



National Fisheries Resources Research Institute (NaFIRRI)

National Agricultural Research Organization (NARO)

IMPLEMENTATION OF A FISHERIES MANAGEMENT PLAN (IFMP) PROJECT FOR LAKE VICTORIA

A REPORT OF THE FISHERIES CATCH ASSESSMENT SURVEY IN THE UGANDAN WATERS OF LAKE VICTORIA FOR THE AUGUST 2007 SURVEY

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CATCH ASSESSMENT SURVEYS ARE JOINTLY CONDUCTED BY THE NATIONAL FISHERIES RESOURCES RESEARCH INSTITUTE (NAFIRRI), THE DEPARTMENT OF FISHERIES RESOURCES (DFR), AND THE DISTRICTS OF BUSIA, BUGIRI, MAYUGE, JINJA, MUKONO, WAKISO, KAMPALA, MPIGI, MASAKA, KALANGALA AND RAKAI.

1 FOREWORD

The monitoring of fish stocks as well as the magnitude, distribution and trends of fishing effort and fish catches is required for sound fisheries resources management. Conducting regular Catch Assessment Surveys (CASs) in Lake Victoria is one of the ways through which the partner states sharing the lake are generating information to contribute to the above process.

The EU funded Implementation of a Fisheries Management Plan (IFMP) project for Lake Victoria through the Lake Victoria Fisheries Organisation (LVFO) is supporting the implementation of regionally harmonised CASs in Lake Victoria. The CASs under IFMP are following a statistical design laid down in Standard Operating Procedures (SOPs) agreed by the three partner states of the East African Community sharing the lake. In the Ugandan part of the lake, the CASs are carried out at 54 fish landing sites selected in the eleven riparian districts sharing the lake. The National Fisheries Resources Research Institute (NAFIRRI), Jinja; the Department of Fisheries Resources (DFR), Entebbe; and the Districts of Busia, Bugiri, Mayuge, Jinja, Mukono, Wakiso, Kampala, Mpigi, Masaka, Kalangala and Rakai jointly conduct the surveys. The CAS enumerators are recruited from the fishing communities and work under direct supervision of subcounty Fisheries Officers. NaFIRRI seeks to continue strengthening the engagement of the Beach Management Units (BMUs) and other fisheries Co-management Institutions in fisheries data collection.

This report presents findings of the CAS conducted in the Ugandan waters of Lake Victoria in August 2007. The results of the previous eight CASs conducted under the same programme in July/August/September/November 2005; March/August/December 2006 and March 2007 are included to show the emerging trends. The report also presents total annual catch estimates for the Ugandan part of the lake for 2006 and 2007.

Through regular CASs, information is building up to show the new picture of fish production in the Ugandan waters of the lake. Similar surveys are simultaneously conducted in the Kenyan and Tanzanian parts of the lake, which provide the lake wide perspective of fisheries production. These data can now be integrated with the outputs of other ongoing Resource monitoring and socio-economic surveys to do a stock assessment for the lake, which will provide good basis for planning and management of the fisheries. The institute is very appreciative of the funding by the IFMP project, which is supporting the CAS programme and other Resource and Socio-economics monitoring activities. We are also very keen and supportive of all efforts being made to sustain resource monitoring programmes beyond the life of the IFMP project.

J.S. Balirwa
Director

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6 SUMMARY

Between July 2005 and August 2007, nine Catch Assessment Surveys (CASs) have been conducted at 54 pre-selected fish landing sites in the Ugandan part of Lake Victoria comprising approximately 10% of all landing sites in each of the 11 districts sharing the lake. The CASs were conducted following regionally harmonised Standard Operating Procedures (SOPs). This report covers the CAS conducted in August 2007 and puts into context the trends generated by results of the previous surveys.

The catch rates of Nile perch in gillnetting boats with motor/sail, which had showed the lowest record of 21.5 kg boat^{-1} day^{-1} in March 2007 increased to 26.9 kg boat^{-1} day^{-1} in August 2007. The Nile perch catch rates of long lining boats also showed some little improvement from 19.4 to 19.9 in paddle boats and 33.6 to 35.3 in motor/sail boats. However, the Nile perch catch rates of gillnetting boats using paddles further decreased from 9.9 kg boat^{-1} day^{-1} in March 2007 to 8.6 kg boat^{-1} day^{-}1 in August 2007. The overall Nile perch total annual catch estimates for the Ugandan part of the lake reduced by 5% from 91,039 t in 2006 to 86,655 t in 2007, a figure that may not be worrisome. However, the corresponding reduction in gross beach value of the Nile perch catches reduced by 16%, from 175.4 billion shillings in 2006 to 147.5 billion shillings in 2007. This was irrespective of the fact that the prices of Nile perch sizes purchased buy fish processing factory agents remained high. The cause of reduction in the overall unit sale price of Nile perch is probably explained by the increase in harvest of immature fish that fetch a low beach price.

The catch rates of tilapia maintained a decreasing trend in the last two surveys in March and August 2007, e.g. 11.2 kg boat^{-1} day^{-1} in parachute boats using gillnets, following another decrease between the December 2006 and March 2007 surveys from 12.6 to 11.6 kg boat^{-1} day^{-1}. Consequently the annual catch estimates show a significant drop of 2,706 t from 2006 to 2007. Whereas these observations may be the result of the long-term effects of the low water levels in 2005 to 2006, other factors like the rampant use of monofilament gillnets need to be considered in efforts to reverse the trend.

A large decrease in catch rates was also observed in the Mukene fishery, i.e. from 240.9 kg boat^{-1} day^{-1} in March 2007 to 161.3 kg boat^{-1} day^{-1}in August 2008 in the most common fishery of paddle boats using small seines. Despite large decrease in the catch rates in August 2007, the Mukene fishery still showed an increase in the overall annual catch estimates of 19% from 2006 to 2007.

There was an overall improvement in total annual catch estimates of 5% from 216,000 t in 2006 to 227,000 t in 2007, which can be attributed to the substantial increase in Mukene catches against decreases in Nile perch and tilapia fisheries. Consequently, Mukene being a lower value fish, the overall gross beach value decreased from shs 221.8 billion in 2006 to shs 194.4 billion in 2007.

7 INTRODUCTION

Lake Victoria, with a surface area of 68,800 km^2, is the second largest freshwater body in the World. The largest part of the lake, i.e. 35,088 km^2 (51%) is in Tanzania, followed by the Ugandan part 29,584 km^2 (43%), and the Kenyan part 4,128 km^2 (6%). The lake has a shoreline length of 3,450 km: 1,150 km (33%) in Tanzania, 1,750 km (51%) in Uganda and 550 km (16%) in Kenya. The lakes' fisheries support a vibrant fish export industry, which is one of the major foreign exchange earners of the Partner States sharing the lake. The lake is also a very important source of high protein food, and employment for the peoples of the Partner States of the East African Community (EAC).

The Partner states of the EAC through the Lake Victoria Fisheries Organisation (LVFO) are monitoring exploitation of the fisheries resources Lake Victoria. The LVFO has harmonised fisheries data collection around the lake including collection of information on trends of fishing effort and fish catches through Catch Assessment Surveys (CASs). The data generated by CASs provide Catch per unit effort (CPUE), which, together with fishing effort information obtained from regular biannual Frame surveys is used to estimate total catches. Data from CASs also provide a rough index of stock size. The monthly total catches in this report, covering the period between July 2005 and August 2007 are estimated using raising factors from the 2006 Frame survey data.

This CAS report provides the estimates of the quantities of fish landed in the riparian districts sharing the Ugandan waters of Lake Victoria; the monetary value of the fish catches; the contribution of different fish species to the total catches; and the trends of fish catch rates, and the total monthly catches for the sampled month since the beginning of the current CAS activities, from July 2005 to August 2007. The report also compares the annual total catch and gross beach value of 2006 and 2007.

8 METHODOLOGY

8.1 The Catch Assessment Survey Design

The CASs conducted in the Ugandan waters of Lake Victoria follow a design laid out in the approved Standard Operating Procedures for Catch Assessment Surveys for Lake Victoria (LVFO, 2005a). This is a two-stage stratified sampling design whereby: within each district, a sample of primary sampling units (PSUs) i.e. the fish landing sites were first selected, and then, at each PSU, stratified samples of Secondary Sampling Units (SSUs) i.e. the Vessel gear type, are randomly selected by the field enumerator for sampling.

8.2 Sampling Units

Landing sites are the primary sampling unit (PSU) and the vessel-gear (VG) types landing at each site are the secondary sampling unit (SSU). Within each of the eleven districts sharing the Ugandan part of the lake, 10% of all landing sites (PSUs) were selected for sampling. A total of 54 PSUs (Appendix 1) were selected for sampling in the Ugandan waters of Lake Victoria. The landing sites

were selected randomly with Probability Proportional to Size (PPS), where size refers to the total number of vessels landing at the site.

During the sampling period, the enumerators identify the numbers of all Vessel-Gear (VG) types at each landing site that land or are expected to land during the sampling day and allocate sampling effort among the SSUs and VG types in proportion to the number of vessels to be sampled. The maximum sample per day per PSU was set at 20 vessels. Sampling is done in four days in the month, staggered to two consecutive days in the first and third weeks of the month.

8.3 Data capture

Regionally harmonised data forms were used to record field data. The enumerators were trained and provided with a *Field Guide* containing the data recording instructions to ensure effective data capture. Provision for close supervision of enumerators by the Sub-county Fisheries Officers and spot checks by District Fisheries Officers and Officers from the National Fisheries Authorities, i.e. the National Fisheries Resources Research Institute (NAFIRRI), and the Department of Fisheries Resources (DFR) were made to ensure that data collection was according to the laid down procedures and to eliminate fabricated records.

8.4 Estimation of CAS-based Indicators

Data were stored and analysed using Microsoft Excel. The fishing crafts were segregated into effort groups (Vessel-gear combinations) and the CAS indicators estimated for each effort group.

(i) The mean fish catch rates (kg boat^{-1} day^{-1}) were estimated for each effort group by species.

(ii) The total fish catches were estimated using the mean fish catch rates and the 2006 Frame survey data. For each effort group, the Boat activity coefficient (*B),* i.e. the probability that a fishing vessel of each vessel-gear type *g* would be active on any day during the month. This was estimated as the mean number of days boats in each effort group fished in a week divided by the number of days in a week. The total catch (*C)* of each effort group was then estimated.

(iii) The beach value of the catch, i.e. the gross income to the fishers, was estimated by raising the estimated total catch in each effort group by the mean unit price of each fish species landed.

(iv) The data used to estimate the total annual catches for 2006 and 2007 were based on the Annual programme estimates period of the IFMP project (October to September of the following year) rather than the calendar year. Thus the data collected in the period October 2005 to September 2006 were used to estimate the total catches for 2006 and the data collected in the period October 2005 to September 2007 used to estimate the total catches for 2007. The total catches of the sampled month were raised to the total catch of that particular quarter and the annual estimates were obtained by summation of the quarterly total catches. The total catch for the April – July

quarter, during which no data were collected, was estimated from the estimates of the adjacent quarters.

9 RESULTS

Details of the results, i.e. fish catch rates and the estimated total fish catches are in Appendices 2&3.

