LAKE VICTORIA
FISHERIES RESEARCH PROJECT
PHASE II

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Species Catalogue Lake Victoria
LAKE VICTORIA
FISHERIES RESEARCH PROJECT
PHASE II
FISH SPECIES IDENTIFICATION GUIDE

FOR

LAKE VICTORIA

Enumerator’s Field Guide

LAKE VICTORIA FISHERIES RESEARCH PROJECT
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LAKE VICTORIA
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PHASE II

PREFACE

The first phase of the Lake Victoria Fisheries Research Project had as one of the objectives to harmonise data collection around Lake Victoria. During the various exercises it appeared that it was rather difficult and complicated to harmonise and standardise data forms, as the three riparian countries had their data collection already in place. The three Fisheries Departments and Fisheries Research Institutes, however, showed their good will and after ample discussion it was found that the data forms were not comprehensive and that at fish species level there were discrepancies. The existing forms did not allow space for certain important commercial species. From in-depth interviews during training courses it became apparent that certain species were neglected as no space on the forms was reserved for them.

The harmonised form, which was the result of the standardisation exercise has not (yet) been introduced, although all important fish species would fit on the form. Sampling demonstrations showed that not all data collectors, beach recorders and enumerators in the three countries were able to identify the fish caught around Lake Victoria. Therefore it was decided that three researchers were given the assignment to prepare an inventory of the most common fish species appearing in the fishermen's catches and to provide the most common features of the species that would allow proper identification. The present document is the result of a compilation by the three authors, using existing literature. It is considered as the first step in the direction of a complete fish species catalogue for fisheries purposes. At the time of printing efforts are underway to produce professional drawings of species that are less common, but definitely important for biodiversity studies.

It is believed that the present species guide will contribute to the knowledge of the staff of Fisheries Departments and Research Institutes as well as of students and other stakeholders.

On top of that this document is also the first in hopefully a long series of technical documents to be published by the Lake Victoria Fisheries Research Project, Phase II.

It is my wish to congratulate the three consultants, who did a commendable job. I trust that this document will be considered as a key catalogue for field work to improve data collection for better catch statistics and for eventually appropriate modeling of the Lake's ecology.

Martin van der Knaap
Project Coordinator
September, 1998
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INTRODUCTION

In the Fisheries Data Collectors training courses in the three riparian countries of Kenya, Uganda and Tanzania, it was found out that knowledge of the commonly encountered fish species in Lake Victoria was lacking. This was particularly so for the tilapiines and cyprinids.

This guide has been prepared to meet the requirements of the beach recorders, and may also prove useful to students and scientists interested in quick identification of Lake Victoria fish species. The guide, however, is lacking in the identification of the Haplochromis and detailed taxonomic techniques for the cyprinids.

The convention used in the description of rays starts with Roman numbers indicating the number of spiny rays when the Arabic numbers devotes the soft rays. This is particularly the case with most dorsal rays. Most drawings have been taken from “Fish stock and fisheries of Lake Victoria - a handbook for field observations” and “FAO Species Identification sheets for fishery purposes: Field Guide to the Freshwater Fishes of Tanzania”. The descriptions of Barbus species were taken from “Fishes of Uganda”.

The document has been prepared under the Lake Victoria Regional Fisheries Research Project funded by the European Union in cooperation with the three riparian countries bordering Lake Victoria.
TECHNICAL TERMS AND MEASUREMENTS

- eye diameter
- preorbital length
- postorbital length
- depth of body
- depth of pectoral fin
- depth of caudal peduncle
- head length
- total length
- fork length
- standard length
- length of preopercle
- nape
- maxilla
- pectoral fin
- lateral line
- adipose fin
- anal fin
- caudal peduncle
- anal-fin origin
- anal fin base
- 1st dorsal fin origin
- 1st dorsal fin base
- 2nd dorsal fin origin
- 2nd dorsal fin base
- dorsal-fin origin
- 1st dorsal fin base
- 2nd dorsal fin base
- length of caudal peduncle
- length of pectoral fin
- length of caudal fin
- 1st dorsal fin base
- 2nd dorsal fin base
- anal-fin origin
- anal fin base
- dorsal- 1m origin
- opercle
- preopercle
- maxilla
- branchiostegal rays
- opercular membrane
- pelvic fin
- adipose fin
- spines (unsegmented, always unbranched)
- soft rays (segmented, usually branched)
- example of a continuous dorsal fin of a spiny-rayed fish
- adipose fin (not supported by rays)

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PICTORIAL INDEX TO FAMILIES

Centropomidae

Mochokidae

Schilbeidae

Bagridae

Clariidae

Cyprinidae

(vii)
Centropomidae

- One or more spines at rear angles of preopercle and opercle. Teeth small. Lateral line continued across caudal fin or forked into 3 branches at its base.

