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ASSESSMENT AND IDENTIFICATION OF FISHING GEARS USED BY FISHERMEN IN YAURI

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ABSTRACT----------
This research work aims to assess and identity the fishing gears used by fishermen in Yauri. Four landing sites were randomly selected and information about the socio economic status, available gears and challenges faced by fishermen were collected using a set of structured questionnaires from 100 fishermen. In this study, the socio economic result reveals that (53%) of the fishermen are engaged in fishing activities as their main occupation, (31%) are engaged in fish processing,(27%) have all fishing equipment with (37%) using cast net and (76%) threatened by water pollution. Lack of effective and efficient fishing gears is one of the major challenges, water pollution is also another challenge. Looking at the present situation of the fishermen, government should provide effective infrastructures and amenities and encourage extension work so as to enlighten fishermen on the need to adopt new fishing techniques.

KEY WORDS: *Assessment, Identification, Fishing, Gear, Fishermen and Yauri.*----------

INTRODUCTION

Fishing is a pre-historic practice dated back at least 40,000 year ago, since 16th century. Fishing usually started as a way of survival in a pre-historic time and turned in time into industry sport and recreational activities (Andrew, 2019). The earlier activity was started using hand and later technology was developed by creating fishing gears. The use of gears for fishing can be traced back 14,000 years ago. The first gears were made from foot long bamboo (Philips, 2018). However, even 10,000 years BCE, very little is known about the different fishing practices. Subsistence fishing at that time consisted in catching fish by hand by using rudimentary tools made from natural materials of which notice remains (Mezeer, 2016).

Technology history within the field of fishing gears has to a great extent focused on technological changes and new innovations. Fishing with primitive gears is confined to shallow water areas. Permanent and semi-permanent barriers were created in the areas with changing water level for catching fish. This practiced in the areas of fresh water and flow areas along the sea coast (Andrew, 2019). The barriers prevent fish from escaping when the water recedes. This was the beginning of filtering fishing gear (Mezeer, 2016). After the intervention of net making, netting made of fibres of different origin was used for gear construction. The first fishing gear was made of wooden material like sticks and flexible branches (Philips, 2018). There was a transition from wooden material to netting material in the construction of traps and barriers and bag etc are held open by means of a framed (Andrew, 2019).

Different fish species live in different areas of water bodies such as surface, mid-water, bottom dwelling and so on behave in different ways, as a result the gears used in catching them needs to be specifically designed and suited for each target species (Petter, 2020). The challenges different gears can have varies in impacts, depending on their designed where they are used and what they are catching. This gears variance is why the same species may have different sustainability concerns but the solution is that fisheries should use gears that have minimum unwanted impacts on the target species and aquatic eco-system. Some gear types with by catch issues can be modified to minimize these impacts by adding escape zones or excluder device in nets for examples allows animal to escape, another modification could be using traps with sunken lines to reduce entanglements (Mezeer, 2016).
In recent years, there have been growing focuses on the ecosystem effects on fisheries, addressing the impacts of fishing operations not only on the target species but also by catch. Also on fishing gears and methods only focused on the highest possible catching efficiency for the target species, now challenge to develop gears that meet the present situations Andrew, 2019).

Fishing gears plays very important role in fishing activity, thereby enhancing the production, particularly on commercial basis (Andrew, 2019). The success of fishing largely depends on to how and which type of gears are used to capture fish (Philips 2018) Fishing gears include hook and line, castanet gillnet and many others. The use

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and application of fishing gears depend also on the size of the fish. Fishing gears regulation also has importance in the stock management and towards the conservation of stock under depletion as similar as ban on fishing. Gene how it might be used, are designed to lure and capture fish (Andrew, 2019)

The application and use of fishing gears for fishing varies from one region to another though depend on the species, size of the fish, water body and as well as the custom and tradition of the society (Andrew, 2019). Most of the gears use for fishing are not well identified and emphatically documented in the study area. In the light of this that, this research works tends to answer the following research questions: -

i. What are the socio economic status of the respondents in the study area?
ii. What are the available gears used for fishing in the study area?
iii. What is the challenges face by fishermen when using the available fishing gears in the study area?