9.1 Fish catch rates

9.1.1 Nile perch catch rates

Sesse boats propelled by paddles or motor/sail using gillnets or long lines are the most important fishing units in the Nile perch fishery, i.e. four main vessel gear combinations target the species.

Gillnetting boats

The Nile perch catch rates of paddled Sesse gillnetting boats decreased from 10.8 ± 1.1 kg boat^{-1} day^{-1} in December 2006 to 9.9 ± 1.0 kg boat^{-1} day^{-1} in March 2007 and 8.6 ± 0.8 kg boat^{-1} day^{-1} in August 2007 (Figure 1). The catch rates of boats with motor/sail also showed a reduction from 30.6 in December 2006 to 21.5 ± 1.3 kg boat^{-1} day^{-1} in March 2007 but increased to 26.9 ± 1.9 kg boat^{-1} day^{-1} in August 2007. The latter was a higher catch rate than what was observed in August 2006.

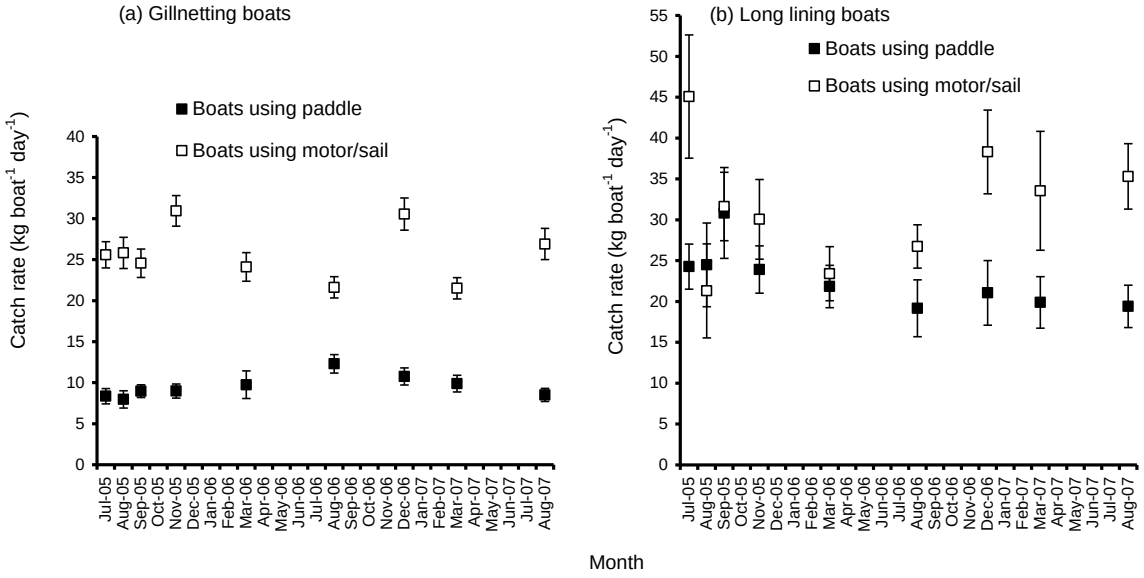

Figure 1. Trends of Nile perch catch rates of the main effort groups targeting the species in the Ugandan part of Lake Victoria between July 2005 and August 2007 (error bars = 95%CL).

Long lining boats

In August 2007, the Nile perch catch rates of long lining boats for boats using paddles were 19.4 ± 2.6 kg boat^{-1} day^{-1} , similar to 19.9 ± 3.2 kg boat^{-1} day^{-1} recorded in March 2007. The Nile perch catch rates of boats using motor/sail increased slightly from 33.6 ± 7.2 kg boat^{-1} day^{-1} in March 2007 to 35.3 ± 4.0 kg

boat^{-1} day^{-1} in August 2007. The Nile perch catch rates of long lining boats with motor/sail remained significantly higher than those of paddled boats.

9.1.2 Tilapia catch rates

The parachute boats (*bawo tatu*) are the main craft in the tilapia fishery in the Ugandan waters of Lake Victoria; paddled Sesse boats, to some extent also operate in the Tilapia fishery; and gillnets and cast nets are the most common gears used to target tilapia. The other gears used in the tilapia fishery that are less common include basket traps and hand line hooks.

In August 2007, the tilapia catch rates of parachute boats using cast nets continued to decrease from 16.5 ± 3.5 kg boat^{-1} day^{-1} in December 2006 and10.2 ± 5.2 kg boat^{-1} day^{-1} in March 2007 to 8.6 ± 2.4 kg boat^{-1} day^{-1} (Figure 2). The catch rates of parachute boats using gillnets also continued decreasing from 12.6 in December 2006 and 11.6 ± 1.0 kg boat^{-1} day^{-1} in March 2007 to 11.2 ± 0.9 kg boat^{-1} day^{-1}. The tilapia catch rates of paddle sesse boats using gillnets also reduced further in August 2007 from 6.5 ± 0.8 kg boat^{-1} day^{-1} in December 2006 and 5.1 ± 0.8 kg boat^{-1} day^{-1}in March 2007 to 4.7 ± 0.6 kg boat^{-1} day^{-1}. The lowest estimate compared with all the previous surveys.

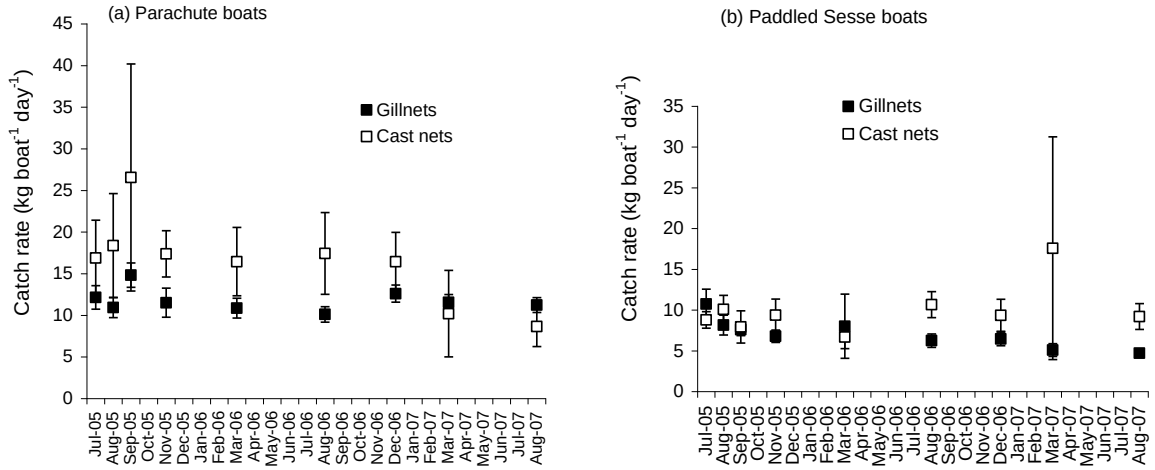

Figure 2. Trends of Tilapia catch rates of the main effort groups targeting the tilapia in the Ugandan part of Lake Victoria between July 2005 and August 2007 (error bars = 95%CL).

9.1.3 Mukene/Dagaa catch rates

The mukene fishery is dominated by paddled Sesse boats using either small seines (Lampala) or scoop nets. There was a large decrease in the catch rates of scoop nets from 240.9 ± 85.3 kg boat^{-1} day^{-1} in March 2007 to 158.1 ± 74 kg boat^{-1} day^{-1} in August 2007 (Figure 3). The catch rates of boats using small seines also decreased from 318.9 ± 87.7 kg boat^{-1} day^{-1} in March 2007 to 161.3 ± 16.3 kg boat^{-1} day^{-1}. The catch rates observed were however in the same range as the same period in August 2006 which may be construed to reflect a seasonal pattern.

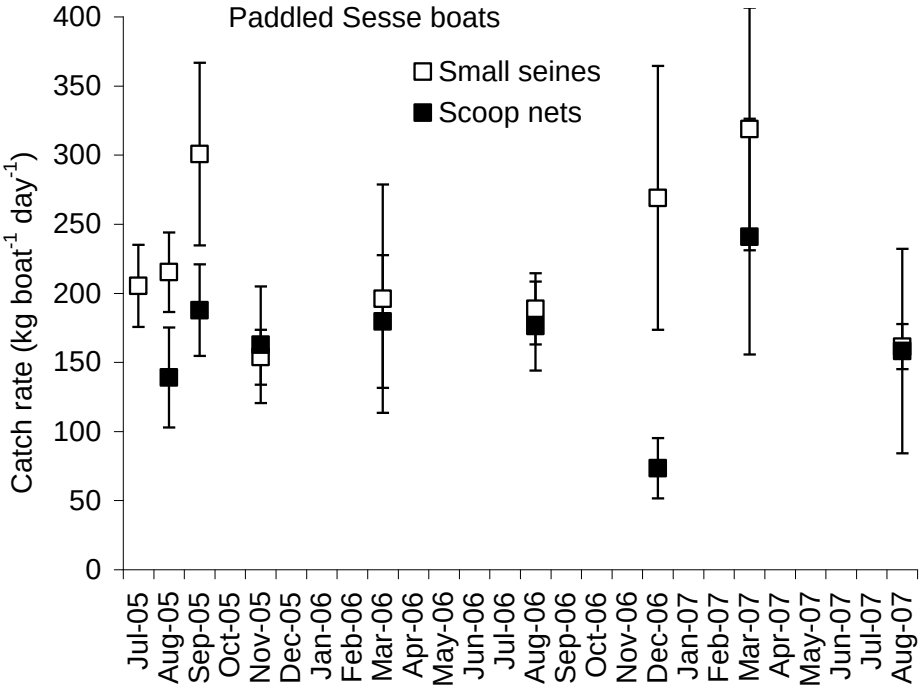

Figure 3. Trends of Mukene/Dagaa catch rates of the main effort groups targeting the species in the Ugandan part of Lake Victoria between July 2005 and August 2007 (error bars = 95%CL).

9.2 National Estimates of total fish catches of the main commercial species

The trends of estimated national total monthly catch for the sampled months between July 2005 and August 2007 are summarised in Table 1. The details for each month segregated by district and species are in Appendices 4-11.

Table 1. Estimated total monthly fish catches (tonnes) in the Ugandan part of Lake Victoria between July 2005 and August 2007

Month	Nile perch	Tilapia	Mukene	Other spp	Total
Jul-05	8031.2±1242.4	2828.9±526.7	9445.0±3239.0	2300.3±752.3	22605.4±5760.4
Aug-05	6633.9±1268.9	2346.0±469.0	8142.6±1252.5	102.1±134.9	17224.6±3125.3
Sep-05	8322.8±1268.0	2401.9±586.9	11494.2±2450.2	101.1±96.8	22320.0±4401.9
Nov-05	8646.3±1100.8	2214.4±425.1	6384.7±1087.4	101.6±98.1	17347.0±2711.4
Mar-06	7099.1±1098.3	2331.2±921.4	8430.8±3311.3	224.6±204.3	18085.7±5535.3
Aug-06	7367.7±1058.7	2206.2±512.9	8587.0±1275.2	176.4±162.8	18337.3±3009.6
Dec-06	8371.0±1066.5	2371.3±416.9	9948.3±3629.1	170.3±154.0	20860.9±5266.6
Mar-07	6710.6±998.1	1923.4±472.5	11994.6±3541.0	247.0±185.2	20875.6±5196.8
Aug-07	6,965.4±807.3	1,908.0±332.4	6,660.1±1,270.6	236.3±170.4	15,769.9±2,580.6

9.2.1 Nile perch

The estimated Nile perch total catches in August 2007 was 6,965.4 ± 807.3 t; was the second lowest monthly catch estimate following the lowest record of 6,633.9 ± 1,268.9 t in August 2005 since the beginning of the surveys in July 2005.