Bagridae

Clariidae

Airbreathing and Labyrinth catfishes

- No spines in dorsal or anal fins. Dorsal fin with more than 25 and anal fin with more than 40 soft rays. Caudal fin rounded.
Mochokidae

Squeakers and Upside-down catfishes

Schilbeidae

Schilbeid catfishes

Cyprinidae

Minnows and Carps
Characidae

Mastacembelidae

Spiny eels

Mormyridae

Elephantfishes

Hippopotamyrurus

Mormyrus
Anabantidae

Single dorsal fin with many spines. Lateral line divided into upper and lower sections. Two nostrils on each side. Anal fin with 9 to 11 spines.

Protopteriidae

African Lungfishes

Cichlidae

Cichlids

Single dorsal fin with many spines. Lateral line divided into upper and lower sections. Only one nostril on each side. 8 genera of wide distribution, containing 43 species, some endemic to lakes. In addition, each of the great lakes contains hundreds of endemic species in numerous endemic genera showing an extraordinary range of adaptation. Many of these are not yet described, and only a few of the more important or more easily recognisable ones are dealt with in this volume. Some examples of the different cichlid body shapes are shown here.
GUIDE TO SPECIES

NON-CICHLIDS

Family: CENTROPOMIDAE

Head and body covered by relatively small scales. Mouth protractile, the maxilla large and not completely covered by the pre-orbital bone. Two nostrils on each side of the head. Lateral line continuous.

Genus: Lates

*Lates niloticus* [Nile perch, Mbuta (K), Mputa (U), Sangara (T)]

**Description:** Body deep and somewhat compressed; scales small and ctenoid. Small villiform teeth in the jaws and on the vomer, palatines and ectopterygoids (bones forming part of the roof of the mouth). Pre-orbital and pre-opercular bones armed with spines; a large spine on the free edge of the operculum. Dorsal fin almost completely divided into two parts by a deep notch; the anterior part comprises 7 or 8 spines and the posterior part one spine and 10-14 branched rays.

**Colouration:** Dorsum dark greyish-blue, flank and ventral side greyish-silver.

**Habitat:** Throughout the lake.
CATFISHES

Family: BAGRIDAE

Body scaleless, moderately elongate. Adipose dorsal fin present. Dorsal and anal fins short, the former with a well developed spine. Three or four pairs of barbels.

Genus: Bagrus

Bagrus docmak: [Seu (K), Mbofa (T), Mboju (T), Hongwe (U), Semutundu (U)]

Description: Body scaleless, moderately elongate. Long adipose dorsal fin present. Dorsal and anal fins short, the first with a well developed spine and 8-11 branched rays. Four pairs of circum-oral barbels, showing great variation in length, being relatively longer in smaller fishes. Some rays in the caudal fin may have filamentous extension.

Colouration: Dark grey-black above, creamy-white below.

Habitat: All parts of Lake Victoria.
CALARIIDAE

Body scaleless and elongate. Head bony, broad and flattened. Dorsal fin long without a spine. Anal fin long, extending to, or almost to the caudal fin. Adipose dorsal fin sometimes present. Four pairs of unbranched circum-oral barbels.

Genus: Clarias

Clarias gariepinus [Muni (TK), Male (U), Catfish, Mud-fish].

Description: Body depth contained 6-8 times in SL; head length 2.9 - 3.6 times in SL. Upper surface of head coarsely granulate in adult fishes, smooth in the young. Teeth on the premaxilla and lower jaw small, fine and arranged in several rows. Vomerine tooth-band composed of several rows of granular teeth. Nasal barbels from 0.2 - 0.8 times as long as the head. Maxillary barbels rarely shorter than the head. Outer mandibular barbel longer than the inner pair. Gill rakers long, fine and closely set and number 25-100 on the first arch. Dorsal fin with 62-80 rays, anal fin with 50-65. Pectoral fin spine only serrated on its out side. Dorsal fin well separated from caudal fin.

Colouration: Generally dark greyish-black above, creamy-white below, a fairly distinct black longitudinal band on each side of the ventral surface of the head. Younger fishes less than 9 cm TL have similar colouration, except the black bands on the head are absent. Colouration may vary with habitat.

Habitat: Almost any water.
**Clarias alluaudi** [Ndira (K)]

**Description:** Dorsal fin and anal fin end close to caudal fin. Length from snout to anal fin less than 50% of SL. 12 to 16 gill rakers on whole first arch. Pectoral fin spine serrated on both inner and outer side. Small fishes, rarely exceeding 15 cm TL.

**Colouration:** Dark-Khaki, occasionally greyish black, lighter below.

**Habitat:** Water lily and papyrus swamps.

---

**Clarias liocephalus**

**Description:** Pectoral fin spine serrated an outer side only.
Clarias werneri [Nyawino (K)]

Description: Pectoral fin spine serrated on both inner and outer side. 17 - 28 gill rakers on whole first arch. Dorsal fin and anal fin end close to caudal fin.
Family: MOCHOKIDAE


Genus: Synodontis

Mandibular barbels branched, mouth without disc, nostrils far apart.

