

ROLE OF TRADITIONAL SMALL SCALE FISHERIES IN FOOD SECURITY AND LIVELIHOODS: CASE OF LAKE ALBERT FISHER COMMUNITIES, UGANDA

M. Masette, D. Bamwirire, E. Tinyiro, and C. Kantono

Food Biosciences and Agribusiness (FBA), P. O Box 7852, Kampala, Uganda.

ABSTRACT

Uganda's fisheries sub-sector is predominantly supported by traditional small-scale fisheries which plays a vital role in food security and livelihoods of at least 5.3 million Ugandans. Nonetheless, this role has not been adequately characterized and quantified. Here, we report part of the work undertaken between June 2010 and December 2013 among fisher communities of L. Albert. Using recommended survey tools, 350 fishers from 5 landing sites around the lake were interviewed purposively to probe their role in food security and livelihoods. Results indicated that 160,000MT of fish valued at US\$ 800M was harvested annually and marketed locally and regionally. The study sites contributed 85.7% of the total catch valued at US\$ 700.8 million while at household level, the average daily income was pitifully low US\$ 26 although above the poverty line. About 90% of men and 87.6% of the women were involved in actual fishing and processing fish for various markets respectively. Comparable with other studies, 93.3% of the fishers were semi-illiterate, 21% had access to potable water and 32% observed acceptable levels of sanitation. Economically, regional traders accrued US\$ 5,000 annual and only US\$ 100 for processor. The per capita fish consumption at study sites was 4.4kg above the national current value. Generally, traditional small-scale fisheries contributed immensely to food security and livelihoods of other people but it was inadequately reflected among the fisher communities themselves.

Key words, Fish catches, incomes, education and health services.

INTRODUCTION

Approximately 18% of Uganda's total land mass is covered by open water. The fisheries sub-sector contributes 2.8% of total GDP equivalent to US\$ 612.5M and supports the livelihoods of an estimated 5.3 million Ugandans (DFR, 2012). About 22.64% of them are directly dependent on fisheries as their main source of household incomes. The sub-sector remains one of the leading non-traditional export sector and the leading foreign exchange earner in the country after coffee over the past decade (MFPED, 2003). For the last 30 years, the European Union, South-East Asia, United States, Australia, Egypt and the Middle East have constituted the major export markets for Uganda's fish and fishery products (UFPEA, 2003). There is a growing regional market for small-sized pelagic fish species in Kenya, S. Sudan, DR-Congo, Rwanda and Zambia. (Agaba, *unpublished data*).

There are over 300 fish species in Ugandan water bodies (Witt *et al*, 1992). However, Nile Perch *Lates niloticus*, Nile Tilapia *Oreochromis niloticus* and the small pelagic species *Rastrineobola argentea* or Mukene are the major commercial fish species. Small pelagic fishes make up 45.6% of the total fish landed from the five major and 160 minor water bodies in Uganda (DFR, 2012). L. Victoria is still the largest and most commercially significant of Uganda's fisheries (FAO, 2003). However, L. Albert has been growing in importance over time and currently it contributes 37.8% of Uganda's total fish catch estimated at 220, 000MT annually, second only to L. Victoria at 45.9% (UBOS, 2013). The commercial fish catch on L. Albert constitutes Nile Perch, Tilapia, *Hydrocynus forskahli*, *Bagrus* spp and *Alestes baremose*. Recently, the small pelagic fish species; *Brycynus nurse* (Ragogi) and *Neobola bredoi* (Muziri) gained commercial importance especially for the mushrooming small scale fisheries (UNDF, 2013). The six major fish landing sites on L. Albert namely Wanseko, Kaboolwa, Bugoigo, Tungo Mbiri, Walukuba and Butiaba are in Buliisa district. The present study is a microcosm of the district where the fisher communities constitute 62.5%, crop farmers (34.1%) and pastoralists (3.4%) of the households. Pastoralists and crop farmers occupy an area between the lake shores and the Murchison Falls National Park. The major crops grown are cassava, maize, cotton and bananas while cattle, piggery, sheep and goats constitute livestock component (UNDF, 2013).

