

SOCIO ECONOMIC CHARACTERISTICS OF FISHERMEN IN JABEL AWLIA AND EL- MAWRADA AT KHARTOUM STATE, SUDAN

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ABSTRACT: The present study aimed to provide baseline information of socio-economic status of Jabel Awlia and El-Mawrada fishery in the White Nile in Sudan due to there is lack of information in this field. Descriptive analysis was done for analyzing the raw data of the study by using Excel Microsoft Software 2003. Social data showed that male fishermen group was dominant in both sites (97.6%, 100%) respectively. Age groups of fishermen ranged between 20 to 70yrs; where age group 31- 40yr was dominant in Jebel Awlia and age group 41-50 was dominant in El-Mawrada. Six educational categories were recorded where primary education was dominant in the two location (48.8%, 44.4%) respectively; whereas, secondary education was the second in the two location (24.4%) and (27.8%) respectively. Part-time fishermen was dominant in both sites (34.1%, 11.1%); whereas full time fishermen was the lowest (4.9%, 16.7%). Most of fishermen were married (85%, 94%) in both sites; whereas unmarried fishermen was the lowest (14%, 5.6%). As regards to the fishermen's other activities results showed that most of them were not practicing any other activities (97.6%, 88.9%). Category of business owner was dominant. Dta showed that experience groups of fishermen in Jabel Awlia and El Mawrada fishery ranged between 5 to 40yrs. Where experience group 6 - 15yr was dominant in Jebel Awlia and group more than 35yr was dominant in El- Mawrada Experience group more than 35 yrs had the highest percentage in both sites; Most of fishermen in both sites did not get any training course (100%, 100%), except the fishermen of El- Mawrada who obtained some training in fish extinction (5.6%). Concerning fishers ownership, the results showed that owner list was dominant in both sites (85.4%, 66.7%); whereas, rent ship in both was the second (21.4%), (16.7%). For fish catchment by season results revealed that less than 5 ton was dominant in the tow locations (100%, 100%). Catch by season, income and fishing craft results in showed that category of fishermen who was able to catch less than 5 kg by season was dominant (100%) in Jabel Awlia and El Mawrada. In addition, most of fishermen income ranged between 1000 - 3000 pounds by year. However, the categories more than 2500 were dominant in both sites, followed by 1000 - 1500 pounds categories respectively. Result of skills and knowledge in fishery showed that fishermen had knowledge and skills in fishing gear and fishing draft respectively. Category had skills and knowledge in fishing time, fishing season and commercial species was dominant in both sites. On other side fish marketing skills and knowledge among fishermen in Jabel Awlia and El Mawrada was (51.2%, 77.8%) respectively. In addition, skills and knowledge of fishermen in fish processing presented as (51.2%, 61.1%) in both sites respectively.

Keywords: Fishery, Fishermen, Economic, Nile, Fishing.

INTRODUCTION

The natural fisheries of Sudan are divided into two main sectors; the inland fisheries (fresh water fisheries) and the marine fisheries of the Red Sea. The inland fisheries are composed of the main Nile and its tributaries which are 6500 km long. And specially the reservoirs formed by the dams on the rivers; Jebel Aulia reservoir on the White Nile, Rosaries and Sennar reservoirs on Blue Nile, Khashm Algerba reservoir on Atbara River and Nuba Lake, which is the Sudan portion on Nasir reservoir. It lies in the northern part of Sudan, and it was formed by the construction of the Egyptian high dam south of Aswan. It is the richest source of fish in the Main Nile inside the Sudan, in addition to the Sud region at Upper White Nile (Awad Elkarim, 1999).

On the other hand, the marine fisheries are at the Sudanese coast line on the Red Sea, which extends to 720 km, and a continental shelf of about 98,000 km², which is unsuitable for trawling due to its irregular coral beds (Souncess, 1978). This area is endowed with fine fishes, shelf fishes, 'crap' and crustacean 'shrimp and lobster'

(Osman, 1990), the total sustainable fish stock of Sudan is about 110,000 tons (Ministry of Agriculture Animal resources 1995).

