THE 36TH MONITORING OF BUJJAGALI HYDROPOWER DAM

THE COMMERCIAL FISHERY



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CONTENTS

LIST OF FIGURES 2
LIST OF TABLES 3
LIST OF PLATES 4
Executive summary 5
1. THE COMMERCIAL FISHERY 7
1.1. Fishing effort in the fishery 7
2. Fish catch composition and catch rates 17
2.1. Fish catch composition 17
Catch rates 19
Estimates of fish Catches 23
Unit cost of the fish species of the Upper Victoria Nile in April 2025 26
Total Monthly catches and revenue 33
Fish retained by fishers for home consumption 34
Fishery related jobs 35
Conclusions and Recommendations 39
References 40

LIST OF FIGURES

Figure 1-1: *Total number of boats and number of gears per boat* 8

Figure *1-2: Distribution of boats using Gillnets, Longlines and small seine nets* 9

Figure 1-3: *Distribution of Boats using Cast nets, Scoop nets, Handline hooks, Basket traps, and Monofilament nets* 10

Figure 1-4 : *Distribution of gillnets at the study sites* 12

Figure 1-5: *Distribution of number of Small-seines, Monofilaments, Cast nets, Longline hooks, Basket traps, Scoop nets and Handline hooks* 14

Figure 2-1*: Monthly Catch Distribution of Species of conservation concern along the Upper Victoria Nile* 23

Figure 2-2 *Distribution of Monthly Catch of commercial species along the Upper Victoria Nile* 24

Figure 2-3: *Monthly revenue from the fish species of conservation concern* 28

Figure 2-4: *Distribution of Monthly revenue of commercial species at study sites* 29

Figure 2-6*:Distribution of monthly catch and revenue from the UVN* 33

Figure 2-6: *Distribution of fish for home consumption by fishers (kg/boat/day)* 34

Figure 2-7: *Distribution of people by gender engaged in different jobs at monitored sites the UVN in April 2025* 36

LIST OF TABLES

Table 1-1: *Trends in number of boats using particular gears at the monitored sites* 11

Table 1-2: *Trends in numbers of gillnets at monitored sites* 13

Table 1-3: *The trend in numbers of fishing gears at monitored sites.* 17

Table 2-1: *Trends in Catch Per Unit Effort (kg/boat/day), with all gears pooled, of the fish taxa at the monitored transects/site* 22

Table 2-2: *Trends of total fish monthly catch estimates (kg) at monitored sites* 26

Table 2-3: *Trends of mean unit prices (Uganda Shillings /kg) of the most common fish species at the beach level, along the Upper Victoria Nile* 27

Table 2-4: *Trends of total fish monthly Revenue estimates (1000) Uganda Shillings at monitored sites* 32

Table 2-5: *Monthly total catches(kg) and revenue (1000 Uganda Shillings) of individual fishing units at the monitored sites* 34

Table 2-6: *Trends of the average weight of fish (kg/boat/day) retained by fishers for domestic use and weight of fish retained as a percentage of the overall average weight of fish caught per boat.* 35

Table 2-7: *People by gender engaged in different jobs at monitored landing sites* 38

LIST OF PLATES

Plate 2-1 *: National Distribution of the Vulnerable (VU) Coptodon zillii* 18

Plate 2-2 *: National Distribution of the Near Threatened (NT) Oreochromis variabilis* 19

Plate 2-3: Setting of Basket traps at Kalange-Makwanzi 20

Plate 2-4: *Distribution of Critically Endangered (CE) Labeo victorianus* 21

Plate 2-5: *Rastrineobola argentea (Mukene) Processing at the Mid-Reservoir: Spreading of Mukene for human consumption (B) and for Animals (D) and Birds eating Mukene under processing (A) and (C)* .. 31

Plate 2-6 *: Collection of Metallic waste for scrap from the Damping site of Yogi steel company near the Mid-Reservoir of the UVN* 39

Executive summary

The Upper Victoria Nile (UVN), a crucial segment of the River Nile stretching 117 km between Lake Victoria and Lake Kyoga, sustains a diverse multi-species fishery of significant commercial, cultural, and ecological value. The UVN also supports national energy demands through major hydropower infrastructure including the Bujagali Dam. However, such developments, coupled with climate variability and anthropogenic pressures, have resulted in marked ecological shifts, particularly in fish habitats, catch composition, and fishing livelihoods.

This 36th monitoring conducted by the National Fisheries Resources Research Institute (NaFIRRI) in April 2025 assessed the impacts of these developments on fisheries dynamics post-dam construction. Data was collected from three monitoring sections: Upstream (Kalange-Makwanzi), Mid-Reservoir, and Downstream (Buyala-Kikubamutwe), focusing on fishing effort, catch composition and rates, economic value, domestic fish use, and gendered fisheries employment.

Key findings included; The Fishing Gear Use: Eight gear types were recorded, with Mid-Reservoir showing dominance in gear diversity and quantity, particularly gillnets and basket traps. Although legally restricted, destructive gears like monofilament nets and basket traps were widely used, especially at Mid-Reservoir. Then the Catch Trends: Ten (10) fish species were recorded, with *Lates niloticus* commanding the highest market value, and *Rastrineobola argentea* contributing the highest catch volume but lowest revenue. Conservation concern species such as *Oreochromis variabilis* and *Coptodon zillii* appeared infrequently, indicating declining populations. And then the Catch and Revenue: The total monthly catch was 77.7 tons, yielding UGX 169.6 million. The Mid-Reservoir accounted for 94% of the total catch and 83% of the revenue, reflecting its central role in UVN fisheries. In addition to that there was also the Livelihood Shifts: Some fishers have diversified into non-fishing livelihoods like scrap metal collection, signaling economic adaptation to fishery pressure and reduced returns. And, the Gender Roles: Men dominated fishing and gear maintenance, while women were active in fish trading and processing. However, the number of women in post-harvest roles is declining, especially at Mid-Reservoir where alternative livelihoods are emerging.

Generally, the monitoring revealed persistent gear misuse, fluctuating fish catch dynamics, and growing livelihood vulnerabilities, necessitating urgent interventions to safeguard the fishery's sustainability.

Based on the findings from the study had the following observations.

- Fish catches and revenues along the UVN continue to fluctuate due to ecological alterations, illegal gear use, and shifting livelihood dynamics.
- *Rastrineobola argentea* dominated catch volumes but offered limited economic returns, while conservation-important species are declining in both abundance and catch rates.
- Despite regulatory efforts, destructive fishing gears (e.g., monofilaments, basket traps) remain in widespread use, threatening fish stock sustainability.
- There was an observable shift in livelihood activities, particularly in the Mid-Reservoir, with some fishers abandoning fishing for more stable income-generating alternatives such as, metal scrap collection.

- ❖ Gendered roles in the fishery are deeply entrenched but evolving, with women increasingly marginalized in fish processing and trade due to socio-economic and environmental changes.

In the catch assessment and catch effort studies done in the UVN came up with the following recommendations as indicated below;

- ❖ Enforce Gear Regulations: Strengthen monitoring, control, and surveillance to eliminate illegal fishing gear, particularly monofilaments and basket traps.
- ❖ Enhance Community Awareness: Implement continuous education and sensitization programs on sustainable fishing practices and conservation of endangered species.
- ❖ Support Alternative Livelihoods: Develop and support non-fishery income-generating activities to reduce pressure on aquatic resources and promote economic resilience.
- ❖ Improve Post-Harvest Handling: Invest in solar dryers, smoking kilns, and cold storage facilities to enhance fish product quality and market value.
- ❖ Empower Beach Management Units (BMUs): Strengthen BMUs and local governance structures to enable participatory and accountable fisheries co-management.
- ❖ Promote Gender Inclusion: Ensure equitable participation of women and marginalized groups in all aspects of the fishery value chain through training and policy support.
- ❖ Invest in Clean Energy Technologies: Promote the adoption of eco-friendly technologies in fish processing to improve efficiency and reduce environmental harm.
- ❖ Conduct Regular Ecological Monitoring: Maintain consistent, science-based monitoring to detect ecological stress early and recommend evidence-based management interventions.

1. THE COMMERCIAL FISHERY

The River Nile is the longest river in the World and is approximately long 6700km (Gilio, 2014). The Nile offers several ecosystem services among which is fish. The river is well known for its aquatic biodiversity (Wakeil,2025) and its social, physical, and economic importance to the complete wellbeing of the riparian communities. The Upper Victoria Nile (UVN) is approximately 117 km and stretches from Lake Victoria to Lake Kyoga ((Bassa et al., 2020). It hosts a multi-species fishery of commercial, cultural, and aqua-tourism importance to the riparian communities (El-Sayed, 2016). The commercial fisheries of the UVN are composed of more than 10 non-haplochromis species of which only two (*Lates niloticus* and *Oreochromis niloticus)* were introduced (El-Sayed, 2016; Ogutu-Ohwayo, 2004).

NaFIRRI contributes to the ecological wellbeing of aquatic ecosystems through providing scientific based evidence. In such circumstances NaFIRRI has been conducting bi-annual fisheries and ecological monitoring studies on the UVN since 2006. These studies are aimed at assessing the likely impacts of Bujagali hydropower project on the fisheries, water environment and the entire ecosystem, and recommend remedial measures to the developers. The monitored area was divided into three sections i.e., Upstream (Kalange-Makwanzi), Mid-Reservoir, and Downstream (Buyala-Kikubamutwe).

This report presents results of the 36th monitoring of the commercial fisheries of the Upper Victoria Nile. Fishing effort, commercial fish stocks, fish catches and associated revenue, fishers' retained fish for home consumption, as well as gender and fishery related jobs are presented in this report. The 36th monitoring was conducted in April 2025, and trends in commercial fisheries during the post-dam construction were also presented. The study was done in both Catch assessment and catch effort data collection that was done concurrently in the UVN ecosystem.

1.1. FISHING EFFORT IN THE FISHERY

Mid-Reservoir recorded the highest 69% (74) number of boats in April 2025, followed by Kalange-Makwanzi (25) 23% and, Buyala-Kikubamutwe had the lowest (***Figure 1-1***). In these boats, the number of gears used in each boat varied across the study sites. Despite having only 25 boats, Kalange-Makwanzi registered 40 boat-gear combinations. Notably, Kalange-Makwanzi was the only landing site where two (2) boats were recorded operating three gears each (***Figure 1-1***). Fishers of the UVN exhibit a character of optimising the catch, these fishers practice alternation of gears since different fishers target different fish species and have different fishing periods.

The current study reported the highest (9) number of boats using gillnets at Mid-Reservoir. Similarly, the highest number of boats using longline hooks (10 boats) and small seine (31) were at Mid-Reservoir (***Figure 1-2***). The total number of boats has varied across the 10-year reported period. The first phase of the year's monitoring registered the highest number of boats (153) in April 2019, while the least (67) was observed in April 2018 (Table 1-1). The second phase of the year's monitoring recorded the highest number of boats (130) in September 2019 and the lowest number (78) was recorded in September 2018. At Kalange-Makwanzi, the highest number of boats (45) was observed in September 2017, while the lowest (13) was observed in July 2023 (Table 1-1).

Fishing boats at monitored sites

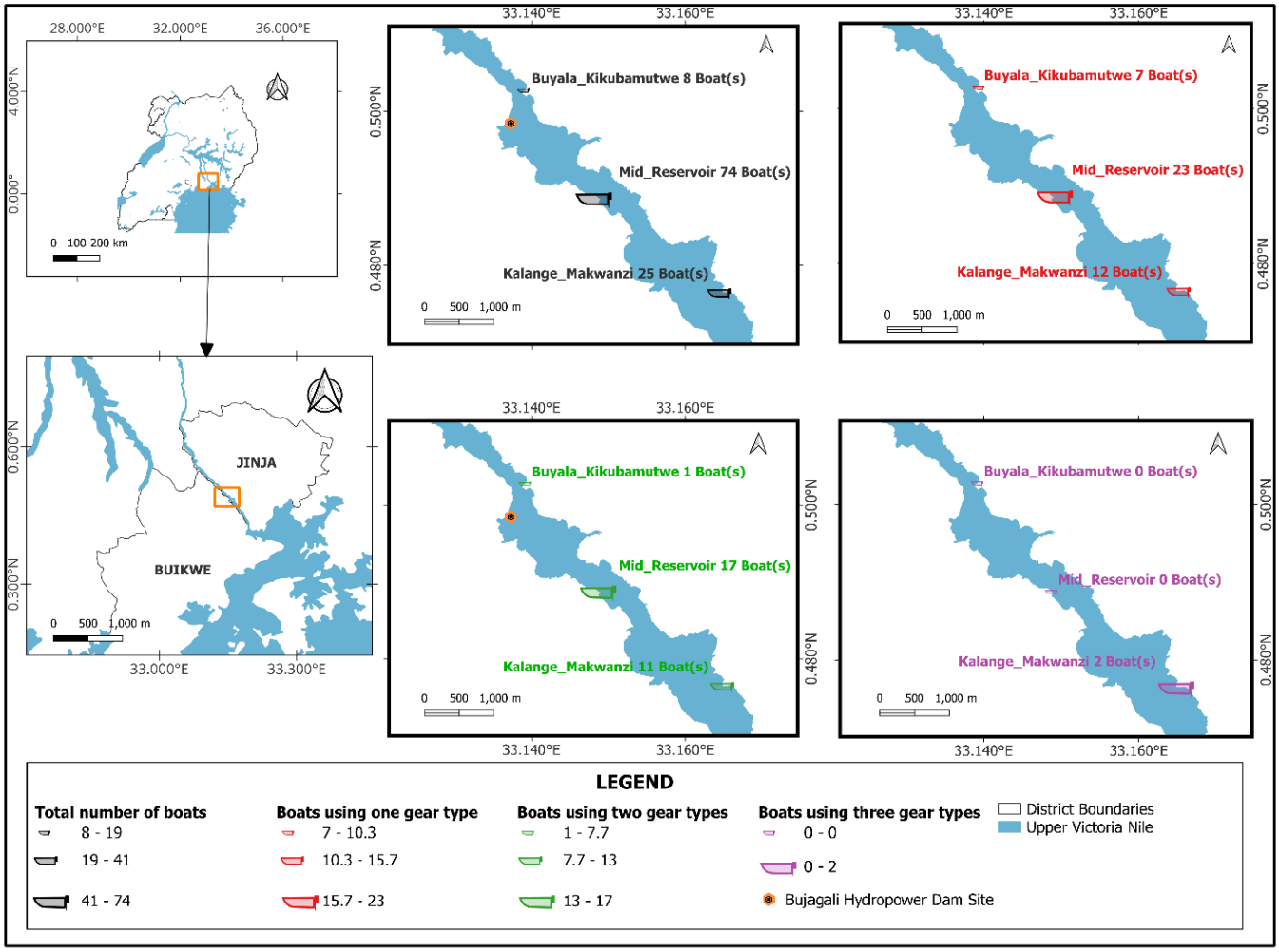


Figure 1-1: Total number of boats and number of gears per boat

The Mid-Reservoir has always recorded the highest number of boats in all the sampling periods with exception of July 2023. An extraordinary number of boats (79) was recorded at Buyala-Kikubamutwe in April 2019 and the lowest (4) number of boats was in April 2024.

Comparing the two sampling seasons, April recorded higher boat numbers than September, except for 2015, 2018, and 2021. At Kalange-Makwanzi, April had lower number of boats than September in 2017, 2018, 2021, and 2024. In contrast, Mid-Reservoir had lower boat numbers in April sampling of 2015, 2016, 2018, and 2019, while Buyala-Kikubamutwe had lower numbers only in 2024 (Table 1-1).