Fish is an important commodity providing the cheapest source of high quality animal protein for 34.5 million Ugandans. However the current per capita consumption of 5.7 kg is way below the WHO recommended 12 kg (DFR, 2012). Livelihoods are a combination of the capabilities, material and social assets and activities required for a means of living. The opportunities offered by natural resource-based production systems such as fisheries enhance the capability of rural communities to improve their livelihoods (DFID, 1999). According to FAO, (1996) food security refers to the physical, social and economic access to sufficient, safe and nutritious food by all the people at all times to meet the dietary needs and food preferences for an active and healthy life. The main objective of this

study was to assess the contribution of traditional small-scale fisheries to the food security and livelihoods of fisher communities on L. Albert.

METHODS AND MATERIALS

Landing sites; Butiaba, Walukuba, Bugoigo, Kaboolwa and Wanseko along Lake Albert from the Central-North West Zone were purposively selected for their fish production and species diversity. Three hundred and fifty fishers (350) were randomly selected and were interviewed using structured questionnaires. Group discussions were also conducted to obtain general information on demographic factors of fishers and socio-economic aspects, fish production and benefit derived from the fisheries activities.

Data Analysis

Data collected were analysed using descriptive statistics and the Statistical Package for Social Scientists Software (SPSS package 16).

RESULTS

Demography

The ages of fishers at landing sites was asymmetrically distributed between 20-60 years with an average of 32 years (Fig 1). However the majority (70.6%) were ≤ 40 years which had a bearing on labour, resource allocation and exploitation. There were more males (77%) than their female counterparts who constituted only 23%. The majority of fishers were married (80%) which influenced a number of factors such as decision making. The demography had a bearing on the overall livelihoods and food security of the communities.

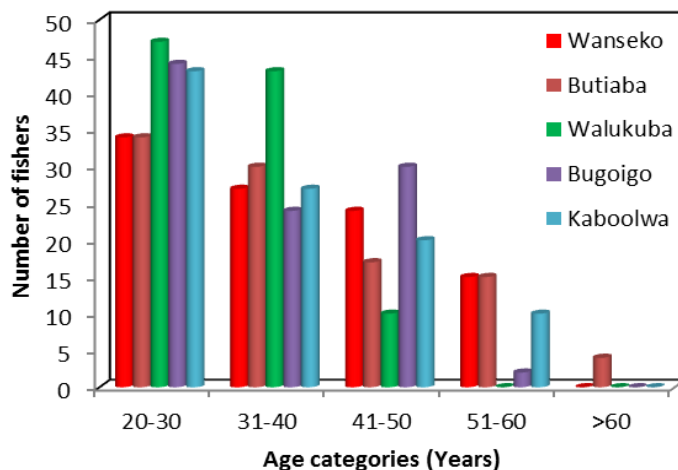


Figure 1. Age distribution among fisher communities of L. Albert, Uganda

Food security

Production

The fish harvested and other variables (Table 2) were indicative of the different landing sites and their socio-economic status and disposition.

Table i: Fish production (% of total catch 160,000T) and other variables at study sites

Variable	Bugoigo	Walukuba	Butiaba	Wanaseko	Kaboolwa
Type of fishery					
Nile Perch	9	10	7.5	7	10
Tilapia	11	30	7.5	3	15
Ragoogi/Muziri	75	60	85	80	60
Others	5	0	0	10	15
Fishing Method					
Gill nets	30	12	13	30	18
Seine nets	50	80	80	70	70
Hooks	20	8	7	0	12
Processing method					
Smoking	25	0	18	30	25
Sun drying	70	80	80	70	70
Icing	5	0	2	0	5
Sold Fresh	0	20	0	0	0
Boat ownership					
Yes	11	10	10	10	6
No	89	90	90	90	94
N of boats owned					
1	60	50	55	50	70
2	30	33	30	25	25
3	10	12	15	15	5
Type of boat owned					
Manually propelled	60	40	50	70	70
Small wooden boat with engine	40	60	50	30	30

Evidently, small pelagics *Brycinus nurse* (Ragoogi) and *Neobola bredoi* (Muziri)) were the most predominant fishery. While the male folk went out fishing, the womenfolk ferried the catch to beach site for processing (Fig. 2). The boat owners hired labour from the women in kind or paid the equivalent of US\$ 2 per processing cycle

**Figure. 2.** Woman ferrying a 30Kg basinful of Muziri from a boat to the beach site

On the average, respondents had fishing experiences of above 5 years, with 55.2% ranging between 5-10 years and 44.8% falling within 1-5 years respectively. Most of them were using wooden Ssesse type of fishing boats (Fig. 3) which could be manually propelled (56%) by 2-3 fishermen and fitted with an outboard small 25-40 horsepower engine (42%) which could allow long distance fishing trips. A few boat owners had up to 3 boats each. The majority (57%) owned 1-2 boats while only 43% had 3. None owned 4 fishing boats. The cost of an average sized fishing boat was equivalent of US\$ 300.



