PRACTICE OF SUSTAINABLE FISHERIES REGULATIONS IN NIGER STATE, NIGERIA

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ABSTRACT

The study assessed practice of sustainable fisheries regulations in Niger State, Nigeria. A multi-stage sampling technique was used to select 228 respondents for the study. Validated interview schedule were used to collect data and data collected were analyzed using both descriptive and inferential statistics. The result revealed that majority (51.7%) of the respondents fall within age range of 41 to 60 years. Major source of information for the respondents was fish masters (75.4%). Non use of explosives was the most widely practised sustainable fishing regulation by the respondents, while sustainable fishing regulations such as effort control (12.3%) and closed areas/closed seasons (10.5%) had low practising percentages in the area; reasons given for not practising such sustainable fishing regulations were remoteness of fishing communities and cultural believes. Finding further indicated that there were positive significant relationship between educational level (r=0.835), association membership (r=0.473), access to all weather roads (r=0.441), contact with fish master (r=0.480) and practice of sustainable fishing regulations. Therefore, it was suggested that fishermen should be trained and encouraged to adopt all the sustainable fishing practices for sustainable economic development. It was also recommended that motorable roads should be constructed in the rural fishing communities to improve fish master/extension contact and adherence to sustainable fishing regulations.

INTRODUCTION

All over the world, fishery sub-sector serves as an important source of food for sustaining human race. It is a vital source of dietary protein and micronutrient, which plays a significant role in improving nutritional status and food security (Bene and Heck, 2005). In Nigeria, domestic fish production has not been able to bridge the gap between supply and demand. Fish supply in the country is put at 0.7 million metric tons in comparism to the demand of 1.7 million metric tons (Federal Department of Fisheries, 2010). This perhaps makes Nigeria one of the leading importers of fish among the under-developed countries, importing between 600 to 700 metric tons annually at the cost of US$0.4 billion (Moehi, 2003 and USAID/Nigeria/SPDC undated). This has been partly attributed to lack of adoption of sustainable fishing practices.

While lending credence to this assertion, Mutume (2002) stressed that despite the contribution of inland fisheries to the economic development of Nigeria, its sustainability is being threatened by over exploitation of natural fish stock, which is getting to its limit. Also, Ohen *et al.* (2009)

reported that inspite of the potentials of abundance fisheries resources in Nigeria, its remains a very large importer of fish. This has been blamed on the subsistence nature of fishing, isolation of fishing communities and use of outdated fishing gears, as well as poor management practices adopted by these engaged in fishing.

In order to reverse the declining trend in capture fisheries resources, the Federal Government of Nigeria formulated sustainable fisheries management practices, which encompasses management measures such as technical, input/output controls and economic incentives. These sustainable management strategies are supported by laws at Federal level and edits at the State level. It is against this background that this study seeks to examine the practice of sustainable strategies in Niger State, Nigeria and its implication for effective policy formulation and fisheries extension delivery. The specific objectives of the study are to:

i. describe the socio-economic characteristic of respondents;
ii. determine sources of information for sustainable fisheries regulations;
iii. examine the practice of the sustainable fisheries regulations; and
iv. determine reasons for not practising the sustainable fisheries regulations in the study area.

Hypothesis

There is no relationship between socio-economic characteristics of respondents and practice of sustainable fisheries regulations.

METHODOLOGY

The study was conducted in Niger State, Nigeria. The State falls with latitudes 8^0-10^0N and longitudes 3^0-8^0East. The availability of large water bodies such as rivers Niger, Kaduna, Gbakogi, Gurara, Chanchaga and their tributaries as well as numerous streams offers great opportunity for fishing in the State. Multi-stage sampling technique was used for selecting respondents for the study. Three Local Government Area (Mokwa, Borgu and Shiroro), where there is high concentration of fishing activities were purposively selected in the first stage. At the second stage, four fishing communities were randomly selected from each Local Government Area. Thereafter, a total of 228 respondents were randomly selected proportionately from the fishing communities in the third stage. The sample size selected was

not less than 10% of the sampling frame of 2280 fishermen established through the community heads.