Boats using Gillnets, Longline and Small Seins

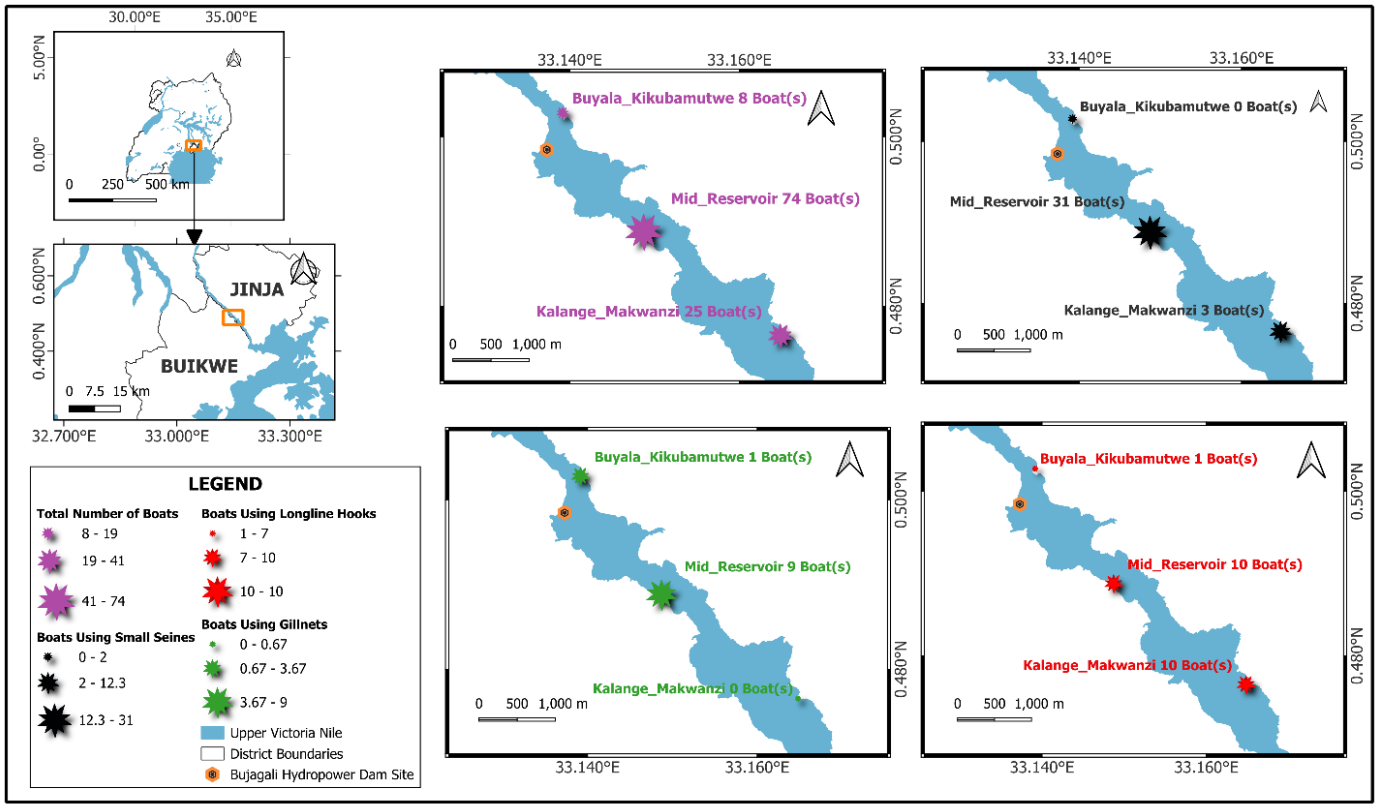


Figure 1-2: Distribution of boats using Gillnets, Longlines and small seine nets

In April 2025, a total of 34 boats were observed using small seine with the highest percentage 91% (31) at Mid-Reservoir. No boat using a small seine (Lampala nets) was traced at Buyala-Kikubamutwe (Figure 1-2). These small seine nets are used for harvesting of a silver cyprinid, *Rastrineobola argentea*. The distribution of these boats could be largely associated with the fishing grounds in the river. In April 2025, the total number of boats using gillnets was 10, with 90% at Mid-Reservoir and 10% at Buyala-Kikubamutwe. All monitored sites were observed to have practice the use of longline hooks. A total of 21 boats were observed using longline hooks (Figure 1-2) with only one (1) at Buyala-Kikubamutwe. Both Mid-Reservoir and Kalange-Makwanzi registered 10 (48%) boats using longline hooks.

The number of boats using fishing gears varied across the study sites. While the highest number of cast nets was at Kalange-Makwanzi, the highest number of boats using basket traps was at Mid-Reservoir. Notably, all the boats (3) using scoop nets encountered in this study were at Mid-Reservoir. Mid-Reservoir had the highest number of boats using both monofilaments and Handline hooks (***Figure 1-3***).

Over the past 10 years, boats using fishing gears have continued to fluctuate across the study sites. However, Mid-Reservoir has always recorded the highest total number of boats (Table 1-1). Boats using gillnets were consistently observed at Kalange-Makwanzi from 2015 to 2019. The up-stream site recorded the least number of boats using gillnets until September 2018. At Mid-

Reservoir, the peak of number of boats using gillnets was in December 2023, while at Kalange-Makwanzi it was in September 2016. The total number of boats using gillnets was higher in September than in April, from 2015 to 2028 which showed no clear pattern thereafter. All study

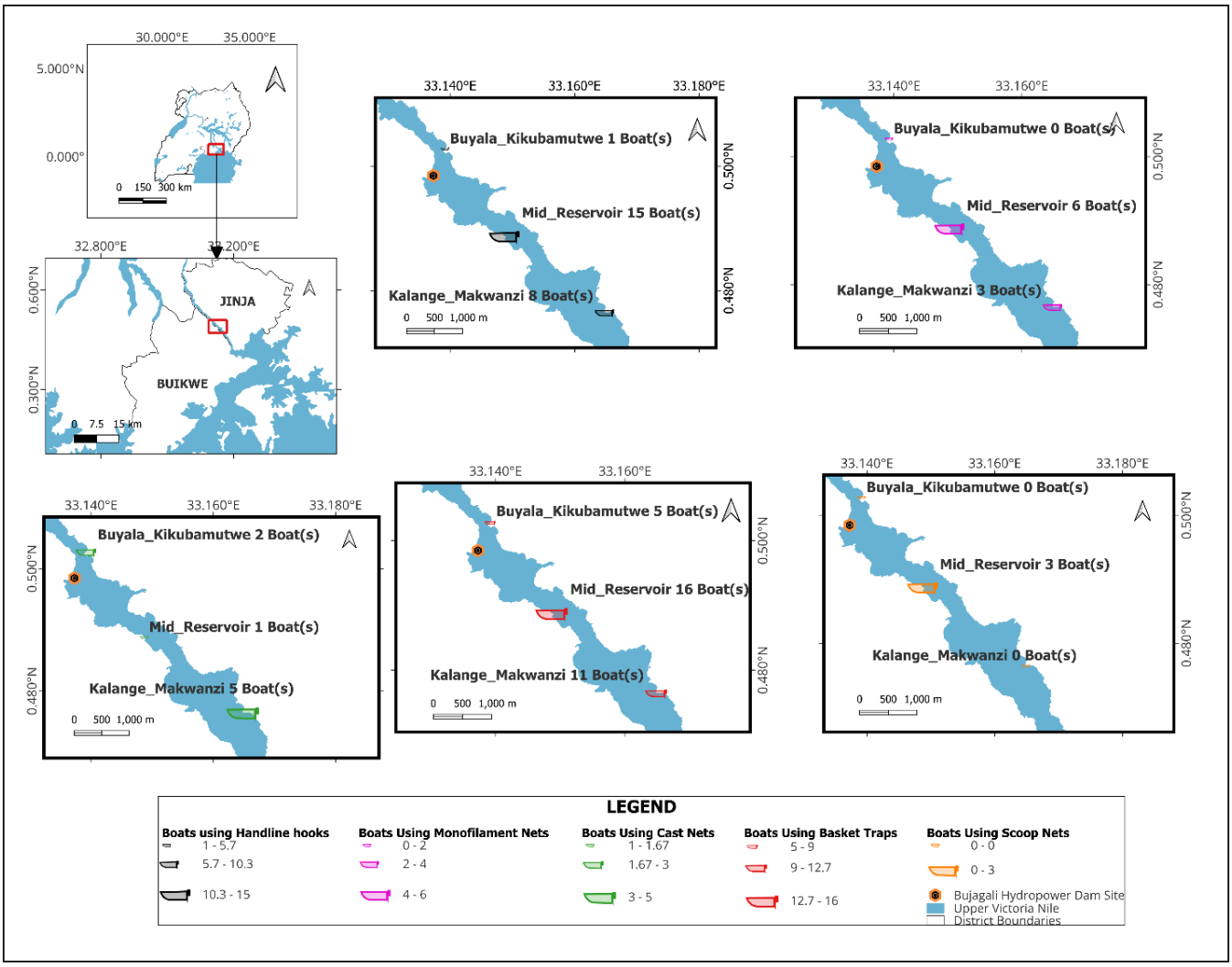


Figure 1-3: *Distribution of Boats using Cast nets, Scoop nets, Handline hooks, Basket traps, and Monofilament nets*

sites recorded at least boats using longline hooks in the April 2025 samplings. Both Kalange-Makwanzi and Mid-Reservoir recorded the same number of boats using longline hooks in the current study (Figure 1-3;Table 1-1).

Boats using cast nets have been habitual at Kalange-Makwanzi with exception of April 2024 and July 2023 samplings. For the past 10 years, Buyala-Kikubamutwe has rarely used cast nets. However, the highest number boats recorded using cast nets at Mid-Reservoir was 10, in April 2017 (Table 1-1). Boats using handline hooks were fewer compared to the total number of boats at each study site. In 2015 for example, only 13% of 32 boats at Kalange-Makwanzi used handline hooks. This could be attributed to the fact that this is an active gear requiring operation during

day. Similarly, boats using handline hooks were absent at Kalange-Makwanzi in September 2015, June 2020, July 2023, and April 2024 which is evidence of an unclear pattern.

Table 1-1: *Trends in number of boats using fishing gears at the monitored sites*

Fishing effort indicator	Transect/Site	2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025
		Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	June	Sept	Apr	Oct	May	Nov	July	Dec	Apr	Sept	Apr
Total Fishing boats	Kalange-Makwanzi	32	25	40	31	37	45	25	29	42	35	30	25	25	30	34	41	30	20	19	28	25
	Mid-Reservoir	38	51	46	48	41	22	29	67	32	62	32	56	40	65	63	43	27	49	79	54	74
	Buyala-Kikubamutwe	25	21	18	14	21	11	13	20	79	33	13	14	21	18	21	14	13	17	4	7	8
Boats using gillnets	Kalange-Makwanzi	6	10	3	11	7	9	7	4	2	6	6	3	6	1	6	1	-	3	-	-	-
	Mid-Reservoir	13	12	11	9	10	6	5	5	7	4	-	1	7	8	8	-	1	22	9	5	9
	Buyala-Kikubamutwe	1	4	7	3	-	1	1	1	26	-	1	-	1	1	-	3	1	2	-	-	1
Boats using long line hooks	Kalange-Makwanzi	3	4	3	6	-	5	4	2	9	7	10	4	4	5	12	10	11	22	6	12	10
	Mid-Reservoir	6	2	7	6	3	-	3	6	-	10	3	3	11	2	10	3	6	4	6	7	10
	Buyala-Kikubamutwe	6	-	4	3	3	-	-	-	9	-	5	-	3	-	2	4	2	2	6	1	1
Boats using cast nets	Kalange-Makwanzi	5	2	5	4	6	6	5	5	5	6	5	8	3	5	1	4	-	2	-	3	5
	Mid-Reservoir	2	7	3	2	10	-	-	7	7	-	-	2	-	3	5	-	-	1	3	-	1
	Buyala-Kikubamutwe	7	-	1	3	1	-	-	-	6	5	-	-	2	-	-	-	2	1	2	-	2
Boats using Hand line hooks	Kalange-Makwanzi	4	-	6	3	10	2	3	6	5	4	-	3	1	3	2	2	-	1	-	6	8
	Mid-Reservoir	9	14	9	13	13	12	11	20	12	20	4	20	4	15	5	7	3	4	3	3	15
	Buyala-Kikubamutwe	3	17	3	2	2	5	1	4	-	6	-	-	7	1	-	-	9	1	6	1	1
Boats using scoop nets	Kalange-Makwanzi	4	-	-	-	2	-	-	-	-	-	-	-	3	-	-	7	-	-	1	-	-
	Mid-Reservoir	8	-	10	16	6	-	-	7	4	1	3	18	4	-	-	-	-	-	-	2	3
	Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	3	-	-
Boats using Traps	Kalange-Makwanzi	7	7	7	3	12	21	14	9	19	15	9	9	8	9	13	11	2	17	19	15	11
	Mid-Reservoir	-	1	6	2	3	3	6	19	3	15	2	5	5	10	9	-	1	4	1	2	16
	Buyala-Kikubamutwe	8		21	6	15	5	12	15	33	22	7	14	3	16	18	7	6	12	3	7	5
Boats using Small seine nets	Kalange-Makwanzi	3	2	2	4	2	2	3	3	1	-	-	-	-	1	-	-	-	-	-	2	3
	Mid-Reservoir	-	-	-	-	3	-	-	3	6	11	18	2	5	21	22	16	11	22	31	34	31
	Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-

Gillnets

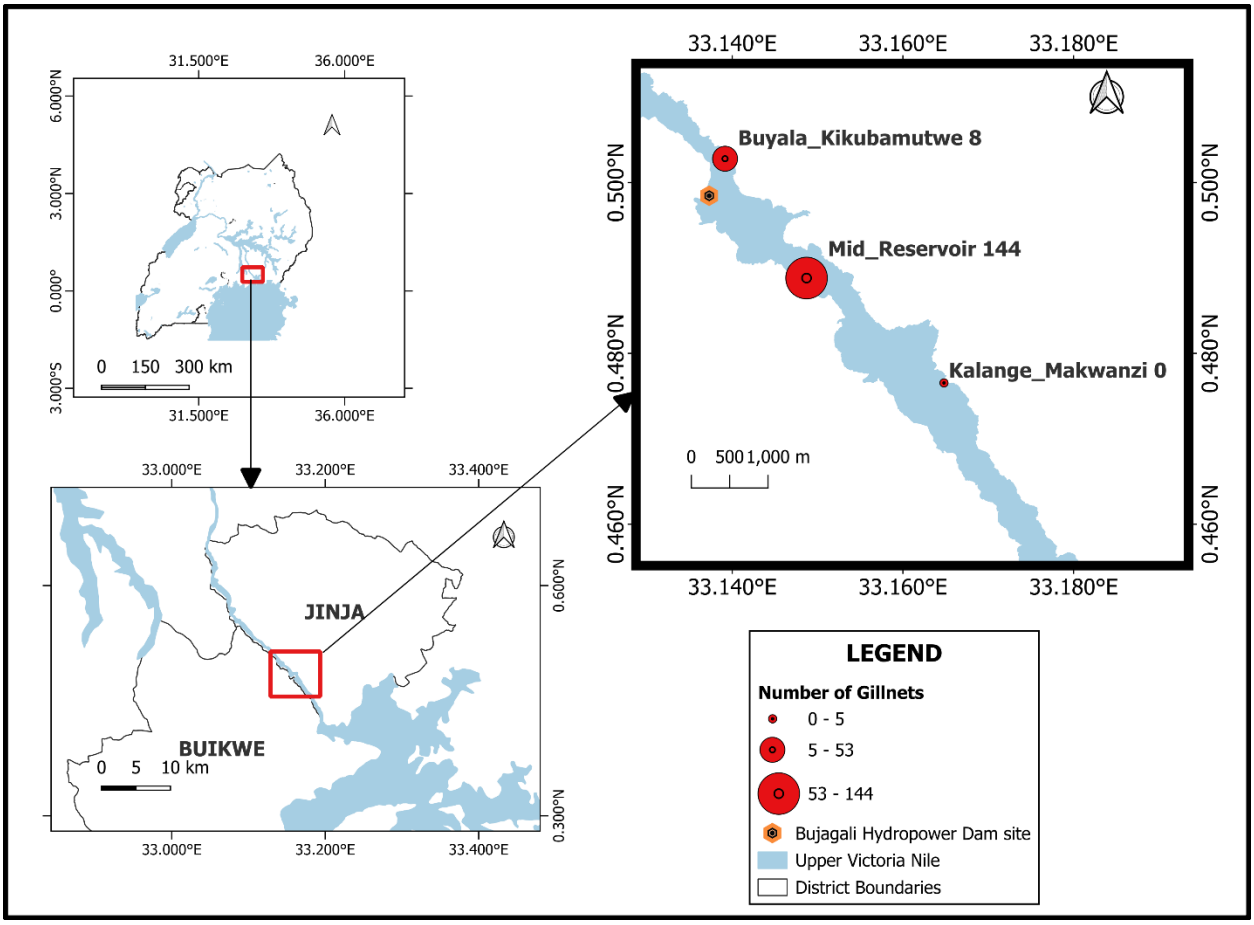


Figure 1-4 : *Distribution of gillnets at the study sites*

A total of 152 gillnets were recorded from the current monitoring which was a 3-fold increase from 46 observed in September 2024 (***Figure 1-4***; Table 1-2). It was observed that 95% (144) gillnets were at Mid-Reservoir while no gillnets were recorded from Kalange-Makwanzi (Figure 1-4). At Kalange-Makwanzi, the highest number of gillnets (116) was observed in September 2019 (Table 1-2). This was the highest number of gillnets recorded in the past 10 years at any of the monitored sites. Comparing with the September 2024, the total number of gillnets increased by more than 3-fold from 46 to 152. Despite this increase, gillnets were distributed at only two study sites: Kalange-Makwanzi and Mid-Reservoir in the ratio of 4:9 respectively.

Since November 2022, no gillnet was observed at Kalange-Makwanzi (Table 1-2). This could be attributed to the increasing water levels that could have altered the fishing ground where gillnets are set.

Despite harvesting undersize fish, gillnets of size <5" were more common in the years 2015 to 2022, contributing the highest percentage of gillnets used in the study sites. Currently, 85% (130) of gillnets were complaint with regulations (Fish (Fishing) Rules; 2010). However, all the 8 (5%) gillnets at Buyala-Kikubamutwe were undersized (Table 1-2).