Synodontis afrofischeri: [Okoko (K), Gogogo (T), Nkolongo (U)]

Description: Depth of body contained 3.5 - 4.5 times in SL.; 32 - 54 mandibular teeth. Maxillary barbels reaching almost to the pelvic fin in some fishes and to the tip of the humeral process in others. Outer mandibular barbels with slender branches, inner pair with shorter, but slender branches. Depth of humeral process contained in 1.5 - 2.0 time in its length. Dorsal fin consisting of a spine, smooth anteriorly and serrated on its posterior face, and 7 rays. Distance between the last dorsal ray and the origin of the adipose fin contained in 1.0 - 1.5 times in the length of the adipose fin. Pectoral spine strongly serrated on its anterior face, very strongly serrated on the posterior face.

Size: A small species rarely exceeding 15 cm SL.

Colouration: Marbled yellowish-brown. In many fishes scattered dark spots occur on the body.

Habitat: Seems to prefer areas less than 20 m deep.
Synodontis victoriae: [Okoko (K), Gogogo (T), Nkolongo (U)].

**Description:** Depth of body contained 3.25 - 4.5 times in SL; 16 - 21 mandibular teeth. Maxillary barbels reaching the posterior tip of the humeral process, occasionally somewhat beyond. Mandibular barbels with slender branches. Depth of humeral process contained in 1 - 1.5 times in its length. Dorsal fin consisting of a spine, weakly serrated on its posterior face, and 6 or 7 branched rays. Distance between the last dorsal ray and the origin of the adipose fin contained 1.5 - 2.0 times in the length of the adipose fin. Pectoral spine moderately serrated on the outer face in small fishes and only feebly so in larger individuals, strongly serrated on the inner.

**Colouration:** Greyish-silver, with dark spots of variable size. Caudal fin occasionally spotted.

**Habitat:** Most common in water more than 14 m deep, although the species does occur in shallow water.
Family: SCHILBEIDAE


Genus: Schilbe

6 soft rays in the dorsal fin.

Schilbe intermedius [Sire (K), Butterfish, Nembe (T), Ndera (T)]

Description: Body strongly laterally compressed. Dorsal fin very short, comprising a spine and 5 or 6 branched rays. No adipose dorsal fin. Anal fin long, extending from the vent almost to the origin of the caudal fin. Four pairs of short, circum-oral barbels.

Colouration: Silver-grey, somewhat dark above. The young with three longitudinal black bands, the upper and inner of which are continued on to the caudal fin.

Habitat: Large rivers and inshore areas of lakes.
CYPRINIDS

Family: CYPRINIDAE

Elongate fishes, mostly species laterally compressed. Body covered with cycloid scales, the head naked. Jaws without teeth. One to two pairs of circum-oral barbels, which are however missing in some species. One dorsal fin. Well developed sickle shaped paired pharyngeal bones, each bearing 1-3 series of teeth.

Genus: Barbus

Barbels normally on the upper jaw only. Dorsal and anal fins very short. The dorsal fin is directly above the pelvic fin. The dorsal fin is often with a sharp spine. The anal fin-base shorter than or equal to dorsal fin-base. The genus ranges from small to large species.

Barbus altianalis: [Fwani (K), Kuyu (T), Kisinja (U)]

Description: Body somewhat compressed, the scales generally large. Lateral line nearer to the ventral than the dorsal body profile, but always running along the middle of the caudal peduncle. Mouth terminal. Exposed surface of the scales with numerous longitudinal striae. Two pairs of barbels present, the anterior somehow shorter than the eye, the posterior as long as the eye. Dorsal fin with III - IV, 8 - 9 rays, the last unbranched ray strong and bony. The base of the pelvic fins is situated below the anterior rays of the dorsal fin. Lateral line with 28 - 36 Scales.

Colouration: Tarnished silver in young fishes, becoming golden green in adults.

Habitat: Inshore waters and rivers.
NOTE: More work is needed on the taxonomy of small *Barbus* species. The species reported to occur in the Lake Victoria catchment include the following:

- *Barbus amphigamma*
- *Barbus apleurogramma*
- *Barbus cercops*
- *Barbus jacksonii*
- *Barbus kerstenii*
- *Barbus magdalenae*
- *Barbus neglectus*
- *Barbus neumayeri*
- *Barbus nyanzae*
- *Barbus paludinosus*
- *Barbus radiatus*
- *Barbus salmo*
- *Barbus sexradiatus*
- *Barbus viktorianus*
- *Barbus yongei*

Genus: *Garra*

*Garra dembeensis*

**Description:** Lower lip in a circular pad, mouth forms a sucker. Dorsal fin origin well before pelvic fin. Anal fin base shorter than dorsal fin base.