A validated interview schedule which was subjected to Cronbach's Alpha reliability test (r=0.89) was used for data collection. Data were collected on socio-economic characteristics, sources of information, practice of sustainable fishing regulations and reasons for not practising the sustainable fishing regulations. Data collected for objectives 1, 2, 3 and 4 were analyzed using descriptive statistics, while the study hypothesis was tested using correlation analysis.

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

Finding in Table 1 indicated that more than half (51.7%) of the respondents were within the age of 41-60years. This result implies that the fishing activities in the study area were dominated by ageing fishermen. This finding collaborated the result of Nwabeze *et al.* (2011) who reported that majority of fishermen in Nigeria belonged to middle and old age. Table 1 further revealed that 60.0% of the respondents acquired one form of formal education or the other ranging from adult education to tertiary education, which suggest that most of the fishermen in the area were literate. Similarly, Table 1 showed that almost 90.0% of the respondents were male. The result affirms the popular belief about the study area that fishing activities are dominated by the male folks. Furthermore, Table 1 indicated that 75.9% of the respondents were members of fishing associations in their communities. On access to all weather roads; 50.9% of the respondents claimed to have access to rural roads which are passable throughout the year round. The result also revealed that 31.6%, 29.4% and 25.9% of the respondents respectively had one, two and three contacts with fish masters per month.

Table 1: Socio-economic characteristics of respondents

Socio-economic characteristics	Frequency	Percentage
Age		
<21	25	11.0
21-40	72	31.6
41-60	118	51.7
61-80	13	5.7
Educational level		
No formal education	91	40.0
Adult education	15	6.6
Primary education	66	28.9
Secondary education	45	19.7
Tertiary education	11	4.8
Sex		
Male	204	89.5
Female	24	10.5
Association membership		
Yes	173	75.9
No	55	24.1
Access to all weather roads		
Yes	116	50.9
No	112	49.1

Fish master contact per month		
Once	72	31.6
Twice	67	29.4
Thrice	59	29.9
Non contact	30	13.1

Source: Field survey, 2015

Sources of Information

Table 2 indicated that majority (75.4%) of the respondents got information on sustainable fishing regulations through fish masters while cooperative societies and village heads provided information on sustainable fishing regulations to 66.2% and 51.3% of the respondents respectively. This shows that most of the fishermen got awareness through interpersonal and group contact sources. However, the study revealed low awareness through mass media sources such as radio and television, which could be a reliable and effective channel of awareness and information dissemination to fishermen especially these living in the remote fishing communities.

Table 2: Sources of information for sustainable fishing regulations

Sources of information*	Frequency	Percentage
Interpersonal sources		
Community heads	117	51.3
Friends/relatives	82	36.0
Fish masters	172	75.4
Group contact sources		
Cooperative societies	151	66.2
Research station	25	11.0
Mass media sources		

Radio	53	23.2
Television	35	15.4
Posters	9	3.9
Newspapers/magazines	11	4.8
Extension bulletins	22	9.6

Source: Field survey, 2015

* Multiple responses

Practice of Sustainable Fishing Regulations

The result in Table 3 showed that all the respondents (100.0%) complied with the sustainable fishing regulation of ban on the use of explosives. This finding is in accordance with that of Nwabaze and Erie (2013) who found that most fishermen obeyed ban on use of explosives in their fishing activities. Other sustainable fisheries regulations widely practised by the respondents were non use of poisonous chemicals (79.8) and fish fence (53.9%). However, there were low adherence to the fishing regulations of gear control (37.3%) and declaration of fish catch (20.6%). Also, sustainable fisheries regulations such as effort control (12.3%) and closed areas/closed seasons (10.5%) were rarely practised by the respondents in the study area. This result therefore, suggests low conformity to the input and output control measures of sustainable fishing by the respondents in the study area.