Table 1-2: *Trends in numbers of gillnets at monitored sites*

Number of gillnets per	Transect/Site	2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025
		Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	June	Sept	Apr	Oct	May	Nov	July	Dec	Apr	Sept	Apr
Gillnets - ≤2½"	Kalange-Makwanzi	8	1	6	19	5	14	10	4	-	4	54	7	18	-	-	-	-	-	-	-	-
	Mid-Reservoir	9		3	8	13	20	10	-	-	-	-	1	1	10	54	5	5	-	-	-	14
	Buyala-Kikubamutwe		11	-	-	-	3	3	-	53	-	2	-	-	2	-	60	-	-	-	-	-
Gillnets 3"	Kalange-Makwanzi	6		13	6	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mid-Reservoir	35	9	12	19	13	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
	Buyala-Kikubamutwe	15		7	6	-	-	-	2	43	-	-	-	-	-	-	-	-	-	3	-	-
Gillnets 3½"	Kalange-Makwanzi	1	8	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mid-Reservoir	5		16	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Buyala-Kikubamutwe	-	-	-	-	-	-	-	3	-	6	-	-	17	-	-	-	-	-	-	-	-
Gillnets 4"	Kalange-Makwanzi	1	-	6	3	-	3	-	11	-	4	-	-	-	-	-	1	-	-	-	-	-
	Mid-Reservoir	1	-	-	-	15	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	8
Gillnets 4½"	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-
	Mid-Reservoir	1	-	-	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-
	Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-
Gillnets 5"	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-
	Mid-Reservoir	-	-	-	2	10	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-
	Buyala-Kikubamutwe	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gillnets 6"	Kalange-Makwanzi	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mid-Reservoir	-	32	-	-	-	-	-	6	-	-	-	-	-	-	4	-	-	12	42	20	120
	Buyala-Kikubamutwe	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gillnets 6½"	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gillnets 7"	Kalange-Makwanzi	-	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mid-Reservoir	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	11	10
	Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gillnets 8"	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gillnets	**Kalange-Makwanzi**	**16**	**18**	**25**	**29**	**7**	**18**	**29**	**7**	**5**	**116**	**54**	**54**	**18**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**
	Mid-Reservoir	**51**	**32**	**31**	**40**	**63**	**34**	**13**	**19**	**-**	**-**	**-**	**1**	**1**	**52**	**9**	**5**	**15**	**12**	**45**	**46**	**144**
	Buyala-Kikubamutwe	**15**	**11**	**7**	**6**	**3**	**3**	**2**	**2**	**124**	**-**	**2**	**-**	**17**	**-**	**-**	**60**	**10**		**-**	**-**	**8**

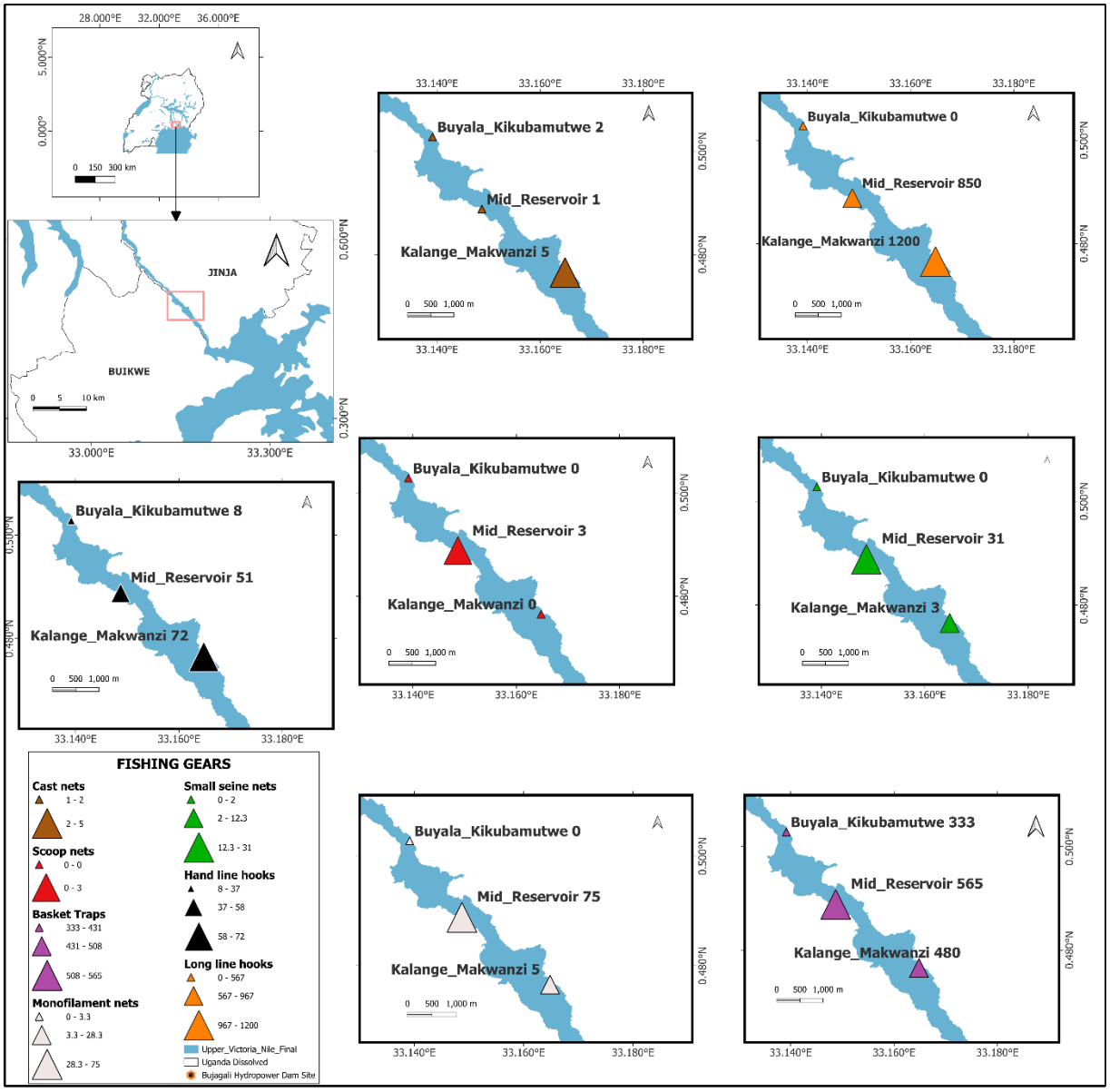


Figure 1-5: *Distribution of number of Small-seines, Monofilaments, Cast nets, Longline hooks, Basket traps, Scoop nets and Handline hooks*

A total of eight (8) cast nets were recorded in April 2025, distributed in the ratio of 5: 1: 2 at Kalange-Makwanzi, Mid-Reservoir and Buyala-Kikubamutwe respectively (**Figure 1-5**). In the current sampling, 2,050 longline hooks were observed of which 59% (1,200) were at Kalange-Makwanzi.

Notably, no longline hooks were recorded at Buyala-Kikubamutwe. Nevertheless, each site registered handline hooks. Kalange-Makwanzi registered the highest number (72) of

handline hooks, followed by Mid-Reservoir (51) and Buyala-Kikubamutwe had the lowest (8) as seen in Figure 1-5 and Table 1-3.

Scoop nets (Chota-chota) that are highly recommended (Nandutu, 2024) were only observed at Mid-Reservoir. A total of 80 destructive monofilament nets were recorded in the April 2025, and these were from Kalange-Makwanzi and Mid-Reservoir distributed in the ratio of 1:15 respectively. Despite recording no monofilament nets at Buyala-Kikubamutwe, the monitored site recorded 333 Basket traps. Although Basket traps are very destructive and unlawful, all monitored sites use them (**Figure 1-3**).

The use of longline hooks has been practiced by fishers throughout the past 10 years of monitoring at Kalange-Makwanzi (Table 1-3). At this study site, the number (1,200) of longline hooks remained constant in September 2024 and April 2025. However, the highest number of longline hooks (3,200) at Kalange-Makwanzi were recorded in October, 2021 and the least (22) were recorded in December 2023.

Unlike Kalange-Makwanzi, Buyala-Kikubamutwe and Mid-Reservoir did not register any longline hooks in September 2020. In the current study, Only Buyala-Kikubamutwe was observed to have no longline hooks (Figure 1-3). The number of longline hooks increased from 100 (Table 1-3) in October, 2021 to 850 in April 2025 (**Figure 1-3**) at the Mid-Reservoir. Of the three monitored sites, Buyala-Kikubamutwe was observed to have no longline hooks for eight (8) monitored seasons out of 21 in the past 10 years. Studying sampling periods, longline hooks exhibited an unclear pattern. For the past 10 years**,** April samplings period recorded higher number of longline hooks in 2015, 2016 and 2024, while September samplings had higher longline hooks in 2017, 2018, 2019 and 2021 (Table 1-3).

The number of cast nets at monitored sites has fluctuated overtime. However, the highest (19) total number of cast nets was recorded in April 2019 and the least (2) was recorded in October, 2021. In the past 10 years, Kalange-Makwanzi was observed to have no cast nets in only July 2023 (***Table 1-3***). Cast nets have ranged from 1-6 at Kalange-Makwanzi and 1-7 at Mid-Reservoir for the past 10 years. Buyala-Kikubamutwe recorded the highest (13) cast nets in the past 10 years in April 2019 (***Table 1-3***).

Handline hooks have been observed at all sites in the past four (4) monitoring periods (***Table 1-3***). Nevertheless, the total number of hand line hooks increased by 24% from 106 in September 2024, to 131 in April 2024 (***Table 1-3***). This increase was largely driven by the drastic increase of hand line hooks from 3 to 51 handline hooks at the Mid-Reservoir. The highest number of handline hooks at the Mid-Reservoir was 381 recorded in July 2023. In fact, this is the highest number of handline hooks recorded at any site in the past 10 years (***Table 1-3***).

Despite being legal and recommended (Nandutu, 2024), scoop nets have dwindled over time. The observation of scoop nets has been on and off in the past 10 years with the highest (18) recorded in September 2022 **(**Table 1-3**)**. From April 2015 to April 2017, the

total number of scoop nets was at its peak, with more than 10 scoop nets accounting for more than 67% at Mid-Reservoir. In contrast to Mid-Reservoir, Kalange-Makwanzi has showed relatively low usage of scoop nets with a maximum of 7 nets observed in a single sampling of November 2022 (Table 1-3). These scoop nets were recorded in the April samplings of 2015, 2017, 2021 and November 2022. Scoop nets have not been common at Buyala-Kikubamutwe and only three (3) have been recorded in April 2021. This is consistent with the overall trend of limited usage of scoop nets at this site.

Small seine nets have been largely used to harvest Mukene from the study sites due to the technical know-how among the fishers of the UVN. The current sampling registered a slight decline (6%) of the number of small seins used at the monitored sites. This decline could be attributed to the shift in the source of lively hood among fishers. The fishers of the Mid-Reservoir that contributed the highest percentage of Mukene fishery were reported to collect waste in the land fill of Yogi steel company (

Plate 2-6). The waste collected was reported as a better trade off to labours of fishing. At Buyala-Kikubamutwe, no small seine net was observed in the past 10 years **(**Table 1-3**)**. This could be attributed to the rocky fishing grounds that are not suitable for use of small seine nets. Kalange-Makwanzi demonstrates another pattern of small seines for the past 10 years. For the past 9 monitoring periods of April 2015 to April 2019, at least a single small seine net was recorded at Kalange-Makwanzi. However, eight (8) monitored seasons at Kalange-Makwanzi were observed to have no small seine net (Table 1-3). Since September 2018, Mid-Reservoir has been consistent in registering at least a small seine net every sampled season. The highest number of small seine nets registered at the Mid-Reservoir was 109 in June 2020 which is a three-fold decline to 31 nets recorded in the current sampling (Table 1-3).

Despite being prohibited, monofilament nets are becoming increasingly popular among the Upper Victoria Nile fishers, posing a potential threat to the sustainability of fish population and the aquatic ecosystem. A total of 80 nets were recorded in the current sampling, registering an increment of 24% from the 64 recorded in September 2024 (Table 1-3). Whereas the highest number (75) of monofilament nets in the current sampling was observed at the Mid-Reservoir, no single monofilament net was observed at Buyala-Kikubamutwe (Figure 1-5). For the past 10 years of monitoring, it was only 2019 where no single monofilament net was recorded at all the study sites (Table 1-3). While the highest number (25) of monofilament nets was registered at Kalange-Makwanzi in April 2016, no monofilament net was recorded at all study sites in September 2019. Buyala-Kikubamutwe has been the least study site in recording monofilament nets for the past 10 years. Monofilament nets once not controlled will greatly contribute to stressed fish population and depletion of the resource.

Even though basket traps target immature and small-sized fish, the gear seems to be the most used at all the study sites. The current sampling recorded a rise of 59% of the total

number of basket traps from April 2024. Mid-Reservoir dominated the usage of Basket traps by more than 40% in the current sampling (Figure 1-3). At this site, the highest (1,137) traps were recorded in April 2024 while no trap was recorded in April 2015 and November 2022. Both Kalange-Makwanzi and Buyala-Kikubamutwe have recorded at least a basket trap in the past 10 years (Table 1-3). Nevertheless, there is no clear pattern of the distribution of these basket traps across the years and the study sites. The widespread use of basket traps could exacerbate the decline of fish populations, particularly if not managed sustainably.

Table 1-3: *The trend in numbers of fishing gears at monitored sites.*

Gears	Transect/Site	2,015		2,016		2,017		2,018		2,019		2,020		2,021		2,022		2,023		2,024		2,025
		Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	June	Sept	Apr	Oct	May	Nov	July	Dec	Apr	Sept	Apr
Long line hooks	Kalange-Makwanzi	230	625	250	1,050	910	440	650	233	910	350	1,040	600	400	3,200	1,120	963	1,325	22	727	1,200	1,200
	Mid-Reservoir	378	200	140	154	-		55	88	-	645	70	-	1,150	100	660	90	440	7	585	390	850
	Buyala-	1,100	420	56	420	300	-	-	-	1,096	-	180	-	260	-	100	350	250	2	-	120	-
Cast nets	Kalange-Makwanzi	5	2	5	3	6	6	5	5	6	3	5	6	3	5	1	4	-	2	3	3	5
	Mid-Reservoir	2	7	3	2	-	-	-	7	-	-	-	2	-	3	5	-	-	1	2	-	1
	Buyala-	7		1	3	1	-	-	-	13	5	-	-	2	-	-	-	2	2	-	-	2
Hand line hooks	Kalange-Makwanzi	35		30	1	10	12	15	61	20	9	50	14	5	22	12	17	-	-	15	80	72
	Mid-Reservoir	65	218	50	73	61	36	85	83	103	224	6	144	49	84	18	47	381	8	98	13	51
	Buyala-	18	63	18	-	4	15	10	14	-	66	-	-	-	150	5	-	-	9	1	13	8
Scoop nets	Kalange-Makwanzi	4	-	-	-	2	-	-	-	-	-	-	-	3	-	-	7	-	-	-	-	-
	Mid-Reservoir	8	15	10	16	9	-	-	7	2	1	3	18	4	-	-	-	-	-	3	2	3
	Buyala-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-
Small seine nets	Kalange-Makwanzi	2	2	2	4	2	2	3	3	1	-	-	-	-	1	-	-	-	-	1	2	3
	Mid-Reservoir	-	-	-	-	3	-	-	3	2	59	109	16	5	20	22	15	11	22	31	34	31
	Buyala-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-
Monofilament nets	Kalange-Makwanzi	16		25	24	23	18	15	7	2	-	-	-	-	3	6	2	-	1	8	4	5
	Mid-Reservoir	47	43	28	34	30	34	30	2	12	-	3	9	-	8	7	10	6	-	21	60	75
	Buyala-			7	10	12	3	2	2	-	-	-	-	2	-	1	-	-	-	-	-	-
Traps	Kalange-Makwanzi	48	1	124	41	189	110	164	192	407	303	180	167	215	310	590	495	140	17	820	695	480
	Mid-Reservoir	-	10	105	22	44	36	59	207	8	215	12	296	46	314	283	-	60	7	1,137	30	565
	Buyala-	97	55	39	53	127	29	62	175	601	272	100	205	30	462	580	223	355	12	467	144	333

2. Fish catch composition and catch rates

2.1. FISH CATCH COMPOSITION

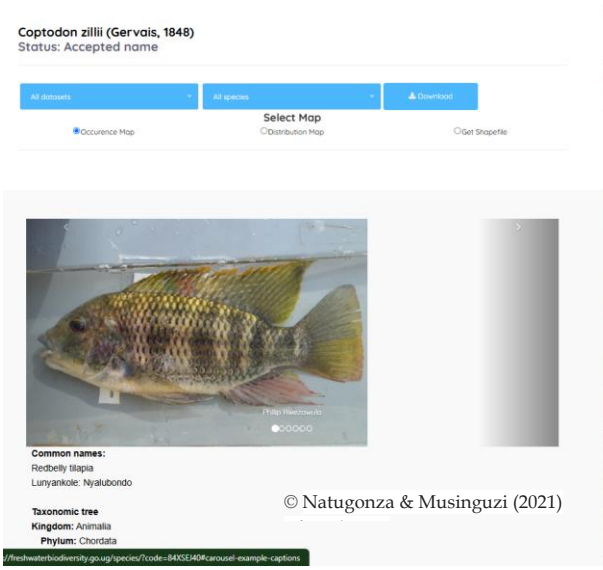
Fish catch compositions along the UVN have fluctuated over time. In the April 2025, only ten (10) fish species were recorded which is an increase of one from September 2024. The commercial fisheries of the UVN were exploited from seven fish families i.e., Bagridae, Latidae, Cichlidae, Cyprinidae, Danionidae, Mochokidae, Mormyridae. Particularly, *Bagrus docmak*, *Lates niloticus, Oreochromis niloticus*, *Oreochromis variabilis, Coptodon zillii, Rastrineobala argentea, Synodontis afrofischeri, Mormyrus kannume* and Haplochromine cichlids grouped as a single taxon (**Table 2-1**). The number of fish species recorded has

oscillated over time. While the highest (14) number of species was observed in September 2015, the least was observed in May 2023. There is no clear pattern of the number of species at the monitored sites**,** however, some species have been rarely observed in the past 10 years. *Bagrus docmak*, *Lates niloticus, Oreochromis niloticus*, *Rastrineobala argentea, Synodontis afrofischeri, Mormyrus kannume* and Haplochromine cichlids have been regularly reported in the past 10 years **(**Table 2-1**).** The fish diversity of the UVN according the National Red List is of a great concern. In this sampling, two species were encountered in the fisherman's catch and yet they are of conservation interest at the National level **(**Plate 2-1; Plate 2-2**).**

Fish species of Buyala-Kikubamutwe have remained relatively constant with only four (*B. docmak, C. zillii, Haplochromines and M. kannume*) encountered in the current study (Table 2-1). Of these four species, only *M. kannume* has been common at all study sites for the past 10 years. *M. kannume* is used as a bait among fishers of the Upper Victoria Nile, Lake Victoria and Lake Kyoga. At Buyala-Kikubamutwe, *Lates niloticus* (Nile perch) was absent in September 2020 and April 2025 (Table 2-1).