9.2.2 Tilapia

The Tilapia total catch estimates were the lowest at 1,908.0 ± 332.4 t in August 2007 following another low catch (<2000 t) in March 2007 compared with the previous records between in July 2005 and December 2006. The trend of tilapia total catches in appears to be decreasing in view of the August catches in the earlier surveys (>2200 t).

9.2.3 Mukene/Dagaa

The Mukene total catch estimate decreased sharply from 11,994.6 ± 3541.0 t in March 2007 to 6,660.1 ± 1,270.6 t in August 2007, Such a low catch was estimated in November 2005.

9.2.4 Other fish species

The contribution of fishes other than Nile perch, tilapiines and Mukene remained low at 247.0 ± 170.4 in August 2007, comparable with 247.0 ± 185.2 t estimated in March 2007.

9.2.5 All fish species

The total catch estimates for all fish species decreased from 20,875.6 ± 5,196.8 t in March 2007 to 15,769.9 ± 2,580.6 in August 2007. The large decrease can be attributed mainly to Mukene catches which decreased by over 5000 t.

9.3 District Estimates of monthly total fish catches and beach value of the main commercial species

The distribution of the number of fishing crafts in the riparian districts (Table 1) determines the proportional distribution of the total catch estimates for the districts. Further to the number of crafts, the finer details of the craft-gear characteristics, determine the differences in the estimates for each fish species among the districts. Thus, Mukono district with 36% of all fishing crafts in the Ugandan part of the lake (Frame survey, 2006) had the largest share of the total fish catch estimates for all species, followed by Kalangala, Bugiri, and Mayuge and the least in Busia and Kampala districts district (Tables 3-7). Likewise, the estimate of the gross income from the sale of fish catches at the beach is unevenly distributed in the riparian districts.

Table 2. Distribution of fishing crafts in the riparian districts of the Ugandan part of Lake Victoria (Frame survey 2006 data).

District	No. fishing crafts	%ge
Kampala	142	0.6
Busia	153	0.6
Jinja	246	1.0
Rakai	469	1.9
Mpigi	802	3.3
Masaka	1182	4.9
Wakiso	2022	8.4
Mayuge	2211	9.2
Bugiri	3389	14.0
Kalangala	4797	19.9
Mukono	8735	36.2
Total	24148	100.0

Table 3. Estimated monthly total catches and beach value of Nile perch in the Ugandan part of Lake Victoria presented by district between July 2005 and August 2007.

Month	Tota catch and Value	Busia	Bugiri	Mayuge	Jinja	Mukono	Kampala	Wakiso	Mpigi	Masaka	Kalangala	Rakai	Total
Jul-05	Total catch (tonnes)	29.0	1589.0	757.1	48.2	3074.4	47.4	546.8	160.2	200.8	1390.3	187.9	8,031.2
	Beach Value (Mill.shs)	55.9	3060.9	1458.4	92.8	5922.2	91.2	1053.3	308.6	386.9	2678.2	361.9	15,470.4
Aug-05	Total catch (tonnes)	17.4	1102.7	572.3	41.2	2633.2	42.3	467.2	143.4	174.6	1269.1	170.7	6,633.9
	Beach Value (Mill.sh s)	33.5	2124.1	1102.3	79.3	5072.3	81.4	900.0	276.2	336.3	2444.7	328.9	12,778.9
Sep-05	Total catch (tonnes)	28.3	1392.0	748.1	54.3	3362.7	63.3	593.5	161.7	216.8	1516.9	185.2	8,322.8
	Beach Value (Mill.shs)	54.5	2681.4	1441.1	104.6	6477.5	122.0	1143.3	311.5	417.6	2922.1	356.7	16,032.2
Nov-05	Total catch (tonnes)	24.8	1589.3	792.4	50.8	3348.6	51.1	576.0	170.2	221.0	1599.3	222.9	8,646.3
	Beach Value (Mill.shs)	47.8	3061.5	1526.3	97.8	6450.4	98.4	1109.5	327.8	425.7	3080.7	429.3	16,655.3
Mar-06	Total catch (tonnes)	23.5	1204.5	642.6	44.2	2810.2	49.0	488.3	152.5	186.2	1323.7	174.3	7,099.1
	Beach Value (Mill.shs)	45.3	2320.3	1237.8	85.1	5413.2	94.4	940.7	293.7	358.7	2549.9	335.8	13,674.8
Aug-06	Total catch (tonnes)	48.0	1217.3	639.3	50.6	2924.7	57.6	527.2	168.3	197.0	1368.5	169.3	7,367.7
	Beach Value (Mill.shs)	92.4	2344.9	1231.6	97.4	5633.7	110.9	1015.6	324.3	379.4	2636.0	326.1	14,192.2
Dec-06	Total catch (tonnes)	20.3	1599.9	763.7	41.7	3193.2	50.5	543.3	171.4	214.3	1548.0	224.6	8,371.0
	Beach Value (Mill.shs)	32.7	2570.5	1227.1	67.0	5130.5	81.1	872.9	275.4	344.4	2487.2	360.9	13,449.7
Mar-07	Total catch (tonnes)	17.9	1,231.3	594.6	41.6	2,637.4	45.5	466.0	139.2	164.6	1,215.1	157.5	6,710.6
	Beach Value (Mill.shs)	28.7	1,978.3	955.3	66.8	4,237.5	73.2	748.8	223.6	264.4	1,952.3	253.0	10,782.0
Aug-07	Total catch (tonnes)	19.2	1,349.2	615.8	42.9	2,689.4	42.2	470.0	139.1	163.9	1,257.7	176.0	6,965.4
	Beach Value (Mill.shs)	35.8	2521.8	1151.0	80.2	5026.8	78.9	878.5	260.0	306.4	2350.8	328.9	13019.1

Table 4. Estimated total catches and beach value of Tilapia in the Ugandan part of Lake Victoria presented by district between July 2005 and August 2007.

Month	Tota catch and Value	Busia	Bugiri	Mayuge	Jinja	Mukono	Kampala	Wakiso	Mpigi	Masaka	Kalangala	Rakai	Total
Jul-05	Total catch (tonnes)	19.4	272.1	269.9	39.1	869.0	20.2	300.5	167.5	246.3	572.0	52.9	2,828.9
	Beach Value (Mill.shs)	18.7	262.8	260.7	37.8	839.5	19.5	290.3	161.8	238.0	552.6	51.1	2,732.8
Aug-05	Total catch (tonnes)	22.6	193.1	359.3	57.7	787.0	25.8	180.7	135.1	203.7	361.9	32.8	2,359.8
	Beach Value (Mill.shs)	21.7	184.8	343.9	55.2	753.2	24.7	172.9	129.3	194.9	346.3	31.4	2,258.3
Sep-05	Total catch (tonnes)	12.3	238.3	226.9	31.2	696.7	14.9	259.6	148.3	234.7	492.4	46.4	2,401.9
	Beach Value (Mill.shs)	11.9	230.2	219.2	30.2	673.0	14.4	250.8	143.3	226.7	475.7	44.8	2,320.2
Nov-05	Total catch (tonnes)	13.3	217.4	219.4	32.0	664.5	16.6	240.9	129.5	205.4	434.3	41.3	2,214.4
	Beach Value (Mill.shs)	12.8	210.0	211.9	30.9	641.9	16.1	232.7	125.1	198.4	419.5	39.9	2,139.1
Mar-06	Total catch (tonnes)	16.6	247.4	233.1	30.9	732.4	17.5	234.5	131.4	192.7	453.1	41.6	2,331.2
	Beach Value (Mill.shs)	16.0	239.0	225.2	29.8	707.5	16.9	226.6	127.0	186.1	437.7	40.2	2,251.9
Aug-06	Total catch (tonnes)	11.7	231.6	241.7	31.2	667.0	17.0	232.8	123.7	191.6	420.7	37.2	2,206.2
	Beach Value (Mill.shs)	11.3	223.7	233.4	30.2	644.3	16.4	224.9	119.5	185.1	406.4	36.0	2,131.2
Dec-06	Total catch (tonnes)	13.0	232.4	253.1	34.6	688.6	17.2	261.9	138.3	229.3	462.0	40.8	2,371.3
	Beach Value (Mill.shs)	12.4	221.9	241.7	33.1	657.4	16.5	250.0	132.0	218.9	441.1	39.0	2,263.9
Mar-07	Total catch (tonnes)	9.1	188.2	196.4	28.4	555.1	13.5	225.7	111.9	183.5	376.5	35.2	1,923.4
	Beach Value (Mill.shs)	8.7	179.6	187.5	27.1	530.0	12.9	215.4	106.9	175.1	359.4	33.6	1,836.3
Aug-07	Total catch (tonnes)	10.5	162.7	188.5	22.6	569.6	14.1	216.3	112.8	195.4	381.8	33.8	1908.0
	Beach Value (Mill.shs)	12.8	198.2	229.6	27.6	693.8	17.1	263.5	137.4	238.1	465.1	41.2	2324.4

Table 5. Estimated total catches and beach value of Mukene in the Ugandan part of Lake Victoria presented by district between July 2005 and August 2007.