METHODOLOGY

Study Area

This study was carried out in Yauri local government area of Kebbi State which is one of the twenty-one local government areas of Kebbi State, it is located in the South-Eastern part of the State at Latitudes11^{o}15'-12^{o}30'NandLongitudes 5^{o}18'-11^{o}20' E. The projected population of the area are about100, 546population.The major cultural and linguistic groups are kambari, Gungawa and Hausa, Fulani others non indigenous groups are Yoruba, Igbo and soon (NPC, 2006).

Climate, soil and vegetation of the study area

The climate of the area is a tropical savannah climate with average annual rainfall of about1000-1200mm per annum, with mean annual temperature of about32^{0}c. The area has two main seasons, the rainy season and dry-season, the rainy season start from May-September. The vegetation of the area is Northern Guinea Savannah vegetation with tall catered trees and shrubs are found in the area, the area also experience a period of Hamattan from November-February. The area is surrounded by River Niger with many lakes which favour fishing activities (Ahmed, 2015).

Economic activities of the people in the study area

Major economic activities of the people in the area include fishing, farming and trading. The major crops grown in the area include cereals, legumes and vegetables. Farm animals such as sheep, goat and cattle's, poultry and equines are also reared in the area. Most people engaged in trading for agricultural and other goods, (Ahmed, 2015).

Sampling Procedure and Sample Size

Multi-stage sampling technique was used to select one hundred respondents both male and female from the sampling frame of the fisher men in the study area. The first stage was involved the selection of four villages from the study area. The second stage was involved the selection of respondents randomly from the selected villages. The table below will show the number of respondents allocate to each sampling villages in the study area.

Table 1: Sampling Villages and Number of Respondents that will be Allocated

State	L.G.A	Villages	No. of Respondents
Kebbi	Yauri	Zamare	25
		Gungun Sarki	25
		Mashayan Sarki	25
		Yabon Sarkawa	25
Total		**4**	**100**

Data Collection

Both primary and secondary data were used for the study, Primary data was obtained by the aid of structured questionnaires designed in line with the objectives of the study. While secondary data was obtained from text books and journals.

Data analysis

Data obtained from the administered questionnaire was analysed based on descriptive statistics using frequency, percentage distribution and mean with the aid of Microsoft Office Excel or Statistical Package of Social Science (SPSS) Version 25.0.

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RESULTS AND DISCUSION

Result

Socio-demographic Information

The result from table 1 shows the personal data of the fishermen in Yauri and it also reveals that (75%) of the fishermen are male while (25%) are female. In term of age (10%) of the fishermen are in the age group of 10-20year's, (30%) are 21-30years, (35%) are 31_40years while (25%) are 41-50years. The table also indicates that (75%) of the fishermen are married, (13%) are single and (12%) are widow. In term of family size (6%) 1-3, (16%) have 4-5, (32%) have 6-10, (24%) have 11-15, (15%) have 16-20 while (7%) have 21 above. The table further shows (82%) of the male are involved in fishing while (18%) of the female are involved in fishing. The result further shows the majority of the fishermen (40%) had some knowledge in formal education especially in the field of Islamic education, while (25%) attended primary school, (25%) attended secondary school, (7%) attended high school while non-formal and non-western education has (3%).