Unlike Buyala-Kikubamutwe, Kalange-Makwanzi recorded nine (9) species in the current study, with *B. docmak, M. kannume, Lates niloticus* and *Oreochromis niloticus* appearing relatively constant in the past 10 years. *Rastrineobola argentea* has appeared in the commercial catches of Kalange-Makwanzi for only three times (April 2019, September 2024, and April 2025) in the past 10 years (Table 2-1).

Mid-Reservoir recorded only eight (8) fish species in the current sampling which is an increase from 5 reported in September 2024. The highest number of species recorded was in April and September 2015. Like Kalange-Makwanzi, Mid-Reservoir has *B. docmak, M. kannume, Lates niloticus* and *Oreochromis niloticus* appearing relatively constant in the past 10 years (Table 2-1).



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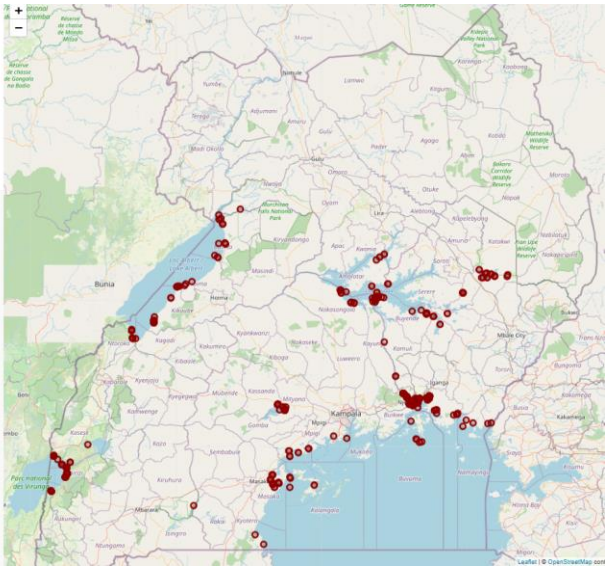
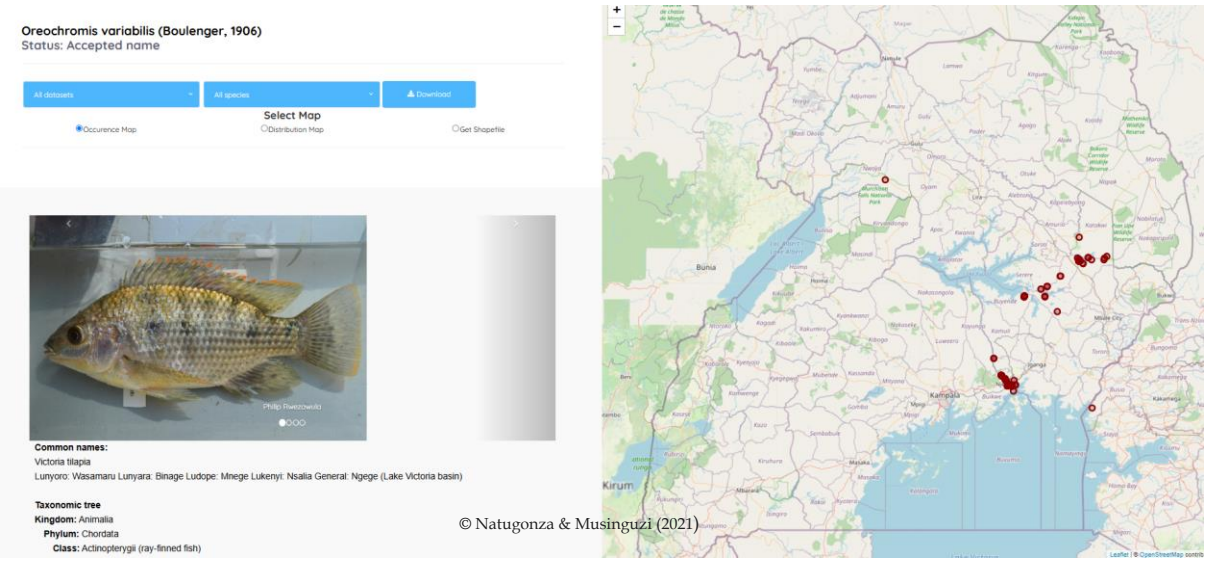


***Plate 2-1** : National Distribution of the Vulnerable (VU) Coptodon zillii*



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***Plate 2-2** : National Distribution of the Near Threatened (NT) Oreochromis variabilis*

CATCH RATES

Generally, the catch per unit effort (CPUE) has varied across the study sites and species over time. The catch rates of *B. docmak* have not differed from other species at study sites and sampling period. For the past 10 years, the highest (42 kg/boat/day) CPUE of *B. docmak* was encountered at the Mid-Reservoir in September 2017, while the least (0.04 kg/boat/day) was at Buyala-Kikubamutwe in September 2018.

Lates niloticus (Nile perch) is a fish species of significant revenue importance due to its export value. Compared to *B. docmak*, Nile perch registered higher CPUE in the current study. However, the CPUE of Nile perch has fluctuated over time.

ZThe highest CPUE (18.55kg/boat/day) of Nile perch was reported at Mid-Reservoir in September 2024, while the least was reported in December 2023 (**Table 2-1**). The current study reported the highest CPUE of 1.7 kg/boat/day for *M. kannume* at Buyala-Kikubamutwe, the least was 0.5 kg/boat/day at Kalange-Makwanzi (**Table 2-1**). Basket traps are the major gear (

Plate 2-3) used to target immature *M. kannume* at the UVN. Over the past 10 years, the highest CPUE of *M. kannume* was 42 kg/boat/day in September 2019 at the Mid-Reservoir. The high





CPUE of 42 kg/boat/day (**Table 2-1**) could be attributed to reduced fishing effort and change in market dynamics.

Plate 2-3: *Setting of Basket traps at Kalange-Makwanzi*

Conservation is key to sustainability of an ecosystem. The UVN is endowed with more than 15 known fish species. However, the ecosystem continues to show reduction of diversity in the

fisherman's catch. Fish species (**Plate 2-1**: **Plate 2-2**) of national conservation importance have continued to decline in the catch rates of fishermen's catch.

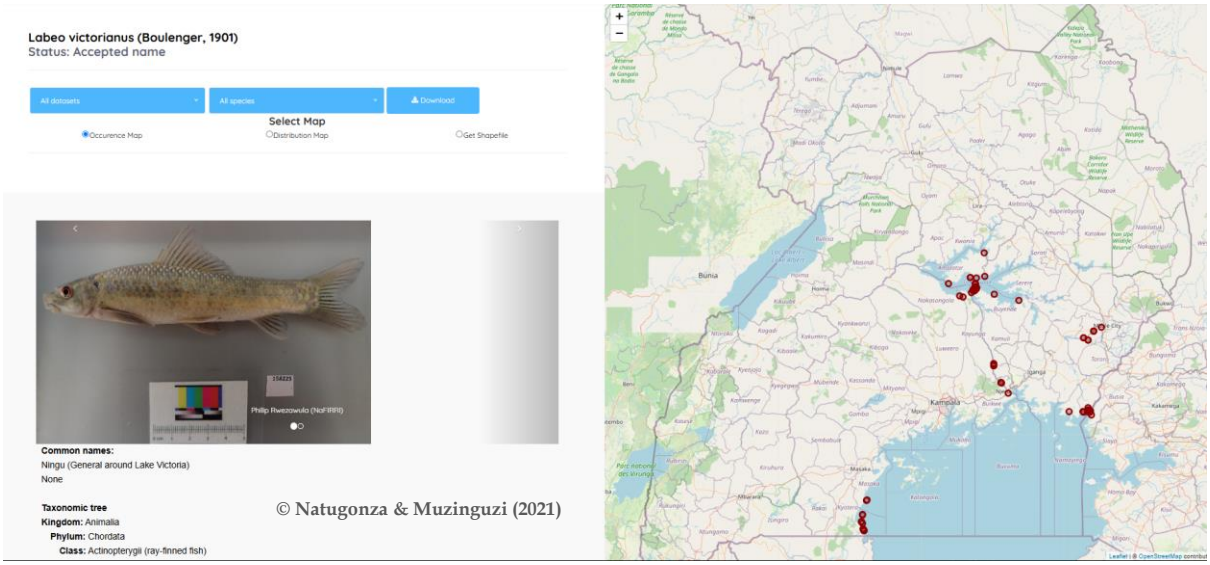


Plate 2-4: *Distribution of Critically Endangered (CE) Labeo victorianus*

Catch rates of the critically endangered fish species such as *Labeo victorianus* have dwindled over time. Over the past 10 years, *Labeo victorianus* was only recorded at Buyala-Kikubamutwe, in April 2019, April 2021 and October 2021 registering 0.04 kg/boat/day, 2.8 kg/boat/day, and 0.3 kg/boat/day respectively. (**Plate 2-24**),

Although *Oreochromis variabilis* is near threatened at the national level (**Plate 2-2**), the fish species' catch rates have not been consistent over time. In the current study, *Oreochromis variabilis* was only recorded at Kalange-Makwanzi with CPUE of 0.4 kg/boat/day. *O. variabilis* has been absent at Buyala-Kikubamutwe in the past 10 years. However, the highest CPUE of *O. variabilis* for the past 10 years was at Kalange-Makwanzi. Mid-Reservoir recorded *O. variabilis* only in September samplings of 2015, 2017, and 2020 (Table 1-1).

Despite showing a wide distribution at the national level, *C. zillii* is vulnerable (Plate 2-1) and calls for conservation strategies. However, the species was recorded in the fisherman's catch of the UVN in the current study. Catch rates of *C. zillii* are remarkably reducing over time. The current monitoring recorded 0.02 kg/boat/day of *C. zillii* at both Kalange-Makwanzi and Mid-Reservoir. The current CPUE of *C. zillii* is the least recorded in the past 10 years. This could be attributed to non-compliance with regulations coupled with unstable enforcement. *C. zillii* has only been encountered in a single sampling of September 2015 with CPUEs of 0.1 kg/boat/day, 0.5 kg/boat/day, and 0.6 kg/boat/day at Kalange-Makwanzi, Mid-Reservoir, and Buyala-Kikubamutwe respectively (Table 1-1).

Oreochromis leucostictus, *Mastacembulus frenatus*, *Synodontis victoriae, Protopterus aethiopicus,* and *Labeo victorianus* did not register any CPUE in the current study (**Table 2-1**). Of these *O. leucostictus* and *Mastacembulus frenatus* appeared at most twice over the sampled period. The uncertain absence *O. leucostictus* which is of conservation concern at national level, poses a serious threat. Both *Labeobarbus altianalis* and *Rastrineobola argentea* were absent at Buyala-Kikubamutwe in the current sampling. However, *R. argentea* has been consistently recorded over the past ten years and it has consistently recorded the highest CPUEs. While Haplochromines were distributed across all study sites, their CPUE was low, ranging from 0.2 kg/boat/day to 1.8 kg/boat/day (**Table 2-1**). The highest CPUE of Haplochromines was at Buyala-Kikubamutwe. This could be ascribed to the use of many basket traps coupled with predominant use of longlines targeting Nile perch.

Table 2-1: *Trends in Catch Per Unit Effort (kg/boat/day), with all gears pooled, of the fish taxa at the monitored transects/site*

Family	Species/ taxa	Transect/Site	2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025
			Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	June	Sept	Apr	Oct	May	Nov	July	Dec	Apr	Sept	Apr
BAGRIDAE	*Bagrus docmak*	Kalange-Makwanzi	0.2	1	0.9	1	1.7	2	0.3	0.6	0.6	0.95	0.33	0.4	2.4	0.5	1.8	0.19	2.03	0.2	1.4	0.7	0.9
		Mid-Reservoir	0.3	1.6	1.1	2	1.2	42	18	2	0.9	2.6	0.33	0.3	0.9	2.4	6.3	1.81	0.63	5.67	0.5	-	4.0
		Buyala-Kikubamutwe	0.2	2	1.6	2.3	-	4	0.4	0.04	0.6	2.5	0.39	0.29	0.7	1.2	1.1	1.62	-	0.68	0.5	-	0.3
LATIDAE	*Lates niloticus*	Kalange-Makwanzi	0.4	2.7	2.8	1.9	2.6	0.2	3.3	1.6	3.2	1.83	3.59	3.4	2.2	1.2	3.2	2.7	13.6	1.25	1.6	1.5	2.0
		Mid-Reservoir	1.6	2.5	1.6	2.8	2.3	3.3	3.9	2.9	3	3.9	4.41	0.65	1.3	6.2	3.4	2.07	0.87	4.77	2.4	18.6	8.8
		Buyala-Kikubamutwe	0.2	1.8	0.1	8	-	1.4	-	0.7	4.6	1.2	0.32	-	1.3	1.9	1.6	1.8	-	0.06	0.6	0.1	-
CICHLIDAE	*Oreochromis niloticus*	Kalange-Makwanzi	0.4	1.5	0.6	1	1.4	0.5	-	0.3	1.2	1.05	2.18	2.5	0.3	0.8	0.2	0.87	0.29	0.92	0.8	0.5	0.9
		Mid-Reservoir	0.2	1.5	0.3	2.3	2.8	0.1	1.8	1.8	0.4	0.45	-	1.2	0.6	2.2	3.2	0.75	0.89	0.36	3.9	0.7	0.2
		Buyala-Kikubamutwe	1.4	0.3	-	-	-	-	-	-	0.2	-	-	-	0.5	-	0.2	2.07	-	0.04	-	-	-
	Oreochromis leucostictus	Kalange-Makwanzi	0.01	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.23	-	-	-	-	-
	Oreochromis variabilis	Kalange-Makwanzi	0.2	1.6	1	1.2	0.4	0.4	-	0.3	0.3	-	0.5	-	0.4	-	0.2	-	0.1		0.4	-	0.4
		Mid-Reservoir	-	0.3	-	-	-	0.1	-	-	-	-	-	0.5		-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Coptodon zillii	Kalange-Makwanzi	0.02	0.1	0.2	0.8	1	0.7	0.1	0.2	1.2	0.6	-	7.3	0.2	1.7	-	0.2	-	-	1.1	0.3	0.0
		Mid-Reservoir	0.02	0.5	0.2	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	-	0.3	-	-
		Buyala-Kikubamutwe	-	0.6	0.2	-	-	-	-	-	0.3	-	0.2	-	0.4	-	-	4.08	-	-	-	-	0.0
	Haplochromines	Kalange-Makwanzi	0.01	0.1	0.1	0.2	0.2	0.3	-	0.1	15.1	0.05	-	-	5	-	-	0.19	0.66	0.3	0.1	0.3	0.5
		Mid-Reservoir	-	0.1	0.1	-	-	0.1	0.3	-	-	-	-	-	-	-	-	0.2	-	0.25	0.1	0.1	0.1
		Buyala-Kikubamutwe	0.2	0.8	-	-	0.3	-	-	0.1	0.2	-	-	-	-	-	-	0.7	0.03	0.07	0.1	0.1	1.8
CLARIIDAE	*Clarias gariepinus*	Kalange-Makwanzi	0.1	2.8	-	-	-	-	-	-	5.9		-	-	-	-	-	-	-	1.03	-	-	-
		Mid-Reservoir	-	3.1		4.5	8	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CYPRINIDAE	*Labeobarbus altianalis*	Kalange-Makwanzi	-	9.8	-	-	-	2.1	-	1.9	-	-	-	-	0.3	0.7	-	3.1	1.5	3.5	-	0.7	1.5
		Mid-Reservoir	-	-	-	-	-	-	-	4	-	-	-	-	0.1	-	-	-	0.18	5.5	-	-	0.1
		Buyala-Kikubamutwe	-	-	-	3	-	15	-	-	1.2	-	-	0.15	-	-	-	-	-	0.13	-	-	-
	Labeo victorianus	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	0.04	-	-	-	2.8	0.3		-	-	-	-	-	-
DANIONIDAE	*Rastrineobola argentea*	Kalange-Makwanzi	-	-		-	-	-	-	-	21	-	-	-	-	-	-	-	-	-	-	125.0	29.0
		Mid-Reservoir	7.2	51	73.3	23	25	-	26	32	19.7	22.3	13.8	23.8	23.3	22.4	19.1	31.7	37.5	118	74.1	69.6	162.3
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MASTACEMBELIDAE	*Mastacembulus frenatus*	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PROTOPTERIDAE	*Protopterus aethiopicus*	Kalange-Makwanzi	0.4	0.7	0.3	1.9	-	0.2	0.5	0.6	0.4	0.4	0.2	0.2	-	-	-	16.9	-	-	-	-	-
		Mid-Reservoir	-	0.5	0.2	0	-	0.5	0.3	0.4	-	0.2	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	0.4	0.4	-	-	1.7	-	0.3	0.04	-	0.33	0.24	-	-	-	-	-	-	-	-	-
MOCHOKIDAE	*Synodontis afrofischeri*	Kalange-Makwanzi	-	-	0.2	-	0.9	-	-	-	-	-	-	-	0.5	0.1	-	0.1	0.03	0.08	0.0	-	-
		Mid-Reservoir	-	0.3	0.5	-	0.1	-	-	-	-	-	-	-	0.5	2.1	0.5	0.2	-	0.1	-	-	0.1
		Buyala-Kikubamutwe	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.09	0.1	-	-
	Synodontis victoriae	Kalange-Makwanzi	2.2	1.1	2.1	0.3	0.3	2.2	0.5	0.6	11.5	0.96	-	0.52	-	-	0.1	-	-	-	0.1	-	-
		Mid-Reservoir	0.4	2.7	2.7	0.8	0.6	5.8	1.1	0.5	42	0.98	0.52	1.07	-	0	-	0.5	-	0.3	0.2	-	-
		Buyala-Kikubamutwe	2.5	2.3	9.7	2.3	1.6	7.5	1	10.6	1.8	1	0.71	1.11	-	-	-	-	-	-	6.0	0.0	-
MORMYRIDAE	*Mormyrus kannume*	Kalange-Makwanzi	2.2	1.1	2.1	0.3	0.3	2.2	0.5	0.6	11.5	0.96	-	0.52	0.7	1.2	1.2	0.9	1.26	1.41	1.0	1.6	0.5
		Mid-Reservoir	0.4	2.7	2.7	0.8	0.6	5.8	1.1	0.5	42	0.98	0.5	1.07	0.6	1.3	2	1.72	1.35	1.51	0.4	0.7	0.7
		Buyala-Kikubamutwe	2.5	2.3	9.7	2.3	1.6	7.5	1	10.6	1.8	1	0.71	1.11	0.9	2.1	0.8	0.9	0.23	0.97	1.7	2.1	1.7