Figure. 3 Typical wooden fishing boats around L. Albert

Livelihoods

Education

The majority of fishers were semi-illiterate or had attained only primary education (Fig 4) despite the free universal primary and secondary education in the country.

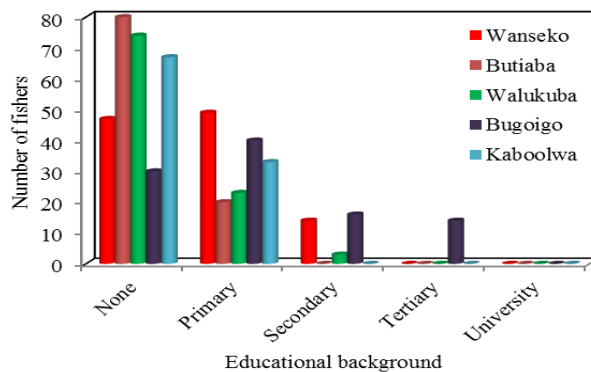


Figure. 4. The level of education among fisher communities of L. Albert, Uganda

Incomes

The majority of the respondents (52.8%) had a fairly good net monthly income that ranged between US\$ 81 to US\$ 120 (Fig 5) and only 2.4% at only Butiaba landing site could save above US\$ 201.

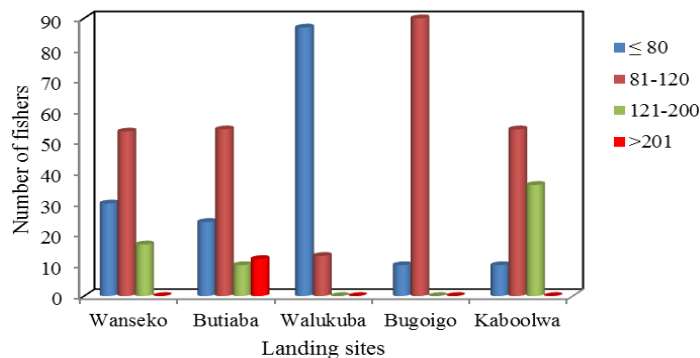


Figure. 5 Net monthly income (US\$) among fisher communities of L. Albert, Uganda

Most of the incomes earned by the respondent were spent on education (59%) for their children, food (50%), and health (49%) respectively as compared to other expenses in their day-to-day living. Households at different landing sites were either managed by men (60%), women (22.8%), jointly by women and men (28%) and by children (1%) which was indicative of the manner in which incomes were disbursed. Children-led households were common practice at Bugoigo only. The incomes accrued from fish catches varied with species and landing site (Table 3)

Table ii: Indicators of Incomes from fish transactions by both fishermen and fish traders

Landing site and fish species caught	Quantity landed per boat (kg)	Cost price/Kg (UGX)	Selling price/Kg (UGX)	Total Sales per fisherman (UGX)
Bugoigo				
Nile perch	16	7,000	10,000	160,000
Tilapia	16	5,000	8,000	128,000
Ragogi/Muzili	120	750	1,000	120,000
Walukuba				
Nile perch	15	7,000	10,000	150,000
Tilapia	20	4,500	7,000	140,000
Ragogi and Muzili	100	400	650	65,000
Butiaba				
Nile perch	30	7,000	10,000	300,000
Tilapia	10	4,500	7,000	70,000
Ragogi/Muziri	200	1,000	1,250	250,000
Wanseko				
Nile perch	50	5,000	13,000	650,000
Tilapia	45	4,000	6,000	270,000
Ragogi/Muziri	180	500	750	135,000
Kaboolwa				
Nile perch	10	6,500	9,000	90,000
Tilapia	12	4,000	6,500	78,000
Ragogi/Muziri	120	500	750	90,000

Exchange rate 1 US \$ = UGX 2500

Health and social services

The different health services and infrastructure available at the respective landing sites, varied accordingly (Table 4). At landing sites, potable was a rarity. As such, most fishing communities relied on lake water as exemplified by the high percentages at all landing sites visited during the survey. Other social amenities ranging from fuel for cooking to health services were also rare.

