



SOCIO-ECONOMIC AND SUSTAINABILITY CONSEQUENCES OF THE DECLINE OF LARGE FISH SPECIES IN THE UGANDAN LAKES

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JOINT NARO-MAK AGRICULTURAL DISSEMINATION CONFERENCE

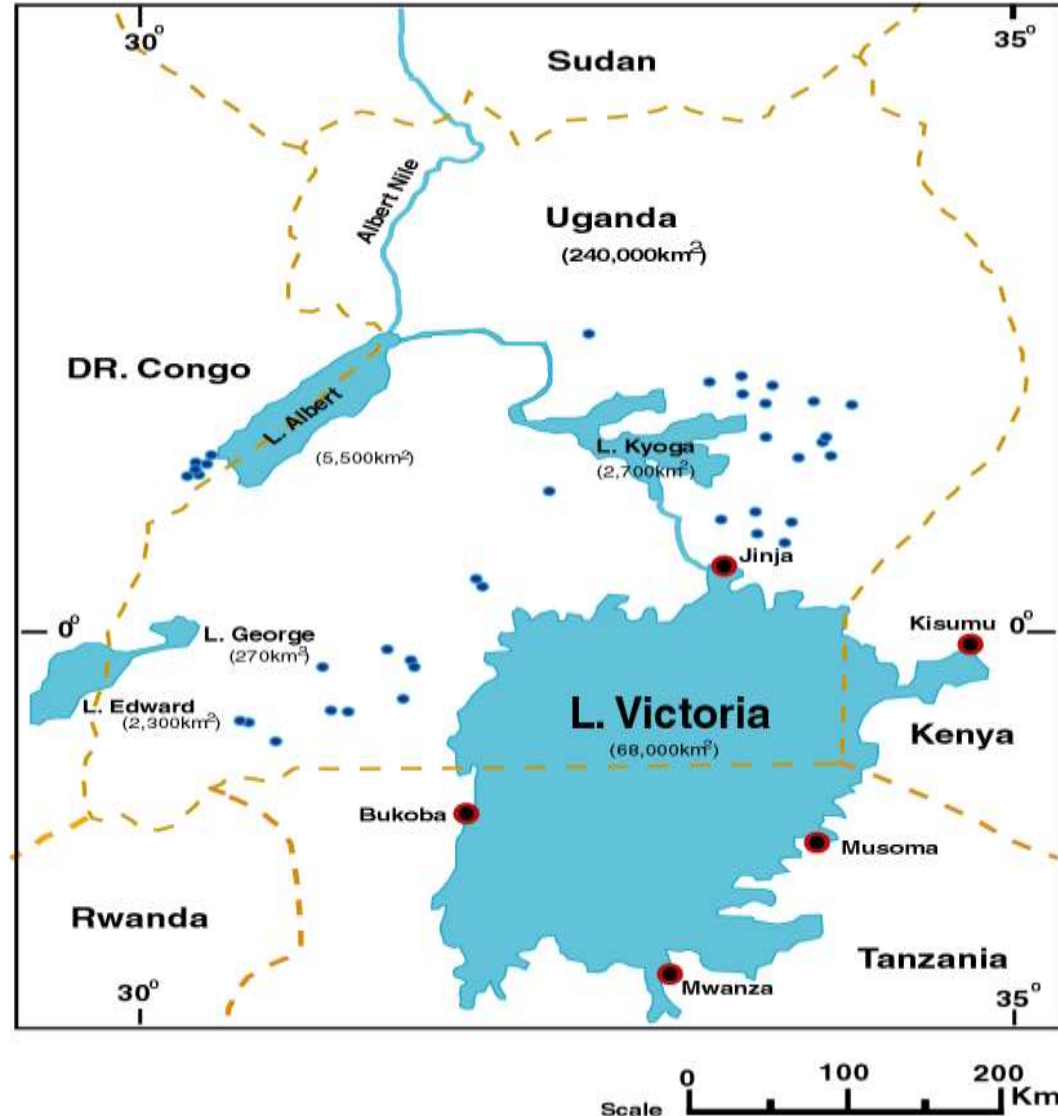
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Outline of the presentation

- BACKGROUND
- CAPTURE FISHERIES IN UGANDA
- THE PROBLEM
- DATA SOURCES
- RESULTS AND DISCUSSION
- CONCLUSIONS
- RECOMMENDATION AND MANAGEMENT IMPLICATIONS

Background

- Water accounts for about 20% of Uganda's surface
- The water bodies are important sources of fisheries resources
- Fisheries resources contribute between 3-6% of the national GDP & up to 12% to the Agricultural GDP (UBOS, 2015; World Bank, 2009)



Capture fisheries in Uganda

- Fisheries production in Uganda is majorly based on the wild stocks (capture fisheries)
- These contribute about 90% of the total annual fish supply (estimated at 550,000 t)
- Capture fisheries production is mainly from the large lakes (~95%)
- The exploited fish species range from the small (e.g. Mukene, Ragoogi, Nkejje) to the large ones (e.g. Nile perch, Tilapias, Clarias, Bagras sp, tiger fishes, Protopterus)