ESTIMATES OF FISH CATCHES

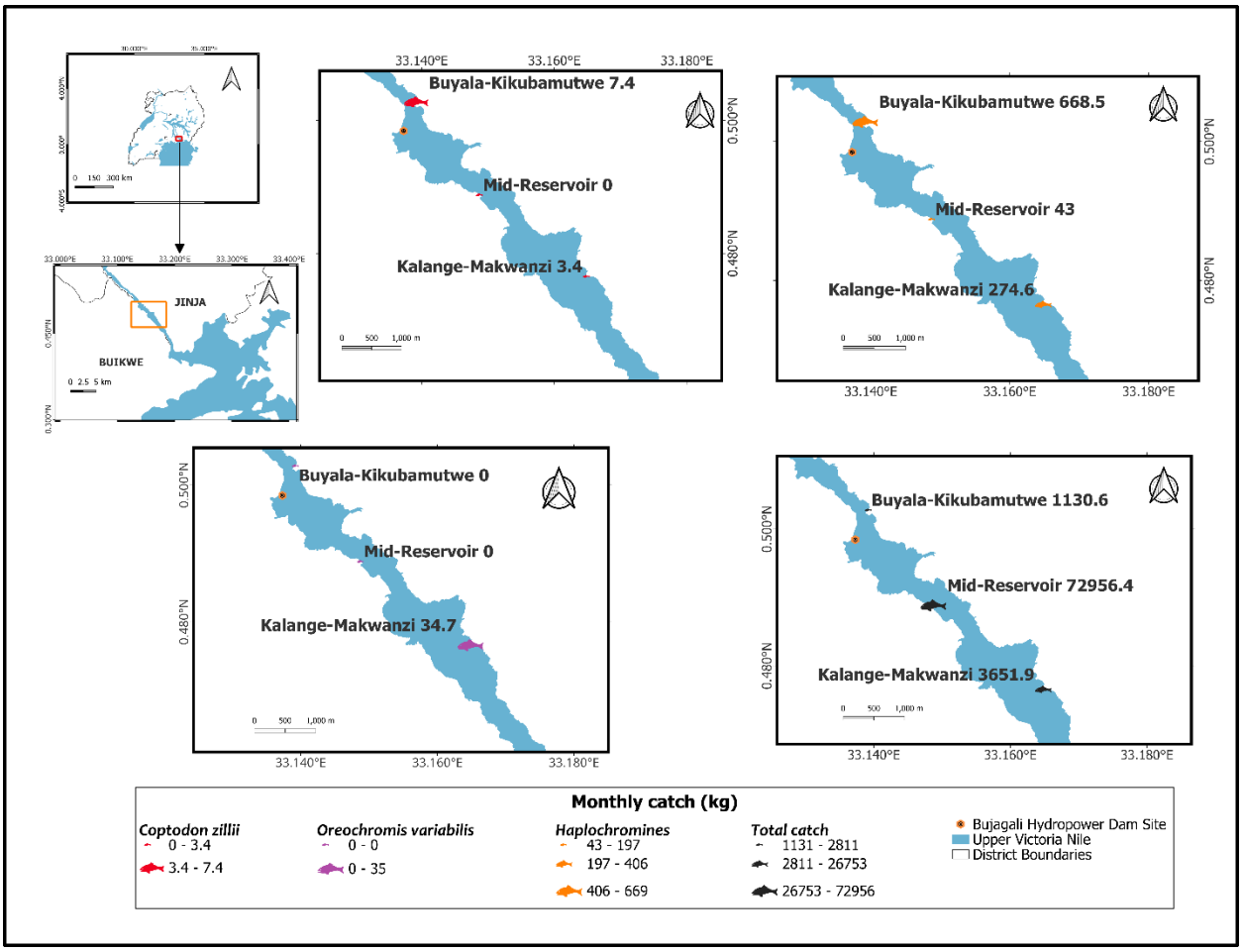


Figure 2-1: Monthly Catch Distribution of Species of conservation concern along the Upper Victoria Nile

The current study reported three fish species of conservation concern encountered in the fisherman's catch. While *Coptodon zillii* was encountered at Buyala-Kikubamutwe and Kalange-Makwanzi, *Oreochromis variablis* was at only Kalange-Makwanzi (***Figure 2-1***). Although not all haplochromines are of conservation concern, are some (eg *Haplochromis simotes*) that are endemic to the River Nile, and this study grouped them as a taxon. Haplochromines were distributed at all study sites in the ratio of 16:1:6 at Buyala-Kikubamutwe, Mid-Reservoir, and Kalange-Makwanzi respectively (***Figure 2-1***).

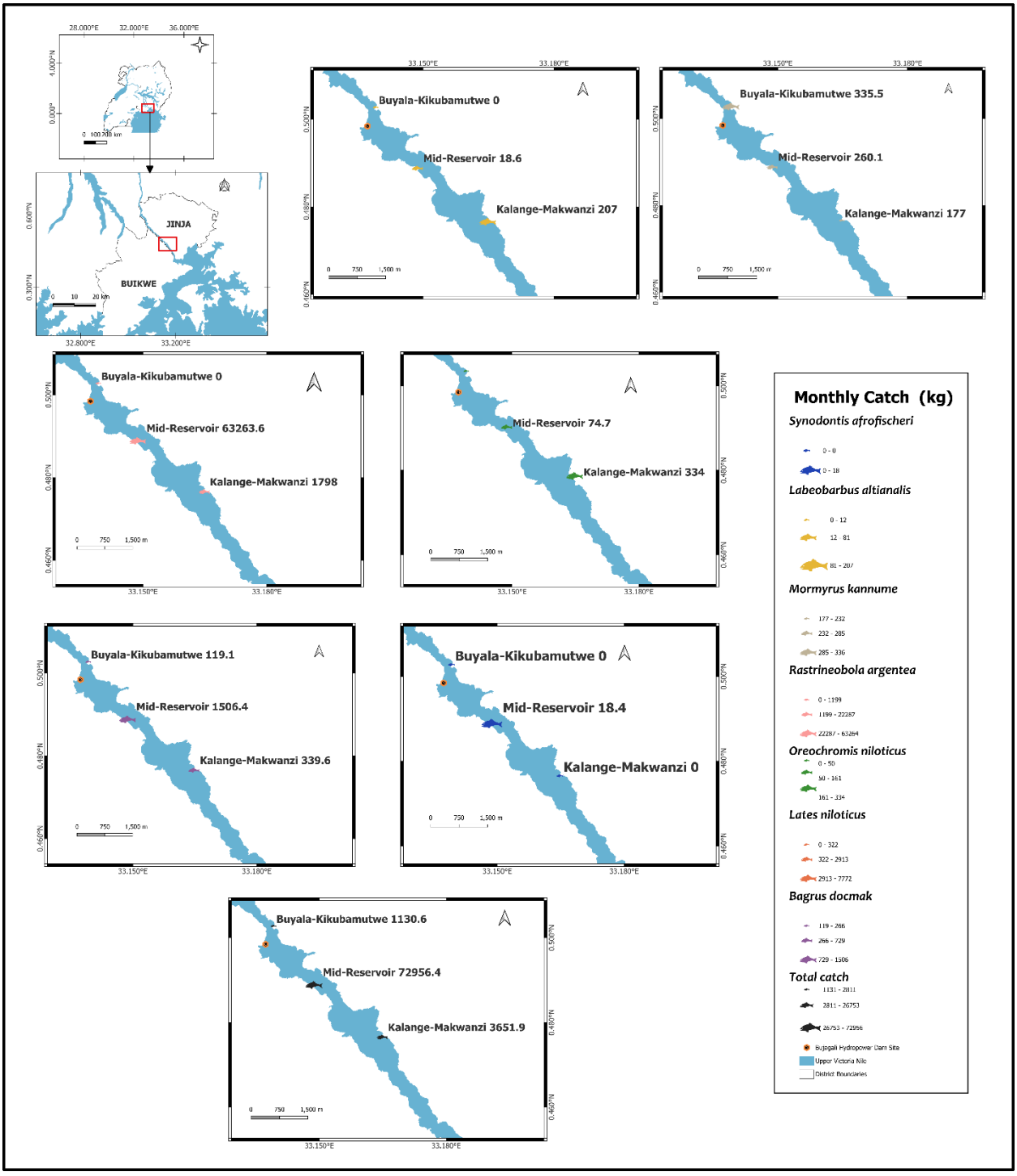


Figure 2-2 Distribution of Monthly Catch of commercial species along the Upper Victoria Nile

The total monthly catch was 77.7 tons. This catch was distributed in ratio of 3:64:1 at Kalange-Makwanzi, Mid-Reservoir, and Buyala-Kikubamutwe respectively.

Two fish species (*M. kannume, and B. docmak,*) were encountered at all the study sites while three species (*L. niloticus, S. afrofischeri* and *L. altianalis)* were encountered at a single site. Mid-Reservoir contributes93% of the catch while Buyala-Kikubamutwe contributed only 1%. Of the total catch, *R. argentea* contributed 83% with 97% (63,263.6 kg) from the Mid-Reservoir (***Figure* 2-2**). *L. niloticus* was distributed in the ratio of 1:16 at Kalange-Makwanzi and Mid-Reservoir respectively (***Figure* 2-2**).

The highest total monthly catch of *B. docmak* was 16,942.7 kg, recorded in May 2022, while the least was 239 kg in September 2024 (**Table 2-2**). At Kalange-Makwanzi, the highest monthly catch was 1,794 kg, recorded in April 2021, while at Mid-Reservoir, the highest was 11,419 kg, recorded in May 2022. Mid-Reservoir and Buyala-Kikubamutwe recorded no catches of *B. docmak* in September 2024 and July 2023, respectively. Kalange-Makwanzi recorded *B. docmak* throughout the past five years (**Table 2-2**).

Lates niloticus has been recorded throughout the 5-year period of monitoring at Kalange-Makwanzi. Over the past 5 years, Mid-Reservoir recorded the highest monthly catches of 20,491 kg and Kalange-Makwanzi recorded 3,231 kg in April 2024 and June 2020 respectively (***Table* 2-2**). Despite recording lower catches of *Lates niloticus*, Buyala-Kikubamutwe has not been consistent in recording this species.

While *Mormyrus kannume* was only absent in December 2023, no records of *Protopterus aethiopicus*, *Clarias gariepinus* and *Mastacembulus frenatus* were registered in the past 5 years. The catches of *M. kannume* have been low, contributing less than 15% of the total catches of the sampled sites. Over the past 5 years, the least (0.99%) contribution of *M. kannume* to the total monthly catch was recorded in the current sampling (**Table 2-2** ;**Figure 2-2**). *Oreochromis leucostictus* was only recorded in November 2022, registering 12 kg/month which contributed 0.4% of the total catch.

Monthly catches of *O. variabilis* varied across the study periods, with the highest being 630kg, accounting for 2% of the total catch in April 2021. Both *C. zillii* and Haplochromines recorded highest monthly catches of 1,505.0 kg and 1,002.8 kg, respectively, in September 2020 (**Table 2-2**). The critically endangered *Labeo victorianus (Plate 2-4*) was only encountered at Buyala-Kikubamutwe, registering low monthly catches of 63.0 kg, 1,608.8 kg, and 162.0 kg in October 2021, May 2023, and November 2022, respectively.

The two species of the Mochokidae family varied across the study sites and sampling periods. *Synodontis afrofischeri* was absent only in September 2024 but registered the highest monthly catch (1,392.9 kg) in October 2021 (**Table 2-2**), which accounted for 3% of the total monthly catch. On the other hand, *Synodontis victoriae* was only recorded at all the study sites in April 2024. In April 2024, the monthly catches of *Synodontis victoriae* were 139.2 kg, 64.8 kg, and 5,018.3 kg at Kalange-Makwanzi, Mid-Reservoir, and Buyala-Kikubamutwe, respectively (**Table 2-2**).

Table 2-2: Trends of total fish monthly catch estimates (kg) at monitored sites

Family	Species/ taxa (local name)	Transect/Site	Monitoring Period										
			2020		2021		2022		2023		2024		2025
			June	Sept	Apr	Oct	May	Nov	July	Dec	Apr	Sept	Apr
BAGRIDAE	*Bagrus docmak* (Semutundu)	Kalange-Makwanzi	292.2	297.5	1,794.0	1,077.2	1,224.0	81.0	408.0	72.0	252.0	103.5	339.6
		Mid-Reservoir	316.8	423.0	965.9	306.4	11,419.0	228.0	243.0	7,302.0	285.1	-	1,506.4
		Buyala-Kikubamutwe	152.8	120.8	321.8	243.0	4,299.7	363.0	-	1,955.0	108.0	135.0	119.1
LATIDAE	*Lates niloticus* (Mputa)	Kalange-Makwanzi	3,231.0	2,550.0	1,640.6	1,016.4	3,225.8	1,244.0	940.0	3,150.0	795.0	1,128.2	483.6
		Mid-Reservoir	4,240.0	936.0	1,359.6	8,231.8	5,912.5	1,034.0	359.0	17,788.0	20,490.5	4,552.1	7,772.1
		Buyala-Kikubamutwe	123.5	-	711.2	1,026.0	992.0	428.0	-	2,808.0	72.0	9.0	-
CICHLIDAE	*Oreochromis niloticus* (Ngenge-Kibati)	Kalange-Makwanzi	1,953.0	1,875.0	250.0	658.9	193.8	69.0	150.0	330.0	275.2	32.1	334.0
		Mid-Reservoir	-	1,728.0	620.1	8,231.8	5,252.0	147.0	569.0	164.0	702.0	113.4	74.7
		Buyala-Kikubamutwe	-	-	-	315.0	-	992.3	759.0	29.0	-	-	-
	Oreochromis leucostictus (Ngege-Nabutono)	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	12.0	-	-	-	-	-
	Oreochromis variabilis (Ngege-Kadugala)	Kalange-Makwanzi	-	-	-	205.7	459.0	18.0	-	189.0	96.9	-	34.7
		Mid-Reservoir	-	-	630.0	-	83.0	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-
	Coptodon zillii (Ngege-Ntomera)	Kalange-Makwanzi	-	5,475.0	162.5	1,329.4	-	21.0	-	-	279.1	16.8	3.4
		Mid-Reservoir	-	-	-	-	-	-	-	-	46.3	-	-
		Buyala-Kikubamutwe	78.0	-	252.0	-	-	1,484.0	-	-	-	-	7.4
	Haplochromines (Nkejje)	Kalange-Makwanzi	-	-	375.0	518.4	183.6	32.0	163.0	163.0	95.6	147.7	274.6
		Mid-Reservoir	-	-	-	89.1	429.9	34.0	-	-	46.8	3.8	43.0
		Buyala-Kikubamutwe	78.0	1,002.8	-	162.0	189.0	174.0	14.0	50.0	11.1	20.4	668.5
CLARIIDAE	*Clarias gariepinus (Male)*	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-
CYPRINIDAE	*Labeobarbus altianalis* (Kisinja)	Kalange-Makwanzi	-	-	-	612.2	-	375.0	1,438.0	1,260.0	-	80.4	207.0
		Mid-Reservoir	-	-	-	-	187.5	-		21.0			18.6
		Buyala-Kikubamutwe	2,671.8	2,671.8	-	-	120.0	-	1,591.2	-	-	-	-
	Labeo victorianus (Ningu)	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	87.6	-	-	63.0	1,608.8	162.0	-	-	-	-	-
DANIONIDAE	*Rastrineobola argentea* (Mukene)	Kalange-Makwanzi	25,830.0	-	-	-	-	-	-	-	-	7,500.0	1,798.0
		Mid-Reservoir	13,214.1	22,800.0	17,437.5	24,463.2	23,820.0	30,143.0	7,213.0	369,450.0	687,589.5	42,432.1	63,263.6
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-
PROTOPTERIDAE	*Protopterus aethiopicus* (Mamba)	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-
MOCHOKIDAE	*Synodontis afrofischeri* (Nkolongo)	Kalange-Makwanzi	-	150.0	375.0	166.9	-	-	14.0	58.0	42.0	-	-
		Mid-Reservoir	180.0	-	630.0	1,226.0	59.4	11.0		36.0	-	-	18.4
		Buyala-Kikubamutwe	130.0	100.8	-	-	15.0	-	-	162.0	47.0	-	-
	Synodontis victoriae (Nkolongo-Kadugala)	Kalange-Makwanzi	-	-	-	-	-	-			139.2	-	-
		Mid-Reservoir	-	-	-	3.4	198.0	13.0	-	-	64.8	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	5,018.3	7.2	-
MORMYRIDAE	*Mormyrus kannume* (Kasulubana)	Kalange-Makwanzi	450.0	387.9	327.0	1,109.7	1,224.0	616.0	793.0	-	7,987.1	732.4	177.0
		Mid-Reservoir	-	1,795.0	654.0	1,352.6	3,531.1	295.0	764.0	-	234.0	61.8	260.1
		Buyala-Kikubamutwe	276.9	464.6	513.0	1,118.6	519.8	185.0	98.0		2,917.9	420.5	335.5
MASTACEMBELIDAE	*Mastacembulus frenatus*	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-
TOTAL		Kalange-Makwanzi	**6,106.5**	**11,110.4**	**5,312.2**	**6,695.0**	**8,670.0**	**3,416.0**	**3,907.0**	**9,225.5**	**29,690.1**	**9,741.0**	**3,651.9**
		Mid-Reservoir	**17,770.9**	**27,691.2**	**22,417.1**	**41,654.4**	**51,023.1**	**31,926.0**	**9,290.0**	**1,884.2**	**946,736.3**	**47,163.2**	**72,956.4**
		Buyala-Kikubamutwe	**839.2**	**1,793.9**	**3,721.7**	**2,711.6**	**2,677.5**	**3,404.0**	**112.0**	**9,225.5**	**10,269.4**	**592.1**	**1,130.6**