Month	Tota catch and Value	Busia	Bugiri	Mayuge	Jinja	Mukono	Kampala	Wakiso	Mpigi	Masaka	Kalangala	Rakai	Total
Jul-05	Total catch (tonnes)	19.0	744.2	570.6	6.2	3436.5	7.6	446.1	30.4	450.2	3722.8	11.4	9445.0
	Beach Value (Mill. shs)	3.7	145.1	111.3	1.2	670.1	1.5	87.0	5.9	87.8	725.9	2.2	1841.8
Aug-05	Total catch (tonnes)	21.0	822.0	621.6	2.5	3436.9	8.4	461.8	33.6	479.5	2242.8	12.6	8142.6
	Beach Value (Mill. shs)	4.1	160.3	121.2	0.5	670.2	1.6	90.0	6.5	93.5	437.4	2.5	1587.8
Sep-05	Total catch (tonnes)	29.3	1148.9	869.5	4.1	4821.1	11.7	648.5	47.2	670.9	3225.3	17.7	11494.2
	Beach Value (Mill. shs)	5.7	224.0	169.5	0.8	940.1	2.3	126.5	9.2	130.8	628.9	3.5	2241.4
Nov-05	Total catch (tonnes)	14.4	561.4	427.8	3.6	2477.0	5.9	327.3	24.2	332.9	2201.4	9.0	6384.7
	Beach Value (Mill. shs)	2.8	109.5	83.4	0.7	483.0	1.2	63.8	4.7	64.9	429.3	1.7	1245.0
Mar-06	Total catch (tonnes)	19.7	792.1	590.0	3.9	3349.1	7.9	444.3	32.2	454.2	2722.6	14.9	8430.8
	Beach Value (Mill. shs)	3.8	154.5	115.1	0.8	653.1	1.5	86.6	6.3	88.6	530.9	2.9	1644.0
Aug-06	Total catch (tonnes)	19.6	766.4	583.3	4.2	3360.6	7.8	444.0	31.3	454.8	2903.1	11.7	8587.0
	Beach Value (Mill. shs)	3.8	149.5	113.7	0.8	655.3	1.5	86.6	6.1	88.7	566.1	2.3	1674.5
Dec-06	Total catch (tonnes)	28.1	1103.4	831.8	2.4	4476.5	11.9	611.0	45.9	633.2	2187.2	16.9	9948.3
	Beach Value (Mill. shs)	5.4	212.4	160.1	0.5	861.7	2.3	117.6	8.8	121.9	421.0	3.3	1915.1
Mar-07	Total catch (tonnes)	28.6	1127.0	864.9	5.8	4800.6	11.8	639.4	50.2	655.3	3793.3	17.8	11994.6
	Beach Value (Mill. shs)	3.6	140.9	108.1	0.7	600.1	1.5	79.9	6.3	81.9	474.2	2.2	1499.3
Aug-07	Total catch (tonnes)	15.4	602.0	457.8	3.2	2626.5	6.1	347.6	24.6	356.6	2211.1	9.2	6660.1
	Beach Value (Mill.shs)	3.4	134.3	102.1	0.7	585.7	1.4	77.5	5.5	79.5	493.1	2.1	1485.2

Table 6. Estimated total catches and beach value of other fish species (Haplochromines, *Bagrus*, *Protopterus*, *Clarias* and others) in the Ugandan part of Lake Victoria presented by district between July 2005 and August 2007.

Month	Tota catch and Value	Busia	Bugiri	Mayuge	Jinja	Mukono	Kampala	Wakiso	Mpigi	Masaka	Kalangala	Rakai	Total
Jul-05	Total catch (tonnes)	7.6	278.8	201.3	2.2	1,061.2	4.1	151.7	21.0	147.7	413.5	11.3	2,300.3
	Beach Value (Mill. shs)	7.9	300.5	221.7	1.3	1,160.6	3.8	163.7	18.2	165.4	442.4	8.4	2,493.9
Aug-05	Total catch (tonnes)	10.5	8.2	7.1	0.9	37.6	0.7	9.1	5.2	4.3	16.9	1.6	102.1
	Beach Value (Mill. shs)	8.9	6.4	5.7	0.7	26.7	0.5	7.2	3.9	3.2	12.7	1.2	77.0
Sep-05	Total catch (tonnes)	2.3	13.8	10.5	1.9	36.2	0.9	11.0	4.2	4.0	14.8	1.5	101.1
	Beach Value (Mill. shs)	1.9	10.9	8.3	1.5	27.5	0.7	8.9	3.3	3.2	11.4	1.2	78.8
Nov-05	Total catch (tonnes)	0.4	12.1	9.2	1.0	32.7	0.9	11.3	6.2	5.6	20.0	2.2	101.6
	Beach Value (Mill. shs)	0.3	9.2	7.1	0.7	23.2	0.6	8.7	4.7	4.5	14.8	1.7	75.6
Mar-06	Total catch (tonnes)	3.1	21.8	19.9	2.2	91.6	2.0	22.0	9.5	8.1	41.2	3.2	224.6
	Beach Value (Mill. shs)	1.9	15.2	14.3	1.6	65.5	1.4	16.5	6.9	5.8	29.5	2.1	160.6
Aug-06	Total catch (tonnes)	0.6	16.0	13.6	1.5	64.4	1.4	16.8	7.7	6.7	45.3	2.4	176.4
	Beach Value (Mill. shs)	0.5	13.1	11.3	1.2	53.2	1.1	14.1	6.5	5.7	42.1	1.9	150.8
Dec-06	Total catch (tonnes)	0.8	14.6	13.2	1.7	71.1	1.9	15.8	7.8	7.1	33.7	2.5	170.2
	Beach Value (Mill. shs)	0.6	11.4	10.1	1.2	53.1	1.4	12.0	5.8	5.3	24.9	1.9	127.9
Mar-07	Total catch (tonnes)	0.8	24.2	22.0	2.7	103.7	2.3	25.0	9.3	7.9	46.0	3.0	247.0
	Beach Value (Mill. shs)	0.6	17.3	15.7	1.9	73.7	1.6	17.8	6.8	5.8	32.9	2.1	176.3
Aug-07	Total catch (tonnes)	0.79	22.09	19.72	2.98	109.48	2.37	21.76	6.92	5.78	42.38	2.01	236.30
	Beach Value (Mill.shs)	0.78	21.94	20.02	2.87	106.16	2.30	21.38	6.84	6.38	41.43	1.96	232.06

Table 7. Estimated total catches and beach value (all fish species pooled) in the Ugandan part of Lake Victoria presented by district between July 2005 and August 2007.

Month	Total catch and value	Busia	Bugiri	Mayuge	Jinja	Mukono	Kampala	Wakiso	Mpigi	Masaka	Kalangala	Rakai	Total
Jul-05	Total catch (tonnes)	75.0	2884.0	1798.9	95.8	8441.2	79.3	1445.2	379.0	1045.1	6098.6	263.4	22605.4
	Beach Value (Mill. shs)	86.3	3769.3	2052.1	133.1	8592.4	116.0	1594.3	494.5	878.0	4399.1	423.7	22538.8
Aug-05	Total catch (tonnes)	71.5	2126.0	1560.3	102.2	6894.7	77.2	1118.8	317.3	862.1	3890.7	217.7	17238.4
	Beach Value (Mill. shs)	68.2	2475.5	1573.1	135.6	6522.4	108.3	1170.2	416.0	627.9	3241.0	363.9	16702.1
Sep-05	Total catch (tonnes)	72.2	2793.0	1855.0	91.5	8916.7	90.9	1512.7	361.4	1126.4	5249.5	250.8	22320.0
	Beach Value (Mill. shs)	74.0	3146.6	1838.1	137.1	8118.2	139.3	1529.4	467.2	778.4	4038.1	406.2	20672.6
Nov-05	Total catch (tonnes)	52.9	2380.2	1448.7	87.4	6522.8	74.5	1155.4	330.1	764.9	4254.9	275.3	17347.0
	Beach Value (Mill. shs)	63.7	3390.2	1828.8	130.1	7598.5	116.2	1414.7	462.4	693.6	3944.3	472.6	20115.0
Mar-06	Total catch (tonnes)	62.9	2265.8	1485.6	81.2	6983.3	76.3	1189.1	325.6	841.2	4540.7	234.0	18085.6
	Beach Value (Mill. shs)	67.0	2729.0	1592.3	117.3	6839.2	114.2	1270.3	433.8	639.2	3548.0	381.0	17731.3
Aug-06	Total catch (tonnes)	79.8	2231.3	1477.9	87.5	7016.7	83.8	1220.8	331.0	850.1	4737.6	220.6	18337.2
	Beach Value (Mill. shs)	107.9	2731.2	1590.0	129.6	6986.6	130.0	1341.2	456.3	658.9	3650.7	366.3	18148.7
Dec-06	Total catch (tonnes)	62.3	2950.3	1861.8	80.4	8429.5	81.5	1432.0	363.3	1083.9	4231.0	284.9	20860.9
	Beach Value (Mill. shs)	51.2	3016.2	1639.0	101.7	6702.8	101.2	1252.5	422.0	690.5	3374.3	405.1	17756.6
Mar-07	Total catch (tonnes)	56.4	2570.7	1677.9	78.5	8096.8	73.1	1356.1	310.7	1011.3	5430.8	213.4	20875.6
	Beach Value (Mill. shs)	41.6	2316.1	1266.6	96.6	5441.3	89.2	1062.0	343.5	527.3	2818.8	291.0	14293.8
Aug-07	Total catch (tonnes)	45.8	2136.0	1281.8	71.7	5994.9	64.8	1055.8	283.4	721.7	3892.9	221.0	15769.9
	Beach Value (Mill.shs)	52.8	2876.2	1502.7	111.4	6412.5	99.8	1240.9	409.7	630.3	3350.4	374.1	17060.7

9.4 Relative contribution of the main fish species to the monthly total catches and the beach value.

In August 2007, Nile perch contributed 45%, of the total fish catches in the Ugandan part of the lake, followed by Mukene contributed 42%, Tilapia 12% and other fishes 1% (Figure 4). Compared with the March 2007 CAS results, the contribution of Mukene to the total catches in August 2007 reduced from 57.5% to 42%.

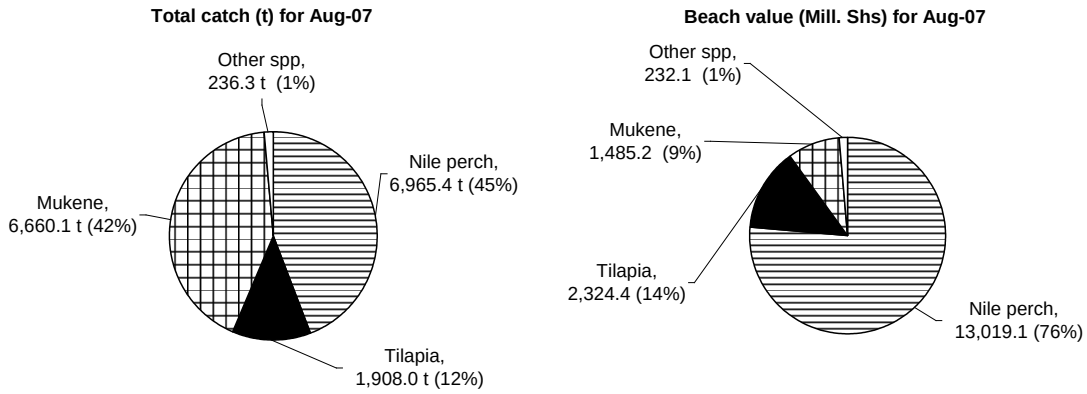

Figure 4. Relative contribution to the total monthly catches and beach value of the main fish species in the Ugandan part of Lake Victoria in August 2007**.**

9.5 Estimated Annual Total Fish Catches and Beach Value

The annual fish catch estimates based on the sample month estimates of for 2006 and 2007 are in Table 8 and details by district are in Appendix 13. The Estimated overall total annual catches of Nile perch in the Ugandan part of the lake were estimated at 91,039 t in 2006 and this reduced by 5% to 86,655 t in 2007 (Table 8). The corresponding reduction in gross beach value of the Nile perch catches was 16%, from 175.4 billion shillings in 2006 to 147.5 billion shillings in 2007. This implied a reduction in the average unit sale price as a result of increased harvest of immature fish that did not fetch the prime market price offered by fish processors.

