CHAPTER 5

THE BIOLOGY AND ECOLOGY OF NATIVE NON-CICHLIDS IN THE VICTORIA AND KYOGA LAKE BASINS.

Mbabazi D., R. Ogutu-Ohwayo, S.B Wandera and G. Namulemo
Fisheries Research Institute
P.O Box 343,
Jinja.

An Over-view of Other Native Non-cichlid species of Lake Victoria

An overview of the biology and ecology of some of the constantly less important commercial species is given below. These included *Bagrus docmac, Clarias gariepinus, Protopterus aethiopicus, Labeo victorianus, Barbus spp*, Mormyrids, *Synodontis spp*, and *Schilbe intermedius*. The stocks of most of these species declined due to over-exploitation and introduction of non-native fishes especially Nile perch. A few of these taxa still survive in the main lake and others in satellite lakes. The current status of these species in the Victoria lake basin is not known but the available information provided some information on some habitat and other requirements of some of these originally important species of the Victoria lake basin.

Bagrus docmac

The catfish, *Bagrus docmac* is widely distributed occurring in lakes Victoria, Kyoga, Albert, Edward, George and Nabugabo. Before the Nile perch upsurge, *B. docmac* was widespread in Lake Victoria in both shallow and deep waters but are now very rare in Lake Victoria and are virtually absent in lakes Kyoga and Nabugabo. They can grow to a length of 100 cm and a weight up to 50 kg. They feed mostly on insect larvae, crustaceans and small fishes especially haplochromines. They breed in wave washed rocky shores but juveniles have also been recovered from rivers and rocky shore sand beaches. The smallest mature fish are 20 to 24 cm but 50% maturity is 35 cm for males and 25 cm for females. Fecundity is 2,000 to 88,000 eggs in fish of 45 and 54 cm fork length.

During this survey *B. docmac* was only encountered in River Nile and Lake Victoria. One fish examined showed that *B. docmac* fed mainly on insects namely Odonata and terrestrial insect (cricket) and fish. The size *B. docmac* from River Nile was 29 cm total length.

Clarias spp

There are about five species of *Clarias* in the Victoria Lake Basin. These include: *Clarias gariepinus, C. carsonii, C. alluaudi* and *C. liocephalus*. Of these *C. gariepinus* is the largest and commercially the most important. They are still common in lakes Albert, Edward, George and the Koki lakes and became rare in Lake Victoria only after establishment of Nile perch. They are widely distributed within individual water bodies but are most

abundant in shallow inshore areas near marginal vegetation. They posses accessory breathing organs which enable them to utilise atmospheric oxygen and to survive in water with low oxygen concentration. *C. carsoni* and *C. alluaudi* form an important fishery in swamps.
C. gariepinus can grow to a length of 120 cm and a weight of 35 kg. They are omnivorous, feeding on small fishes, insect larvae, molluscs and plants. They mature at about 50 cm TL in Lake Victoria and at 25 to 40 cm TL in Lake Kyoga. There are equal numbers of males and females in the population. They produce 5,000 to 192,000 eggs depending on size of the fish. They breed in small streams which flow into the lakes during the rainy season. Eggs are attached to plants and debris in the bottom of the stream. The young spend the first six weeks of their life in the stream and move to the lake at about 2.5 cm. There are about 40 cm by the end of their third year of life.

During this survey three *Clarias spp* were encountered. *C. gariepinus* was found present almost in all lakes sampled with the exception of lakes Nabugabo and Agu. *C. liocephalus* occurred in lakes Wamala, Kachera and Nakuwa. *C. carsoni* occured only in Lake Wamala. From the few fishes examined for food, *C. gariepinus* fed on fish, Chironomid larvae and pupae. The size range for *C. gariepinus* was 21-80 cm and *C. liocephalus* 15-36 cm.

Protopterus aethiopicus

The lung fish, *Protopterus aethiopicus* is widely distributed in virtually all the water bodies in Uganda. It can grow to a length of 2 metres. *P. aethiopicus* can aestivate and remain dormant while enclosed in a mud cacoon during the dry season. It depends on atmospheric oxygen and breathes by a pair of well developed lungs. Within the lakes it is most abundant along the swampy shores. It feeds on molluscs but also ingests small fish especially haplochromines. The size at first maturity is between 73 and 84 cm. Fecundity increases with the size of the fish and mean fecundity has been estimated as 8960 eggs. There are more males than females (1.8:1) in the populations. *P. aethiopicus* exercises parental care. Males prepare nests and after the females have spawned, the males guard the nests and aerate them by stirring up water. Juveniles of 5 to 30 cm long are common in matted roots of papyrus and are now common in water hyacinth mats.