Table 1 Personal Data

Variable	Frequency	Percentage (%)
Gender		
Male	75	75.0
Female	25	25.0
Total	**100**	**100**
Age		
10 – 20	10	10.0
21 – 30	30	30.0
31 – 40	35	35.0
41 – 50	25	25.0
51 Above	0	0
Total	**100**	**100**
Marital status		
Married	75	75.0
Single	13	13.0
Widow	12	12.0
Divorced	0	0
Total	**100**	100
Variable	**Frequency**	**Percentage (%)**
Family size		
1-3	6	6.0
4-5	16	16.0
6-10	32	32.0
11-15	24	24.0
16-20	15	15.0
21 above	7	7.0
Total	**100**	100
No of family involve in fishing		
Male	82	82.0
Female	18	18.0

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Total	**100**	**100**
Education level		
Primary school	25	25.0
Secondary school	25	25.0
High school	7	7.0
Islamic school	40	40.0
None	3	3.0
Total	**100**	**100**

Socio- economic information of the fishermen in Yauri

The result from table 2 indicates that the majority of the fishermen (53%) are engaged in fishing activities as their main occupation, (31%) are engaged in fish processing, (10%) are engaged in farming activities and (6%) are engaged in artisan activities. In respect to the years of experience in fishing profession, the majority of the fishermen (25%)spent 20years,(25%) for 6-10years,(24%) for more than 21years,(23%) for 11-15years and (7%) for 0-5years. The result also shows that the majority of the fishermen (73%) are members of the association while (27%) are not members of the cooperation. The result further shows that (28%) of the fishermen have access to formal credit facilities while (72%) have no access. In term of the source of income the table reveals that the majority of the fishermen are engaged in fishing while (15%) are engaged in non-fisheries and (34%) are engaged in both fisheries and non-fisheries activities.

Table 2 Socio-Economic Information

Variables	Frequency	Percentage (%)
Major Occupation		
Fishing	53	53.0
Fish Processing	31	31.0
Farming	10	10.0
Artisan	6	6.0
others	0	0
Total	100	100
Years of Fishing Experience		
0-5 years	7	7.0
6-10 years	25	25.0
11-15 years	23	23.0
16-20 years	25	25.0
21 above	24	24.0
Total	**100**	100
Membership of association or cooperative		
Yes	73	73.0
No	27	27.0
Total	**100**	**100**
Access to Formal Credit		
Yes	28	28.0
No	72	72.0
Total	**100**	**100**
Source of Income		
Fisheries	51	51.0

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Non-fisheries	15	15.0
Both	34	34.0
Total	**100**	**100**

Gears information

The result shown from table 3 reveals that most of the fishermen (27%) have 5 fishing equipment, (26%) have 3, (24%) have 2, (1%) have 13 while (10%) have 4 fishing equipment and materials. The result further shows the type of fishing gears used by fishermen, (37%) used cast net, (30%) used gura trap, (20%) used drag net,(5%)used gourd and (8%) used hook and line.

Table 3 Gears Information

Number of Fishing equipment and materials		
1	13	13.0
2	24	24.0
3	26	26.0
4	10	10.0
5	27	27.0
Total	**100**	**100**
Fishing Gear used		
Gura Trap	31	31.0
Cast net	37	37.0
Hook and Line	8	8.0
Drag Net	24	24.0
Total	**100**	**100**

SWOT Analysis of fishery

The result from table 4 indicates the strength of the fishermen (85%) depend on fishery resources while (15%) did not, in term of net and boat materials available (74%) have the material and (26%) does not have. the result also shows(87%) of the fishermen have good environment while (15%)does not have. (87%) of the fishermen have good community cooperation and (13%) does not have. The table further shows the weakness of the fishermen, majority of them (95%) have good market system while (5%) does not have.in term of preservation facilities (68%) have the facilities while (32%) does not have.(70%) of the fishermen have good transport facilities while (30%) does not have. The table further identified (30%) of the fishermen have the facility for cage culture while (70%) does not have. The table also reveals that (65%) have culture facility and (35%) does not have. the table also shows (20%) have raft culture facility and (80%) does not have. (71%) have recreational fishery facilities and (29%) does not have. (69%) for value added products and (31%) does not added value.(25%) of the fishermen are engaged in branding fish products while(75%) are not engaged.(65%) are involved in other activities while (35%) are not involved. The result further reveals that (76%) of the fishermen are threatened by water pollution while (24%) are not threatened. (55%) have vandalism and (45%)do not have.(60%) have thief and (40%) do not have.(64%) have flood and (36%) does not have, sedimentation have (80%) and (20%) does not have.