**Habitat:** Common in rapid parts of rivers.
Genus: *Labeo*

Dorsal fin base longer than anal fin base. Dorsal fin origin before pelvic fin base. Mouth ventral. Lips fleshy, forming a sucker, with a horny rim inside the lower lip.

*Labeo victorianus*: [Ningu (KTU)]

**Description:** Scale usually large. Lateral line running along the middle of the flank and the caudal peduncle. Dorsal fin with 3 unbranched rays, none spinous, its origin well in advance of the pelvic fin insertions. Mouth large, inferior and protractile, the lips well developed; immediately in front of the upper lip there is a flap of skin dependent from the snout. Both jaws provided with bony cutting ridges. Barbels hidden.

**Colouration:** Olivaceous above, lighter or creamy white below.

**Habitat:** Most of life span in lake, but spawn in flooded grassland beside both permanent and temporary streams.
Genus: *Rastrineobola*


*Rastrineobola argentea*: [Mukene (U), Omena (K), Dagaa (T), Bukena (T)].

Body strongly compressed, scales moderately large. Lateral line situated low on the body and running along the lower part of the caudal peduncle. Dorsal fin inserted almost entirely above the anal fin. Mouth large, terminal and rather oblique, without lips or circum-oral barbels. Cheek covered by the thin suborbital bones. Lateral line with 42-56 scales, and fin with 12-14 branched rays.

**Colouration:** Intensely silver with an overall nacreous sheen. Caudal fin yellow, other fins colourless. After death a distinct mid-lateral stripe appears.

**Habitat:** Pelagic.
CHARACIDS

Family: CHARACIDAE

Body slender and fusiform, covered, except for the head, by cycloid scales. Cheek partly or completely covered by the suborbital bones. Lateral line running below the mid-line of the flank and caudal peduncle. Fins entirely composed of soft rays; an adipose dorsal fin present. Mouth not protractile. Teeth always present and firmly fixed to the underlying bone.

Genus: Brycinus

The mouth is terminal. Two rows of multicuspid teeth in upper jaw. 4 branchiostegal rays. The adipose eyelid absent or poorly developed.

*Brycinus jacksonii*: [Osoga (K), Soga (T), Nsoga (U), Angara(U)]

**Description**: Body laterally compressed, its depth contained 3 - 4 times in SL. Snout rounded. Lateral line with 25 - 29 scales; 4.5 - 5.5 scales between the lateral line and the origin of the dorsal fin. Dorsal fin with 10 rays, the first two unbranched; its origin above the pelvic fin insertion. Anal fin with 18 - 19 rays, the first three unbranched. Sexual dimorphism is seen on the anal fin. In the females the fin-marginal is straight or very slightly concave, whereas it is markedly convex in males. Further, in males, the individual rays are stouter and coarser than those in the females.

**Colouration**: Silver bluish-grey to blue-black dorsally. A large black blotch on the caudal peduncle with a narrow extension on to caudal fin. Dorsal fin grey, adipose fin orange, caudal yellow or orange.

**Habitat**: Shallow coastal/inshore waters.

*Brycinus jacksonii* (Boulenger, 1912)
Brycinus sadleri [Ndera (K)]

**Description:** Body laterally compressed, its depth contained 3 - 4 times in SL. Snout rounded. Jaws equal anteriorly. Lateral line with 31 - 34 scales; 6.5 - 7.0 scales between the lateral line and the origin of the dorsal fin. Dorsal fin with 10 rays, the first two unbranched; its origin above the pelvic fin insertion. Anal fin with 20 - 31 rays, the first three unbranched.

Difference in anal fin shape of males and females as in *Brycinus jacksonii*.

**Colouration:** Silver, bluish to black dorsally; an intensely silver longitudinal band running from behind the operculum to the caudal peduncle, where it merges with an irregular black blotch which extends on to the caudal fin base.

**Habitat:** Shallow vegetated areas.
Family: MASTACEMBELIDAE


Genus: Aethiomastacembelus

Aethiomastacembelus frenatus: [Okunga (K), spiny eel, Mukunga (K)]

Description: Body elongate and eel-like, covered with minute cycloid scales. Anterior nostril in the form of a short tentacle. Snout produced as a fleshy appendage. Mouth not protractile. Dorsal and anal fins long, continuous with caudal fin. Pelvic fins absent. The dorsal fin consists of 32 - 34 (rarely 29 - 31 or 35) separate spines, and a soft fin (64 - 73 rays) continuous with the caudal and soft anal fins.

Colouration: Extremely variable. Ground colour brown with a variable pattern of reticulations and blotches.