UNIT COST OF THE FISH SPECIES OF THE UPPER VICTORIA NILE IN APRIL 2025

Over time, the unit prices of fished have fluctuated. For the past 10 years, *R. argentea* has recorded the least prices. Notably, the least price (426 Ush/kg) was recorded in the current sampling. The price of *R. argentea* reduced from 1,036 Ush/kg in September 2024 to 426 Ush/kg in April 2025. Similarly, the unit cost of *M. kannume* reduced from 27,440 Ush/kg in September 2024 to 11,201 Ush/kg in the current study (***Table 2-3***).

Both *Lates niloticus* (4,689 Ush/kg) and *O. niloticus* (2,900 Ush/kg) recorded the least cost in April 2016. The lower price of these species could be attributed to the harvesting of immature fish. Of the four species from Chilcidea family, *O. niloticus* recorded the highest

unit cost of 9,143 Ush/kg while the Haplochromines were the least with 3,964 Ush/kg in the current study.

The unit price of *B. docmak* registered more than 3-fold increase from 2,833 Ush/kg in September 2024 to 10,012 Ush/kg in the current study (***Table 2-3***). From April 2015, *L. niloticus* was registering the highest price until April 2017. Thereafter, *M. kannume* registered the high prices until the present study.

Table 2-3: *Trends of mean unit prices (Uganda Shillings /kg) of the most common fish species at the beach level, along the Upper Victoria Nile*

Major Commercial Fish Species (local names)	Monitoring period																				
	2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025
	Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	June	Sept	Apr	Oct	May	Nov	July	Dec	Apr	Sept	Apr
Lates niloticus (Mputa)	5,198	4,945	4,689	5,700	8,500	6,250	8,600	7,215	7,710	9,133	6,916	6,567	6,065	8,950	8,229	8,880	8,506	8,121	7,257	12,600	12,267
Oreochromis niloticus (Engege)	3,286	3,526	2,900	4,850	7,300	3,000	5,500	3,500	4,233	7,333	6,500	3,575	4,625	6,688	4,000	7,610	6,918	6,063	4,170	8,667	9,143
Labeobarbus altianalis (Kisinja)	3,000	-	-	5,000	-	5,600	-	6,000	7,000	-	-	20,000	1,000	5,400	4,500	7,333	5,293	4,833	-	6,750	6,750
Mormyrus kannume (Kasulubana)	2,709	2,877	5,787	5,353	4,000	4,800	27,300	23,000	8,349	20,227	26,090	21,202	3,467	11,219	11,248	3,818	19,220	19,212	14,116	27,440	11,201
Oreochromis variabilis (Engege)	3,350	4,300	2,000	3,033	6,000	2,100	-	3,500	4,425	-	-	3,100	4,800	4,000	5,000	6,300	-	4,500	2,938	-	6,000
Bagrus docmak (Semutundu)	2,813	3,542	3,540	4,885	4,200	4,150	7,600	4,200	7,900	4,618	5,136	5,768	4,877	7,238	6,132	6,596	4,716	9,031	5,000	2,833	10,012
Clarias gariepinus (Male)	3,000	2,875	-	4,000	5,000	12,000	-	-	2,000	-	-	-	-	-	-	-	-	5,000	-	-	-
Haplochromines (Nkejje)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,384	2,335	3,271	4,923	3,964
Rastrineobola argentea (Mukene)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,056	791	1,562	1,036	426
Synodontis afrofischeri (Nkolongo)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,150	-	3,000
Synodontis victorie (Nkolongo)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,000	4,000	-
Coptodon zilli (Engege Ntomera)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,000	9,800	3,000	10,000	7,702

Monthly revenue

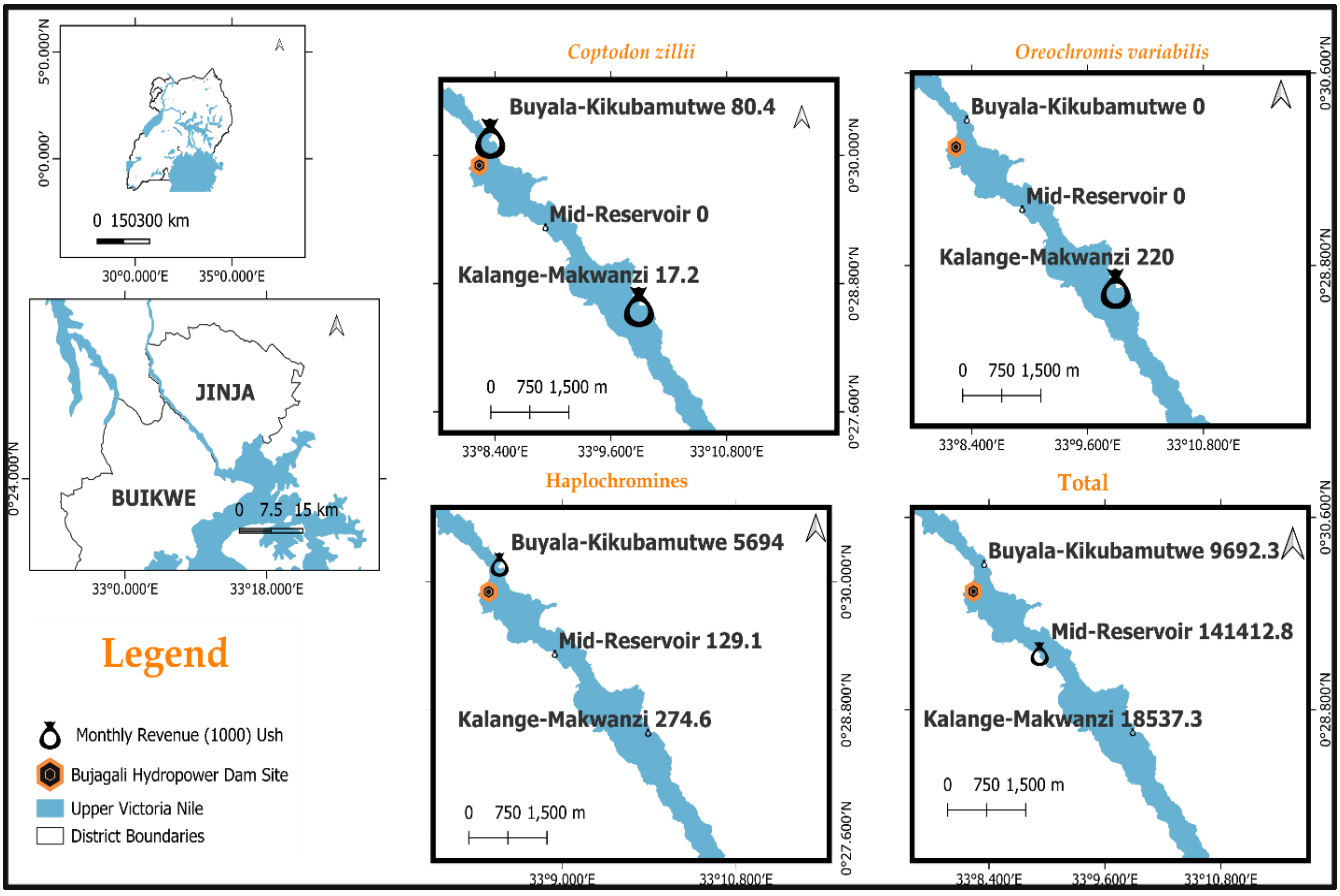


Figure 2-3: *Monthly revenue from the fish species of conservation concern*

Among the three species, Haplochromines were the only ones encountered at all the study sites and generated a total of 6,097,700 /=, which accounts for 4% of the total monthly revenue at the beach value. The revenue from haplochromines was distributed in the ratio of 2:1:44 at Kalange-Makwanzi, Mid-Reservoir and, Buyala-Kikubamutwe, respectively. *C. zillii* contributed less than 0.1% of the total generated revenue at all study sites. Unlike Buyala-Kikubamutwe, Kalange-Makwanzi, was the only study site that registered *O. variabilis* worth 220,000 /= monthly (**Figure 2-3**).

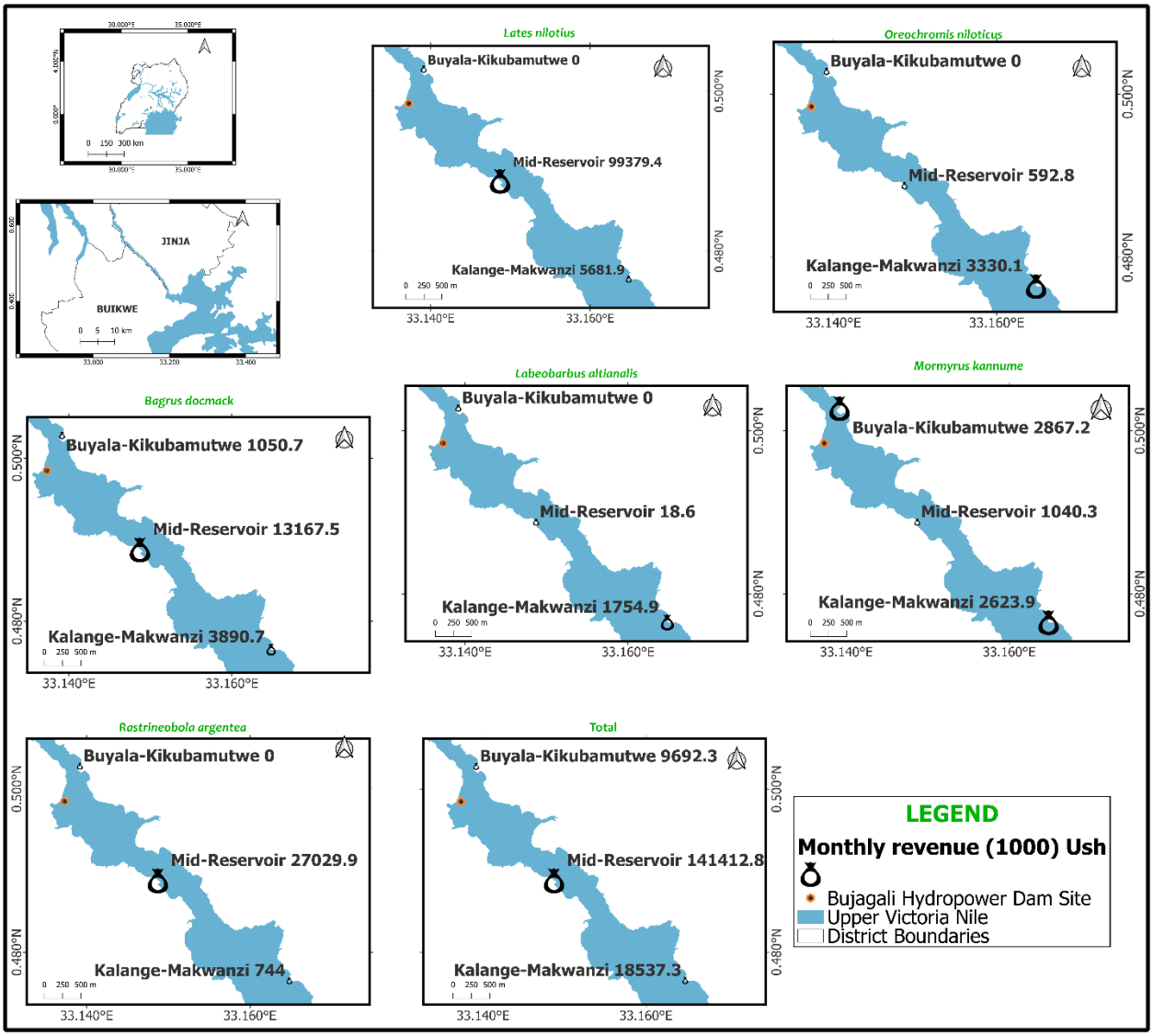


Figure 2-4: *Distribution of Monthly revenue of commercial species at study sites*

Despite contributing the highest monthly catch (**Figure 2-2**), *Rastrineobola argentea* was second in monthly revenue, accounting for 16% of the total monthly revenue. This revenue was from two landing sites: Kalange-Makwanzi and Mid-Reservoir contributing 744,000 Ush and 27,029,900 Ush, respectively (**Figure 2-4**).

Lates niloticus contributed the highest monthly revenue totalling to 105,061,300 /= Ush, distributed in the ratio of 1:17 between Kalange-Makwanzi and Mid-Reservoir, respectively.

Mormyrus kannume and *Bagrus docmak* were the only species with revenue recorded at all the study sites throughout the five-year sampling periods. However, their distribution varies across the study sites. Despite recording the highest number of basket traps and gillnets at Mid-Reservoir (**Figure 1-5**: **Figure 1-4**) in the current study, the site recorded

the least monthly revenue from *M. kannume* resulting from lower catches from the fisher folk (**Table 2-4**;**Figure 2-4**). *B. docmak* generated a total of 18.1 million Ush with Mid-Reservoir recording 72% (13.2 million Ush) and Kalange-Makwanzi registering only 21% (3.9 million Ush) of revenue. Similarly, *L. altianalis* and *O. niloticus* were recorded at only Mid-Reservoir and Kalange-Makwanzi, generating a total revenue of 1,773,000 /- UGX and 3,922,900 /- UGX respectively.

There was no clear trend across sites and sampling periods for the monthly revenue generated from the UVN. While the highest (78,005,000 /-) was registered in May 2022, the least total revenue (664,000 /-) was registered in September 2024 (**Table 2-4**). This could be attributed to the small immature *B. docmak* that was landed in September 2024.

Over the 5-year period, *Lates niloticus* has consistently contributed significantly to the monthly revenue of the Upper Victoria Nile. In the current study, *Lates niloticus* contributed 62% a proportion like that in April 2024 (**Table 2-4**). With exception of December 2023, Buyala-Kikubamutwe contributed the least revenue to total monthly revenue from the UVN. Kalange-Makwanzi contributed the highest monthly revenue of 11,475,000 Ush (55%), 2,214,400 UGX (42%) and, 7,084,000 UGX (65%) in September 2020, November 2022, and July 2023, respectively (**Table 2-4**).

Over the past 5 years, only two study sites have recorded the revenue of *R. argentea* with Mid-Reservoir contributing the highest proportion. This could be attributed to distribution of fishing grounds that enable harvesting high catches of *R. argentea* from the Mid-Reservoir. This, coupled with poor and a rudimentary processing method worsens the value of the fish. At these landing sites, *R. argentea* is open sun-dried and this exposes it to spoilage (see **Plate 2-5**). Additionally, the time spent from fishing to processing without any treatment, also increases the chances to spoilage hence fresh *R. argentea* attracting higher prices.