Capture fisheries in Uganda Cont'd



Some of the commercial species in Uganda waters

Statement of the problem

- ❑ The large fish species dominated the commercial fisheries (> 70%) from the 1980 to Early 2000s)
- ❑ Fish export is based on the large species e.g. Nile perch



Statement of the problem Cont'd

- ❑ There has been a shift in species composition and size structure of the commercial fisheries in recent years
- ❑ Commercial fisheries on the large lakes dominated small fishes e.g. Mukene, Nkejje, Mziri and Ragoogi of low economic value
- ❑ Reductions in fish total export and revenue
- ❑ Reduction in national per-capita consumption (from 10-6kg)

Water Body	Dominant species (Biomass)	% composition of dominant species
Victoria	<i>R. argentea</i> (Mukene)	60
Kyoga	<i>R. argentea</i> (Mukene)	43
Albert	<i>B. nurse</i> & <i>N. bredoi</i>	83
George	Haplochromine cichlids	> 90
Edward	Haplochromine cichlids	> 90

Objectives

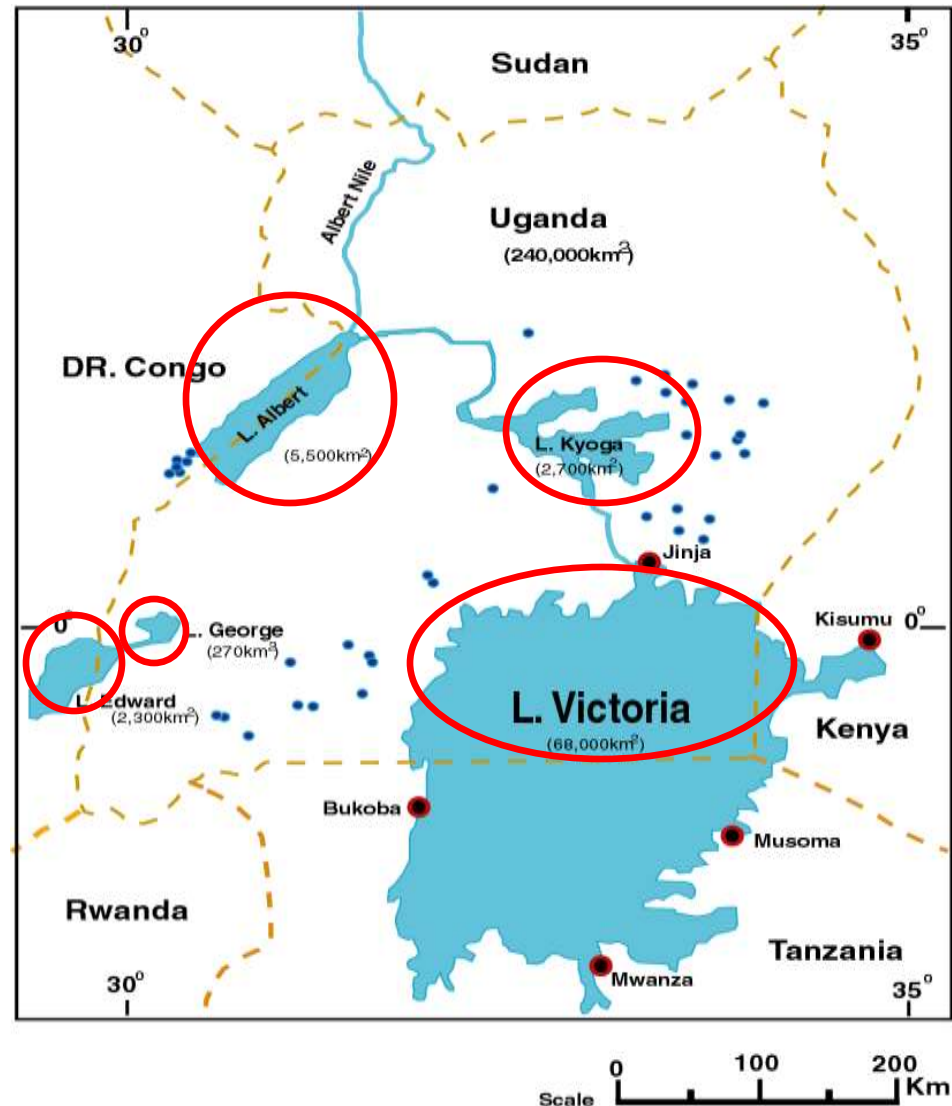
Overall objective: To quantify the implication (socio-economic and sustainability) of the decline in large size fish species on the major lakes of Uganda

Specific objectives

1. Examine trends in of fishing effort, catch and beach revenue of the commercial landing on the five large lakes
2. Examine the handling practices of the emerging small fishes on the large lakes and the socio-economic implications

