing a big challenge, that of feeding her ever growing population with the right quantity and quality of food. Man in his effort to satisfy this demand is capable of destroying the delicate balances that exist between his manipulation of the environment and the range of adjustments the environment can undergo (Olofin, 2000; United Nations, 2013). Therefore, it has become necessary to monitor man's manipulation on the environment so as to maintain the balance and enhance development on a sustainable basis (Conrad, 1999; UNDSD, 2004; Tadesse, 2005; Ogunnowo, *et al*, 2006; Ndububa, 2014 and Rabo, *et al,* 2014). The future prospect of any natural resource depends on the pattern of its exploitation. This implies that resources are sustainable only under the right mix of utilization and management. An important area of resource exploitation where ideas of present processes and future patterns may be applied to advantage is the fish industry. Fishermen, being eager to make money or have a decent diet or maintain a cultural taste, engage in catching all types of fish including fingerlings in lakes and rivers in a genocide fashion (Ohidi, 1992; Ayuba, *et al,* 2003). This trend of exploitation of fish resources if unchecked will lead to environmental bankruptcy and so our effort in the battle to feed Nigerians will be costly.

The aim of this paper is to examine the future prospects of the fish resource under the existing pattern of exploitation in the river Yobe basin. This study was conceived out of personal observation over the years, that the mention of Gashua town in this sub-region was always associated with fish resource availability. It was also observed that the fishes obtained from the Gashua area have travelled far and wide, and are of outstanding quality. However, it is sad to note that Gashua area now lives in the shadow of her former fish glory in the north-eastern region of Nigeria. What must have caused this drastic scarcity of fish resource in a once surplus fish environment? Gashua lies in the Sahel climatic zone of North-eastern Nigeria where rainfall is erratic. The area is also characterized by extremes of climatic conditions. Therefore, the presence of the river Yobe in this region serves as a live wire to the economy. Hence the importance of fish to the economy of the inhabitants cannot be overemphasized. Fishing is an age long economic activity that tends to guarantee stable off-season income apart from crop cultivation in this region.

Constraints to the fishing sub-sector include the size and quantity of catch, improper funding, poor input facilities, poverty in fishing communities, water boundaries, effects of climate change and lack of comprehensive man poor development and training programmes (Rabo, *et al,* 2014). The fishing system in the study area relies predominantly on traditional forms of production and processing. This system is fast failing in producing enough protein in-take in the diet of an average household, partly because the fishermen are illiterate, ignorant, and use traditional tools and methods of processing. Low protein in-take especially among the low income earners in a society leads to poor health, which in turn leads to low productivity in other sectors of the economy. However, the power of information technology (IT) that has reduced the whole world into a global village has also accelerated fish resource utilization (Ayuba, *et al,* 2003; Tafida, 2009). Information regarding the availability of fish resource in an environment can be quickly transmitted within a short period of time (Rabo, *et al,* 2014). High technology in terms of usage of refrigeration for preservation of fresh fish,

and faster means of transportation to areas of production linking areas of consumption have contributed to intensifying fish resource exploitation in our rivers to its present level.

Methodology of Study

Data required for this study were derived from responses to an interview schedule and focus group discussions conducted among fishermen and fish traders in the study area to capture important stages in a fishing economy. Personal interactions between Local Government officials and North East Arid Zone Development Programme (NEAZDP) fisheries specialists on their perception of fish resource sustainability in the area and policy implications were also sought. Secondary data were assessed from published documents to supplement those obtained from the field survey.

A total of 77 fishermen were interviewed in the study area as shown in Table 1.