Table 8. Estimated total catches (tonnes) and beach value (Million shs) in 2006 and 2007

	2005		2006		2007	
	Catch (t)	Beach value (Mill. Shs)	Catch (t)	Beach value (Mill. Shs)	Catch (t)	Beach value (Mill. Shs)
Nile perch	60147	105016.7	91,039	175,368	86,655	147,454
Tilapia	28948.2	27616.6	27,061	26,141	24,356	25,515
Mukene	68765.9	11140.1	95,734	18,668	113,791	19,176
Other species	5,374.6	6,722.1	2,109	1,628	2,685	2,221
Total	**163,235.7**	**150,495.5**	**215,944**	**221,805**	**227,488**	**194,365**

Additions highlighted

The annual catch estimates for tilapia reduced by 10% from 27,061.4 t in 2006 to 24,356 t in 2007 whereas the gross beach value reduced by only 2% which implied an increase in average unit price. The annual catch estimates for Mukene increased by 19% from 95,734.1 t in 2006 to 113,791 in 2007. However the associated gross beach value increased by only 3% suggesting a decline in the average unit sale price.

10 DISCUSSION

An improvement in the Nile perch catch rates was observed in August 2007 compared with March 2007. The pattern of Nile perch catch rates so far observed since 2005 generally reflect seasonality which are partly consistent with the earlier catch assessment studies in the Ugandan part of the lake (Muhoozi, 2002), which showed two Nile perch recruitment pulses, a weak one representing about 20% of the annual recruitment in the first half of the year in (February to March) and the strong one representing 60% of annual recruitment in the second part of the year (July – September). An improvement in catch rates would therefore be expected in the second half of the year leading to the peak catches observed in the surveys conducted in the November-December period.

The overall Nile perch total annual catch estimates for the Ugandan part of the lake reduced by 5% from 91,039 t in 2006 to 86,655 t in 2007, a figure that may not be worrisome. However, the corresponding reduction in gross beach value of the Nile perch catches reduced by 16%, from 175.4 billion shillings in 2006 to 147.5 billion shillings in 2007. This is irrespective of the fact that the prices of Nile perch sizes purchased buy fish processing factory agents remained high. The cause of reduction in the overall unit sale price of Nile perch is probably explained by the increase in harvest of immature fish that fetch a low beach price.

The catch rates of tilapia have maintained a decreasing trend in the last two surveys in March and August 2007. Consequently the annual catch estimates show a significant drop of 2,706 t from 2006 to 2007. Whereas these observations may be the result of the long-term effects of the low water levels in 2005 to 2006, other factors like the rampant use of monofilament gillnets need to be considered in efforts to reverse the trend.

The Mukene fishery, despite large fluctuations in the catch rates and monthly catch estimates, still shows an increase in the overall annual catch estimates of 19% from 2006 to 2007. The overall improvement in catch estimates of 5% from 216,000 t in 2006 to 227,000 t in 2007 can be attributed to the substantial increase in Mukene catches. Despite the increase in catches, the Mukene/Dagaa fishery in the Ugandan waters of Lake Victoria remained a near shore fishery in which paddle sesse boats were the dominant craft. Development of this fishery in the offshore waters, with efficient fishing methods suitable for open waters, remains an option to be explored to further increase the catches of Mukene beyond the current levels.

11 REFERENCES

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LVFO (2005) Standard operating procedures for catch assessment surveys. 42pp.

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12 APPENDICES

Appendix 1. List of fish landing sites selected and sampled in Catch Assessment surveys in the Ugandan waters of Lake Victoria

District	Laning site
Bugiri	Golofa
	Bumeru A
	Butanila B
	Mwango
	Maruba
	Hama 'B'
Busia	Madwa
Jinja	Owen Falls Dam
	Wanyange
Kampala	Luzira Port Bell
Masaka	Nakigga
	Makonzi
Mayuge	Khaaza
	Maganda
	Malindi
	Nakirimira
	Ntinkalu
Rakai	Kasensero
Wakiso	Kinywante
	Kagulube
	Nsonga-Kava
	Nakiwogo
	Kasenyi
Mukono	Buwagajjo
	Namugambe
	Bukaali
	Kibulwe-Ziiru

District	Laning site
Mukono	Nantwalantya
	Kawunguli-Bulago
	Malija-Wabuziba
	Maala
	Kiruguma
	Lufu
	Kisu
	Gunda
	Kinaggaba
	Kawafu
	Zinga
	Kachanga-Bulago
	Luwero
	Kaziru
	Nambula
	Namugombe
	Kalega
	Nyenda
	Kiyindi
Mpigi	Katebo Lwazi
	Nakaziba
Kalangala	Banda
	Kakyanga
	Kasenyi
	Luku-Nabisukiro
	Mweena
	Kyagalanyi
Total	**54**

Appendix 2. Fish catch rates (kg boat^{-1} day^{-1}) in the Ugandan part of of Lake Victoria presented by effort group (Vessel-gear type) and species for August 2007

	VGtype	BOATDAYS	NPWt.	CL	TLWt.	CL	DAWt.	CL	HAWt.	CL	BDWt.	CL	PAWt.	CL	CGWt.	CL	OTWt.	CL
Parachute																		
	PA-GN	502	0.53	0.16	11.22	0.89	-	-	0.00	0.00	0.01	0.01	0.02	0.02	0.04	0.02	0.01	0.01
	PA-LL	33	17.97	5.74	-	-	-	-	-	-	-	-	0.48	0.60	0.29	0.36	-	-
	PA-HL	91	5.21	1.67	3.52	1.14	-	-	-	-	-	-	-	-	-	-	-	-
	PA-CN	29	0.02	0.04	8.64	2.39	-	-	0.62	0.91	-	-	-	-	-	-	-	-
	PA-TR	45	-	-	11.48	2.42	-	-	-	-	-	-	-	-	-	-	-	-
	PA-BS	10	18.20	5.69	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PA-OT	5	0.80	2.22	8.40	7.53	-	-	-	-	-	-	-	-	-	-	-	-
SessePaddle																		
	SP-GN	768	8.58	0.81	4.71	0.60	-	-	0.01	0.02	0.02	0.01	0.18	0.08	0.05	0.03	0.29	0.12
	SP-LL	278	19.37	2.63	0.50	0.24	-	-	-	-	0.01	0.01	1.75	1.06	0.18	0.18	0.08	0.16
	SP-SS	190	-	-	-	-	161.30	16.29	0.13	0.23	-	-	-	-	-	-	-	-
	SP-SN	33	-	-	-	-	158.09	74.01	-	-	-	-	-	-	-	-	-	-
	SP-HL	154	6.80	1.94	1.52	0.51	-	-	0.00	0.00	-	-	-	-	0.03	0.05	0.28	0.16
	SP-CN	70	0.02	0.03	9.21	1.58	-	-	-	-	-	-	-	-	-	-	-	-
	SP-TR	22	-	-	12.61	9.11	-	-	-	-	-	-	3.19	3.92	0.82	1.52	-	-
	SP-BS	417	24.19	2.53	9.19	2.16	-	-	0.01	0.01	-	-	0.42	0.28	0.24	0.18	0.04	0.03
	SP-OT	4	4.75	15.12	8.75	13.65	-	-	-	-	0.50	1.59	-	-	-	-	-	-
Sessemotor/sail																		
	SMS-GN	906	26.87	1.86	0.17	0.09	-	-	-	-	0.02	0.02	-	-	-	-	0.01	0.01
	SMS-LL	274	35.31	4.01	0.00	0.00	-	-	-	-	0.09	0.10	0.11	0.22	-	-	-	-
	SMS-HL	7	9.86	11.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SMS-OT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Othercraft																		
	OT-GN	3	1.00	4.30	9.33	12.25	-	-	-	-	-	-	-	-	-	-	-	-
	OT-LL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	OT-HL	26	-	-	6.17	1.59	-	-	-	-	-	-	-	-	-	-	-	-
	OT-TR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix 3. Estimated total fish landed (tonnes) in the Ugandan part of Lake Victoria presented by effort group (Vessel-gear type) and species for August 2007

	VG type	NP	±	TL	±	DA	±	HA	±	BD	±	PA	±	CA	±	OT	±	**TOTAL**	±
Parachute boats																			
	PA-GN	37.8	11.7	795.6	63.2	-	-	0.0	0.0	0.8	0.8	1.5	1.2	2.9	1.6	0.4	0.4	**839.0**	**79.0**
	PA-LL	129.4	41.3	-	-	-	-	-	-	-	-	3.5	4.3	2.1	2.6	-	-	**135.0**	**48.2**
	PA-HL	86.9	27.8	58.6	18.9	-	-	-	-	-	-	-	-	-	-	-	-	**145.4**	**46.8**
	PA-CN	0.1	0.3	67.0	18.5	-	-	4.8	7.0	-	-	-	-	-	-	-	-	**71.9**	**25.8**
	PA-TR	-	-	4.1	0.9	-	-	-	-	-	-	-	-	-	-	-	-	**4.1**	**0.9**
	PA-BS	43.6	13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**43.6**	**13.6**
	PA-OT	0.2	0.6	2.4	2.1	-	-	-	-	-	-	-	-	-	-	-	-	**2.6**	**2.8**
SUB-TOTAL		**298.0**	**95.4**	**927.7**	**103.7**	**-**	**-**	**4.8**	**7.0**	**0.8**	**0.8**	**5.0**	**5.5**	**4.9**	**4.2**	**0.4**	**0.4**	**1,241.7**	**217.0**
Sesse Paddle																			
	SP-GN	934.8	88.5	512.8	65.8	-	-	1.4	2.0	2.1	1.3	19.8	8.9	5.9	2.9	31.7	13.3	**1,508.6**	**182.8**
	SP-LL	1,093.2	148.7	28.1	13.8	-	-	-	-	0.6	0.6	98.7	59.7	10.2	9.9	4.8	9.2	**1,235.6**	**241.8**
	SP-SS	-	-	-	-	5,031.3	508.1	3.9	7.1	-	-	-	-	-	-	-	-	**5,035.3**	**515.2**
	SP-SN	-	-	-	-	1,628.8	762.5	-	-	-	-	-	-	-	-	-	-	**1,628.8**	**762.5**
	SP-HL	168.1	47.9	37.6	12.6	-	-	0.0	0.0	-	-	-	-	0.6	1.3	6.9	3.9	**213.2**	**65.6**
	SP-CN	0.1	0.2	47.5	8.2	-	-	-	-	-	-	-	-	-	-	-	-	**47.6**	**8.3**
	SP-TR	-	-	4.9	3.5	-	-	-	-	-	-	1.2	1.5	0.3	0.6	-	-	**6.4**	**5.6**
	SP-BS	734.4	76.9	279.1	65.5	-	-	0.2	0.2	-	-	12.9	8.5	7.3	5.3	1.2	1.0	**1,035.0**	**157.4**
	SP-OT	2.8	8.9	5.2	8.1	-	-	-	-	0.3	0.9	-	-	-	-	-	-	**8.3**	**17.9**
SUB-TOTAL		**2,933.4**	**371.1**	**915.2**	**177.4**	**6,660.1**	**1,270.6**	**5.5**	**9.3**	**3.0**	**2.9**	**132.6**	**78.5**	**24.4**	**20.0**	**44.6**	**27.4**	**10,718.8**	**1,957.3**
Sesse motor/sail																			
	SMS-GN	2,402.0	166.1	14.9	7.8	-	-	-	-	1.7	1.4	-	-	-	-	0.8	1.1	**2,419.4**	**176.4**
	SMS-LL	1,319.4	149.8	0.1	0.1	-	-	-	-	3.5	3.8	4.1	8.1	-	-	-	-	**1,327.1**	**161.8**
	SMS-HL	9.7	11.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**9.7**	**11.6**
	SMS-OT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**