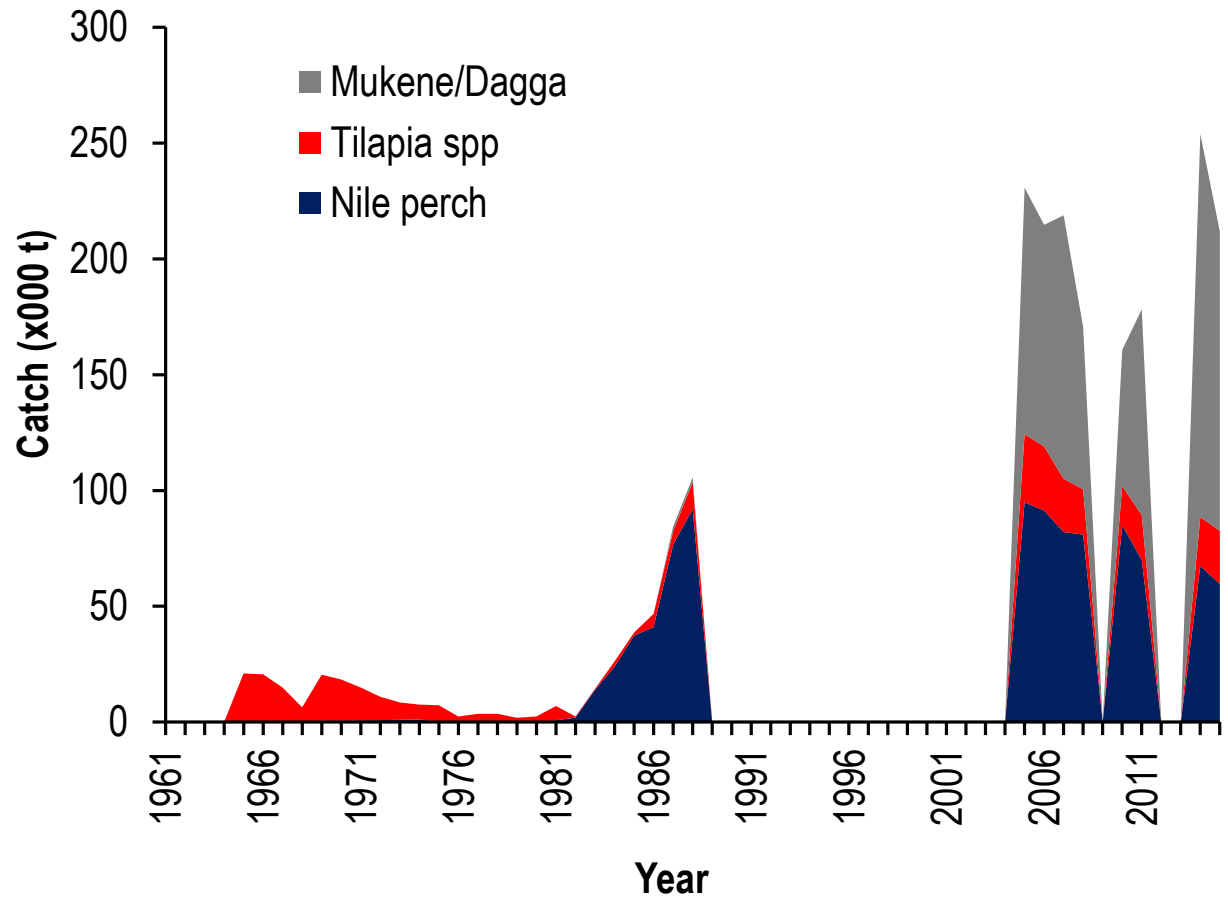
Data sources

- ❑ The study used historical fisheries data on the five major lakes
- ❑ Data obtained through: Trawl, Acoustics, Frame and Catch Assessment Surveys
- ❑ Examined fisheries archive (reports, journals)



Results & Discussion

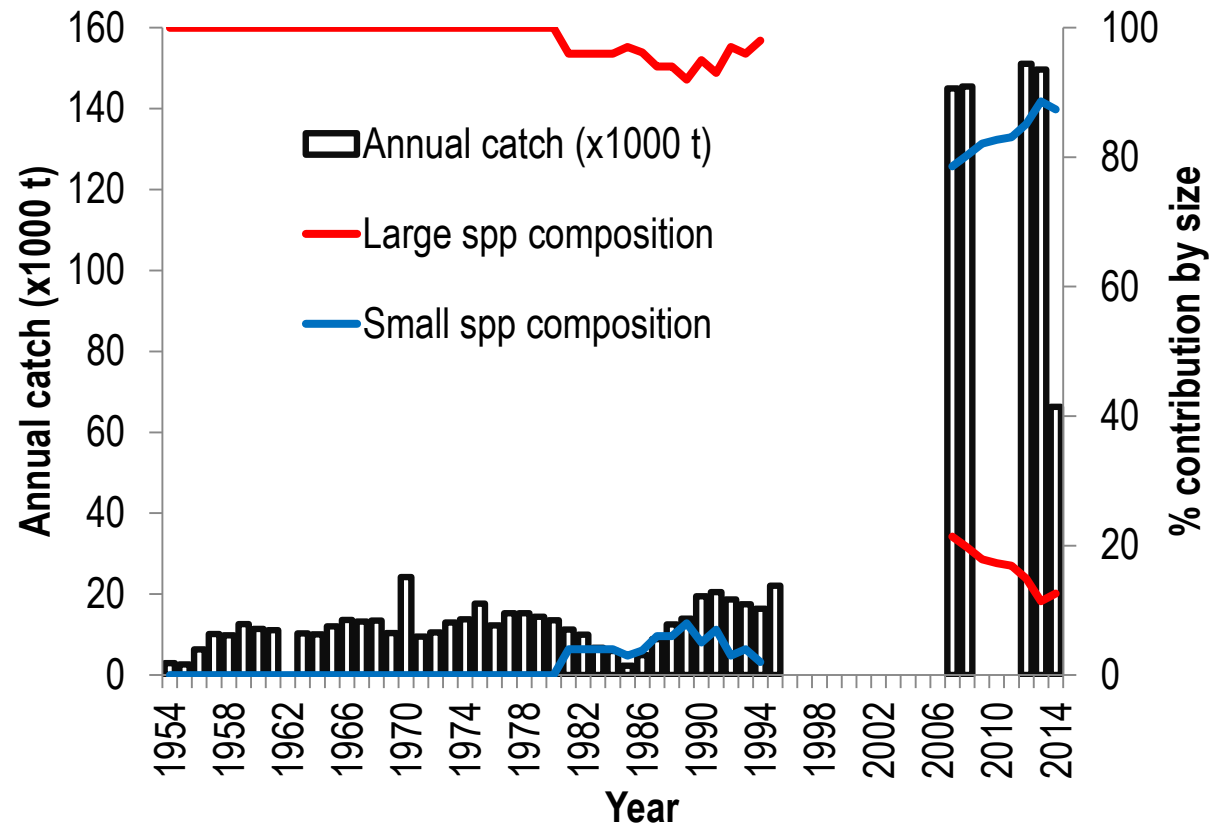
□ A shift in species composition of the commercial catch from the large species to small size species