Table iii: Social amenities expressed in terms of percentage of respondents using them

Social variable	Bugoigo	Walukuba	Butaiba	Wanseko	Kaboolwa
Sources of water for domestic use					
Lake	85	70	80	80	80
Tap			19	20	-
Stream	5	-	-	-	20
Borehole	10	-	-	-	-
River	-	30	-	-	-
Others	-	-	1	-	-
Main type of fuel used for cooking					
Charcoal	70	20	40	70	10
Firewood	30	80	60	30	90
Latrine ownership					
Private pit latrine	90	70	60	50	30

Public pit latrine	10	30	40	50	70
Common diseases					
Malaria	60	40	40	50	45
HIV/AIDS	15	30	40	20	40
Bilharzia	20	10		10	
Cholera	5	20	20		15
Others	-	-	-	20	-
Whether any family members had illness					
Yes	33	33	40	40	40
No	67	67	60	60	60
Treatment of diseases & illnesses					
Local clinic	80	70	60	70	80
Health centre	20	30	30	30	-
Hospital	-	-	10	-	-
Home remedy	-	-	-	-	20
Loss of a worker due to AIDS					
Yes	30	70	20	60	40
No	70	30	80	40	60

Financial services

Credit and savings schemes among fisher communities varied with type and landing sites (Table 5). Most fishers preferred group saving schemes offered by the recently introduced Savings and Credit Co-operative (SACCOs) as opposed to traditional banks. Fishers in Uganda do not have a saving culture and this assertion was confirmed in the present study.

Table iv: Credit and saving facilities available to fishing communities at study sites

Access to financial credit	Percentage (%) access				
	Bugoigo	Walukuba	Butiaba	Wanseko	Kaboolwa
Income savings					
Yes	30	40	5	35	30
No	70	60	95	65	70
Nature of savings					
Individual	40	20	95	60	60
Group	60	80	5	40	40
Earned a credit in last one year					
Yes	100	25	20	38	43
No	-	75	80	62	57
Source of credit					
Bank	5	5	10	10	2
SACCO	60	60	60	80	40
Others	35	35	30	10	58

DISCUSSION

Food security

The major fish species in L. Albert were small pelagics fishes (Ragoogi and Muziri), Tilapia and Nile perch. With at least 60% of respondents at each landing site engaged in small pelagic fishery, it is critical for food security of inhabitants in terms of physical access to a sufficient and nutritious food (fish) as well as entitlements. However, bad fishing methods characterized by indiscriminate illegal gears and practices compromised the resource base thus could affect food security. Illegal gears led to the declining catches not only in Lake Albert but also in other lakes which also contributed to declining per capita fish consumption. Over 85% of fishers at all the landing sites were working for the few (15%) boat owners instead of owning individual fishing boats. This work ethics exacerbated the migratory nature of most fishermen that has a bearing on production. Fisher migrations result in unstable households which remain vulnerable to decline in food availability and access due to the continued absence of the household head who most times is the bread winner. Jabil (2009) and Haruna (2002) noted that gender and household sizes were usually economic indicators of labour availability, distribution and specialization. Disruptions in the arrangement, inevitably undermines food production for sustainable consumption and excess for marketing. On the contrary, overuse of resources poses a serious threat to rural livelihoods and food security (FAO, 2014).

Livelihoods

There were several aspects of livelihoods that were apparent in the present study; education, incomes, gender, social services and infrastructure, health and financial services. Fisher communities being dynamic, these aspects tend to overlap and exemplified by level that has been strongly associated with contraceptive use, fertility and general health status, morbidity, and mortality of children (UDHS, 2006). However, for clarity each one of them has been singularly described.

Education

Education affects many aspects of life, including individual demographics and health behaviour. The high rate of illiteracy observed in this study was characteristic of fishing communities all over the country. It was associated with limitations of long distances to the nearest government aided schools, cost of scholastic materials, lunch for children, school uniforms and other costs. Group dynamics among fisher communities were influenced by level of education, occupation, expenses, incomes, and longevity at the landing sites. These factors allowed fishers to critically assess the dynamics of food security and market trends of the fishery commodities. A lack of formal education among the fisher community could be a stumbling block to the introduction and adoption of various sustainable resource management interventions. Furthermore, illiteracy greatly undermines fishers' competitiveness in the market due to failure to comprehend market information.