Table 4 SWOT Analysis of Fishery

Variable	Specification	Frequency	Percentage
Fisheries Resources	Yes	85	85.0
	No	15	15.0
Total		100	100
Net and boat materials available	Yes	74	74.0
	No	26	26.0
Total		100	100
Good environment	Yes	85	85.0
	No	15	15.0

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	Total		
		100	100
Good community cooperation	Yes	87	87.0
	No	13	13.0
			100
	Total	100	

Weakness (Market Distance, Preservation and Transportation facilities)

Variables	**Specification**	**Frequency**	**Percentage**
	Yes	95	95.0
Good market system	No	**5**	5.0
	Total	100	100
	Yes	68	68.0
Preservation facilities	No	32	32.0
	Total	100	100
	Yes	70	70.0
Good transport facility	No	30	30.0
	Total	100	100

Opportunities

Item	**Specification**	**Frequency**	**Percentage**
	Yes	30	30.0
Facility for cage culture (commercial fish opp.)	No	70	70.0
	Total	100	100
	Yes	65	65.0
Culture facility	No	35	35.0
	Total	100	100
	Yes	20	20.0
Raft culture facility	No	80	80.0
	Total	100	100
	Yes	71	71.0
Recreational fishery facilities	No	29	29.0
	Total	100	100
	Yes	69	69.0
Value added product	No	31	31.0
	Total	100	100
	Yes	25	25.0
Branding fish products	No	75	75.0
	Total	100	100
Others income generating activities (like agriculture, livestock and fish breeding)	Yes	65	65.0
	No	35	35.0
	Total	100	100

Threat (Water Pollution, Vandalism, Thief etc

Items	**Specification**	**Frequency**	**percentage**
	Yes	76	76.0
Water Pollution	No	24	24.0
	Total	100	100
	Yes	55	55.0
Vandalism	No	45	45.0
	Total	100	100
	Yes	60	60.0
Thief	No	40	40.0
	Total	100	100
	Yes	64	64.0
Flood	No	36	36.0
	Total	100	100
	Yes	80	80.0
Sedimentation	No	20	20.0
	Total	100	100

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DISCUSSIONS

The characteristics of fishermen in Yauri should be classified under the artisanal fisheries with multi species and multi gears activities. The fishermen in Yauri used simple fishing gears and equipment and some of the fishermen catch fish in a very small quantity for subsistence purpose while some catch in a large quantity for commercial purpose.

According to FAO, 1991 out of 1.9 million people engaged in fishing, about (98%) belongs to the artisanal sector. However this sector is characterized with low technology, lack of modern equipment and low fund resulting in labour intensiveness with little or no opportunities to expand. Fishermen that are involved in artisanal fisheries make use of gears made from natural and synthetic materials. The fishermen in Yauri used gill net, cast net, hook and line, drag net, gourd/calabash, gura trap, clap net etc. in this survey gourd/calabash and plank canoes were also found, the type of gears used in fishing with the area to which the process take place, sometimes difference amount of water flow lead to the selection of a particular type of gear to be used.

A total of 5 different gear types were used by the fishermen in this study. These include the gill nets, cast nets, hook and line, gura traps, drag nets and gourd/calabash. All of the gears have been revealed by Ibrahim and ogundeji (2016) in their previous surveys carried out in some selected water bodies in northern Nigeria. These are the most common fishing gears used by the artisanal fishermen in the Kainji Lake, River Yauri, Kontagora Lake and the Lake Chad basin in Nigeria Bene *et al.,* 2004 and Bankole *et al.,* 2003 and Ibrahim and ogundeji 2016.