Khartoum State covers an area of 21000 km² and the fish storage in it is estimated around 15,000 tons. But the amount exploited is not more than one thousand tons. The fish production is found in the fisheries inside Khartoum State in Jabal Awlia, Kalakla, Fetiah Al-Agaleen, El-Mawrada, the island of Al-Fitihab, Al-Sagai, Al-Sabalwaga and Al-Jeriah area on the Blue Nile (Abdal Mutalib, 2000). The process of handling and distribution of fish is carried by fishermen, traders and this confirmed with the case of Ethiopia (Degebassa, 2010).

The fish section in Khartoum State is characterized by being traditional in general and the ways and equipment of fishing did not find their chance to be modernized effectively. Add to that there are no enough means of storing, refrigeration and suitable transportation. On the other hand, the fish marketing activity is concentrated on only two markets out of the three fruit and vegetable central markets that exist in the state. Even in those two markets, there are very simple ways of preserving, showing and circulating the fish. In the state there are two stations for fish services which are regarded as a centre for the teams of the statistics. What is observed in these two centers is that there infrequency in the studies and researches that are concerned with the development of the fish section in the state (Ministry of Agriculture, 2004).

The main objective of this study is to investigate the economics and social characteristics of the fishermen in Jabal Awlia and Elmawrada at Khartoum state.

MATERIAL AND METHODS

Study area

Jabal Awlia: Jebel Awlia Dam reservoir (JADR) located at 32° 29'07.1" E and 15° 14'18.1" N, 40.6 Km² south of Khartoum; the dam elevation is 383m (Figure 1). It was constructed to control the flow of the Nile to aid the Aswan Dam in storing water for summer cultivation in Egypt.



FAO 2008



UNEP 2000

Figure 1 - The location of Jebel Aulia Reservoir on the White Nile in Sudan [Source: adapted from FAO (2008) and UNEP (2000)].

El-Mawrada: El- Mawrada is considered as a rich region by fish stock and fish marketing in Sudan. This is located at White Nile at Omdurman at Khartoum State. It's one of the big fish market in Sudan and the coastal area is suitable locality for fishing, so that we found some parasite which affects a fish in this region.

Data Collection

Raw data of this study were gathered through a questionnaire during summer season 2014. The questionnaire was designed to provide essential socio-economic information related to: sex, age, education levels, social status, time spending in fishing, other job beside fishing, fishermen activity, experience in fishery, training programs, owning fishing equipment, , ways of fishing used, catch by season ad income, fishing graft and skills and knowledge in fishery. 40 fishermen were questioned from Jabal Awlia and 18 fishermen were questioned from El-Mawrada.

Statistical analysis

Descriptive analysis was done for analyzing the raw data of the study by using Excel Microsoft Software 2003.

RESULTS AND DISCUSSION

This study was conducted to investigate socioeconomic characteristics of fishermen in Jabel Awlia and El-Mawrada areas at Khartoum State.

Social data Table 1 showed that age groups of fishermen in Jabel Awlia and El Mawrada fishery ranged between 20 to 70 yrs. Age group less than 20 yrs had the lowest percentage as 7.3% in Jabel Awlia and 5.6% in El Mawrada; whereas, age group 31- 40yrs was the dominant (22%) in Jabel Awlia and the age group 51-60 and above 60yrs was dominant in El Mawrada (27%), followed by age group 41-51 and 51-60yr (19.5%) in Jabel Awlia and age group 31-40yr in El Mawrada (22.2%). These results reflect that most fishermen who practiced fishing activity were youth and this dominance may also be due to flood season, during which rate of fishes are high that may attract youth to get benefit and probably they are able to practice fishing during strong wind and high waves of the water. This result is in agreement with results of Hamza (1981). In contrary, age group 60-70yrs may represent the rate of the professional fishermen who practice fishing during whole year. This result is in harmony with results of FDKS (2003).