Trends in catch landings on Lake Victoria, Uganda

Results & Discussion Cont'd

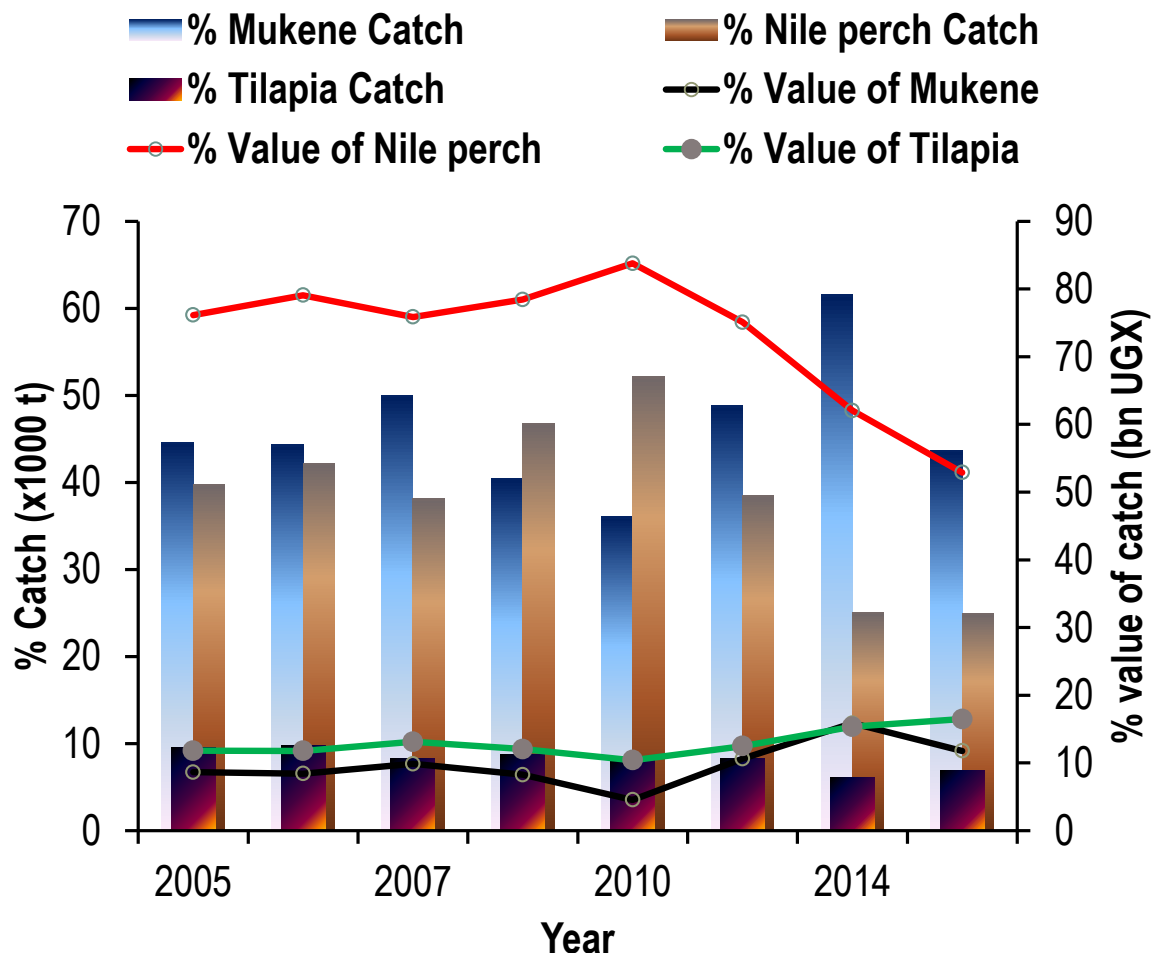
- Catch dominated by large size species up to late 1990s
- Catch presently dominated by two species (*B. nurse* & *N. bredoi*)
- Extinction of some large species e.g. *C. citharus* & *H. vitattus*