Table 3: Practice of sustainable fishing regulations

Regulations*	Frequency	Percentage
Ban on use of explosives	228	100.0
Prohibition of fish fence	123	53.9
Ban on use of poisonous chemicals	182	79.8
Declaration of fish catch	47	20.6
Gear control	85	37.3

Closed areas an closed seasons	24	10.5
Effort control	28	12.3

Source: Field survey, 2015
* Multiple responses

Reason for not Practicing Sustainable Fisheries Regulations

Form Table 4, a total of 53.5% of the respondents indicated that remoteness of their fishing communities is instrumental to their habit of not declaring fish catch and usage of ban gears at nights. Similarly, cultural believes was responsible for low practising of sustainable fishing regulation of closed areas/closed seasons as indicated by 50.9% of the respondents. Also, 30.3% of the respondents reported that seasonal changes in fishes habits and habitants force them to use even ban nets some times to earn a living.

Table 4: Reasons for not practising sustainable fisheries regulations

Reasons*	Frequency	Percentage
Remoteness of community	122	53.5
Change in fishes habit	69	30.3
Cultural believes	116	50.9

Source: field survey, 2015
*Multiple responses

Relationship between Socio-economic Characteristics of Respondents and Practice of Sustainable Fishing Regulations

The result of the correlation analysis in Table 5 revealed that there was a significant positive (r=0.835) relationship between educational level of the respondents and practice of sustainable fishing regulations. This implies that the educational attainments of the respondents impacted positively on the respondents' biochemical, social and economic understanding of sustainable fishing regulations and ability to practice them. Jane *et al*. (2013) stressed that high educational level is an essential springboard for agricultural practices. Also, association membership had significant (r=0.473) relationship with the practice of sustainable fishing regulations. This can be used to show the relevance of cooperative societies in promoting adoption of improved practices. In a related study, Umar *et al.* (2009) found that membership of association influenced farmers'

awareness and adoption of improved practices. Furthermore, contact with fish masters had significant (r=0.480) relationship with the practice of sustainable fishing regulations, which suggests that the fish masters who are saddled with the responsibility of monitoring fishing activities in the area are making significant impact on the practice of sustainable fishing regulations. Access to all weather roads also had significant (r=0.441) relationship with the practice of sustainable fishing regulations. This shows that access to motorable roads which allowed inspection of fishing activities regularly influenced the practice of sustainable fishing regulations in the area.

Table 4: Correlation analysis between socio-economic characteristics of respondents and practice of sustainable fisheries regulations

Socio-economic characteristics	Practice of sustainable fisheries regulations
Age	0.107^{ns}
Educational level	0.835^{*}
Sex	0.104^{ns}
Association membership	0.473^{*}
Access to all weather and roads	0.441^{*}
Contact with fish masters	0.480^{*}

Computed from field survey data, 2015
*Significant at 5%
ns- Not significant

CONCLUSION

From the finding of the study, it was concluded that fish masters were the major source of information for the respondents on sustainable fishing regulations. All the respondents adhered to the sustainable fishing regulation of ban on use of explosives. Socio-economic characteristics such as educational level, association membership, access to all weather roads and contact with fish masters had significant relationships with the practice of sustainable fishing regulations by the respondents.

RECOMMENDATIONS

Extension agencies and its agents as well as other stakeholders should create more awareness through radio and television on sustainable fishing regulations in fishing communities and re-orientate fishermen on the implications of non adherence to sustainable fishing regulations. Fishermen should be trained and encouraged to adopt all sustainable fishing practices that present high potentials for sustainable economic development.

Stringent regulatory measures should be put in place to control the sales and use of fishing gears, as well as curtail cultural practices that are not in conformity with the sustainable fisheries regulations.

Motorable roads should be constructed in rural fishing communities to improve extension/fish master contact and adherence to sustainable fishing regulations.

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