

Introduction

Lake Edward, shared between Uganda (29%) and the Democratic Republic of Congo, DRC (71%) connects with Lake George through the 36 km Kazinga Channel. This connected system of water bodies form a major source of fish for food and income. However, scanty data exists on the commercial fisheries in the these water bodies with the harvested species comprising of *Oreochromis niloticus*, *Bagrus docmac*, *Protopterus aethiopicus*, and *Clarias gariepinus*. NaFIRRI in collaboration with the Directorate of Fisheries Resources (DiFR) and the riparian district local governments conducted lake wide Catch Assessment Survey (CAS) to generate information on the current status and trends of harvestable fish species in the three water bodies.

The annual revenue from catch was estimated at Uganda Shillings 47.0 billion (bn) distributes as George (23.9 bn), Edward (20.1 bn) and Kazinga Channel (3.1 bn), with *P. aethiopicus* and *B. docmac* contributing the highest figures (Table 2).

Table 2. Annual beach revenue (million Ugshs) of catch landed on lakes Edward, George, and the Kazinga Channel based on the July 2019 CAS

Water body	<i>Bagrus</i>	<i>Barbus</i>	<i>Clarias</i>	<i>Haplochromine</i>	<i>Labeo</i>	<i>Mormyrus</i>	<i>Protopterus</i>	<i>Tilapia</i>	Total
Edward	6,479	1,942	2,329	35	1,150	385	3,321	4,460	20,101
George	4,344	3,363	4,202	5	-	724	7,876	3,369	23,882
Kazinga Channel	1,217	394	353	4	5	58	835	187	3,052
Total	12,040	5,698	6,883	44	1,155	1,167	12,032	8,015	47,035



Plate 1. (a) *Bagras docmac* (c) *Protopterus aethiopicus* as the major fish stocks in lakes Edward, George and the Kazinga Channel.

Materials and methods

Data was collected from 15 landing sites; Edward (5), George (7), and Kazinga Channel (2) following the Lake Victoria Fisheries Organization Standard Operating Procedures for CAS (LVFO, 2005 a) and Frame Surveys (LVFO, 2005 b). The data were compared to the historical statistics from NaFIRRI data archives.