Trends in commercial catch composition on Lake Albert, Uganda

Results & Discussion Cont'd

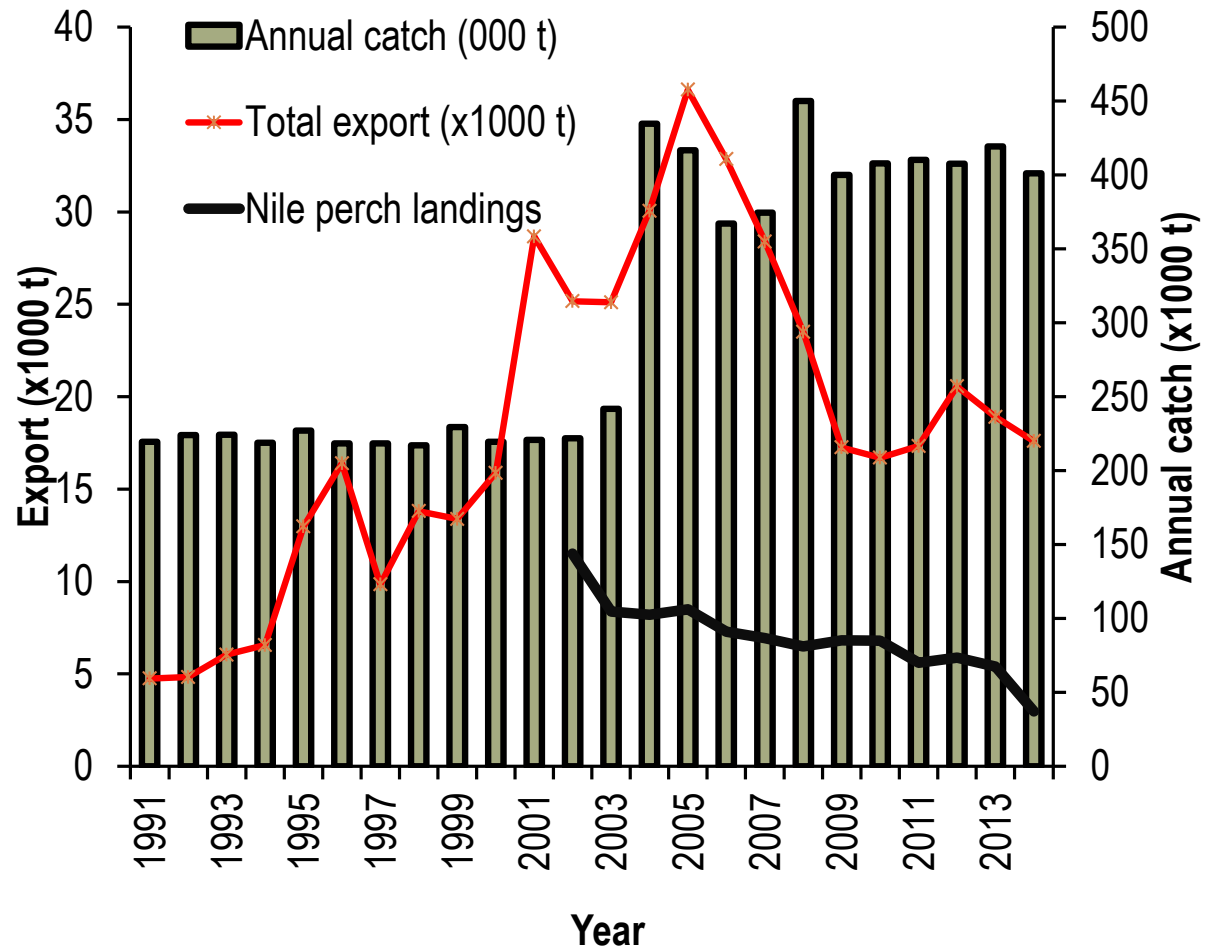
- Small size species have low economic value and are less acceptable for human consumption
- They form a major diet of the large size species in their habitats