Habitat: Rivers and lakes, particularly in swamps.
MORMYRIDS

Family: MORMYRIDAE

Body somewhat elongate and laterally compressed, caudal peduncle narrow and distinct. Snout variable, short and rounded to elongate and trunk-like. Operculum hidden beneath the skin, the opening of the branchid cavity reduced. Eyes small and covered by skin. Head naked, its skin thick and well-supplied with mucus glands. Mouth not protractile, teeth invariably present. Scales small and cycloid; the lateral line complete. Fins without spines.

Genus: Mormyrus

*Mormyrus kannume*: [Elephant snout fish, Suma (K), Kasulubana (U), Domodomo (T)]

Description: Dorsal head profile straight or somewhat curved, sloping steeply. Snout produced into a stout trunk whose thickness and angle to the face are variable. Mouth small and terminal, lips thick. Eye small, contained 1 - 2 times in the inter-orbital width. Origin of dorsal fin above origin of caudal fins. *Mormyrus kannume* differs from all other Mormyridae in Lake Victoria by its long dorsal fin, originating above the pelvic fin and ending posteriorly to the anal fin, and by its trunk-like snout.

Colouration: Dull bronze above, lighter below.

Habitat: Throughout the lake and in large rivers, associated with rocks.
Genus: *Gnathoneinus*

Origin of dorsal fin above insertion of anal fin, or slightly in front or behind this point. Lower jaw extending beyond upper jaw. Chin with a long fleshy appendage.

*Gnathoneimus longibarbis*

**Description:** Depth of body contained 3.7 - 5 times in standard length, length of head (excluding lower lip) 4 - 4.5 times. Snout 0.5 - 0.75 length of the post-ocular part of the head. Chin produced into a long, cylindrical and fleshy appendage which is as long as, or longer than snout. Mouth terminal. Teeth in a single series restricted to the middle of each jaw, small and notched; 3 - 5 and 4 - 6 in the upper and lower jaws respectively. Dorsal fin 22 - 25 rays; anal with 28 - 31, its origin slightly in advance of the dorsal. Caudal fin almost entirely covered with small scales, the lobes pointed. Lateral line with 58 - 64 scales; 10 - 20 round the caudal peduncle, which is from 2 - 2.5 times longer than deep.

**Colouration:** Dark brown, lighter ventrally.

**Habitat:** Shallow inshore waters.
Genus: *Hippopotamyrus*

Origin of dorsal fin above insertion of anal fin, or slightly infront or behind this point. Upper jaw extending beyond lower jaw. Less than 12 teeth in lower jaw. Chin rounded. Dorsal fin originating anterior to anal fin origin.

*Hippopotamyrus grahami*

**Habitat:** Shallow water with sandy bottom.
Genus: *Marcusenius*

Origin of dorsal fin above insertion of anal fin, or slightly in front or behind this point. Lower jaw extending beyond upper jaw. Chin with a fleshy globular thickening.

*Marcusenious rheni*

**Habitat:** Water lily swamps.
*Marcusenious victoriae*

**Habitat:** Waterlily swamps.
Genus: *Petrocephalus*

Origin of dorsal fin above insertion of anal fin, or slightly in front or behind this point. Upper jaw extending beyond lower jaw. Less than 12 teeth in lower jaw.

*Petrocephalus catostoma*

**Description:** Depth of body contained 3 - 3.5 times in the standard length. Length of head 3.25 - 4 times. Snout very short, 0.25 - 0.17 length of head, rounded and projecting beyond the mouth which lies immediately below the eye. Eye small, its diameter 0.25 - 0.20 head length. Teeth notched, 10 - 14 and 17 - 22 in the upper and lower jaws respectively. Dorsal fin with 19 - 24 rays, its origin above the first anal fin ray. Anal fin with 25 - 30 rays, equally distant from the origins of the pelvic and caudal fins. Caudal fin with pointed lobes, scaled on the basal part only. Lateral line with 87 - 96 scales; 20 round the caudal peduncle which is nearly twice as long as deep.

**Colouration:** Dusky silver above, whitish below.

**Habitat:** Pools and rivers.
Genus: *Pollimyrus*

Origin of dorsal fin above insertion of anal fin, or slightly in front or behind this point. Upper jaw extending beyond lower jaw. Less than 12 teeth in lower jaw. Chin non-existent. Dorsal fin originating posterior to anal fin origin.

*Pollimyrus nigricans*

**Habitat:** Fringes of papyrus swamps.
Family: ANABANTIDAE

Body short, moderately compressed. Scales large and ctenoid. The entire head covered with scales and a serrated edge on the operculum. Two nostrils on each side of head, the anterior one in form of a small tube. An accessory breathing organ is situated above the gills.