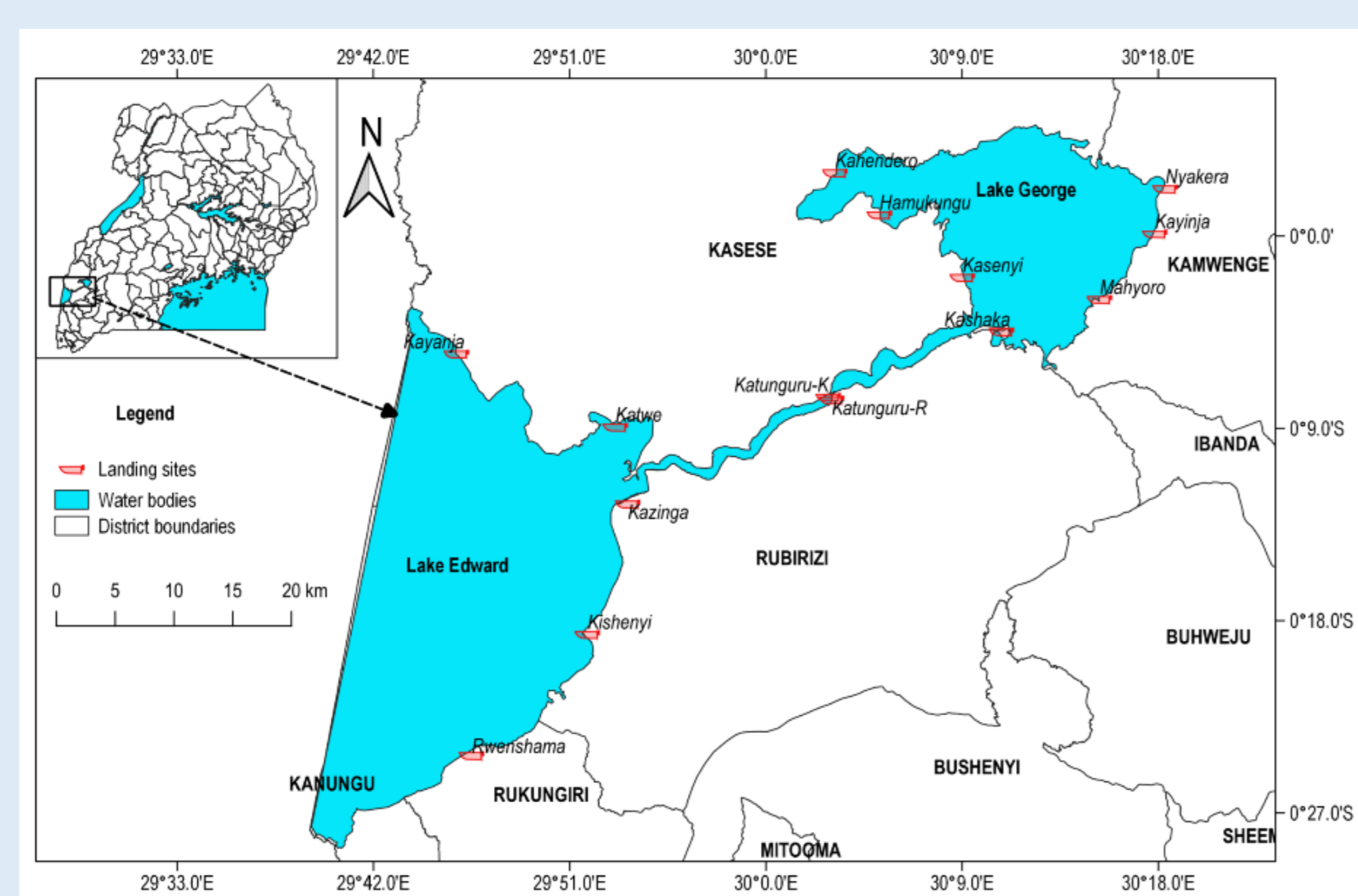


Figure 1. Landing sites sampled for CAS on Lakes Edward, George and the Kazinga channel

Results

- Three vessel-gear (V-G) categories; Parachute boats using Longlines (PA-LL), Sesse Flat boats using Gillnets (SF-GN) and Sesse Flat boats using Longlines (SF-LL) were recorded.
- All the gears used in fish harvesting comply with the legal limits i.e. > 4.5 inches for gillnets and < size 9 for the Longline hooks.
- The harvestable fish species comprised of *Barbus spp*, *P. aethiopicus* and *Tilapia spp* with catch-per-unit-effort (CPUE) varying across districts (Table 1).
- *Barbus spp* (36.2 kg/boat/day) recorded the highest catch rates while the *Haplochromine spp* (0.6 kg/boat/day) registered the least.

Table 1. CPUE for the different V-G combinations presented per species group on Lakes Edward, George and Kazinga Channel

District	V-G Combination	<i>Bagrus spp</i>	<i>Barbus spp</i>	<i>Clarias spp</i>	<i>Haplochromine spp</i>	<i>Labeo spp</i>	<i>Mormyrus spp</i>	<i>Protopterus sp</i>	<i>Tilapia spp</i>
Kamwenge	PA-LL	7.8	0	15.7	0	0	0	21.2	0
	SF-GN	5.4	0	4.4	0	0	1	7.1	4.8
	SF-LL	4	0	5.6	0	0	0	12	6.1
Kasese	SF-GN	26.6	12.7	9	0	2.4	8.6	17.9	11.6
	SF-LL	17.8	1	16.3	0	0	0	30.5	6.4
Rubirizi	SF-GN	18.4	36.2	4.5	0.6	0	5.6	15.6	8.7
	SF-LL	7.7	0	12.1	0	0	0	17.6	11
Rukungiri	SF-GN	13.2	5	5.3	0	0	0	5.6	4.9
	SF-LL	3	1	31.1	0	0	6	9.6	2

The annual catch of 6,637 tons (t) was estimated; 2744 t (Edward), 3431.2 t (George) and 461.8 t (Kazinga Channel) (Fig.2). Kasese district recorded the highest catch (729 t) dominated by *P. aethiopicus*.