Table 1 - Distribution of fishermen according to their personal characteristics

Variable	Jabel Awlia		Elmawrada	
	N	%	N	%
sex				
Male	40	97.6	18	100
Female	1	2.4	0	0
age				
Less than20	3	7.3	1	5.6
21-30	7	17.1	0	
31-40	9	22	4	22.2
41-50	8	19.5	3	16.7
51-60	8	19.5	5	27.8
More than60	6	14.6	5	27.8
Educational level				
Illiterate	8	19.5	4	22.2
Khalwa	0	0	1	5.6
Primary	20	48.8	8	44.4
Secondary	10	24.4	5	27.8
University	3	7.3	0	0
Above university	0	0	0	0
social status				
Married	35	85	17	94.4
Unmarried	6	14	1	5.6
Full or part time				
Full time	2	4.9	3	16.7
Part time	14	34.1	2	11.1

General educational level (48.4%) in Jabel Awlia and (44.4%) in El Mawrada, high educational level (7.3%), (0%) in Jabel Awlia and El Mawrada respectively and illiteracy (19.5%) in Jabel Awlia and (22.2%) in El Mawrada; the general educational was dominant followed by secondary and illiteracy this result is under line with result of Mohammed (2004) who reported that most fishermen of the state have basic education of 47%; whereas, the illiterate fishermen constituted 31.7%.

Economic results showed that two categories of fishermen (professional fishermen, part-time fishermen) were presented with different percentages such as: 4.9%, 16.7% and 34.1%, 11.1% respectively. Category of part – a time fisherman was dominant and explains why age group 31- 40yr was one of the dominance age group of fishermen In addition, most of fishermen was married (85%),(94.4%); in Jabel Awlia and El Mawrada respectively. This result also harmonizes with results of Mohammed, M. O. (2006).

Other activity data in Table 2 showed that social practice of fishermen in Jabel Awlia and El Mawrada fishery is different. Not practice group had the highest percentage as (97.6%) in Jabel Awlia and (88.9%) in El Mawrada; followed by member of fishermen society (2.4%) in Jabel Awlia and in El mawrada (11.1%). Also other activity

results showed that four categories of other job of fishermen (farmer, officer, worker, business owner) were presented with different percentages such as: 9.5%, 0% and 7.3.1%, 16.7% and 4.9%, 5.6% and 7.3%, 22.2% and 0%, 0% respectively. Category of business owner was dominant followed by officer and other job group had lowest percentage (0%). This result also harmonizes with results of Mohammed, 2006); FDKS (2004).

Table 2 - Distribution of fishermen according to their other activity

Variable	Jabel Awlia		ELmawrada	
	N	Percentage	N	Percentage
Social activity				
Not practice	40	97.6%	16	88.9
Member of Fishermen society	1	2.4%	2	11.1
Member of a cooperative society	0	0	0	0
Member of the popular committee	0	0	0	0
Member of board parents	0	0	0	0
Other	0	0	0	0
Other job				
Farmer	4	9.8	0	0
Officer	3	7.3	3	16.7
Worker	2	4.9	1	5.6
Business owner	3	7.3	4	22.2
Other	0	0	0	0

Data in Table 3 showed that experience, training course and owner in fishery; experience groups of fishermen in Jabel Awlia and Elmawrada fishery ranged between 5 to 40yr. Experience group more than 35 yr had the highest percentage as 26.8%in Jabel Awlia and 38.9% in Elmawrada; followed by experience group 6-15 yr (29.3 %) in Jabel Awlia and in Elmawrada (27.8%).

Also training course results showed that six categories of training course of fishermen (fishing gear and graft, fishing time, fishing season, fish marketing, fish extinction and fish processing) were presented with the same percentages all as: (0%) except fish extinction (5.6%) in Elmawrada. In case of their owner the result showed that owner list group was dominant (85.4%), and (66.7%) in Jabel Awlia and Elmawrada respectively, followed by rent group (21.4%) in Gabel Awlia and (16.7%) in Elmawrada, but partnership group had lowest percentage (0%) in the tow location. This result is similar to result of (Mohammed, M. O. 2004) who reported that 90% of whole fishermen have owned their fishing gear and have no formal training to do fishing.

Table 3 - Distribution of fishermen according to their experience, training programmers and owner in fishers.