Genus: Ctenopoma

*Ctenopoma muriei* [Oyusi (K)]

**Habitat:** Swamps and lily pools.
Family: PROTOPTERIDAE

Body elongate sub-cylindrical, appearing naked but covered with thin small scales. Caudal fin confluent with dorsal and anal fins. Pectoral and pelvic fins filamentous with or without unilateral fringe. Young with external gills. Adults with 6 gill arches and 5 gill clefts. Lungs paired, elongate, attenuate posteriorly.

Genus: Protopterus

Protopterus aethiopicus [Kamongo (KT), Mamba (U), Lungfish]

**Description:** Body elongate, sub-sy1indrical, the tail pointed and confluent with the long dorsal and anal fins. Pectoral and pelvic fins slender and filamentous. There are no individual teeth in the jaws, the dentition consisting of upper and lower tooth-plates in the form of sharp cutting ridges. Scales thin and deeply embedded in the skin.

**Colouration:** Dark slate-grey above, yellowish-grey or pinkish below; often with numerous dark spots or flecks on the fins and body.

**Habitat:** Open lake and marginal swamps.
CICHLIDS

Internal structures play a major role in the classification of cichlids. Cichlids of Lake Victoria have truncate or very slightly emarginate caudal fins and never more than 13 gill rakers.

Family: CICHLIDAE

Body form variable, scales ctenoid or cycloid. Head not completely covered by scales. Mouth protractile, teeth variable in form and number. No teeth on the vomer, palatines or pterygoids (bone forming the roof of the mouth). A single nostril on each side of the head. Lateral line interrupted, usually in two parts. Two groups exist, the tilapiines (*Tilapia* and *Oreochromis*) and haplochromines.
Genus: *Tilapia*

8 - 12 Gill rakers on lower part of first gill arch, caudal fin truncate or rounded. Dark spot at base of soft dorsal fin in adults and juveniles. Substrate brooding species.

*Tilapia rendalli* [Ndira (K), Ngege (U), Sato (T)]

**Description:** Body depth contained 2.25 - 2.4 in Standard Length (SL), 8 - 10 gill rakers below the joint of the first gill arch. Number of dorsal fin spine XVI, rarely XV or XVII.

This species is essentially similar in appearance to *Tilapia zillii*. The fry are difficult to separate as in both shape and general colour they are the same. The only detectable difference between the two species are that the opercular spot is usually absent in *Tilapia rendalli* and the “Tilapia mark” is followed by 2 - 3 dark bars on the soft portion of the dorsal fin. Its pelvics are longer, reaching to the anus and are orange coloured in contrast to the clear pelvics in *Tilapia zillii*.

**Colouration:** Dorsal surface of head and body mid to dark olive-green, paling over the flanks. Body crossed by dark vertical bars. Dorsal fin olive-green with a thin red margin and white to grey dark oblique spots on the soft rays. The caudal fin has a spotted upper half and a red or yellow lower half.

**Habitat:** Weedy areas.

![Diagram of Tilapia rendalli](image)
Tilapia zillii [Opat (K), Ngege (TU), Sato (T)]

**Description:** Body depth contained 2.0 - 2.25 times in SL. 8 - 12 gill rakers on the lower part of the first gill arch. Distinctive "Tilapia mark" persisting in adult fishes.

**Colouration:** Body olivaceous, shot with an iridescent blue sheen. Chest pinkish. Six or seven dark vertical bars. Dorsal, caudal and anal fins olivaceous with yellow spots, the dorsal and anal fins often outlined by a narrow orange band. The "Tilapia mark" is a large, black, nearly circular spot almost completely outlined in yellow.

**Habitat:** Shallow areas with vegetation.
**Genus: Oreochromis**

Lateral line series with 31 - 33 (usually 31) scales; 22 - 28 (usually 24 - 26) gill rakers on the lower half of the first gill arch. Distinctive male breeding colours. Mouth brooding species.

**Oreochromis esculentus:** [Ngege (KUT), Sato (T)].

**Description:** Lateral line series with 32 - 35 (usually 32 or 33) scales; 18 - 21 (usually 19) gill rakers on the lower part of the first gill arch. Length/depth ratio of the caudal peduncle 0.9 - 1.1.

**Colouration:** Reddish brown; fins greyish, weakly if at all spotted; dorsal fin without coloured outline, or if coloured, a deep red (never orange). Breeding males have the vertical surface of the body sooty, and the flanks suffused with red. Young fishes are silvery grey; the “Tilapia mark” is a well defined black spot outlined in pale yellow.

**Habitat:** Mostly in inshore waters but extends down to at least 15 metres.
**Oreochromis leucostictus**: [Opat (K), Ngege (UT), Sato (T)].

**Description**: Lateral line series with 28 - 30 (usually 29) scales; 19 - 24 (usually 22) gill rakers on the lower part of the first gill arch. Length/depth ratio of the caudal peduncle 0.5 - 0.8.