Plate 2-5: *Rastrineobola argentea (Mukene) Processing at the Mid-Reservoir: Spreading of Mukene for human consumption (B) and for Animals (D) and Birds eating Mukene under processing (A) and (C)*

Over the past five years, Mid-Reservoir contributed significant proportions (more than 50%) of *Oreochromis niloticus* from September 2020 to July 2023. Like the current study, Kalange-Makwanzi recorded significant contributions to the revenue generated from *O. niloticus* in April 2020 (100%) and December 2023 (74%) and April 2024 (65%).

Over the past five years, the highest total revenue generated from *M. kannume* was 300,609,800 Ush (48%) in December 2023. This could be attributed to the increased market demand of *M. kannume* on Lake Victoria to support the bait fishery. Currently, *M. kannume* is marketable at both Lake Victoria and Lake Kyoga. However, the unit price reduced greatly in the current study. Fishers explain such a scenario by the seasonal changes of the of Synodontis species and Haplochromine species in the large lakes. Also, the reduction of the Nile perch catches in both lakes and rivers which diminishes the market of *M. kannume*.

Both *Synodontis victoriae* and *Synodontis afrofischeri have* always contributed less than 2% to the total generated revenue over the past 5 years. No records of *Protopterus aethiopicus* and *Mastecemberas franetus* have been observed. In both sampling periods of 2022, no revenue was generated from the *R. argentea*. This could be attributed to the sampling period since the fishing of the species is light dependent. Over the passed 5 years, *C. zillii, O variabilis* and *O. esculentus* contributed to less than 5% of the monthly revenue (**Table 2-4**)

Table 2-4: *Trends of total fish monthly Revenue estimates (1000) Uganda Shillings at monitored sites*

Family	Species/ taxa (local name)	Transect/Site	Monitoring Period										
			2020		2021		2022		2023		2024		2025
			June	Sept	Apr	Oct	May	Nov	July	Dec	Apr	Sept	Apr
BAGRIDAE	*Bagrus docmak* (Semutundu)	Kalange-Makwanzi	914.0	1,517.0	6,996.0	7,848.4	11,876.0	576.0	1,897.0	1,440.0	1,260.0	258.8	3,890.7
		Mid-Reservoir	1,267	2,592	4,388	24,335	64,665	426	1,204	14,634	2,134	-	13,168
		Buyala-Kikubamutwe	1,018.0	649.0	2,574.0	1,093.5	1,463.6	4,299.0	-	36,180.0	565.0	405.0	1,050.7
LATIDAE	*Lates niloticus* (Mputa)	Kalange-Makwanzi	20,770.0	11,475.0	7,727.0	7,514.1	30,039.0	2,214.4	7,084.0	20,340.0	3,603.0	13,783.3	5,681.9
		Mid-Reservoir	34,980.0	9,360.0	8,526.0	85,257.0	41,140.0	1,595.2	3,778.0	74,549.8	32,464.0	67,877.5	99,379.4
		Buyala-Kikubamutwe	452.0	-	5,394.0	10,260.0	10,914.0	1,514.5	-	93,600.0	960.0	90.0	-
CICHLIDAE	*Oreochromis niloticus* (Ngenge-Kibati)	Kalange-Makwanzi	14,322.0	5,625.0	812.5	3,129.9	969.0	1,854.0	-	18,000.0	1,353.5	305.0	3,330.1
		Mid-Reservoir	-	8,640.0	3,720.5	3,720.5	27,435.5	16,955.0	394.9	3,390.0	720.0	793.8	592.8
		Buyala-Kikubamutwe	-	-	2,520.0	-	-	1,854.7	-	2,880.0	-	-	-
	Oreochromis leucostictus (Ngege-Nabutono)	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	12.3	-	-	-	-	-
	Oreochromis variabilis (Ngege-Kadugala)	Kalange-Makwanzi	-	1,125.0	-	822.9	2,295.0	20.2	-	4,860.0	811.0	-	220.0
		Mid-Reservoir	-	-	3,024.0	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-
	Coptodon zillii (Ngege-Ntomera)	Kalange-Makwanzi	-	16,425.0	568.0	6,204.0	-	16.5	-	-	931.0	168.0	17.2
		Mid-Reservoir	-	-	-	-	-	-	-	-	462.0	-	-
		Buyala-Kikubamutwe	78.0	-	1,764.0	-	-	-	-	-	-	-	80.4
	Haplochromines (Nkejje)	Kalange-Makwanzi	-	501.0	1,555.3	91.0	-	1,049.0	1,512.0	-	1,209.0	654.5	274.6
		Mid-Reservoir	-	-	-	178.3	4,229.0	-	-	10,080.0	2,002.0	26.4	129.1
		Buyala-Kikubamutwe	39.0	-	-	81.0	94.0	-	60.0	2,700.0	164.0	98.6	5,694.0
CLARIIDAE	*Clarias gariepinus* (Male)	Kalange-Makwanzi	-	-	-	-	-	-	-	3,857.0	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-
CYPRINIDAE	*Labeobarbus altianalis* (Kisinja)	Kalange-Makwanzi	-	-	-	3,305.9	7.1	282.3	8,037.0	1,260.0	-	526.8	1,754.9
		Mid-Reservoir	-	-	-	-	-	153.6	680.0	2,520.0	-	-	18.6
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	1,440.0	-	-	-
	Labeo victorianus (Ningu)	Kalange-Makwanzi	-	-	-	-	-	-	-	4,860.0	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	1,260.0	20,109.0	810.0	-	-	-	-	-	-	-
DANIONIDAE	*Rastrineobola argentea* (Mukene)	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	13,500.0	744.0
		Mid-Reservoir	173,338.0	370,500.0	241,045.0	427,164.9	-	-	7,616.0	36,515.0	1,208.0	41,356.5	27,029.9
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-
MASTACEMBELIDAE	*Mastacembulus frenatus*	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	42.0	-	-	-	-	-	-	-	-	-
PROTOPTERIDAE	*Protopterus aethiopicus* (Mamba)	Kalange-Makwanzi	-	-	-	-	-	-	-	-	-	-	-
		Mid-Reservoir	-	-	-	-	-	-	-	-	-	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	-	-	-
MOCHOKIDAE	*Synodontis afrofischeri* (Nkolongo)	Kalange-Makwanzi	360.0	180.0	-	6,677.0	-	-	58.0	33,300.0	231.0	-	-
		Mid-Reservoir	-	-	-	3,565.0	59.0	36.1	-	1,800.0	-	-	55.3
		Buyala-Kikubamutwe	65.0	500.0	-	-	157.0	21.0	-	33,300.0	300.0	-	-
	Synodontis victoriae (Nkolongo-Kadugala)	Kalange-Makwanzi	-	-	-	-	990.0	36.7	-	4,320.0	933.0	-	-
		Mid-Reservoir	-	-	-	6.8	-	-	-	-	90.0	-	-
		Buyala-Kikubamutwe	-	-	-	-	-	-	-	-	278.8	28.8	-
MORMYRIDAE	*Mormyrus kannume* (Kasulubana)	Kalange-Makwanzi	1,350.0	8,480.0	1,072.0	12,411.3	22,582.0	883.0	7,428.0	75,548.6	10,050.0	15,257.8	2,623.9
		Mid-Reservoir	-	38,148.0	2,832.0	8,782.0	24,573.0	295.7	153.0	132,746.4	940.0	1,891.6	1,040.3
		Buyala-Kikubamutwe	7,863.0	9,292.0	2,736.0	17,178.0	3,118.0	27.9	266.0	92,314.8	1,481.0	12,615.8	2,867.2
TOTAL		Kalange-Makwanzi	**37,716.0**	**44,947.0**	**18,115.0**	**43,459.5**	**75,015.0**	**6,932.1**	**27,035.0**	**184,483.5**	**18,423.0**	**44,454.0**	**18,537.3**
		Mid-Reservoir	**209,855.0**	**429,240.0**	**266,201.0**	**578,164.9**	**500,174.0**	**691,075.0**	**21,419.0**	**175,231.6**	**37,807.0**	**111,945.8**	**141,412.8**
		Buyala-Kikubamutwe	**9,517.0**	**11,774.0**	**35,098.0**	**29,422.5**	**30,841.0**	**18,585.0**	**1,789.0**	**262,414.8**	**3,184.6**	**13,238.2**	**9,692.3**

TOTAL MONTHLY CATCHES AND REVENUE

Trend of monthly total catches (kg) and revenue (1000 Uganda Shillings) of individual fishing units at the monitored sites

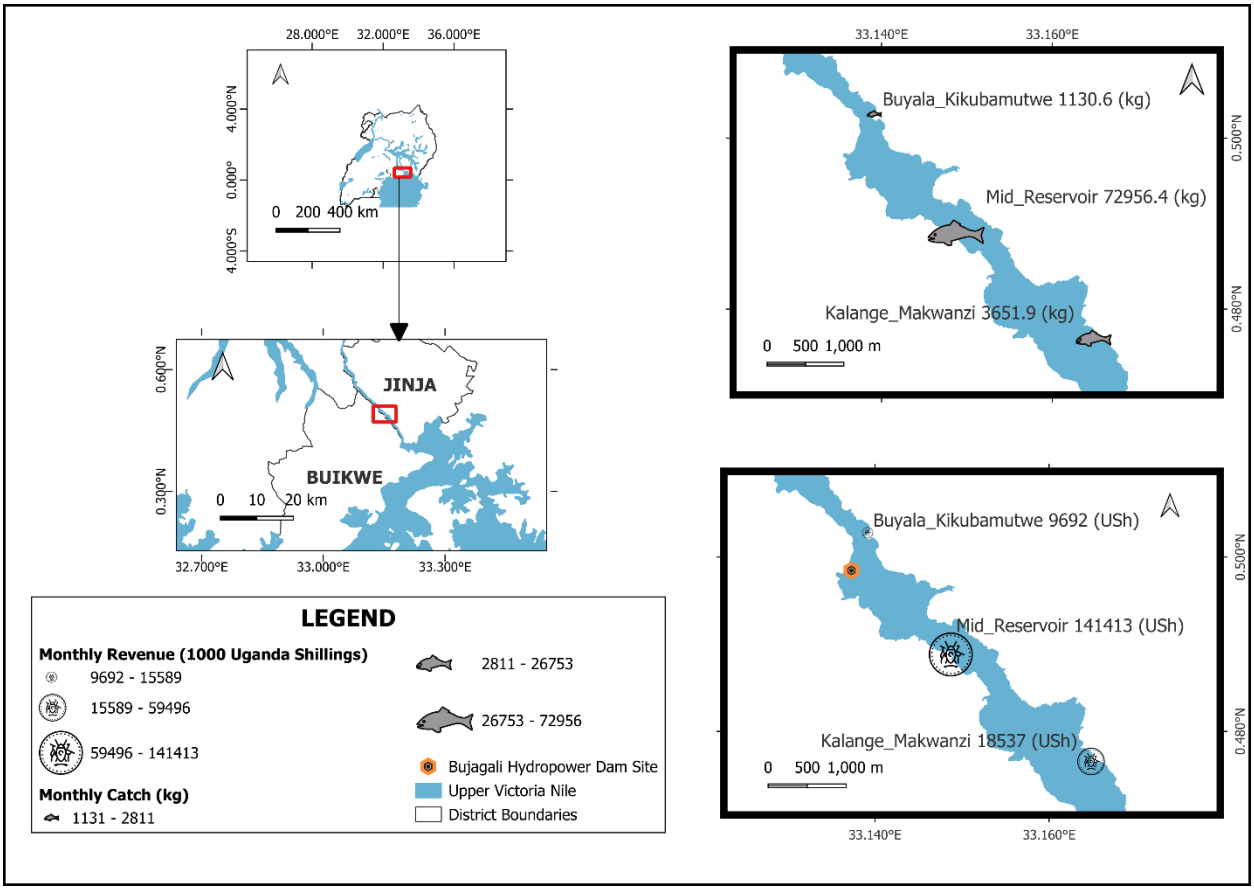


Figure 2-5:Distribution of monthly catch and revenue from the UVN

In the current study, Mid-Reservoir recoded the highest proportion of total catches (94%) and monthly revenue (83%). Kalange-Makwanzi and Buyala-Kikubamutwe registered total catch of 3.6 and 1.1 tons respectively (*Figure 2-5*;*Table 2-5*). While Kalange-Makwanzi recorded 18.5 million Ush, Buyala-Kikubamutwe recorded 9.7 million Ush monthly revenue (*Table 2-5*:*Figure 2-5*).

For the past 10 years, Mid-Reservoir has been recoding more than 35% of the total revenue except for December 2023. Although the revenue was always high at the Mid-Reservoir, the monthly total catch showed a non-clear pattern. The Mid-Reservoir has contributed 82% for two consecutive samplings of October 2021 and May 2022 (*Table 2-5*).

Table 2-5: Monthly total catches(kg) and revenue (1000 Uganda Shillings) of individual fishing units at the monitored sites

Transect/Site	Monitoring Period																				
	Year	2016		2017		2018		2019		2020		2021		2022		2023		2024		2025
	Month	Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	Jun	Sept	Apr	Oct	May	Nov	Jul	Dec	Apr	Sept	Apr
Kalange-Makwanzi	Catch	14,167	3,672	10,368	12,675	1,687	1,847	74,182	4,665	6,107	11,110	5,312	6,695	8,670	3,416	3907	399	29,690	9,741	3651.9
	Beach revenue	66,378	2,310	50,533	50,487	22,050	13,979	357,186	43,658	37,716	44,947	18,115	43,460	75,015	3,616	27093	184483	18,423	44,454	18537.3
Mid-Reservoir	Catch	30,839	9,335	12,688	11,365	4,800	16,979	16,812	35,729	17,771	27,691	22,397	41,654	51,022	31,926	9270	18	946	47,163	72956.4
	Beach revenue	51,437	3,761	80,931	74,847	86,050	286,659	279,265	489,360	209,855	429,240	266,201	578,804	691,075	218,907	21361	184	375,480	111945.8	141,413
Buyala-Kikubamutwe	Catch	94,275	1,523	892	9,086	403	5,704	16,928	4,476	839	1,794	3,721	2,712	2,677	20,208	112	9	10,269	592	1130.6
	Beach revenue	49,509	2,166	5,038	48,726	3,579	115,440	171,666	44,617	95,517	11,774	35,098	29,423	18,585	20,343	1789	262414	311,487	13,238	9692.3

FISH RETAINED BY FISHERS FOR HOME CONSUMPTION

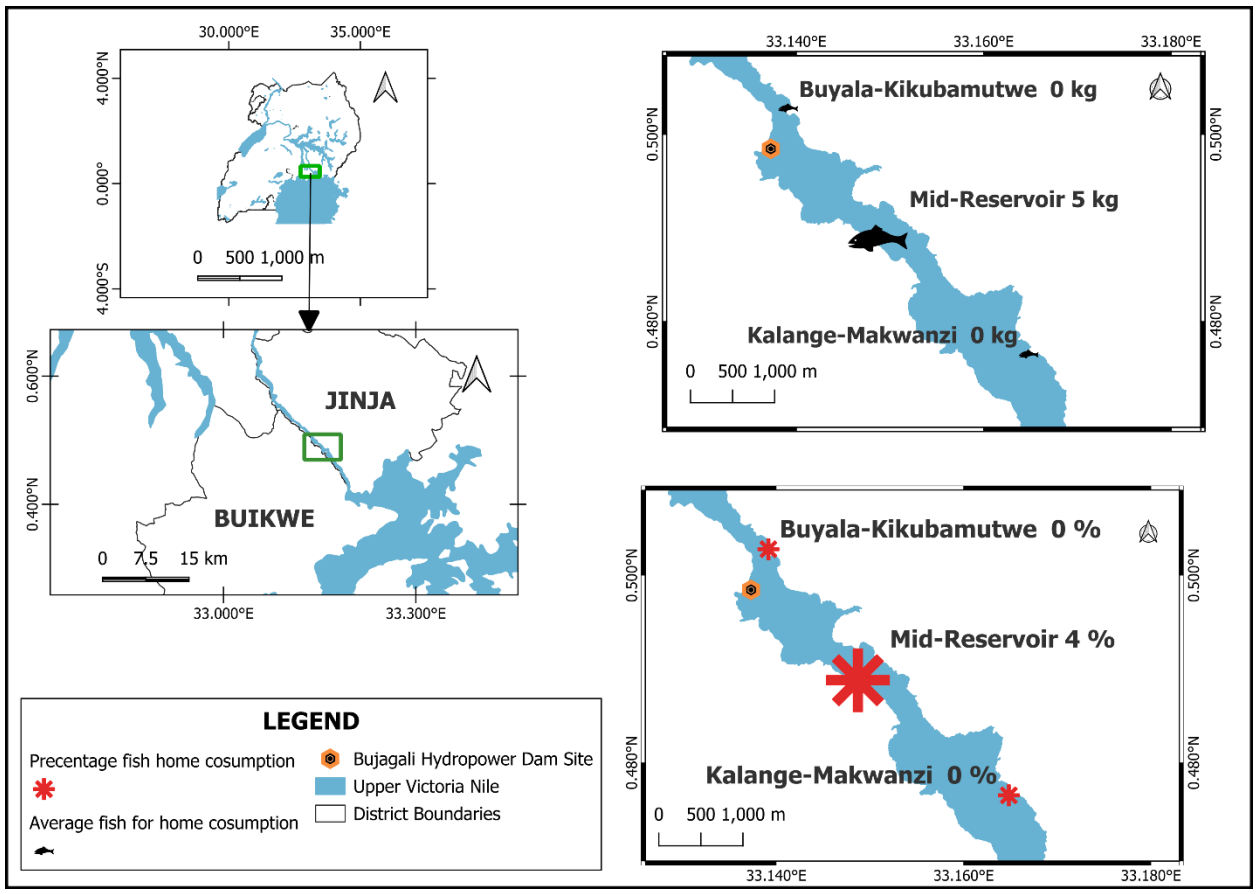


Figure 2-6: Distribution of fish for home consumption by fishers (kg/boat/day)

Only Mid-Reservoir registered some fishers taking fish home for the family consumption in the April 2025 study. An average of 5 kg/boat/day that contributed only 4% of the catch was registered in the current sampling (*Figure 2-6*;*Table 2-6*). Over the past 10 years, the average weight of fish retained for consumption has fluctuated across study sites. In April 2015, April, 2018, and December 2023, all study sites recorded fish for home consumption. While the highest average weight (2.8 kg/boat/day) of fish for home consumption at Kalange- Makwazi was

recorded in July 2022, the highest proportion (100%) was in April 2024 (***Table 2-6***). At Mid-Reservoir, both the highest proportion and average catch were recorded in December 2023. Similarly, Buyala-Kikubamutwe registered the highest catch and proportion in the same month, December 2023 (***Table 2-6***).