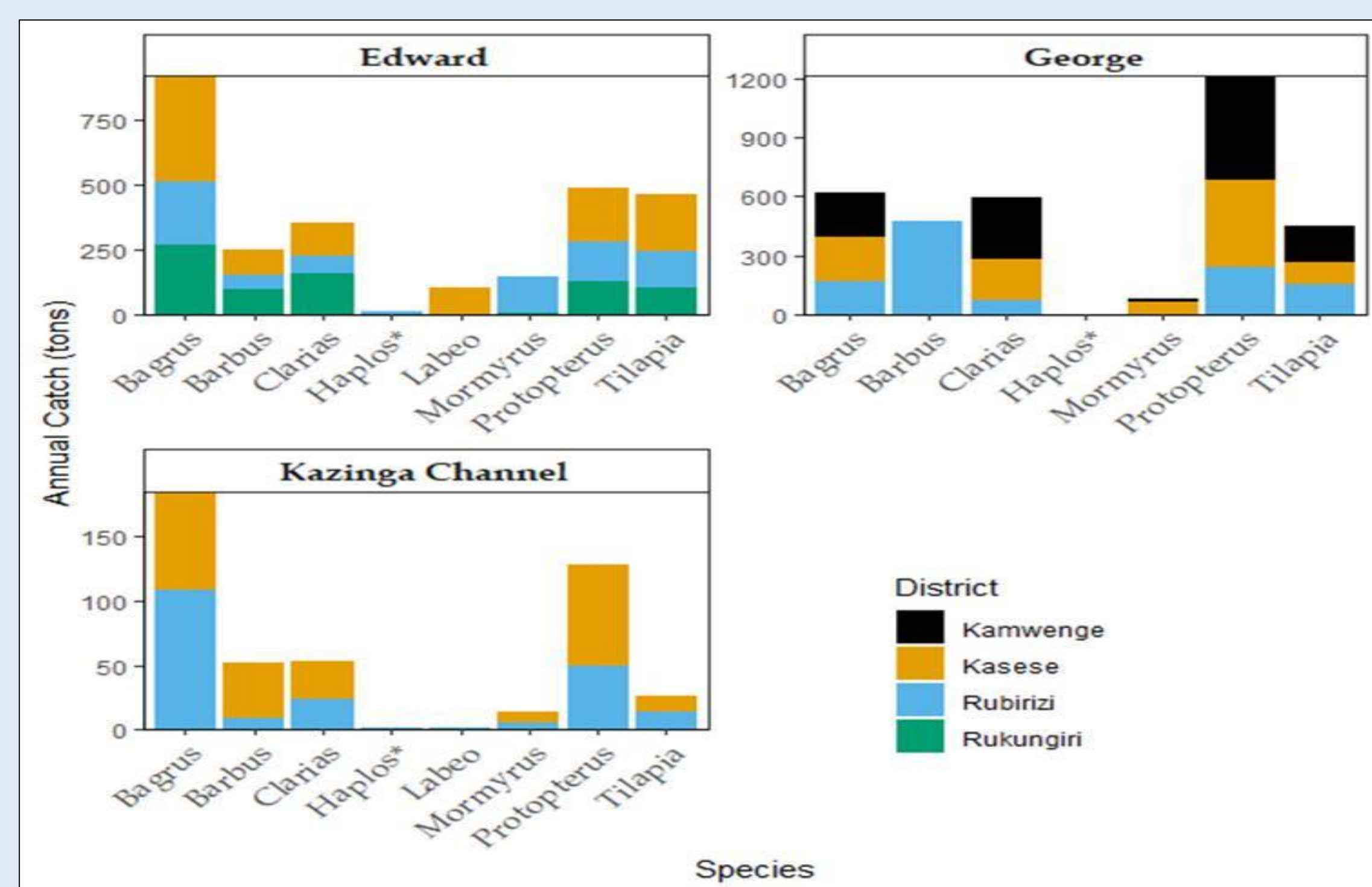


Figure 2. Annual catch landed on lakes Edward, George and Kazinga Channel (Haplo*=Haplochromine spp)

