

NOTES ON FISHES OF KENYA IN THE RIFT VALLEY

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ABSTRACT

This paper attempts to update information on scientific and recommended English common names, distribution and taxonomic notes of fish species of Kenya occurring in the East Arm of the Rift Valley drainage system. Twenty (20) fish families consisting of 35 genera and 66 species occur in the drainage system, with Lake Turkana catchment having the richest (50) species diversity in their natural habitats. Five (5) special fish species have been introduced into the drainage system, with the highest number for commercial purposes and sports, in Lake Naivasha and one fish species tolerant to high salinities, into Lake Nakuru. One fish species has been extinct from the drainage system (Lake Naivasha), perhaps due to such introductions. Most fishes occurring in the drainage system are capable of living in both lacustrine as well as riverine conditions, except three (3), which tend to be entirely riverine. One minnow occurs in "Amala River", an affluent of Lake Baringo and another minnow is widespread in several rivers (e.g. Suam, Subukia, Seya, Sinet, Waseges, Kerio affluent), while one cichlid occurs in Suguta River and tributaries. Important notes are included for selected fish species to clarify and to update some undoubtful information, which exists in the literature. The information from this study is recommended when carrying out further studies on fishes of Kenya in the East Arm of the Rift Valley drainage system.¹

INTRODUCTION

The East Arm of The Rift Valley begins outside African continent, in Jordan in the Middle East and treks southwards through East Africa and Mossambique into the Indian Ocean. The East Arm is joined in Malawi by a West Arm, which arcs northwards and ends in regions of western Uganda. The Kenyan portion of the East Arm of The Rift Valley forms one of the largest drainage systems of the country, especially in terms of the number of individual catchment areas. Low areas of The Rift Valley are characterized by a chain of saline or brackish water lakes, which high areas (escapements) form good water tables, supplying springs, streams and rivers, especially during rainy seasons. The chain of lakes found in the Kenyan portion of the East Arm of The Rift Valley drainage system, are (starting from the North) Turkana, Ogipi, Baringo, Bogoria, Nakuru, Elementaita, Naivasha, Magadi, Kabongo and Natron (Fig 1). The main rivers supplying the drainage system, are Turkwell, Suam, Kerio, Suguta, Seya, Sinet, Molo, Perakera, Subukia, Waseges, Njoro, Kariandusi, Malewa, Gilgil and South Uaso Nyiro (the latter, not included in this paper).²

Lake Turkana, like almost all Rift Valley lakes, is situated in an interior basin with no outlet. Its largest affluent is the Omo River in the North, which is situated entirely in Ethiopian territory. Rising from Mount Elgon in the southwest of Lake Turkana, is the Turkwell River, which does not regularly reach the lake but stays dry at times of low rainfall. This is even more with the cases of Kerio and Suguta Rivers, which flow northwards in the Rift Valley; especially, the Suguta only seldomly reaches Lake Turkana.

Lake Baringo is situated in one of the interior basins of the Rift Valley. There are some smaller seasonal rivers, mainly in the South, such as, Molo and the Perakera Rivers, bringing water into the lake.

Lake Bogoria is normally a salt-water lake; but the Weseges River, which enters the lake from the North contains fresh water. The river dries up in dry periods.

Oi Bolosat Swamp exists to the northeast of Lake Nakuru. The ecology of the swamps is not yet well studied. Lake Nakuru has only a very small catchment and dries up sometimes. The main natural drainage into Lake Nakuru is River Njoro; waste waters from Nakuru Town also contribute to a great deal of inflows to the lake, sometimes polluting it. Lake Elementaita is a salt lake.

The main drainage into Lake Elementaita is the River Kariandusi, originating from the Aberdare Mountain ranges; the river carries with it some effluent water of the Kariandusi Diatomite Mines and factory, located nearby along the main Nairobi-Nakuru road. Other drainages into Lake Elementaita come from the opposite Mau Escapement.

Additional index words: East Africa, Kenya, Rift Valley, Turkana, Naivasha, riverine fish, biodiversity.

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mainly updates classification of fishes, from sporadic but comprehensive surveys which have been carried out since exploration times (Peters 1868; Kersten 1869; Boulenger 1909; 1911; 1915; 1916, Worthington 1932; Trewavas 1933; 1953; Worthington & Ricardo 1936; EAFRO 1949; 1962; Copley 1958; EAFRO 1964; 1976; UFFRO 1977; KMFRI 1981; TAFIRI 1984). This is one of the first attempts to put in a nutshell or fill the gap of scientific and recommended English common names and distribution of fish of these important and unique drainage systems of Africa. There is only one such study recently done elsewhere in Kenya (Okeyo 2003). The results of this study, it is hoped, will be useful to fisheries managers, students of fish taxonomy and ecology, curators and researchers of African fishes, and that it will be one of the data bases from which further studies of a similar nature will be drawn.