Table 1: The distribution of sampled fishermen

Settlement	No. of fishermen interviewed	%
Dumburi	12	16
Gashua (Rest House & Takari)	30	39
Karage	20	26
Usur	15	19
Total	77	100

Source: Field Survey, 2012

The questionnaire administered to these fishermen was designed to seek information that is primarily concerned with activities that are detrimental to sustainability in the fish economy of the area. In addition to the questionnaire, Focus Group Discussions (FGD) headed by the *Sarkin Ruwa* was conducted in each sampled settlement. The size of each group depended on what was presented in each locality visited. Similarly, 15 dry fish traders were interviewed in the local markets at Gashua, Takari, and Usur. Their views on who are the buyers of fingerlings were captured. The mean market value of a tin full of fingerlings was also determined. The average number of fingerlings per tin was calculated while fresh fish value of the same species was determined as well as their mean weight if fully grown. Therefore, 15 standard size of peak milk tin used locally by the traders in the dry fish business were bought. These consist of 10 tins from the Gashua main market, 3 tins from Usur village and 2 tins from Takari local market. This study covers the major fishing communities from the confluence of rivers Hadejia and Katagum down to Gashua town. The selected villages include Usur, Karage, Dumburi and Takari ward in Gashua covering the period 2008 to 2012. Measures of fingerlings were bought in the local market and used to estimate the number of species caught and their unit price. Implications on the mode of exploitation and the unrestricted size of catch were also assessed.

The fish economy

The river Yobe is fed by rivers Hadejia and Jama'are, and empties its water into lake Chad in the North-eastern corner of Nigeria. Internationally, the river Yobe is shared along $2/5^{th}$ of its course with the republic of Niger, which has a serious bearing on the relationship between

Nigeria and Niger. Traditionally, even the planting season is marked with the arrival of flood waters in the river Yobe around Gashua. People here believe that if the up-stream flood has not reached this area, then the rainy season is still far away and they will therefore not start planting their crops. It is also believed that without the river Yobe, most of the settlements along its banks would not exist, such is the importance of this river in a typical arid environment.

Fishing accounts for about 30% of dry season employment among the inhabitants of the area (Oladimeji, 1997). The fishing equipment is very expensive and as such many of the fishermen have to depend on external sources of funding in order to remain in business. Income generated from fish is enormous, as Bdliya (1997) estimated that by 1993, the net benefit from fishing in the Nguru wetlands amounted to 17.88 million Naira. Similarly, Oladimeji (1997) in a separate study estimated that 4 million naira worth of dry fish was sold at the Gashua weekly market over a period of 16 weeks. All these estimates did not take into account local consumption and those that do not enter the market directly.

Different fishing techniques are adopted depending on the season of fishing and also the type of fish being caught. Fishing gears are mostly the traditional types constructed from local materials, e.g. the use of nets. These nets vary in size from large, medium and very fine nets that are capable of catching even a fly. Hence, the major problem in fishing activities here is the use of nets that can harvest almost every creature whether big or small that comes its way. The use of chemicals in fishing is minimal as there was no reported case in the study area. Unlike areas under the Nguru wet lands conservation project, fishing activities along the river Yobe are unrestricted by any law, but just left at the mercy of the exploiters. Preservative methods of fish resource in this region include, sun drying of fingerlings, smoking of bigger fishes, frying and the use of ice blocks in refrigeration for transportation of fresh fish to different parts of the country like Potiskum, Kano, Damaturu, among other methods.

Two distinct fishing patterns exist in the area, that is, flood fishing and non-flood fishing. Thus, flood fishing starts as soon as the river is in flood which normally begins June through to November of every year. Under this pattern, fishing in all the flood waters is free for those who obtained the fishing permit from the *Sarkin Ruwa* (this includes the migratory fishermen). However, the non-flood pattern runs the rest of the months of the dry season i.e. from November ending in May. During this period fishing water points are owned by individuals of the communities in the area where the river passes through. The owners of such fishing grounds (stretch of water) control its usage as to when and who fishes in their portion of the river. Also during this period, group fishing is regularly organized by resident fishermen. In the group (*suu*), the water designated for fishing that day is therefore sold or leased to a buyer, who then organizes the participating fishermen and traders locally. The general community is also informed of the fishing activity for effective participation.