Gill nets are regarded as the most common fishing gear for small scale fisheries within the globe (Millar,2000). This gear can be categorized as passive or stationary due to the fact that it is set up and left behind in the water(Madsen et al 1999).As the gill net is cast out in the water, any fish that come across the net will be entangled and caught by the net, usually at the gill region between the head and the body(Minns &Hurley,1988).
The design of gill net is quite simple and easy.

According to Abdul (2005), the various type of fishing gears and the way they are used on water depend on fishermen's financial status, water depth, shoreline patterns, targeted fish species and seasons of the year. The fishing activities in Yauri were also dominated by males because of religious and socio-cultural reasons, which limits the involvement of women in fishing activities.

Similar observation was reported by Sraboni *et al*. (2014) on women's empowerment in agricultural activities in Bangladesh. This is contrary to the other research findings, were reported that a large number of women participated in the fish processing activities within the fishing communities of Lake Feferuwa, in the state of Nasarawa, Nigeria. Olapade (2012) reported that women play some significant roles in artisanal fisheries in Asejire River, in the state of Oyo, Nigeria.

Meanwhile, the data obtained in the study indicated that the fishermen were represented by the age group of 31 to 40 years (35%) and 41 to 50 years old (25%), which should be considered as the middle age group of fishermen. This would probably due to the lack of alternative jobs available in the area, especially for the middle age groups of the community. The similar findings of a high proportion of the middle age group which involved in artisanal fishing was also reported by Ahmed (2008) in Uganda. This study also revealed that the majority of the fishermen (75%) were married and most of them have many children and other dependents, which depend on their fishing activities to survive. Similar finding was reported by Bolorunduro (2003) among the fishermen community in the state of Niger, Nigeria. The study also revealed that the majority of the fishermen (53%) engaged in fishing activities as their major occupation. This could be due to the high amount of fish that were caught every year that could sustain the livelihoods of the community. Similar finding was reported by Tafida (2011) however, they provide with some useful recommendations for the fishermen to create some enterprise diversification activities, rather than depending on the fishing activities alone.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Base on the results, it can be concluded that the fishing gears used by the fishermen who involved in the fisheries activities in Yauri can be classified as 'artisanal fisheries' and they are similar to the other artisanal fishermen exist in Kebbi State, in general. It was observed that the rate at which a particular fishing gears is used depend on the effectiveness of the gear and sometimes also on the level of water that is the season of the year determine the kind of fishing gears used for the fishing activities. This study provides some basic data and base-line information to the government, Fisheries regulation, fishermen and researchers, policymakers and scholars who managed the Kebbi state, especially the inland waters and its fishery resources. Furthermore, net generally is the most widely

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used fishing gears in Yauri, because of its efficiency and effectiveness in catching many kinds of fishes. The information supply by fishermen coupled with researchers revealed net to be the most popular type of fishing gear used in Yauri, kebbi state. There are other types of fishing gears found in the study area, but none of them was considered to be as efficient as net.

Recommendations

The following recommendations are hereby made, so as to ensure optimum operation of the Fishermen in Yauri, Kebbi State as well prevent over-exploitation of the endangered smaller fish species, through utilization of the recommended sizes of fishing gears.

i. Government should intervene in supplying the type of gears used by fishermen in catching fish, so that fishing activities could be efficient and effective, such gear could include net, hook and line, gura trap and others.
ii. Government should provide effective infrastructures and amenities and encourage extension work so as to enlightened fishermen on the need to adopt new fishing techniques.
iii. The government should help to regulate the type and size of gear that will used in fishing activities so as to prevent over-exploitation of smaller species considered to be endangered also ensure continuity of the fishing activities.
iv. Fishing net with mesh size of above 2.5mm should be recommended by the government to fishermen for their fishing activities, so that the juvenile species are not reduce drastically as a result of their operation.
v. There is need to provide workshops, seminars conferences in order to make emphasis to fishermen on the process of handling these gears, so as to ensure good utilization.

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