**Colouration**: Body dark olive-green to slately black, clearly marked with whitish spots, lower lip often bluish-white; 8 - 11 dark vertical stripes sometimes visible on the flanks. Dorsal, anal and caudal fins dark; the soft dorsal fin, the entire caudal fin and the anal with well-defined bluish-white spots. In breeding males the ground colour changes to a dark blue-black, whilst the whitish spots on the body and fins are intensified; the eye is outstanding with its bright amber iris crossed by a black bar.

**Habitat**: Shallow channels and lagoons on vegetated lake shore.
**Oreochromis niloticus**: [Nyamai (K), Ngege (UT), Sato (T), Nile Tilapia].

**Description**: Lateral line series with 31 - 33 (usually 31) scales; 22 - 28 (usually 24 - 26) gill rakers on the lower half of the first gill arch.

**Colouration**: Greyish-brown ground colouration, darker above; faint traces of 6 or 7 dark bars on the flanks and the caudal peduncle. Dorsal and anal fin greyish, somewhat irregularly spotted. Caudal fin grey, covered with dark red, narrow, vertical stripes. In breeding males the ventral surface of the body and the anal, dorsal and pelvic fins are black, and the head and flanks are flushed with red.

**Habitat**: Mostly in inshore waters but extends down to at least 15 metres.
Oreochromis variabilis: [Mbиру (K), Ngege (UT)].

**Description:** A relatively deep bodied species with a characteristic convexity immediately before the eye. A characteristic feature of breeding males is the conspicuous genital tassel. This is the branched structure, yellow to orange in colour and often several centimeters long, developed from the genital papilla, which lies immediately before the anus.

**Colouration:** Adult but non-breeding fishes are uniformly grey or freyish-green, the flank scales somewhat darker at the center than at the edge. Fins grey, the caudal weakly if at all, spotted. Dorsal fin tipped with orange throughout life. Breeding males are bluish-grey to bluish-green; the caudal fin is outlined in bright orange. The colouration of breeding females similar to non-breeding individuals. Immature specimens are grey-silver, with 8 - 10 dark, vertical stripes on the flanks and caudal peduncle. The dorsal fin is outlined in orange; the “Tilapia mark” is a relatively indistinct black marbling.

**Habitat:** Off exposed shores. Occurs mainly in waters less than 20 m deep and partly on exposed shores.
Genus: *Haplochromis*

Ctenoid scales, the caudal peduncle elongated (i.e. rectangular); no “Tilapia mark” at the base of dorsal fin.

**Detritivores/phytoplanktivores**

**Description:** Size range of adults 5 - 9 cm SL. Body shape mostly generalised. In a few species the dorsal head profile is concave above the eye. Outer teeth in oral jaws generally bicuspid. Inner teeth in one or two, rarely in three rows.

**Habitat:** Bottom dwelling species, over mud bottoms, from 2 to at least 30 metres deep.

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**Epilithic algae grazers**

**Description:** Size range of adults 5 - 12 cm SL. Lower jaw short and broad; length/width ratio 1.0 - 2.0 but mostly smaller than 1.5. No mandibular mental prominence, symphysis rounded. Retroarticular processes of lower jaw not interrupting ventral body outline and not touching each other. Scales on chest smaller and deeper embedded than those on ventral and ventro-lateral parts of the body, the size change is rather abrupt. Outer teeth subsequently bicuspid, closely set. In lateral view the crown is hardly compressed. Tricuspid inner teeth in 3 - 7 rows. The space between outer row and inner tooth series is reduced and the inner row teeth are generally not much shorter than the outer teeth, thus providing a continuous scraping surface.

**Habitat:** Restricted to rocks.
Insectivores

Description: Size range of adults 6 - 15 cm SL. Body shape mostly generalised. Outer teeth variable; bicuspids and unicuspsids occur. Sometimes the teeth may be rather stout. In species with unicuspsids, the teeth generally are straight or slightly curved, not acutely pointed and the medial teeth are often longer than the lateral ones. Inner teeth in 1 - 4 generally 2 - 3 rows. In some species phryngeal teeth are slightly to moderately enlarged.

Habitat: Representatives of this trophic group were found in all habitats of the lake. Currently mainly in littoral areas.

Oral mollusc shellers/crushers

Description: Size range of adults 6 - 15 cm SL. (most species 7 - 12 cm). Dorsal head profile often curved. Lower jaw short and broad; length/width ratio generally 1.0 - 0.5. No mandibular mental prominence; symphysis rounded. Retroarticular processes of lower jaw not interrupting ventral body outline and not touching each other. Oral teeth generally stout, unicuspid, acutely pointed and (strongly) recurved. Inner teeth mostly unicuspid in 3 - 9 rows.

Habitat: Bottom dwelling species. Mainly occurring over sand bottom, from 1 to at least 32m. Currently rare outside the littoral areas.
Paedophages

The paedophages of Lake Victoria can be sub-divided into snout-engulfers, who suck eggs and larvae from the mouth brooding females and egg-snatchers who steal eggs from the substrate before they are taken into the mouth of spawning female.