Incomes

The daily income of UGX 173,000 (US\$ 69.2) or a monthly income of UGX 5.2 Million (US\$ 2,080) was comparable to the monthly salary of some middle class Ugandans. An average fishing boat on a single fishing day landed small pelagics valued at UGX 135,000 or UGX 2 million (US\$ 800) per month per boat. The amount is slightly lower than the actual computation because small pelagic fishery was seasonal and therefore fishers supplemented their incomes by other fishery (Tilapia and Nile perch) with an average income per boat of about UGX1 million (US\$ 400) estimated at 43% of the accrued incomes from the five landing sites on a daily basis. Hence, Wanseko and Butiaba were relatively better in terms of infrastructure (roads, health facilities, schools) than other landing sites.

Gender roles

Understanding gender roles and responsibilities is a pre-requisite for improving livelihoods of fisher communities. The womenfolk manage natural resources as farmers, processors and household providers. The women-led households observed in the present current study was attributed to the changing cultural lifestyles, levels of understanding frequent wars and diseases such as HIV/AIDS that claim spouses. Gender inequality was most evident in access to land. In Uganda, culture prohibits women from owning land. As such, women can only use rights, mediated by men. The youth who form a substantial proportion at landing sites contribute to the labour force. The male dominance in the fishing and relegation of the womenfolk to fish processing was decisive distinction of gender roles. This kind of labour division is critical for decision making which subsequently influences the livelihoods of households within most communities.

Social services and infrastructure

With the decentralised system of governance in Uganda, most services at all the landing sites along Lake Albert were provided for by the Buliisa District Authority as well as Central government, Non-Government Organisations (Tullow Oil), Food and Agricultural Organisation of the United Nations (FAO). The types of fuel used at landing sites were scarce and expensive.

Health services

Under the Poverty Eradication Action Plan (PEAP) framework, Uganda had envisaged to provide potable water to all Ugandans by 2015. The program does not seem to have worked around L. Albert region because of the observed poor sanitation and unsafe water at most of the study sites. Inadequate sanitation facilities accelerate proliferation of disease causing agents like Bilharzia, cholera and dysentery. In areas faced with shortage of water, methods for managing the scarce resources and increasing their efficient usage play an important role in securing the subsistence level, food and nutrition security as well as monetary income of rural households (FAO, 2008). A livelihood framework influences the well-being of the fisher communities through diverse occurrences like low fish catches (DFID, 1999). The type of drugs usually dispensed in local clinics at landing sites hardly meets the health quality requirements. Consequently, certain cases may worsen and subsequently to deaths because such services are often expensive and not managed by adequately trained health personnel. The infection of fishers with HIV/AIDS at the landing sites exceeded the national prevalence of 7.3% (MOH, 2011).

Financial services

The possible causes of having low credit facilities from banks could be related to low saving culture among the fishes, the long distances from landing sites to major towns where banks were located and the levels of education held by the majority of the fisher communities. The majority of fishers either did not appreciate the importance of saving or did not have insufficient incomes to save. The poor saving culture among fishers has been reported by several authors. Fisheries in Uganda are crucial in providing food, income and employment for millions of people although a considerable proportion of households subsist below the poverty line of less than US\$ 1.25. This was because the majority of fisher communities had limited access to different livelihood assets such as credit and savings especially hired fishers. For this group to increase their incomes and thereby improve their livelihoods, they should supplement fishing with other activities such as farming or related activities.

CONCLUSION

Considering that the selected landing sites contributed over three quarters of L. Albert total annual catches, the role of traditional small-scale fisheries with regard to food security and livelihoods cannot be overemphasized. Small scale fisheries especially those of small pelagics are important for the food security of fisher communities given the dwindling catches of the big pelagics. The products processed from small pelagics were marketed locally and further afield regionally. As such, fish supplies reached more consumers than the reported 5.3 million Ugandans. The 10kg per capita fish consumption at the selected landing sites is almost double the national per capita of 5.6kg. This indicates a decline in fish consumption farther from the lake. The fisher communities were characterised by low levels of education, relatively high incomes, and inadequate health, social and financial services.

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