Variable	Jabel Awlia		ELmawrada	
	N	%	N	%
Experience				
Less than 5 year	10	24.4	1	5.65
6 - 15	12	29.3	5	27.8
16 - 25	5	12.2	2	11.1
26 - 35	3	7.3	3	16.7
More than 35	11	26.8	7	38.9
training programmers				
Fishing gear &graft	0	0	0	0
Fishing time	0	0	0	0
Fishing season	0	0	0	0
Fish marketing	0	0	0	0
Fish extinction	0	0	1	5.6
Fish processing	0	0	0	0
Other	0	0	0	0
Their owner				
Owner list	35	85.4	12	66.7
Free hold	2	4.9	1	5.6
Rent	3	21.4	3	16.7
Partner ship	0	0	0	0
Owner	0	0	1	5.6
Other	1	2.4	1	5.6

Catch by season, income and fishing craft results in table (4); showed that four categories of fishermen according to their catch by season (less than 5 kg, 5 - 7 kg, 7 - 9 kg and more than 9 kg) .Category of less than 5 kg by season was dominant (100%) in Jabel Awlia and Elmawrada but the other categories had (0%) in the tow location respectively and that explains why fishermen had low income by season. In addition, most of fishermen income ranged between 1000 – 3000 pounds by year. The categories more than 2500 was dominant (41.5%) in Gabel Awlia and (50%) in Elmawrada, followed by 1000 – 1500 pounds categories (29.3%), (38.9%) in Gabel Awlia and Elmawrada respectively. Categories 1501 – 2000 had lowest percentage (4.9%) in Gabel Awlia and (0%) in Elmawrada. This result is semi to result of Abd El-Rahaman, (2003) who recorded that the total annual yield of JADR was estimated at 115.732kg and the maximum sustainable yield was 90.706kg as in. Also fishing of craft using in fishing results showed that four type of graft use by fishermen (boat, vessel, lynch and other) were presented with different percentages such as: 56.1%, 50% and 14.6%, 5% and 2.4%, 0% and 26.8%, 0% respectively. Category of boat was dominant (56.1%), (50%) followed by other group (26.8%), (0%) in two location followed by vessel group (14.6%), (5%) respectively and the lynch group had lowest percentage (2.4%), (0%) in Jabel Awlia and Elmawrada.

Table 4 - Distribution of fishermen according to their catch by season, income and fishing craft.

Variable	Jabel Awlia		ELmawrada	
	N	%	N	%
Catch by season				
Less than 5 ton	41	100	18	100%
5 - 7 ton	0	0	0	0
7 - 9 ton	0	0	0	0
More than 9 ton	0	0	0	0
Income (pound)				
Less than 1000	8	19.5%	1	5.6
1000 - 1500	12	29.3%	7	38.9
1501 - 2000	2	4.9%	0	0
2001 - 2500	2	4.9%	1	5.6
More than 2500	17	41.5%	9	50
Fishing craft				
Boat	23	56.1	9	50
Vessel	6	14.6	9	50
Lynch	1	2.4	0	0
Other	11	26.8	0	0

Result of skills and knowledge in fishery in Table 5 showed that fishermen had skills and skills in fishing gear people say yes ranged (78.4), (100%), fishing draft fishermen say yes 70.7%, 94.4% respectively. Category had skills and knowledge in fishing time, fishing season and commercial species was dominant people say yes approach (100%) in Jabel Awlia and Elmawrada and that explains why fishermen had a good experience in fishery. On other side fish marketing skills and knowledge in Jabel Awlia percentage (51.2%) from the fishermen say yes and 34.1% say No, but in Elmawrada (77.8%) say Yes and 0% say No. In addition, skills and knowledge of fishermen in fish processing presented as (51.2%), (61.1%) of the fishermen say Yes and (34.1), (0%) say No in Jabel Awlia and Elmawrada respectively. Skills and knowledge in fishery or other fields accrued by learning, practice and dependent on years of experience.

Table 5 - Distribution of fishermen according to their skills and knowledge in fishery

Variable	Jabel Awlia				Elmawrada			
	Yes	Percentage	NO	Percentage	Yes	%	NO	%
Fishing gear	32	78.4	0	0	18	100	0	0
Fishing graft	29	70.7	0	0	17	94.4	0	0
Fishing time	41	100	0	0	18	100	0	0
Fishing season	41	100	0	0	18	100	0	0
Fish marketing	21	51.2	14	34.1	14	77.8	0	0
Fishing area	35	85.4	2	4.9	16	88.9	4	22.2
Fish processing	21	51.2	14	34.1	11	61.1	0	0
Commercial species	41	100	0	0	18	100	0	0

Finally Both inland and marine fisheries resources play an important role in food security and export trade especially in developing countries. In Sudan fisheries, especially those in Khartoum state, the profession of fishing has traditionally been learned by mimicking where a few of them have learned by concerned institute (Mohammed, 2006).

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