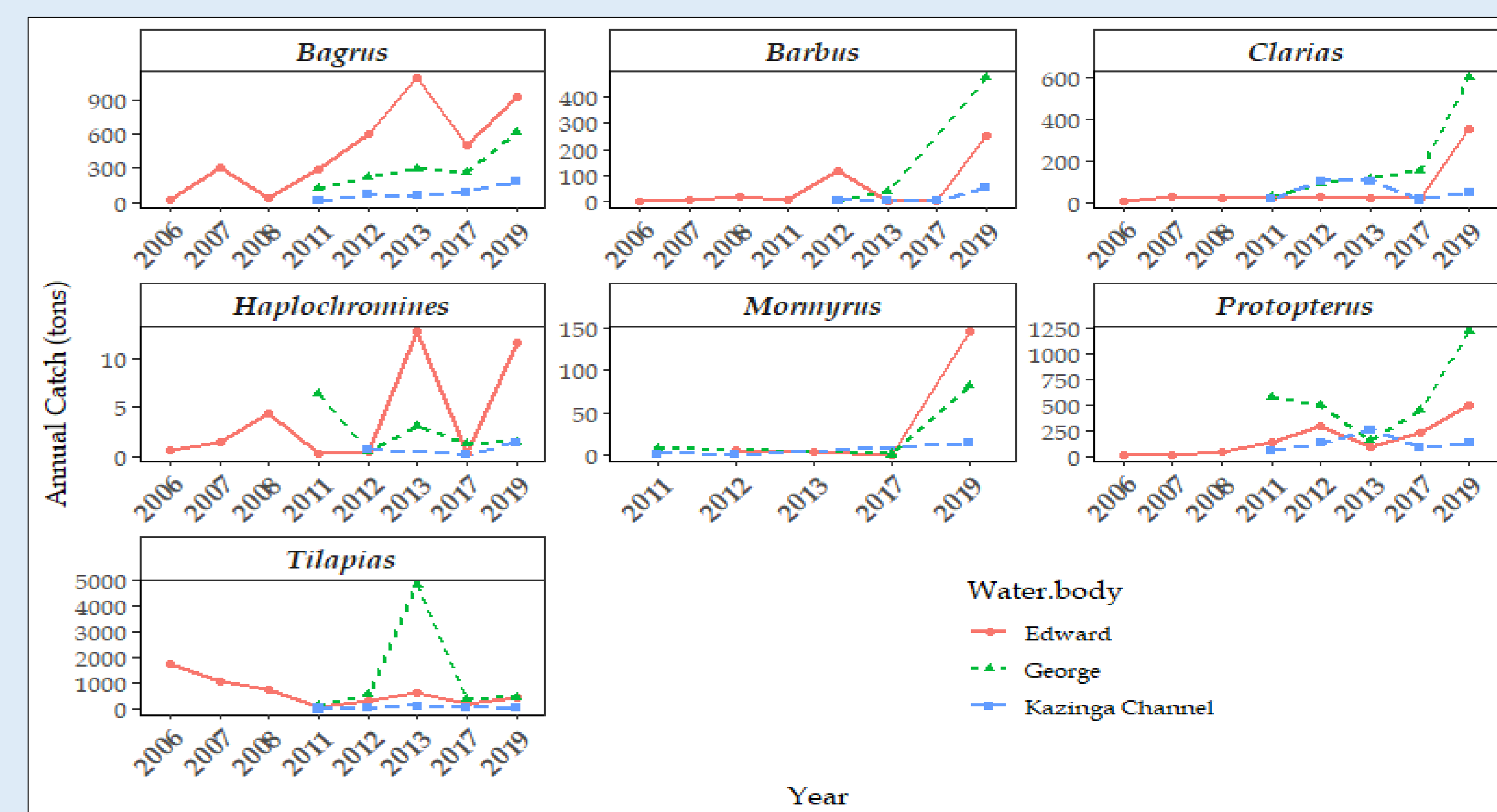


Fig. 3. Trends in annual fish of the harvestable fish species in lakes Edward, George and the Kazinga Channel

Discussion

- The increase in the annual catches in the three water bodies indicates progressive recruitment and fish stock recovery.
- The improved enforcement of fisheries regulations by the Fisheries Protection Unit (FPU) on the three water bodies has helped in eliminating illegal fishing gears and practices in these systems.
- The presence of parachute boats at Nyakera Landing site (Lake George) is indicative of undeveloped fishery.
- Despite low catch rates for the *Tilapia spp*, they remain highly valued species compared to *P. aethiopicus*. On the other hand, haplochromines forming 80% biomass (Mbabazi et al., 2012) in the lakes, registered lowest catches due to under exploitation.

Conclusions

The absence of illegal fishing gears is an improvement in compliance to fishing regulations. The increased catches in 2019 CAS is a sign of stock recovery on these water bodies.

Recommendations

- For sustainability of the fisheries resource and information generation, there is need for continued capacity building and inclusion of fisher communities (the resource users) in fisheries monitoring, surveillances, and management.
- Lake wide harmonized fisheries regulations should be enforced in the two countries sharing Lake Edward.
- Regular monitoring and future research should focus on exploring the potential and possibilities for sustainable harvest of the undeveloped haplochromines.

Acknowledgement

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References

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