



**ASSESSMENT OF THE IMPACTS OF FISHING GEARS (GILLNET SELECTIVITY)
ON FISH PRODUCTION, NAMASAGALI SUB-COUNTY: A CASE STUDY AT THE
UPPER VICTORIA NILE, UGANDA**

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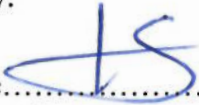



**A RESEARCH REPORT SUBMITTED TO THE FACULTY OF NATURAL RESOURCE
AND ENVIRONMENTAL SCIENCES, DEPARTMENT OF GEO-INFORMATION
, EARTH OBSERVATION AND PHYSICAL LAND RESOURCES IN PARTIAL
FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF BACHELORS
DEGREE IN FISHERIES AND WATER RESOURCES OF BUSITEMA UNIVERSITY.**

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DECLARATION:

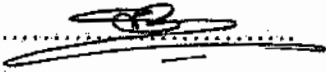
I, KASINGA WASSWA, declare that this thesis titled Assessment of the fishing gears on fish production in the Upper Victoria Nile Uganda. A case study of Namasagali Waters, Kamuli District. Is my original work and has never been submitted for award of a degree in any other university.

Signature.......... Date..........

APPROVAL

I hereby certify that this research report titled "assessment the impacts of fishing gears on the upper waters of victoria Nile in kamuli district." By Kasinga Wasswa has been done under my supervision and it's ready to be submitted to the Faculty of Natural Resources and Environmental Sciences Busitema University.

Signature

.....


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Date

.....
17th July 2017

DEDICATION

I dedicate this dissertation to Mr and Miss Lyada Dennis for their endless support during my journey of education, May God protect you to see the fruits of your sweats.

To God the almighty who has brought me this far

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LIST OF ACRONYMS AND ABBREVIATION

FAO	Food and Agriculture Organisation
NaFiRRI	National Fisheries Resource Research Institute
MAAIF	Ministry of Agriculture, Animal Husbandry and Fisheries
NGOs	Non-Governmental Organisations
MM	Millimetre
CAS	Catch Assessment Survey
PSUs	Primary Sampling Units
SSUs	Secondary Sampling Units
CPUE	Catch per Unit Effort
GPS	Global Positioning System
LVFO	Lake Victoria Fisheries Organisation
BMU	Beach Management Units
MCS	Monitoring, Control and Surveillance
SPSS	Statistical Package for Social Sciences
KDLG	Kamuli District Local Government

ABSTRACT

This study was conducted on three landing sites on communities surrounding river Nile in Namasagali sub county Kamuli district. The purpose of the study was to assess the impacts of different fishing gears on fish production on the waters of upper Victorian Nile. The specific objectives were to find out the different fishing gears, to quantify the different species caught by the different fishing gears and finally find out how different fishing gears were being used the fishermen of the three landing site Kamuli district, Uganda.

The study employed a descriptive research design and used both qualitative and quantitative approaches. Catch assessment and frame survey data were collected in the indentified three sites in Kamuli waters of the upper Victoria Nile. In addition to the secondary data were sued from.

Results indicated that at least some fisher used the right gillnets as compared to illegal ones in Kamuli district. The fact remain that others were using basket traps of gillnets below the right sizes. Besides that 60% of the fish sampled were Nile perch as compared to their fishes then followed by the Nile tilapia.

This implied that if this fisheries was well managed by both the fishermen and the fisheries officers who are the technical cadres in this area their of hope for the fisheries resources to rejuvenate the increased production will be observed.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

Globally, fish industry developed around fishing ports at a time when landings were plentiful and there was little concern about environmental impacts (low production) (FAO, 1997). Nowadays, Fisheries in developing countries are experiencing serious over-harvesting stress and often consequent collapse of fish resource stocks due to many market and policy failure situations such as poor management thus use of illegal fishing gears and open access conditions and increase in the population (Andrew *et al.* 2007; Sterner, 2003). Thus fisheries resources have registered known production decline levels from 82.6 million tonnes in 2011 to 79.7 million tonnes in 2012 of fish due to the increasing fishing effort hence need for protection by law to promote sustainable exploitation and utilization (FAO, 2013)

Africa is rich in inland lakes most of which have important fisheries which provide food, employment and income. The lakes also serve as sources of water, avenues for transport, and some of them are water reservoirs for hydro-power generation. Most inland lakes in Africa such as Victoria, Albert, Edward, Tanganyika, Malawi and Turkana are among the most important lakes in the world. Lake Victoria is the second largest lake in the world while Tanganyika is the second deepest lake in the world. Lakes Malawi, Tanganyika and Victoria have the highest fish species diversity in the world. Sustainable management of the fisheries of these lakes is therefore of great national and international importance. Most of the lakes are shared between more than one country and their management poses a challenge because the fisheries are managed under national jurisdictions. There is therefore need for a mechanism to facilitate management of each of the lakes harmoniously (Bassa 2011).

Uganda has a potentially high and substantial fisheries resources comprising of capture fisheries and aquaculture, it produces 4% of the global inland fish production (FAO, 2010). About 17% of the country's surface is covered by Rivers and lakes, Victoria, Kyoga, Albert, George, Edward and other 160 small lakes. Fish is the second country's most important export accounting 6% of the total earning.

