BIODIVERSITY O.F LAKE VICTORIA:

ITS CONSERVATION AND SUSTAINABLE USE

[THE UGANDAN VERSION]

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CHAPTER 15

Biodiversity Values of Different Systems, Habitats and Organisms in Relation to Restoration and Sustaining of Biodiversity

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Importance of Biodiversity values.

Biodiversity values provide objective data and advice from which policy makes could assess the conservation options and determine optimal policies that would balance the needs of conservation with the socia-economic needs of the people in the area.

Biodiversity ratings use the following criteria:

- Species rietmess
- Species rarity/uniqueness

Species richness is based on the total number of species that occur for each sitellake/river.

Species rarity/uniqueness is based on the number of sites/lakes/rivers at which a species occurs.

Procedure

Species richness was determined by examining the number of species at each site/lake/river. The site/lake/river with the most species was given a score of S, the next 4 and so on up to 1.

Species rarity/uniqueness was determined by examining the occurrence of different species in different sites/lakes/rivers. A species found at only one site scored 3 for that site, species found at two sites scored 2 for each site, species found at three sites scored I per site. The total scores for each each site were then ranked; the top site scored S, next 4 and so on up to 1.

Finally, the two ranks (species richness and species rarity) for each site totalled.

Total scores were imerpreted in terms of biodiversity ratings..

- Very high, High, Medium, Low & Very low
- Special sites/lakes/rivers

Results

So far data on biodiversity has been collected in all the sampled lakes on algae, zooplankton, macro-invertebrates and Fish. The biodiversity values have therefore been detennined basing on those four taxa (Table below).

THE RELATIVE BIODIVERSITY VALVES FOR THE DIFFERENT SAMPLED LAKES.

		Mro	Kra	Wla	Kja	Kgi	Nbo	Vic	Vie	Kga	Nsa	Nwa	Gti	Ngo	Agu	Kwi	Lma
Parameter	Organism																
Species richness	Algae	4	3	2	0	0	0	0	5	2	0	0	1	0	0	0	0
	Zooplankton	3	4	0	0	0	0	0	5	2	0	4	0	0	7	0	2
	Macro-invertebrates	0	0	3	0	0	2	4	5	0	3	0	2	1	3	0	0
	Fish	0	0	0	0	0	0	5	0	4	5	0	3	2	0	0	0
Total 1 (Species richness)		7	7	5	0	0	2	9	15	8	8	4	6	3	10	1	2
Species rarity	Algae	3	0	2	0	0	1	0	4	5	0	0	0	0	0	0	0
	Zooplankton	0	1	0	0	0	0	0	5	0	4	2	0	3	0	0	1
	Macro-invertebrates	0	0	3	0	0	3	4	5	0	3	0	1	0	2	0	0
	Fish	0	0	0	0	0	0	5	0	4	3	0	2	4	1	0	0
Total 2 (Species rarity)		3	1	5	0	0	4	9	14	9	10	2	3	7	3	0	3
Overall total (I +2)		10	8	10	I	0	6	18	29	17	18	6	9	10	13	1	3
		M	L	M	VL	VL	L	H	VH	H	H	L	L	M	M	VL	VL
			S		S	S											

Modified from (Fuller *et at.,* 1998)

Biodiversity value	Rating (critical values are arbitrary)
Very high	> 20
High	15-20
Medium	10-14
Low	5-9
Very low	<5

The Victoria Nile had a very high biodiversity value (29) as compared to lakes. High biodiversity values were recorded in lakes Victoria, Nawampasa (18), and Kyoga (17), Medium biodiversity values were also recorded in lakes Agu (13), Nyaguo and Wamala (10). Low biodiversity values were recorded in lakes Gigati (9), Kachera (98), Nabugabo and Nakuwa (6). Very low biodiversity values were recorded in lakes Lemwa (3), Kawi and Kayanja (I) and Kayugi (0).

Discussion and Conclusion

The Victoria *Nile* had a very high biodiversity value as compared to lakes. This was mainly because the river is a lotic ecosystem where as the lake is a lemic one, therefore there are certain organisms which are purely lotic and may never be found in lentic ecosystems thus giving Victoria Nile a high biodiversity value. There was also variation in within lakes probably due to either the size of individual lakes or high habitat diversity or both. All those lakes with medium biodiversity values and above were considered to be important for biodiversitry conservation. However despite the low and very low biodiversity values recorded in lakes Kachera, Kayanja and Kayugi they were still considered as special lakes for biodiversity conservation because of the presence of *Oreochromis esculentus* which was abundant in the main lakes Victoria and Kyoga before the introduction of foreign species and is currently lacking.

Critical Habitats

- Macrophytes
- Rock crevices
- Inshore waters
- River mouths
- Pelagic habitats

Macrophytes

Habitats with aquatic macrophytes have been found to support high species diversity i.e fish, macro-invertebrates e.t.c.

Rock crevices

Rock crevices provide refugia the for endangered haplochromine species especially in Lake Victoria and have high diversity of macro-invertebrates

Inshore waters

1. These habitats are associated with high diversity of flora and fauna
2. Provide breeding and nursery grounds of fish species and other organisms

Pelagic habitats

These habitats have less predation pressure from Nile perch and therefore provide suitable habitats for some haplochromines especially *Yssichromins* species

River mouths

These support high species diversity especially of fish and invertebrates including the endangered *Labeo victorianus*

Endangered species

- Most haplochromines
- Labeo victorianus
- Synodontis victoriae
- *Oreochromis variabilis*
- *Xenoclarias*
- *Barbus trispedopleura*
- Cladocerans (zooplankton)

Reference

Fuller, , G.B. Groom, S. Mugisha, P. Ipulet, D. Pomeroy, A. Katende, R. Bailey, & R. Ogutu-Ohwayo 1998. The Integration of field and remote sensing for biodiversity assessment: a case study in the tropical forests and wetlands of Sango Bay, Uganda. *Biological Conservation* 86: 387-391