During this survey *P. aethiopicus* was encountered in all the lakes sampled. It mainly fed on higher plant material, some detritus, algae and Ostracodes. However this fish is not expected to feed on higher plant material. This suggests that may be these food items are taken accidentally as the fish is capturing its prey. The size range of *P. aethiopicus* was 25-99 cm.

Labeo victorianus

The Ningu *L. victorianus* was commercially the most important species on the rivers of the Victoria and Kyoga Lake Basins. It can grow to a length of 41 cm. Within the lakes the species is found in shallow inshore waters. It feeds on plant materials especially plant debris, epiphytic and epilithic algae. They migrate up the rivers to breed in floodwater pools or inundated grasses at the margins of rivers. The smallest mature fish are about 12 cm SL

and 50% maturity is 15 to 19 cm for females. A fish of 24.7 cm was recorded to have 162,000 eggs. They grow to about 9 cm by the end of their first year of life.

There used to be a lucrative fishery of *L. victorianus* on the rivers associated with Lake Victoria. This fishery however, collapsed due to catching of gravid individuals as they migrated up the rivers to breed. *L. Victorianus* is considered one of the most endangered fish species in the Victoria lake basin. Conservation of this species requires prevention of fishing at the mouths of rivers at time when fish migrated up the rivers to breed. Some localised stocks have been recorded on the Victoria Nile and other rivers around Lake Victoria. Efforts should be made to save these stocks.

During this survey *L. victorianus* was only recorded in Lake Kyoga. The size ranged from 10-24 cm.

Barbus spp

Like *L. victorianus*, *Barbus spp* are predominantly riverine species. They vary in size from very small species like *Barbus magdalene* which rarely exceeds 7 cm to the larger species such as *B. altianalis* which grows to about 50 cm total length and can weigh up to 10 kg and *B. bynni* which can reach a weight of 7 kg . The species are mainly found in shallow inshore waters associated with river systems. They feed on molluscs, aquatic vegetation and fishes especially haplochromines. They breed in flooded rivers and streams.

During this survey four *Barbus* spp were encountered. *B. altianalis* was encountered in lakes Kyoga, Nakuwa and River Nile. *B. kerstenii* occurred in lakes Nabugabo, Kayanja and Kayugi. *B. trispidopleura* occurred only in Lake Lemwa. *B. paludinosus* only occurred in Lake Nyaguo. From a few fishes examined for food *B. altianalis* fed on mainly insects *(Povilla)* and rarely Ostracodes. The size range *for B. altianalis* was 15-70 cm.

Mormyrids

Mormyrids were of substantial commercial importance in lakes Victoria and Kyoga. The biology of these fishes can be illustrated by *Mormyrus kannume*, which was commercially the most important mormyrid in Lake Victoria. *M. kannume* are anadromous fishes and spawn in flooded swamp pools associated with lower riches of rivers. They feed on insect larvae especially chironomids and chaoborids. Destruction of swamps would therefore affect reproduction in these fishes. Some of them have a single gonad and others have modified electrical organs. Fecundity was estimated at 1393 and 17,369 in fish of 18 and 37 cm respectively.

During this survey two Mormyrids were encountered. *M. kannume* only in Victoria Nile and *M. macrocephalus* in lakes Kyoga, Nyaguo and Victoria Nile . *M. kannume* fed on mainly insects namely Odonata, *Povilla*, Chironomid larvae and Ostracodes. Stones were also encountered in stomachs of some fish. Whether these stones are taken intentionally or by accident is a question for further investigation. The size range for *M. kannume* was

16-77 cm and *M. macrocephalus* 30-38 cm.

Schilbe intermedius

During this survey *S. Intermedius* was only encountered in lakes Kyoga, Nabugabo and Nakuwa. Few fishes examined showed that *S. intermedius* fed mainly on Chironomid larvae, Caridina, Odonata, fish eggs and detritus. The size sructure of *S. intermedius* was 19-30 cm total length.

Synodontis spp

During this survey two *Synodontis* spp were encountered. *S. Afrofischeri* was encountered in lakes Kyoga, Nakuwa, Nawampasa, Lemwa, Kawi, Gigati and Nabugabo. S. victorae occurred in lakes Nawampasa, Nakuwa, Lemwa Nyaguo and Kyoga. From a few fishes examined for food *S. afrofischeri* fed on Chironomid pupae & larvae, Ostracodes, insect eggs, fish eggs, detritus, Povilla, ephemeroptera and filamentous algae. The size range for *S. Afrofischeri* was 12-18 cm. S. victoriae fed on Chironomid larvae, Ostracodes, Odonata, fish remains, Povilla, insect remains and higher plant material. The size structure for *S. victoriae* was 13-21 cm.