SUB-TOTAL		**3,731.0**	**327.5**	**15.0**	**7.9**	**-**	**-**	**-**	**-**	**5.3**	**5.2**	**4.1**	**8.1**	**-**	**-**	**0.8**	**1.1**	**3,756.2**	**349.8**
Other crafts																			
	OT-GN	3.1	13.3	28.8	37.7	-	-	-	-	-	-	-	-	-	-	-	-	**31.8**	**51.0**
	OT-LL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**
	OT-HL	-	-	21.4	5.5	-	-	-	-	-	-	-	-	-	-	-	-	**21.4**	**5.5**
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**
SUB-TOTAL		**3.1**	**13.3**	**50.2**	**43.3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**53.2**	**56.5**
GRANDTOTAL		**6,965.4**	**807.3**	**1,908.0**	**332.4**	**6,660.1**	**1,270.6**	**10.4**	**16.3**	**9.0**	**8.9**	**141.7**	**92.0**	**29.4**	**24.2**	**45.8**	**28.9**	**15,769.9**	**2,580.6**

Appendix 4. Estimated total fish landed (tonnes) in the Ugandan part of Lake Victoria presented by district and species for July 2005

DISTRICT	NP	±	TL	±	DA	±	HA	±	BD	±	PA	±	CG	±	OT	±	**TOTAL**	±
Busia	29.0	9.9	19.4	6.2	19.0	2.8	6.3	1.6	0.1	0.1	0.1	0.2	0.0	0.0	1.1	1.0	**75.0**	**21.8**
Bugiri	1,589.0	243.6	272.1	59.1	744.2	111.4	245.2	63.2	1.4	1.9	4.4	5.7	0.5	0.7	27.2	24.6	**2,884.0**	**510.2**
Mayuge	757.1	136.3	269.9	75.8	570.6	92.5	183.9	47.5	1.0	1.2	4.2	5.6	0.5	0.7	11.7	9.8	**1,798.9**	**369.4**
Jinja	48.2	9.6	39.1	6.6	6.2	4.5	0.0	0.0	0.1	0.1	0.3	0.5	0.1	0.1	1.7	1.2	**95.8**	**22.6**
Mukono	3,074.4	451.3	869.0	165.4	3,436.5	800.5	965.3	248.3	5.4	6.5	7.2	7.8	1.5	1.8	81.8	67.1	**8,441.2**	**1,748.8**
Kampala	47.4	8.4	20.2	4.1	7.6	1.1	2.5	0.7	0.1	0.1	0.3	0.3	0.0	0.0	1.2	0.8	**79.3**	**15.6**
Wakiso	546.8	95.4	300.5	44.7	446.1	91.5	132.8	34.4	0.9	1.1	4.0	4.1	0.4	0.6	13.6	10.6	**1,445.2**	**282.4**
Mpigi	160.2	32.6	167.5	24.2	30.4	4.5	10.1	2.8	0.3	0.3	2.5	2.4	0.3	0.3	7.8	5.7	**379.0**	**72.9**
Masaka	200.8	45.9	246.3	34.0	450.2	81.5	140.1	36.1	0.6	0.8	1.6	1.6	0.2	0.4	5.1	4.6	**1,045.1**	**205.0**
Kalangala	1,390.3	188.6	572.0	97.9	3,722.8	2,046.8	359.1	92.6	2.4	2.9	5.4	5.0	0.8	1.0	45.8	37.8	**6,098.6**	**2,472.7**
Rakai	187.9	20.9	52.9	8.5	11.4	1.7	3.8	1.0	0.2	0.2	0.6	0.5	0.1	0.1	6.6	6.0	**263.4**	**39.0**
TOTAL	**8,031.2**	**1,242.4**	**2,828.9**	**526.7**	**9,445.0**	**3,239.0**	**2,049.1**	**528.1**	**12.5**	**15.3**	**30.6**	**33.8**	**4.4**	**5.8**	**203.8**	**169.3**	**22,605.4**	**5,760.4**

Abbreviations: NP= Nile perch, TL=Tilapiines, DA= Mukene/Dagaa, HA=Haplochromines, BD=Bagrus, PA= Protopterus, CA= Clarias, OT=Other spp

Appendix 5. Estimated total fish landed (tonnes) in the Ugandan part of Lake Victoria presented by district and species for August 2005.

	NP	95%CL	TL	95%CL	DA	95%CL	HA	95%CL	BD	95%CL	PA	95%CL	CG	95%CL	OT	95%CL	**TOTAL**	**95%CL**
Busia	17.4	3.9	11.9	2.6	21.0	2.8	0.0	0.0	0.0	0.0	6.2	17.4	3.5	17.4	0.8	1.1	**60.8**	**45.3**
Bugiri	1,102.7	203.7	233.2	55.8	822.0	110.3	0.4	0.5	1.0	1.3	3.5	3.7	1.1	1.5	2.2	1.6	**2,166.1**	**378.3**
Mayuge	572.3	135.1	226.5	52.3	621.6	84.3	0.3	0.5	0.8	1.0	3.3	3.6	1.1	1.5	1.6	1.2	**1,427.4**	**279.5**
Jinja	41.2	10.2	34.9	7.4	2.5	0.6	0.0	0.0	0.1	0.1	0.3	0.4	0.1	0.1	0.3	0.2	**79.4**	**19.2**
Mukono	2,633.2	476.8	757.2	162.0	3,436.9	485.9	0.6	1.0	5.1	6.6	10.1	11.9	5.4	7.9	16.4	16.1	**6,864.8**	**1,168.3**
Kampala	42.3	10.3	20.0	4.5	8.4	1.2	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	**71.4**	**16.7**
Wakiso	467.2	106.2	241.1	43.3	461.8	64.1	0.5	0.7	0.9	1.3	4.3	4.4	1.3	1.6	2.1	1.5	**1,179.2**	**223.1**
Mpigi	143.4	35.3	130.9	19.8	33.6	4.6	0.3	0.4	0.3	0.3	2.3	2.1	0.6	0.7	1.8	1.5	**313.1**	**64.7**
Masaka	174.6	49.9	190.9	29.7	479.5	65.5	0.3	0.5	0.2	0.3	1.7	1.8	0.5	0.6	1.7	2.0	**849.2**	**150.2**
Kalangala	1,269.1	216.3	458.4	83.7	2,242.8	431.6	0.6	0.9	2.1	2.6	5.8	5.5	2.6	3.0	5.8	4.1	**3,987.2**	**747.7**
Rakai	170.7	21.2	41.1	7.9	12.6	1.7	0.1	0.1	0.2	0.2	0.7	0.8	0.2	0.2	0.5	0.3	**226.0**	**32.3**
TOTAL	**6,633.9**	**1,268.9**	**2,346.0**	**469.0**	**8,142.6**	**1,252.5**	**3.0**	**4.7**	**10.8**	**13.9**	**38.4**	**51.9**	**16.5**	**34.7**	**33.4**	**29.7**	**17,224.6**	**3,125.2**

Abbreviations: NP= Nile perch, TL=Tilapiines, DA= Mukene/Dagaa, HA=Haplochromines, BD=Bagrus, PA= Protopterus, CG= Clarias, OT=Other spp

Appendix 6. Estimated total fish landed (tonnes) in the Ugandan part of Lake Victoria presented by district and species for September 2005

District	NP	95%CL	TL	95%CL	DA	95%CL	HA	95%CL	BD	95%CL	PA	95%CL	CG	95%CL	OT	95%CL	**TOTAL**	**95%CL**
Busia	28.3	6.2	12.3	3.2	29.3	6.4	0.1	0.1	0.0	0.0	1.8	1.2	0.1	0.1	0.3	0.3	**72.2**	**17.7**
Bugiri	1,392.0	209.3	238.3	105.2	1,148.9	253.1	0.2	0.2	4.8	5.3	6.2	6.2	0.7	1.0	1.9	1.7	**2,793.0**	**581.9**
Mayuge	748.1	126.0	226.9	64.3	869.5	191.6	0.1	0.2	1.6	1.8	5.8	5.9	0.9	1.1	2.1	3.2	**1,855.0**	**394.1**
Jinja	54.3	9.5	31.2	6.4	4.1	1.1	0.0	0.0	0.1	0.1	1.1	1.0	0.3	0.4	0.4	0.2	**91.5**	**18.7**
Mukono	3,362.7	504.5	696.7	180.1	4,821.1	1,048.6	0.3	0.3	4.3	4.6	20.2	18.5	1.8	2.4	9.6	6.4	**8,916.7**	**1,765.4**
Kampala	63.3	10.7	14.9	2.7	11.7	2.6	0.0	0.0	0.0	0.0	0.6	0.5	0.0	0.0	0.2	0.1	**90.9**	**16.8**
Wakiso	593.5	101.8	259.6	53.6	648.5	143.1	0.2	0.2	0.6	0.7	6.6	5.9	1.7	2.1	1.9	1.8	**1,512.7**	**309.2**
Mpigi	161.7	22.9	148.3	18.2	47.2	10.6	0.1	0.1	0.2	0.2	2.4	2.4	0.5	0.6	1.0	0.7	**361.4**	**55.6**
Masaka	216.8	41.2	234.7	41.1	670.9	146.9	0.0	0.1	0.2	0.2	2.9	3.6	0.3	0.4	0.6	0.4	**1,126.4**	**233.9**
Kalangala	1,516.9	215.6	492.4	100.4	3,225.3	641.9	0.2	0.2	1.6	1.5	8.7	8.3	0.7	1.0	3.6	2.1	**5,249.5**	**971.1**
Rakai	185.2	20.3	46.4	11.7	17.7	4.0	0.0	0.0	0.3	0.3	0.8	0.8	0.2	0.2	0.3	0.2	**250.8**	**37.5**
TOTAL	**8,322.8**	**1,268.0**	**2,401.9**	**586.9**	**11,494.2**	**2,450.2**	**1.2**	**1.5**	**13.7**	**14.6**	**57.0**	**54.3**	**7.3**	**9.4**	**21.8**	**17.1**	**22,320.0**	**4,401.9**

Abbreviations: NP= Nile perch, TL=Tilapiines, DA= Mukene/Dagaa, HA=Haplochromines, BD=Bagrus, PA= Protopterus, CA= Clarias, OT=Other spp

Appendix 7. Estimated total fish landed (tonnes) in the Ugandan part of Lake Victoria presented by district and species for November 2005