B. nurse & *N. bredoi* contribute 83% catch 15% in beach revenue on Lake Albert

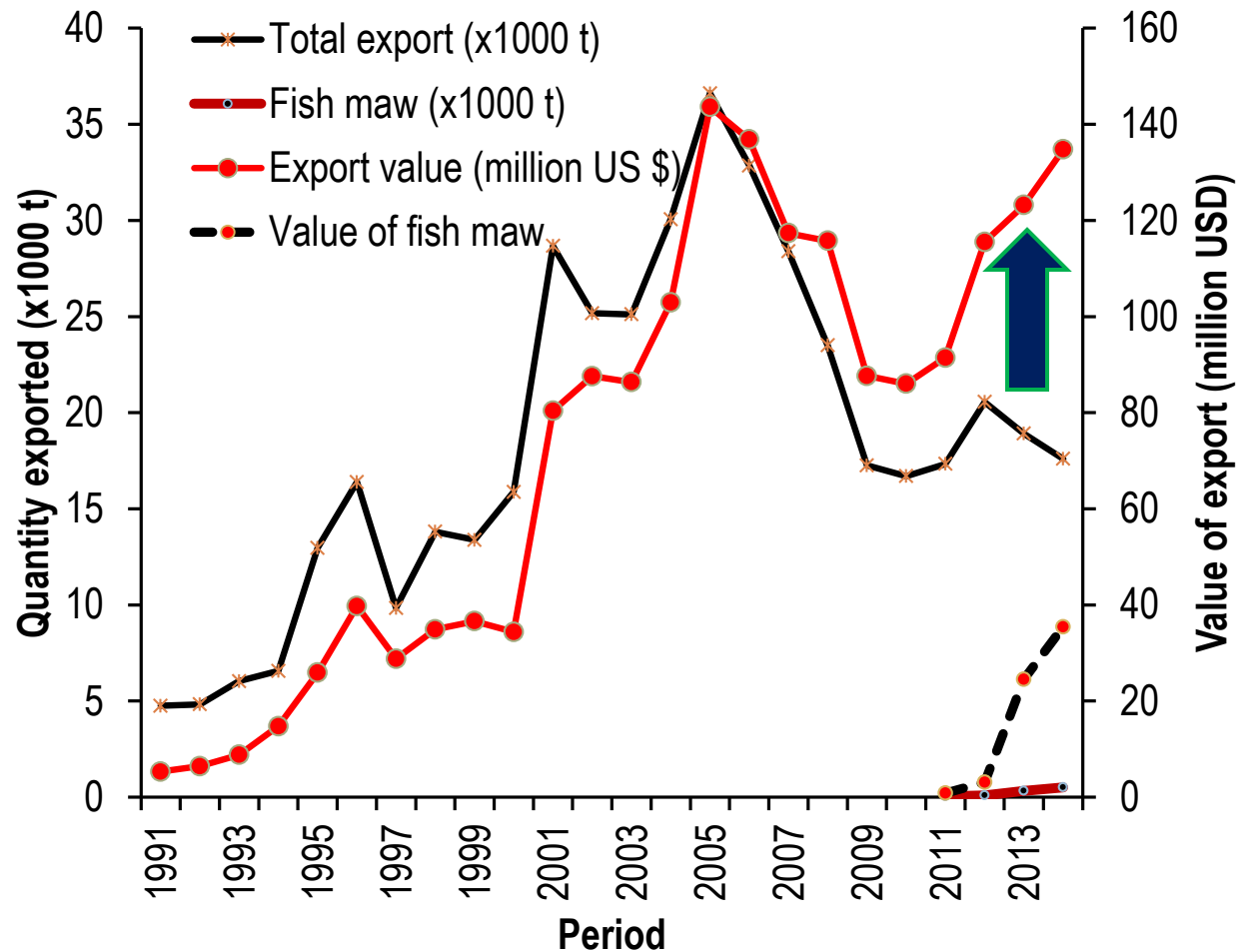
Results & Discussion Cont'd

- Catch increased & remained relatively stable (2004-2014)
- Export reductions despite stable catch
- Export reductions linked to declines in catch of large sized species esp. Nile perch



Results & Discussion Cont'd

- Reductions in export leads to loss of revenue
- Increase in revenue from 2011 is linked to the export of the fish swim bladder
- Swim bladder demand increases pressure on Nile perch