Major findings

The major findings of this study are summarized as follows;

1. Climatic factors especially rainfall are the principal determinants of the occurrence and intensity of fishing activities in the Gashua area. That is, there appears to be a direct link to adequate water resource endowment and fishing activities.
2. There is an observed reduction in the size, species and quantity of fish caught.
3. Consumption is such that fewer people buy and consume the expensive fish species locally while the majority of the locals go for the fingerlings because of low income levels.
4. The fishing industry is male dominated in this area as all those interviewed and involved in the Focus Group Discussions were men.
5. Migrant fishermen constitute 78% of the respondents and are young adults in the age range of 15 to 40 years.
6. Indigenous fishermen are mostly the elderly people that are 50 years and above.
7. Two distinct patterns of fishing co-exist in the study area. There are sedentary fishermen that carry on their fishing activities throughout the year. The second group refers to the migratory fishermen from the Hadejia-Jigawa axis, Katagum area and those from the afar Sokoto region. Migrant fishermen normally arrive in this area between the months of September to November of every year. However, the movement into this area depends on the availability of flood waters in the Yobe basin. Activities of this group of fishermen are usually very difficult to control and sometimes lead to conflicts with the resident fishermen.

Migratory fishermen have a well developed channel of information flow in the study area. Free flow of inter-personal information among this group of fishermen implies that the influx into the Gashua area is considered unrestricted, hence those who participate in this type of movement try to make the best out of every opportunity available without future considerations.

Discussion

It has been observed that within the constraints set by nature, there is no doubt that social customs tend to influence the character off resource exploitation (Whynne-Hammond, 1978; Ayuba, *et al*, 2003; Tafida, 2009). The culture of the people may be reflected in the demand for particular species of fish; hence it's over exploitation leading to extinction. The reduction in the volume of fish trade is a pointer to this fact. Similarly, the drastic loss in species also highlights what trend to expect in the near future. Poverty has pushed many households into consuming fingerlings which are cheaper since they lack the income to purchase high quality fish species. Likewise the lack of gainful employment has forced many to go into fishing business leading to scramble for any available fish in the river, hence their harvest.

The fishermen and fish dealers in Gashua have observed that fish scarcity and unprecedented price inflation of fish are due to over fishing and the fish taste culture of Nigerians. Thus the poor who cannot afford the expensive fish types have their option in the fingerlings. For instance, an average 20 Naira measure of dry fingerlings sold at the Gashua market usually consists of 150 individual fingerlings with 9 different species or types. A fully

grown fresh Tilapia fish weights between 0.2-0.5 kg, and those of *Bargrus sp* and *Clarias sp* are at 2-5 kg, but unfortunately only a few lucky ones do escape to mature fully because of the activities of these fishermen. Similarly, this study observed that over the past 10 years, fish species declined from over 20 different types to just 10 common species.

The channel of information flow established in the fishing system among the migrant fishermen have made fish resource exploitation in the Yobe basin an annual festival rather than a profit-making venture. The problem with the present pattern of exploitation of fish resource in Nigeria generally concerns producing enough fish when and where the need is, on a sustainable basis. Of course, it is reasonable at this stage to assume that the Nigerian fish industry also needs scientific knowledge and the powers of modern technology if it must produce at optimal level.

Conclusion and Recommendations

The quest to feed and develop our nation technologically requires that other less sensitive sectors of our economy (fish industry inclusive) be carried along by government, NGOs and the local community. The nature of fish resource exploitation in this zone is wasteful and seriously compromises the future. To strive off the on-coming disaster and encourage fish resource exploitation on the path to sustainable development, the following suggestions are made:

Encourage the use of modern technology (use of large refrigerators to store fresh fish, establish fish processing industry in the area) in fish production as evidence has shown that the present pattern of production has fallen short of demand for fish-intake.

That government should stop pretending, the problem is real. Therefore, practical regulatory policy regarding fishing should be introduced and enforced directly on defaulting communities and individual fishermen.

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