District	NP	95%CL	TL	95%CL	DA	95%CL	HA	95%CL	BD	95%CL	PA	95%CL	CG	95%CL	OT	95%CL	**TOTAL**	**95%CL**
Busia	24.8	3.8	13.3	3.7	14.4	2.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.2	0.1	**52.9**	**9.8**
Bugiri	1,589.3	202.3	217.4	50.9	561.4	76.7	0.3	0.5	1.4	1.9	6.4	6.5	0.6	1.3	3.5	3.1	**2,380.2**	**343.3**
Mayuge	792.4	123.7	219.4	48.1	427.8	60.2	0.3	0.5	0.7	0.9	5.3	4.8	0.6	1.7	2.4	1.9	**1,448.7**	**241.6**
Jinja	50.8	8.8	32.0	5.9	3.6	1.8	0.0	0.0	0.0	0.1	0.3	0.3	0.0	0.5	0.6	0.4	**87.4**	**17.7**
Mukono	3,348.6	403.1	664.5	129.0	2,477.0	371.4	0.4	0.7	3.2	3.9	13.4	12.7	1.9	4.1	13.8	9.4	**6,522.8**	**934.3**
Kampala	51.1	8.4	16.6	3.2	5.9	1.1	0.0	0.0	0.0	0.0	0.4	0.3	0.0	0.1	0.4	0.2	**74.5**	**13.4**
Wakiso	576.0	85.6	240.9	44.6	327.3	50.4	0.4	0.7	0.6	0.7	6.5	5.1	0.8	2.9	3.1	2.2	**1,155.4**	**192.3**
Mpigi	170.2	26.6	129.5	19.8	24.2	5.4	0.2	0.4	0.2	0.2	3.6	2.6	0.4	0.9	1.7	1.1	**330.1**	**57.1**
Masaka	221.0	36.1	205.4	34.8	332.9	45.3	0.4	0.7	0.2	0.2	3.3	2.6	0.6	0.9	1.1	1.0	**764.9**	**121.6**
Kalangala	1,599.3	182.9	434.3	76.8	2,201.4	471.2	0.6	1.0	1.4	1.7	9.7	7.8	1.3	2.0	7.0	5.0	**4,254.9**	**748.4**
Rakai	222.9	19.4	41.3	8.5	9.0	1.9	0.1	0.1	0.2	0.2	1.2	1.1	0.1	0.3	0.7	0.6	**275.3**	**32.1**
TOTAL	**8,646.3**	**1,100.8**	**2,214.4**	**425.1**	**6,384.7**	**1,087.4**	**2.5**	**4.6**	**7.9**	**9.9**	**50.3**	**43.8**	**6.4**	**14.7**	**34.5**	**25.1**	**17,347.0**	**2,711.5**

Abbreviations: NP= Nile perch, TL=Tilapiines, DA= Mukene/Dagaa, HA=Haplochromines, BD=Bagrus, PA= Protopterus, CG= Clarias, OT=Other spp

Appendix 8. Estimated total fish landed (tonnes) in the Ugandan part of Lake Victoria presented by district and species for March 2006

District	NP	±	TL	±	DA	±	HA	±	BD	±	PA	±	CG	±	OT	±	**TOTAL**	**±**
Busia	23.5	9.4	16.6	9.4	19.7	8.4	0.0	0.0	0.1	0.1	0.2	0.2	0.5	0.6	2.4	3.7	**62.9**	**31.8**
Bugiri	1,204.5	177.0	247.4	96.8	792.1	347.2	0.2	0.4	1.6	2.2	6.8	6.2	2.9	2.9	10.2	9.3	**2,265.8**	**642.0**
Mayuge	642.6	121.1	233.1	91.2	590.0	251.5	0.2	0.4	1.2	1.6	6.9	6.2	3.1	3.2	8.5	8.5	**1,485.6**	**483.8**
Jinja	44.2	9.5	30.9	10.5	3.9	1.1	0.0	0.0	0.2	0.2	0.6	0.4	0.5	0.4	1.0	0.5	**81.2**	**22.8**
Mukono	2,810.2	438.9	732.4	349.4	3,349.1	1,384.8	1.1	1.6	5.6	5.4	26.1	20.5	18.1	16.0	40.7	35.2	**6,983.3**	**2,251.9**
Kampala	49.0	7.8	17.5	9.4	7.9	3.4	0.0	0.0	0.1	0.1	0.6	0.5	0.3	0.3	0.9	0.5	**76.3**	**22.1**
Wakiso	488.3	74.8	234.5	79.2	444.3	186.0	0.3	0.5	1.6	2.1	9.0	8.2	3.7	3.6	7.4	5.5	**1,189.1**	**360.0**
Mpigi	152.5	28.5	131.4	42.6	32.2	14.5	0.1	0.2	0.7	1.1	3.8	3.8	1.1	1.3	3.8	2.9	**325.6**	**94.8**
Masaka	186.2	34.1	192.7	46.6	454.2	190.4	0.1	0.1	0.4	0.6	3.6	3.4	0.6	0.8	3.5	4.6	**841.2**	**280.6**
Kalangala	1,323.7	178.1	453.1	171.1	2,722.6	915.1	0.5	0.8	2.8	3.2	13.4	11.8	6.6	6.4	17.8	13.2	**4,540.7**	**1,299.6**
Rakai	174.3	18.9	41.6	15.2	14.9	8.9	0.0	0.1	0.3	0.3	0.9	0.9	0.2	0.3	1.8	1.3	**234.0**	**46.0**
TOTAL	**7,099.1**	**1,098.3**	**2,331.2**	**921.4**	**8,430.8**	**3,311.3**	**2.6**	**4.1**	**14.6**	**17.0**	**71.8**	**62.1**	**37.7**	**35.8**	**97.8**	**85.3**	**18,085.6**	**5,535.3**

Abbreviations:NP=Nileperch, TL=Tilapiines, DA=Mukene/Dagaa, HA=Haplochromines, BD=Bagrus, PA=Protopterus, CG=Clarias, OT=Other spp

Appendix 9. Estimated total fish landed (tonnes) in the Ugandan part of Lake Victoria presented by district and species for August 2006

District	NP	±	TL	±	DA	±	HA	±	BD	±	PA	±	CG	±	OT	±	**TOTAL**	**±**
Busia	48.0	11.5	11.7	2.6	19.6	2.7	0.0	0.1	0.1	0.1	0.3	0.2	0.0	0.0	0.2	0.2	**79.8**	**17.4**
Bugiri	1,217.3	165.6	231.6	98.7	766.4	104.9	1.2	1.6	2.3	2.5	9.3	8.3	0.9	1.0	2.3	1.7	**2,231.3**	**384.4**
Mayuge	639.3	120.8	241.7	111.2	583.3	80.2	1.1	1.5	1.2	1.4	8.7	7.6	0.8	1.0	1.7	1.2	**1,477.9**	**324.8**
Jinja	50.6	11.0	31.2	5.4	4.2	0.8	0.1	0.1	0.2	0.2	0.8	0.6	0.1	0.2	0.3	0.2	**87.5**	**18.5**
Mukono	2,924.7	397.1	667.0	134.8	3,360.6	475.6	6.4	7.9	5.6	5.1	36.5	31.1	5.4	6.5	10.5	6.7	**7,016.7**	**1,064.8**
Kampala	57.6	9.2	17.0	3.1	7.8	1.1	0.1	0.1	0.1	0.1	0.8	0.6	0.1	0.1	0.3	0.2	**83.8**	**14.5**
Wakiso	527.2	89.4	232.8	35.5	444.0	62.1	1.5	2.1	1.0	0.9	11.3	9.5	1.1	1.3	1.9	1.2	**1,220.8**	**202.0**
Mpigi	168.3	30.9	123.7	23.2	31.3	4.3	0.7	1.0	0.5	0.4	5.0	4.0	0.6	0.6	0.9	0.5	**331.0**	**64.9**
Masaka	197.0	33.4	191.6	28.6	454.8	63.0	0.8	1.1	0.3	0.3	4.3	4.0	0.6	1.0	0.8	0.5	**850.1**	**131.9**
Kalangala	1,368.5	173.3	420.7	64.0	2,903.1	479.0	17.1	21.0	2.5	2.1	18.5	15.5	2.5	2.7	4.7	2.9	**4,737.6**	**760.4**
Rakai	169.3	16.5	37.2	5.6	11.7	1.6	0.2	0.3	0.3	0.2	1.3	1.0	0.3	0.3	0.4	0.3	**220.6**	**25.8**
TOTAL	**7,367.7**	**1,058.7**	**2,206.2**	**512.9**	**8,587.0**	**1,275.2**	**29.2**	**36.7**	**14.1**	**13.2**	**96.8**	**82.5**	**12.4**	**14.9**	**23.9**	**15.6**	**18,337.2**	**3,009.6**

Abbreviations:NP=Nileperch, TL=Tilapiines, DA=Mukene/Dagaa, HA=Haplochromines, BD=Bagrus, PA=Protopterus, CG=Clarias, OT=Other spp

Appendix 10. Estimatedtotalfishlanded Estimated total fish landed (tonnes) in the Ugandan part of Lake Victoria presented by district and species for December 2006

District	NP	±	TL	±	DA	±	HA	±	BD	±	PA	±	CG	±	OT	±	**TOTAL**	±
Busia	20.3	2.7	13.0	2.9	28.1	10.2	0.1	0.1	0.0	0.0	0.2	0.2	0.1	0.2	0.4	0.2	**62.3**	**16.4**
Bugiri	1,599.9	216.1	232.4	58.5	1,103.4	401.6	1.2	1.0	0.7	0.7	6.2	6.2	3.3	4.7	3.2	2.2	**2,950.3**	**690.9**
Mayuge	763.7	143.0	253.1	68.4	831.8	305.1	0.9	0.8	0.4	0.4	6.5	6.5	2.4	3.3	3.1	2.0	**1,861.8**	**529.5**
Jinja	41.7	7.1	34.6	5.6	2.4	2.5	0.2	0.2	0.0	0.0	0.7	0.5	0.3	0.3	0.5	0.3	**80.4**	**16.4**
Mukono	3,193.2	378.8	688.6	127.1	4,476.5	1,657.5	6.5	5.6	2.1	1.9	31.9	28.6	11.8	15.3	18.9	11.5	**8,429.5**	**2,226.3**
Kampala	50.5	6.5	17.2	3.3	11.9	5.4	0.2	0.1	0.0	0.0	0.9	0.6	0.2	0.3	0.5	0.3	**81.5**	**16.6**
Wakiso	543.3	72.5	261.9	35.1	611.0	229.7	1.2	1.1	0.4	0.4	7.6	6.4	3.0	3.5	3.5	2.2	**1,432.0**	**350.9**
Mpigi	171.4	27.4	138.3	18.9	45.9	18.0	0.9	0.7	0.2	0.2	3.4	3.5	1.4	1.7	1.9	1.1	**363.3**	**71.4**
Masaka	214.3	28.8	229.3	27.4	633.2	225.8	0.3	0.3	0.2	0.2	3.9	5.3	1.0	2.0	1.7	1.1	**1,083.9**	**290.9**
Kalangala	1,548.0	164.7	462.0	64.4	2,187.2	767.0	3.4	2.9	1.1	1.0	15.4	13.0	5.4	6.3	8.4	5.2	**4,231.0**	**1,024.5**
Rakai	224.6	18.9	40.8	5.4	16.9	6.2	0.3	0.2	0.1	0.1	1.0	0.8	0.5	0.6	0.6	0.4	**284.9**	**32.7**
TOTAL	**8,371.0**	**1,066.5**	**2,371.3**	**416.9**	**9,948.3**	**3,629.1**	**15.0**	**13.0**	**5.3**	**4.9**	**77.8**	**71.5**	**29.4**	**38.1**	**42.7**	**26.6**	**20,860.9**	**5,266.6**