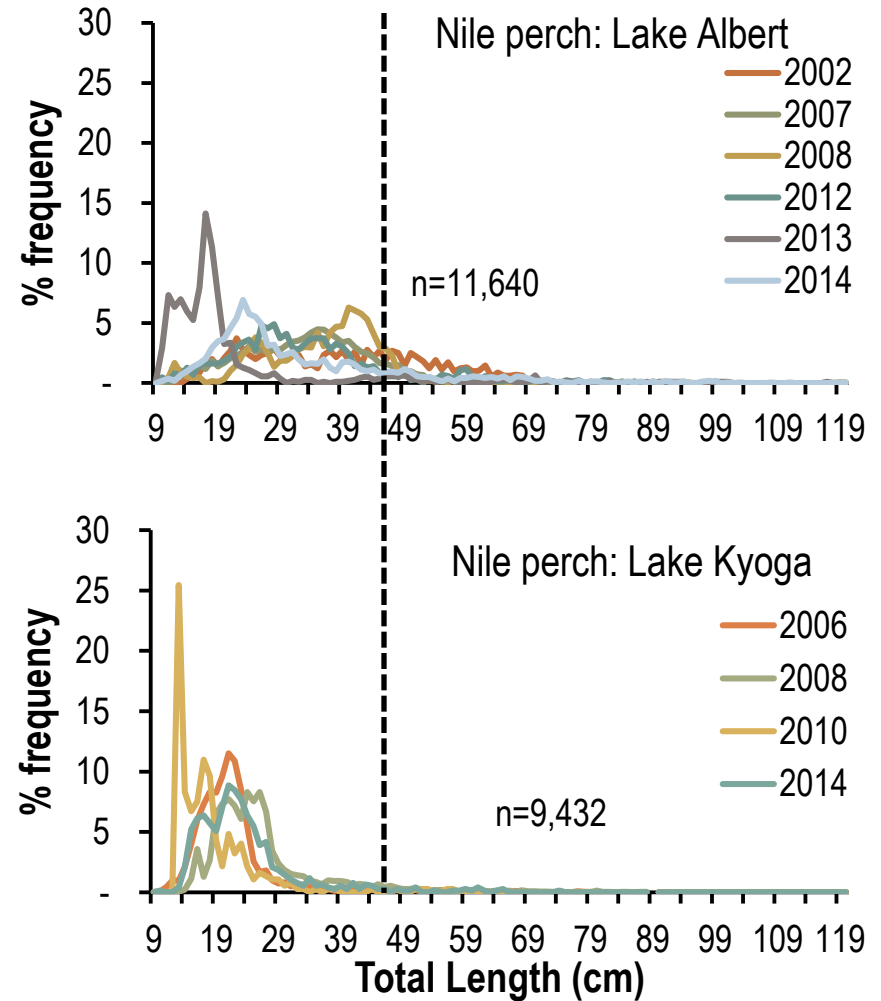
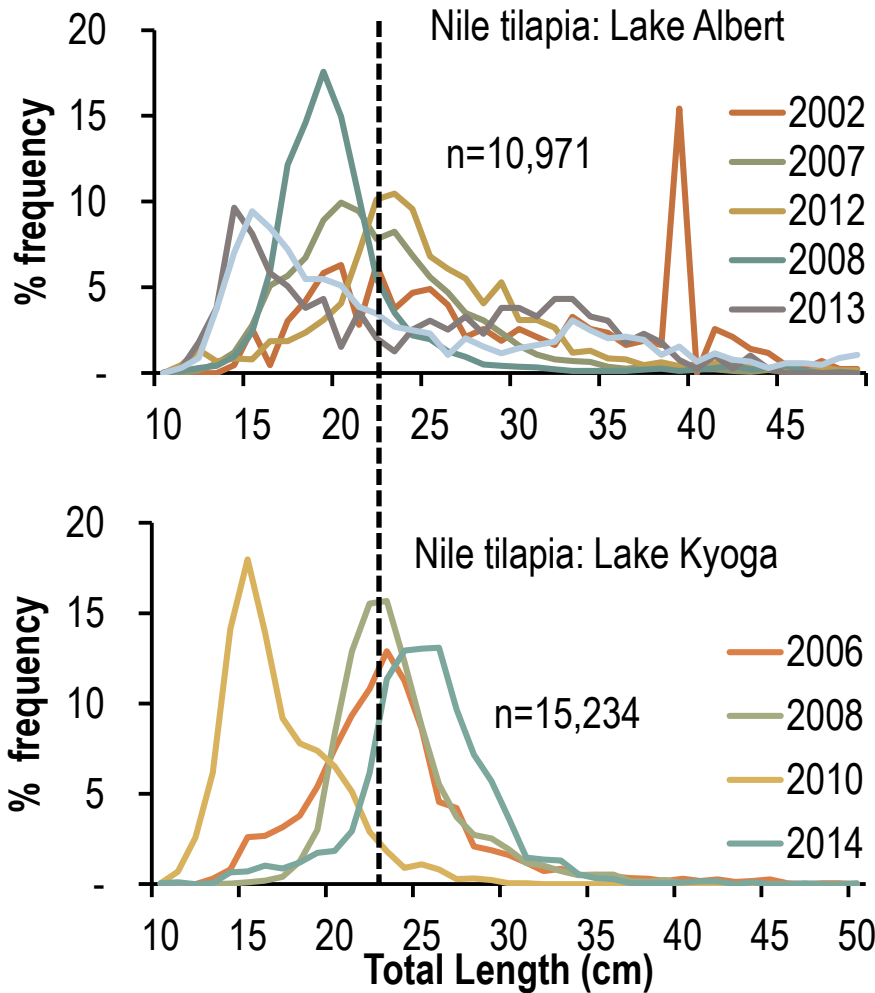


Results & Discussion Cont'd

Changes in key indicators of fishing effort on the five lakes (2000-2014)

Variable	Victoria	Albert	Kyoga	George	Edward
No. of boats	15,500	5,770	6,630	290	210
	64,600 (76)	6,220 (7)	8,760 (24)	730 (60)	470 (55)
No. of fishers	34,890	15,360	12,632	520	450
	64,620 (46)	15,420 (0.4)	18,030 (29)	1,580 (67)	955 (53)
No of undersize gillnets	54,450	54,350	67,765	26,940	920
	78,570 (31)	84,200 (35)	80,870 (16)	24,340 (-10)	380 (-59)
Number of hooks	259,120	1,978,470	120,370	87,600	38,400
	1,900,900 (86)	870,000 (-56)	159,700 (24)	215,600 (59)	102,600 (63)
Other illegal gears	2,080	2,080	2,050	10	20
	3,170 (34)	892 (-57)	11,520 (82)	165 (94)	120 (83)