**Description:** Size range of adults 6 - 7 cm SL. Body form variable. Dorsal head profile slightly to distinctly concave. Maxilla often bullate. In some species the lower jaw is pointed, closes within the upper jaw and is narrow. Teeth (weakly bicusps and unicuspids) of both jaws are deeply embedded in oral mucosa. In a number of species the outer teeth of the lower jaw are curved anteriorly. Inner teeth arranged in 1 - 2 (rarely 3) rows. In some species the teeth are hardly visible due to their small size.

**Habitat:** Used to occur in all habitats of the lake where haplochromine cichlids were present. Currently extremely rare and probably restricted to littoral areas.

![Haplochromis microdon](image)

**Haplochromis microdon**

Parasite eaters

**Description:** Size range of adults 6 - 10 cm SL. One species, *Haplochromis teunisrasi*, is slender (BD 30-35% of SL) with a relatively short and gently curved head. The other species, *Haplochromis cnesther*, has a generalised habitus. Closely set unequally bicuspid teeth with an obliquely truncated major cusp. Inner teeth in 2 - 4 rows.

**Habitat:** The species were caught occasionally over mud bottoms at depths of 8 - 14 m.
Pharyngeal mollusc crushers

Description: Size range of adults 6 - 18 cm SL (most species 9 - 13 cm). Deep bodied species (BD 34-46% of SL, mean >38%). In dorsal view, head tapering relatively strongly. Outer teeth in oral jaws often relatively stout and unicuspid (blunt) but species with smaller bicuspid teeth are also known. Inner teeth in 1 - 3 rows. Pharyngeal teeth molariform, pharyngeal jaws enlarged.

Habitat: Bottom dwelling species that used to live at depths 1 - 28 m over all substrate types. Currently rare outside the littoral areas.

Haplochromis teegelaari

Piscivores

Description: Size range of adults 8-25 cm SL. Body form very variable; deep bodied and slender bodied species are known, and compressed as well as broad bodied forms. All piscivorous species have relatively large head (HL > 36% of SL) which accommodate long jaws (LJL > 45% of HL in all species, > 50% of HL in many species) and relatively deep cheeks. In many species, the lower jaw extends beyond the upper jaw. A few species have a mixture of unicuspid teeth (dominating) and weakly bicuspid teeth in the oral jaws. However, most piscivores have only acutely pointed unicuspid teeth. Tooth curvature varies from almost straight to very strongly recurved. Tooth setting varies from relatively closely to widely set. Inner teeth generally in 2 - 3 rows, some species 4 - 5 inner rows. Exceptionally, specimens with as many as 8 rows are found.

Habitat: Used to occur over all substrate types from shallow littoral regions to depths of 50 m in open waters. Currently extremely rare and probably restricted to refugia in littoral areas.

Haplochromis dentex
Prawn eaters

Description: Size range of adults 9 - 12 cm SL. All species have large eyes (EyL 25 - 35% of HL), the dorsal eye margin touching or extending above the dorsal head profile. Interorbital width less than eye length. Premaxilla expanded medially. Outer teeth in oral jaws generally consisting of a mixture of relatively small, acutely pointed unicuspid (and/or bicuspid) and tricuspid teeth. Inner teeth in 2 - 3 rows of mostly tricuspid teeth.

Habitat: Used to occur over mud bottoms at depths between 6-35 m.

![Haplochromis dolichorynchus](image)

Scale eaters

Description: Size range of adults 8 - 10 cm SL. Slender fish (BD 30 - 33% of SL). Dorsal and anal fins do not reach caudal fin. Lips slightly thickened. Movably implanted, characteristically shaped bicuspid teeth with expanded crowns. In lateral view the crown is compressed. Inner teeth arranged in 6 - 11 rows.

Habitat: The only known species, *Haplochromis welcommei*, is a benthic species that used to occur over mud, sand and rocky bottoms at depths of 1-18 m.

![Haplochromis welcommei](image)
Zooplanktivores

**Description:** Size range of adults 5 - 9 cm SL. Generally slender bodied fishes (BD 23 - 35% of SL, mostly smaller than 33%). Lower jaw slightly to rather oblique and slightly elongate (36 - 45%, generally over 40% of HL). Retroarticular processes of lower jaw generally interrupting ventral body outline. Outer teeth in oral jaws generally unequally bicuspoid, in a few species unicuspid. Inner teeth in one or two, rarely in three rows.

**Habitat:** Used to be common in littoral, sub-littoral and deep water regions (up to at least 35 m depth), especially in sub-littoral regions. Most species occur in areas with a mud bottom.

*Haplochromis laparogramma*
## APPENDIX

### SPECIES OF LAKE VICTORIA

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REFERENCES