Abbreviations:NP=Nileperch, TL=Tilapiines, DA=Mukene/Dagaa, HA=Haplochromines, BD=Bagrus, PA=Protopterus, CG=Clarias, OT=Other spp

Appendix 11. Estimated total fish landed (tonnes) in the Ugandan part of Lake Victoria presented by district and species for March 2007

District	NP	±	TL	±	DA	±	HA	±	BD	±	PA	±	CG	±	OT	±	**TOTAL**	±
Busia	17.9	3.0	9.1	2.3	28.6	8.1	0.0	0.0	0.0	0.0	0.5	0.4	0.0	0.0	0.2	0.3	**56.4**	**14.3**
Bugiri	1,231.3	201.5	188.2	69.2	1,127.0	309.1	2.4	2.4	1.4	1.8	14.6	11.2	1.2	1.5	4.6	1.6	**2,570.7**	**598.4**
Mayuge	594.6	110.5	196.4	70.1	864.9	235.3	2.1	2.1	0.7	0.9	15.1	11.4	1.1	1.4	3.0	1.5	**1,677.9**	**433.2**
Jinja	41.6	7.7	28.4	9.8	5.8	2.6	0.0	0.0	0.1	0.1	1.8	1.6	0.1	0.1	0.7	0.4	**78.5**	**22.4**
Mukono	2,637.4	369.4	555.1	139.7	4,800.6	1,371.5	7.6	7.5	3.8	4.2	68.4	49.3	5.3	5.9	18.5	10.3	**8,096.8**	**1,957.8**
Kampala	45.5	7.3	13.5	2.8	11.8	3.7	0.0	0.0	0.1	0.1	1.6	1.1	0.1	0.2	0.5	0.3	**73.1**	**15.5**
Wakiso	466.0	75.9	225.7	58.3	639.4	182.3	1.1	1.1	0.7	0.8	18.1	14.0	1.4	1.6	3.7	2.1	**1,356.1**	**336.1**
Mpigi	139.2	23.3	111.9	20.6	50.2	16.0	0.2	0.2	0.3	0.2	6.2	4.6	0.7	0.8	2.0	1.1	**310.7**	**66.7**
Masaka	164.6	26.8	183.5	23.1	655.3	182.4	1.0	0.9	0.2	0.2	5.1	3.8	0.6	0.7	1.0	0.7	**1,011.3**	**238.6**
Kalangala	1,215.1	156.4	376.5	68.2	3,793.3	1,224.2	2.6	2.6	1.6	1.6	29.6	21.7	2.9	3.1	9.3	3.9	**5,430.8**	**1,481.6**
Rakai	157.5	16.3	35.2	8.3	17.8	5.8	0.0	0.0	0.2	0.2	1.5	1.2	0.2	0.3	1.0	0.3	**213.4**	**32.3**
TOTAL	**6,710.6**	**998.1**	**1,923.4**	**472.5**	**11,994.6**	**3,541.0**	**17.0**	**16.8**	**9.2**	**10.2**	**162.5**	**120.3**	**13.9**	**15.5**	**44.4**	**22.4**	**20,875.6**	**5,196.8**

Abbreviations:NP=Nileperch, TL=Tilapiines, DA=Mukene/Dagaa, HA=Haplochromines, BD=Bagrus, PA=Protopterus, CG=Clarias, OT=Other spp

Appendix 12. Estimated total fish landed (tonnes) in the Ugandan part of Lake Victoria presented by district and species for August 2007

District	NP	±	TL	±	DA	±	HA	±	BD	±	PA	±	CG	±	OT	±	**TOTAL**	±
Busia	19.2	3.6	10.5	4.1	15.4	1.6	0.1	0.1	0.0	0.0	0.3	0.2	0.1	0.1	0.3	0.2	**45.8**	**9.8**
Bugiri	1,349.2	151.3	162.7	30.2	602.0	60.8	1.7	2.6	2.3	2.4	11.9	9.8	2.3	1.9	3.9	2.5	**2,136.0**	**261.6**
Mayuge	615.8	83.4	188.5	36.0	457.8	48.5	1.5	2.3	0.9	1.1	11.6	8.4	2.7	2.4	3.0	2.0	**1,281.8**	**184.2**
Jinja	42.9	7.3	22.6	4.0	3.2	1.5	0.2	0.3	0.0	0.0	1.6	0.9	0.3	0.3	0.9	0.5	**71.7**	**14.7**
Mukono	2,689.4	310.7	569.6	126.2	2,626.5	358.9	3.9	6.2	3.0	2.9	69.8	43.1	12.4	10.2	20.4	13.5	**5,994.9**	**871.7**
Kampala	42.2	5.6	14.1	2.9	6.1	0.6	0.0	0.0	0.0	0.0	1.4	0.8	0.4	0.3	0.6	0.3	**64.8**	**10.7**
Wakiso	470.0	60.0	216.3	30.7	347.6	43.2	0.6	1.0	0.6	0.5	13.4	8.6	3.0	2.5	4.1	2.6	**1,055.8**	**149.1**
Mpigi	139.1	18.5	112.8	14.3	24.6	2.5	0.2	0.4	0.2	0.2	3.3	2.2	1.1	0.9	2.0	1.0	**283.4**	**39.9**
Masaka	163.9	20.3	195.4	23.8	356.6	40.6	0.7	1.1	0.3	0.3	2.6	1.8	1.3	0.9	0.9	0.5	**721.7**	**89.4**
Kalangala	1,257.7	131.5	381.8	56.0	2,211.1	711.4	1.4	2.2	1.4	1.2	25.1	15.7	5.6	4.4	8.9	5.3	**3,892.9**	**927.8**
Rakai	176.0	15.2	33.8	4.2	9.2	0.9	0.0	0.1	0.2	0.2	0.8	0.6	0.3	0.2	0.7	0.3	**221.0**	**21.7**
TOTAL	**6,965.4**	**807.3**	**1,908.0**	**332.4**	**6,660.1**	**1,270.6**	**10.4**	**16.3**	**9.0**	**8.9**	**141.7**	**92.0**	**29.4**	**24.2**	**45.8**	**28.9**	**15,769.9**	**2,580.6**

Abbreviations:NP=Nileperch, TL=Tilapiines, DA=Mukene/Dagaa, HA=Haplochromines, BD=Bagrus, PA=Protopterus, CG=Clarias, OT=Other spp

Appendix 13. Estimated annual total fish catches (tonnes) in the Ugandan part of Lake Victoria presented by district and species for 2006 and 2007

(a) Nile perch

	2006		2007	
DISTRICT	Total catch (tonnes)	Beach Value (Mill.shs)	Total catch (tonnes)	Beach Value (Mill.shs)
Busia	396.0	762.7	227.7	388.5
Bugiri	15,666.4	30,178.0	16,411.8	27,962.0
Mayuge	8,145.8	15,691.1	7,737.9	13,159.6
Jinja	578.8	1,114.9	505.3	862.6
Mukono	35,852.5	69,062.3	33,550.4	57,081.1
Kampala	632.9	1,219.1	546.4	927.8
Wakiso	6,297.8	12,131.3	5,842.0	9,941.3
Mpigi	1,954.1	3,764.2	1,766.4	3,002.3
Masaka	2,387.3	4,598.7	2,121.1	3,601.5
Kalangala	16,912.7	32,578.8	15,771.7	26,825.5
Rakai	2,214.9	4,266.5	2,174.5	3,701.6
Total	91,039.1	175,367.7	86,655.3	147,453.8

(b) Tilapia

	2006		2007	
DISTRICT	Total catch (tonnes)	Beach Value (Mill.shs)	Total catch (tonnes)	Beach Value (Mill.shs)
Busia	166.8	161.1	127.1	133.8
Bugiri	2,807.6	2,712.1	2,276.2	2,366.0
Mayuge	2,794.6	2,699.6	2,491.3	2,601.9
Jinja	375.3	362.5	333.7	345.5
Mukono	8,290.7	8,008.8	7,126.8	7,479.3
Kampala	205.0	198.0	175.7	184.4
Wakiso	2,825.7	2,729.6	2,774.6	2,905.4
Mpigi	1,536.5	1,484.3	1,425.9	1,495.1
Masaka	2,345.6	2,265.8	2,392.9	2,516.2
Kalangala	5,235.2	5,057.2	4,798.3	5,033.7
Rakai	478.5	462.2	433.0	453.5
Total	27,061.4	26,141.3	24,355.6	25,514.8

(c) Mukene

	2006		2007	
DISTRICT	Total catch (tonnes)	Beach Value (Mill.shs)	Total catch (tonnes)	Beach Value (Mill.shs)
Busia	219.7	42.8	282.2	47.7
Bugiri	8,697.5	1,696.0	11,090.9	1,875.3
Mayuge	6,563.0	1,279.8	8,447.7	1,426.3
Jinja	47.2	9.2	47.3	7.8
Mukono	37,624.8	7,336.8	46,851.3	7,921.2
Kampala	88.4	17.2	116.4	19.7
Wakiso	4,979.2	970.9	6,274.6	1,061.4
Mpigi	358.3	69.9	474.1	79.4
Masaka	5,089.5	992.4	6,453.3	1,092.2
Kalangala	31,920.0	6,224.4	33,581.2	5,615.6
Rakai	146.5	28.6	172.2	29.0
Total	95,734.1	18,668.1	113,791.3	19,175.6

(d) Other fish species

	2006		2007	
DISTRICT	Total catch (tonnes)	Beach Value (Mill.shs)	Total catch (tonnes)	Beach Value (Mill.shs)
Busia	18.2	11.4	9.8	8.0
Bugiri	206.1	155.1	252.2	210.6
Mayuge	178.1	136.3	227.5	190.8
Jinja	19.7	14.6	30.6	25.2
Mukono	800.3	604.0	1,172.5	968.6
Kampala	17.9	13.3	26.6	21.8
Wakiso	208.4	163.9	257.9	212.5
Mpigi	96.0	74.4	96.6	78.8
Masaka	83.4	65.1	83.2	70.8
Kalangala	449.2	366.5	498.6	409.5
Rakai	31.7	23.3	30.0	24.2
Total	2,109.0	1,627.9	2,685.5	2,221.0

(e) **All fish species pooled**

	2006		2007	
DISTRICT	Total catch (tonnes)	Beach Value (Mill.shs)	Total catch (tonnes)	Beach Value (Mill.shs)
Busia	800.6	978.1	646.9	578.1
Bugiri	27,377.6	34,741.3	30,031.1	32,413.9
Mayuge	17,681.5	19,806.8	18,904.3	17,378.6
Jinja	1,021.0	1,501.2	917.0	1,241.1
Mukono	82,568.3	85,011.9	88,701.1	73,450.3
Kampala	944.1	1,447.6	865.1	1,153.7
Wakiso	14,311.0	15,995.8	15,149.1	14,120.7
Mpigi	3,945.0	5,392.8	3,763.1	4,655.6
Masaka	9,905.8	7,922.0	11,050.5	7,280.7
Kalangala	54,517.2	44,226.9	54,649.8	37,884.3
Rakai	2,871.6	4,780.6	2,809.7	4,208.3
Total	**215,943.6**	**221,805.1**	**227,487.7**	**194,365.2**