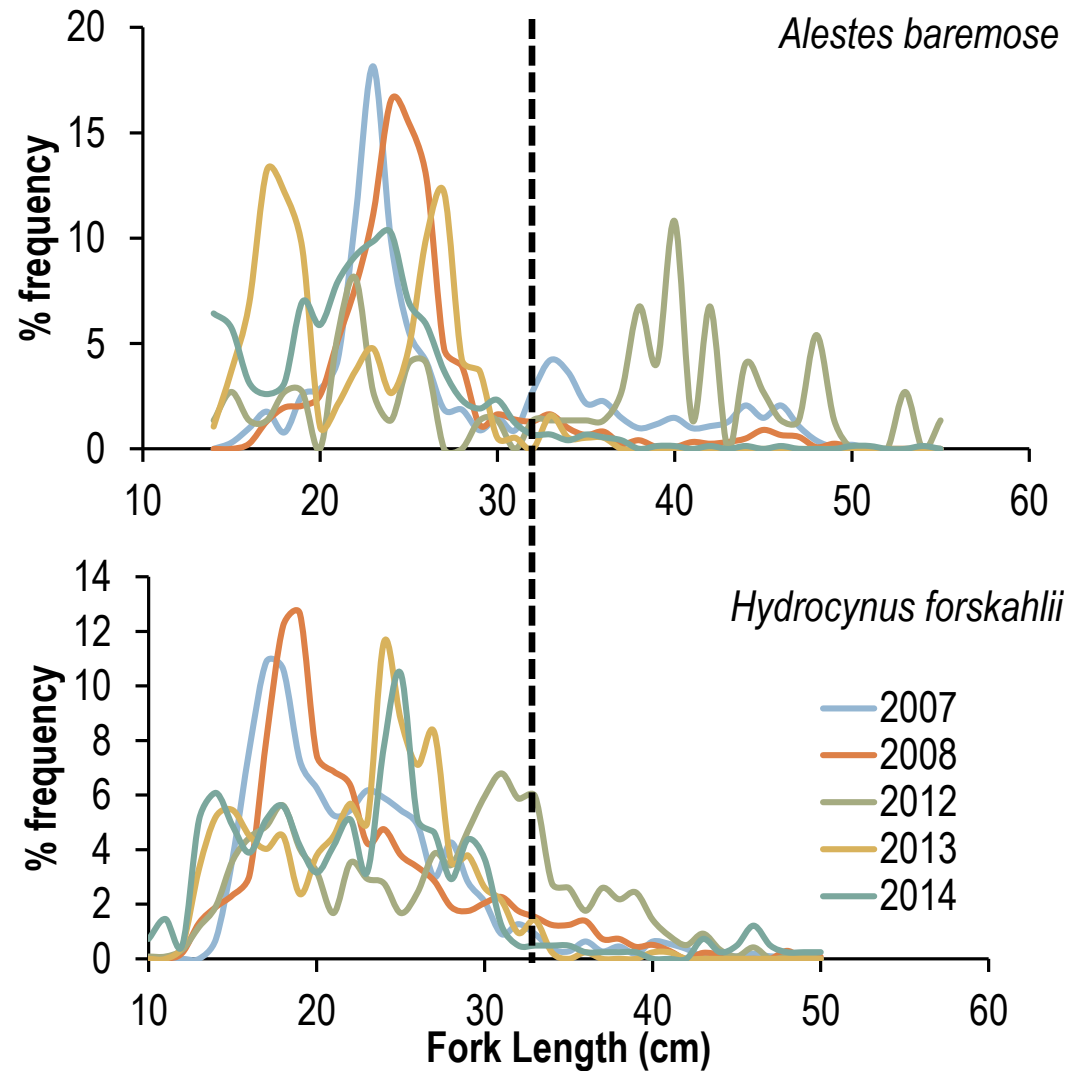
Size structure of large size species harvested



Catch of the large size species dominated by immature individuals

Size structure of *A. beremose* & *H. forskahlii* catch on Lake Albert

High proportion of immature individuals in the catch of *A.beremose* and *H. forskahlii* landed on Lake Albert



Results & Discussion Cont'd

- ❑ Mukene/Mziri, Ragoogi & Nkejje dominate commercial catch in most water bodies
- ❑ Low beach value of catch due to poor post harvest handling



Post-harvesting handling & socio-economics of small size fishes

Other threats to capture fisheries



Eutrophication – Algal blooms and fish kills



Destructive fishing in critical fish habitats and eutrophication

Conclusions

1. The high value large fish species have substantially declined on all the major lakes, replaced by the low value small fishes
2. Fishing effort on major water bodies has more than doubled over a two decade period, dominated by illegal gears
3. Catch landings of the large sized fishes is dominated by juveniles
4. The large fish species are experiencing both growth and recruitment over fishing
5. Fish export and revenue has reduced
6. Poor post harvest handling of small sized fishes leads to low market value

Recommendations and implications

1. There should be a shift from open access to restricted access coupled by effective license of fishing effort
2. Strengthening enforcement of fisheries regulations
3. Improve post harvest handling and value addition to harness economic benefits from the small fishes
4. Species specific management approaches should be adopted
5. Routine monitoring to provide timely scientific information to guide fisheries management

Acknowledgement

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