MATERIALS AND METHODS

The product of this study was as a result of intensive literature searches and examination of reference museum collections of fishes of Kenya, housed at the National Museums of Kenya, Nairobi and the Natural History Museum, London. In a few cases, listed species were based on reliable records from local fishers. It also involved field visits to collect fish during the duration of this study. Fish were subjected to standard methods of systematic and taxonomic field as well as laboratory analysis (Boulenger 1911; 1916; Banister 1973; Campbell *et al.* 1986; Eschmeyer 1990; De Vos 1995; 2001; FishBase 1998; 1999; 2000).

Data were also collected on the general distribution of fish in the drainage system with respect to the lakes, rivers and associated swamps. This was aimed at providing general patterns of local fish distribution. This was also to show representation of the complex diversity, speciation and habitat adaptability of these African fish species or groups. Data from the Southern Uaso Nyiro catchment area was exempted from this paper.

RESULTS AND DISCUSSION

Classification

Citharinidae (citharines) and Characidae (characins) were considered as independent fish families during this study (Table 1). Nelson (1994) agrees with this classification. Distichodidae (distichodines) was herein treated as a family. Vari (1979) agrees with this classification. The family Claroteidae (clarotid catfishes) was recognized as separate from family Bagridae (bagrid catfishes). Mo (1991) supports this classification. Mastacembelidae (spinyeels) was recognized as a family under the order Synbranchiformes (Table 1). Gosline (1983) and Travers (1984a; b), however, contrast this classification, by placing the spinyeels under the order Perciformes.

This study recognized the characins genera, *Brycinus* Valenciennes in Cuvier & Valenciennes, 1849 and *Alestes* Müller & Troschell, 1844 as distinct from each other (Table 1). Myers (1929), Gery (1977) and Paugy (1986) also classify the two characin genera the same way as in this study. In his classification, Nelson (1994) however, contrasts by lumping the two genera together. This study placed the eastcoast lampeye, genus *Pantanodon* in the fish family Aplocheilichthyidae (topminnows or lampeyes). Sethi (1960) and Meyer and Lydeard (1993) agree to this classification. Scientific names are followed by the most appropriate English common names where possible. Names of the authorities who recorded (original) information on respective fish species are included.

Diversity

A total of 20 fish families with 35 genera and 66 species were recorded to occur in the Kenyan portion of the East Arm of The Rift Valley drainage system (Table 1), of which 17 (26%) fish species belonged to the family Cyprinidae (barbs, minnows, labeos), 13 (20%) to Cichlidae (cichlids), 9 (14%) to Characidae (characins), 3 (5%) each to Mochokidae (squeakers, suckermouths), and Aplocheilichthyidae (topminnows or lampeyes), 2 (3%) each to Polypteridae (bichirs), Mormyridae (snoutfishes), Bagridae (bagrid catfishes), Claroteidae (claritid catfishes), Clariidae (catfishes), and Centropomidae (Nile perch and related forms) and 1 (2%) each to Osteoglossidae (bonytongues), Gymnarchidae (gymnarchids), Distichodidae (distichodines), Citharinidae (citharines), Schilbeidae (butter catfishes), Amphiliidae (mountain catfishes), Melapteruridae (electric catfishes), Centrarchidae (sunfishes, freshwater basses), and Tetraodontidae (puffers) (Table 1). Sixty-one (61 (92%)) fish species reported from the drainage system occurred in their natural water bodies; five (5 (8%)) fish species with the highest number for commercial and sports values had been introduced into Lake Nakuru (Vareschi 1979; Table 1). There were a few fish species, which naturally occurred in Lake Naivasha catchment area (e.g. one or two lampeye(s), of the genus *Aplocheilichthys*, and the straightfin barb, *Barbus paludinosus* Peters, 1852). The Naivasha lampeye, *Aplocheilichthys* sp. "Naivasha" has been extinct from the lake since the introductions.