REFERENCES

- Bassa S. (2011). Investigation of the effect of hook and line on the catch rates and size of *Lates niloticus*, in the Napoleon Gulf Lake Victoria Uganda. MSc thesis, Islamic University Uganda.
- Bjorndal, A. and Lokkeborg, S. (1996) *Longlining*. Oxford: Fishing News Books.
- FAO (2000).119B11.Report on the first session of the Sub.committee for Development and Management of the Fisheries of Lake Victoria Fish.
- FAO (, 2000) review the dominance of the gillnets as being the most dominant gear used in this region
- FAO, (2013)_ . *The State of Food Insecurity in the World 2013. The multiple dimensions of food security*. Rome, FAO. 52 pp. (also available at www.fao.org/docrep/018/i3434e/i3434e.pdf).
- FAO. (1997). Review of the State of the World Fishery Resources: Marine Fisheries – Northeast Atlantic/FAO Statistical Area 27, 1997.
- Gophen, M., Ochumba, P.B.O. and Kaufman, L.S. (1995) some aspects perturbation in the structure and biodiversity of the ecosystem of Lake Victoria. Aquatic Living Resources, JANSRN, E.G. (1997) Rich Fisheries, poor fisher folk; Socio--economics of the Lake Victoria Fisheries. CN East African regional office.
- Greenwood, P. H. (1974). The Haplochromis species (Pisces: Cichlidae) of Lake Rudolf, East Africa. Bulletin of the British Museum (Natural History), Zoology Series 27, 141-175.
- Hamblyn, E.L., (1966). The food and feeding habits of the Nile perch, *Lates niloticus* (Linne)(Pisces Centropomidae) Rev. Zool. Bot. afro 74: 1-28. Hopson, A.J. (1972). A study of the Nile
- Hamblyn, E.L., (1966). The food and feeding habits of the Nile perch, *Lates niloticus* (Linne)(Pisces Centropomidae) Rev. Zool. Bot. afro 74: 1-28. Hopson, A.J. (1972). A study of the Nil

Hamley, J.M.1.(1975) Review of gillnet selectivity. *Journal of the Fisheries Research Board of Canada* 31, 1943-69.

Holden, M. (1963) Report 011 the Fisheries of Lake. Albert. Uganda Fisheries Department. Entebbe, 112 pp. HOPSON.AJ (1972) A Study of the Nile Perch [Lates niloticus (L.). Pisces: Centropomidae] in Lake Chad.

Hopsq;-lb. (J 982) The Biology of Lates niloticus in Lake Turkana. In: Lake Turkana. A Report on the Findings of the Lake Turkana Project 1.972-1975, Vol. 5 Oxford University Nile perch project 1983.16 pp. KENCHINGTON, F.E. (J 939) Observations on the Nile perch.

Huse, I., Lkkeborg, S. and Soldal, A.Y.S. (2000) Effects of selectivity and fishing strategy in trawl, longline and gillnet fisheries for cod and haddock. *ICES Journal of Marine Science* 57, 1271-82.

Goldschmidt, J. H. Wanink, M.J. P. van Oijen, P. C. Gaud

LVFO, (2005). Standard Operating Procedures SOPs for Catch Assessment Survey on Lake Victoria. LVFO Standard Operating, LVFO, Jinja.

LVFO, (2007a). Standard Operating Procedures SOPs for Collecting Biological information from the fishes of Lake Victoria. LVFO Standard Operating Procedures No. 1, LVFO, Jinja

LVFO, (2007c). Standard Operating Procedures SOPs for Catch Assessment Surveys on Lake Victoria. LVFO Standard Operating Procedures No. 3 LVFO, Jinja

Mbabazi D., Nakiyende H., Bassa S., Muhumuza E., Balirwa J and Tazibirwa J.(2014). Survey of fish populations in the Victoria Nile/Nile delta, Ramsar site area of Murchison falls National park (MFNP). .

Mbabazi D., Taabu, A.M., Muhoozi, L.I.(RIP), Nakiyende, H. Bassa S., Muhumuza E., Amiina

Nile Basin (2012). Water Resources Atlas.

Ochumba, P. B. O. & Kibara, D. I. (1989). Observations on blue-green algal blooms in the open waters of Lake Victoria, Kenya. *African Journal of Ecology* 27, 23-34.

Ogari, J. ;(1985). Distribution, food and feeding habits of *Lates niloticus* in the Nyanza Gulf of Lake Victoria (Kenya).

Ogutu-Ohwayo, R. (1990). The decline in the native fishes of lakes Victoria and Kyoga (East Africa) and the impact of introduced species, especially the Nile perch, *Lates niloticus* and the Nile tilapia.

Roest, (1992). The pelagic fisheries resources of Lake Tanganyika. *Mitt. Internat. Verein. Limnol.* 23:11-35.

Roest, F., 1992. The pelagic fisheries resources of Lake Tanganyika. *Mitt. Internat. Verein. Limnol.* 23: 11-15. Carpenter, S. R. •J. F. IGtcheU.), R. Hodgson, P. A. Cochran, J. J. Elser. . M. M. Elser, D. M. Lodge, D. Kutchmer, X. He and C. N. von Ende. 1987. Regulation of lake primary productivity by food web Stn. IC-

Schindler, D.E., Ogutu-Ohwayo, R. and Kitchell, J.F., 1995. Ecological consequences of alternative gill net Fisheries for Lake Victoria. *Mimeo. FIRJ, Jinja.* 17pp.

Turner, (1977). Some effects of demersal trawling in Lake Malawi. *Journal of Fish Biology* 10:161-271.

Turner, J.L. 1977a. Changes in the size structure of cichlid populations of L. Malawi resulting from bottom trawling. *J. Fish. Res. Board Can.* 34: 232-238.

Wandera, R. and Balirwa J.S. (2012). The past, present and projected scenarios in the Lake Albert and Albert Nile fisheries: Implications for sustainable management. *Uganda Journal of agricultural.*

Wanink, J. H. 1992a. Species o.. "11nction and the can. Comitant ecological changes in Lake Victoria. *Netherlands Journal of Zoology* 42:214-232. Witte, F... T.

Witte and Van Densen (1995). Gears and boats. Fish stock and Fisheries of Lake Victoria pp 83-