Table 2-6: *Trends of the average weight of fish (kg/boat/day) retained by fishers for domestic use and weight of fish retained as a percentage of the overall average weight of fish caught per boat.*

Transect/Site	Year	2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025
	Month	Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	Jun	Sept	Apr	Oct	May	Nov	Jul	Dec	Apr	Sept	Apr
Kalange-Makwanzi	Average weight of fish retained (kg/boat/day) for consumption	0.5	1.3	-	0.6	0.9	0.3	0.8	-	-	0.4	-	1.7	2.8	-	2.8	-	2.8	0.9	2.5	-	-
	% weight of fish retained for consumption of the overall boat catch	9.2	1.8	-	43.0	59.0	26.0	50.0	-	-	5.0	-	58.6	75.0	-	39.5	-	18.3	1.8	100.0	-	-
Mid-Reservoir	Average weight of fish retained (kg/boat/day) for consumption	0.1	0.5	0.9	-	-	0.1	0.7	1.2	0.4	-	-	-	1.0	2.0	1.8	1.1	-	51.8	-	-	5.0
	% weight of fish retained for consumption of the overall boat catch	0.6	0.8	0.3	-	-	-	17.2	17.1	6.7	-	-	-	38.0	31.0	13.4	47.7	-	96.9	-	-	4.0
Buyala-Kikubamutwe	Average weight of fish retained (kg/boat/day) for consumption	0.1	-	0.3	-	0.3	0.3	0.3	-	0.8	-	-	-	-	-	-	1.2	-	0.7	-	0.4	-
	% weight of fish retained for consumption of the overall boat catch	3.0	-	0.2	-	18.0	5.0	5.5	-	38.1	-	-	-	-	-	-	52.2	-	1.4	-	57.0	-

FISHERY RELATED JOBS

Like other fisheries production industries, UVN was reported to have some jobs are mainly done by a particular gender (Gopal,2020), due cultural belief, nature of the job and education levels. The current study found that the Mid-reservoir has the highest number of fishers. Notably, Mid–Reservoir was the only site to record both female and male fishers with only 1 female fisher and 101 male fishers. While the number of fishers at the Mid-Reservoir and Kalange-Makwanzi decreases in the current sampling, the number of fishers at Buyala-Kikubamutwe increased exponentially from 10 in September 2024 to 50 in April 2025 (.

Table 2-7).

Over the past 10 years, fish trading was dominated by women. Unlike, the previous samplings, the current sampling registered higher several traders at Buyala-Kikubamutwe. This increase in the number of traders could also be explained by the increase in the number of the fishers at the study site (*Table 2-7*). Over the past 10 years, both Kalange-Makwanzi and Mid-Reservoir have recorded at least a female trader.

Fish processing was dominated by female in the current study (*Table 2-7*: *Figure 2-7*). However, the number of processors decreased drastically in the present study. These traders were observed to engage in collection of metallic wastes as seen in

Plate 2-6. Over the past 10 years, the current study recorded the highest number (9) of male fish processors at Kalange-Makwanzi. No fish processing was done at Buyala-Kikubamutwe, likely due to the rocky nature of the landing site, which makes fish processing difficult.

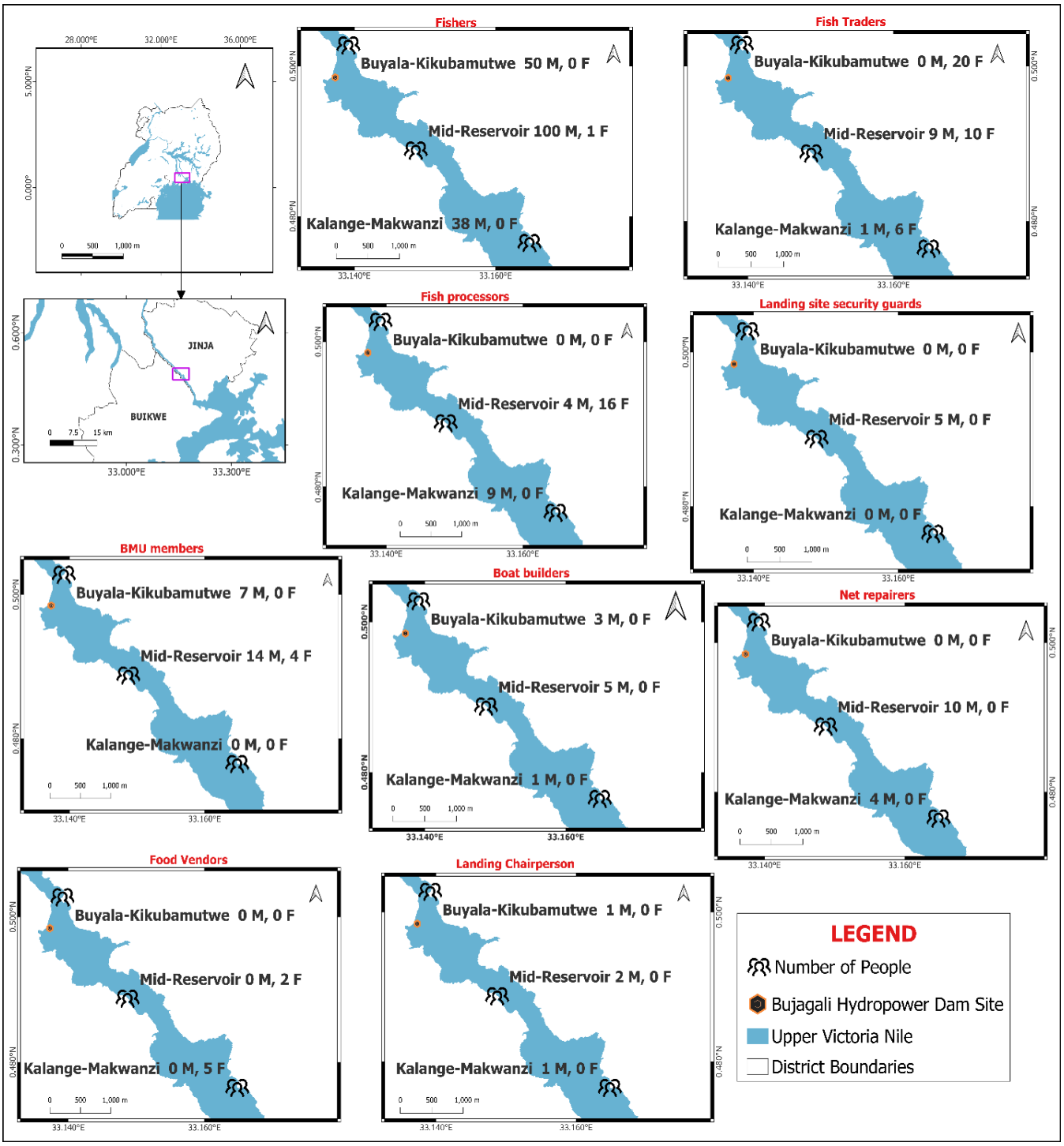


Figure 2-7: Distribution of people by gender engaged in different jobs at monitored sites the UVN in April 2025

Over the past 10 years, there were no fish cleaners at Buyala-Kikubamutwe and Kalange-Makwanzi. The highest number of fish cleaners were three (3) recorded at Mid-Reservoir in April 2017 (*Table 2-7*).

Only Kalange-Makwanzi has been consistently recording a single male chairperson of the landing since 2017. Whereas the Mid-Reservoir reported 2 male chairpersons Buyala-Kikubamutwe, recoded 2 female chairpersons in one of the sampling periods.

The composition of BMU committee members have varied across years and sites. However, females have been less distributed compared to male. In April 2015 for example, only 39% BMU committee members were female. In 2029, only 23 of the BMU committee members were at Mid-Reservoir (*Table 2-7*).

Guarding landing sites has not been commonly taken up by the people of the UVN. Over the past 10 years, guards have been consistently reported at Mid-Reservoir. The current study reported the highest (5) number of guards at Mid-Reservoir (.

Table 2-7;*Figure 2-7*). Since September 2020, no fisheries staff was reported at all landing sites. However, a female officer was reported at the Mid-Reservoir in September 2020 ((.

Table 2-7). Boat building and net repairing were only taken up by males over the past 10 years. The highest number of net repairers was encountered at Mid-Reservoir in April 2017 while the highest number of boat builders was encountered in April 2019. Food vending has been dominated by women at landing sites, however, the highest number of male vendors was five (5) at Kalange-Makwanzi in September 2020 (*Table 2-7*).

Table 2-7: *People by gender engaged in different jobs at monitored landing sites*

Job description	Transect/Site	Sex	Monitoring Period																					
			2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025	
			Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	Apr	Sept	Jun	Sept	Apr	Oct	May	Nov	Jul	Dec	Apr	Sept	Apr	
Fisher	Kalange-Makwanzi	M	54	36	52	45	42	45	37	51	60	53	55	78	35	50	40	77	50	40	32	60	38	
		F	1	2	-	-	-	-	-	1	1	2	-	-	-	-	-	-	-	2	-	1	-	
	Mid reservoir	M	74	37	49	30	52	27	16	73	153	92	50	103	85	136	103	40	90	126	40	180	100	
		F	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	10	-	-	-	-	1	
	Buyala-Kikubamutwe	M	42	21	24	51	20	18	28	20	98	57	-	32	30	30	30	30	25	4	16	10	50	
		F	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	5	-	-	-	
Fish trader	Kalange-Makwanzi	M	1	1	3	14	3	4	4	6	6	3	1	2	2	8	2	1	-	3	-	1	1	
		F	16	7	8	10	6	6	6	8	4	6	8	8	10	7	10	10	10	6	9	8	6	
	Mid reservoir	M	-	2	3	3	3	4	4	4	2	6	2	8	4	4	2	9	-	11	3	2	9	
		F	16	9	16	6	7	4	-	7	13	17	26	20	11	11	8	1	13	13	7	11	10	
	Buyala-Kikubamutwe	M	2	1	-	4	3	3	6	3	1	2	-	8	2	1	-	1	-	4	20	-	-	
		F	3	-	3	1	1	-	5	-	-	10	-	1	4	4	1	1	5	5	-	5	20	
Fish processor	Kalange-Makwanzi	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	9	
		F	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	31	-	1	-	
	Mid reservoir	M	-	-	-	-	-	-	-	-	-	-	4	5	-	-	-	-	-	-	-	4	4	
		F	2	-	-	6	-	-	-	-	-	11	15	15	4	4	-	-	-	-	-	30	16	
	Buyala-Kikubamutwe	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fish cleaner	Kalange-Makwanzi	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mid reservoir	M	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		F	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	
	Buyala-Kikubamutwe	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Chairperson on landing	Kalange-Makwanzi	M	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mid reservoir	M	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Buyala-Kikubamutwe	M	2	2	2	2	2	2	2	2	1	1	-	-	1	1	-	2	1	1	1	1	1	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	
BMU committee member	Kalange-Makwanzi	M	5	6	5	5	5	2	5	4	5	6	6	6	6	5	3	7	-	8	7	-	-	
		F	1	3	4	3	3	-	4	5	1	2	3	3	3	3	7	1	-	1	1	-	-	
	Mid reservoir	M	4	3	18	8	11	12	12	7	3	10	-	5	5	8	2	5	-	10	2	7	14	
		F	1	10		3	4	4	4	-	2	3	4	4	4	3	2	-	-	1	3	-	4	
	Buyala-Kikubamutwe	M	8	2	3	3	3	3	-	4	-	5	-	-	3	1	-	9	5	5	6	-	7	
		F	4	-	-	-	3	-	-	-	-	3	-	-	2	3	-	-	2	-	7	-	2	
Landing site Guard	Kalange-Makwanzi	M	-	-	-	-	-	-	-	1	-	1	3	2	2	2	-	-	-	-	-	-	-	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mid reservoir	M	-	1	-	-	-	-	-	-	-	3	3	-	-	2	3	-	-	-	-	-	5	
		F	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	
	Buyala-Kikubamutwe	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		F	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	
Fisheries officer	Kalange-Makwanzi	M	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	
		F	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mid reservoir	M		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	
		F	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Buyala-Kikubamutwe	M	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	
		F	1	1	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Boat builder	Kalange-Makwanzi	M	2	4	3	3	5	4	3	3	2	2	3	3	3	3	3	1	1	3	3	2	1	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mid reservoir	M	-	2	2	2	2	-	-	6	10	5	3	2	3	4	3	1	-	7	3	4	5	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Buyala-Kikubamutwe	M	-	-	-	-	-	-	-	-	3	1	-	-	3	-	-	1	3	1	-	-	3	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	-	
Food vendor	Kalange-Makwanzi	M	1	-	1	-	1	1	3	1	1	1	1	5	-	-	-	-	-	-	-	1	-	
		F	4	5	5	6	3	4	1	2	3	3	6	11	7	10	4	-	5	4	4	4	5	
	Mid reservoir	M	1	-	-	-	-	-	-	-	1	-	-	-	-	1	2	-	-	3	3	-	-	
		F	1	-	-	-	2	2	-	2	2	2	5	1	1	5	4	6	1	-	2	5	2	
	Buyala-Kikubamutwe	M		-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		F	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Net repairer	Kalange-Makwanzi	M	6	4	5	5	-	6	5	4	-	-	4	4	2	2	-	-	-	-	-	-	4	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mid reservoir	M	-	-	-	3	15	-	-	5	-	5	12	-	4	6	-	-	-	7	2	3	10	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Buyala-Kikubamutwe	M	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	-	3	-	-	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	
landing site cleaner	Kalange-Makwanzi	M	-	-	-	-	-	-	-	-	-	3	-	-	-	-	1	-	-	4	-	-	-	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mid reservoir	M	-	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-	-	-	-	-	-	
		F	-	-	-	-	-	-	-	-	-	-	2	-	-		-	-	-	-	-	-	-	
	Buyala-Kikubamutwe	M	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	
		F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	



***Plate 2-6** : Collection of Metallic waste for scrap from the Damping site of Yogi steel company near the Mid-Reservoir of the UVN*

Conclusions and Recommendations

Based on the findings from the study we concluded as follows;

- Fish catches and revenues along the UVN continue to fluctuate due to ecological alterations, illegal gear use, and shifting livelihood dynamics.
- *Rastrineobola argentea* dominated catch volumes but offered limited economic returns, while conservation-important species are declining in both abundance and catch rates.
- Despite regulatory efforts, destructive fishing gears (e.g., monofilaments, basket traps) remain in widespread use, threatening fish stock sustainability.
- There was an observable shift in livelihood activities, particularly in the Mid-Reservoir, with some fishers abandoning fishing for more stable income-generating alternatives like metal scrap collection.
- Gendered roles in the fishery are deeply entrenched but evolving, with women increasingly marginalized in fish processing and trade due to socio-economic and environmental changes.

To ensure conservation and sustainability of the fish species and stable food and income for the communities of the upper Victoria Nile and more particularly in the Bujaggali stretch; the study came up with the following recommendations.

- Enforce Gear Regulations: Strengthen monitoring, control, and surveillance to eliminate illegal fishing gear, particularly monofilaments and basket traps.
- Enhance Community Awareness: Implement continuous education and sensitization programs on sustainable fishing practices and conservation of endangered species.
- Support Alternative Livelihoods: Develop and support non-fishery income-generating activities to reduce pressure on aquatic resources and promote economic resilience.

- ❖ Improve Post-Harvest Handling: Invest in solar dryers, smoking kilns, and cold storage facilities to enhance fish product quality and market value.
- ❖ Empower Beach Management Units (BMUs): Strengthen BMUs and local governance structures to enable participatory and accountable fisheries co-management.
- ❖ Promote Gender Inclusion: Ensure equitable participation of women and marginalized groups in all aspects of the fishery value chain through training and policy support.
- ❖ Invest in Clean Energy Technologies: Promote the adoption of eco-friendly technologies in fish processing to improve efficiency and reduce environmental harm.

- ❖ Conduct Regular Ecological Monitoring: Maintain consistent, science-based monitoring to detect ecological stress early and recommend evidence-based management interventions

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