Table 1. Scientific, recommended English common names and authorities of fish of Kenya in the East Arm of The Rift Valley drainage system. (?)=Fish species, which occurrence are uncertain. Included are some taxonomic notes on selected fish species; (-)= No notes are included. Distribution is accompanied by supporting literature. Citations and notes may refer to some synonyms.

Family - Species	Distribution and Supporting Literature	Taxonomic Notes
Polypteridae - Bichirs		
<i>Polypterus bichir bichir</i> Geoffroy Saint Hilaire, 1802 - Nile bichir	Lake Turkana (Boulenger 1909; Hopson & Hopson 1982)	-
<i>Polypterus senegalus senegalus</i> Cuvier, 1829 - Senegal bichir	Lake Turkana (Boulenger 1909; Hopson & Hopson 1982)	-
Osteoglosidae - Bonytongues		
<i>Heterotis niloticus</i> (Cuvier, 1829) - African bonytongue	Lake Turkana (Boulenger 1909; Hopson & Hopson 1982)	-
Mormyridae - Snout fishes		
<i>Hyperopisus bebe</i> (Lacepède, 1803) ngai	Lake Turkana (Hopson & Hopson 1982)	-
<i>Mormyrus kannume</i> Forsskål, 1775 - elephant-snout fish	Turkwell River and Lake Turkana (Hopson & Hopson 1982).	-
Gymnarchidae - no suggested common name		
<i>Gymnarchus niloticus</i> Cuvier, 1829 aba aba	Lake Turkana (Boulenger 1909; Hopson & Hopson 1982).	-
Cyprinidae - Barbs, Minnows and Labeos		
<i>Barbus bynni</i> (Forsskål, 1775) - Nile barb	Lake Turkana (Pellegrin 1905; Hopson & Hopson 1982)'	Pellegrin 1905 refers to it as <i>Barbus meneliki</i>
<i>Barbus intermedius intermedius</i> Rüppell, 1835 - Ethiopia barb	Northern Kenya (Banister 1973; Skorepa 1992)	The date of publication of Rüppell's paper is discussed by Banister (1973) who assumed 1837 as the correct date. Lévêque & Daget in Daget <i>et al.</i> 1984 (CLOFFA 1) assumed 1836 as the correct date of publication while in Daget <i>et al.</i> , 1986 (CLOFFA 3) the publication is dated 1835. Rüppell's article in fact should appear in volume 2 of the publication "Museum Senckenbergianum". This volume was published in at least two parts. The last part, which completed the volume, appeared in 1837 (Richter 1935). This part contained the title page bearing the date of the year 1837. The first part, containing pages 1 to 116, and hence the article of Rüppell (pages 1-28), however, was published already in 1836 (hand written note in a copy of volume 2 of Mus. Senckenb. Of the Zoologisches Museum Berlin, which is confirmed by Dean (1917)). The publication date of the Museum Senckenbergianum article of Rüppell therefore is 1836 and not 1837 as assumed by Banister (1973) or listed in many library catalogues, including Richter (1935) Rüppell evidently wanted his article to be published as soon as possible and did not want to wait until the regular issue of Mus. Senckenb. was distributed. On

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<i>Barbus intermedius australis</i> Banister, 1973 - Baringo barb	Lake Baringo drainage	his own costs and therefore not listed in Richter (1935) he ordered separates. Those preprints are clearly dated 1835 on the title page as cited in Banister (1973). This date of publication is to be adopted as correct in the absence of evidence to the contrary, and hence the date of publication of the paper of Rüppell is 1835 according to article 21 (b) and (h) of the International Code of Zoological Nomenclature (1985) Lake Baringo is the type locality
<i>Barbus lineomaculatus</i> Boulenger, 1903 - line-spotted barb	Lake Baringo (Mann 1971)	-
? <i>Barbus loveridgii</i> Boulenger, 1916 - Loveridge's barb	"Amala River", an affluent of Lake Baringo, Kenya (Greenwood 1962; Mann 1971)	This species is known from the types only (Greenwood 1962). The type locality "Amala River", is in doubt (Mann 1971)
<i>Barbus neumayeri</i> Fischer, 1884 - Neumayer's barb	Suam River (Mount Elgon), Subukia River (Lake Bogoria drainage), Seya River (Isiolo district), Sinet River near Loitoktok (Greenwood 1962); Waseges River (Lake Bogoria drainage) (Mann 1971); Kerio affluent, Lake Turkana drainage	The status of <i>B. neumayeri</i> is yet to be unresolved; it is unclear if the species presently known under this name is identical with the species as represented by the type specimens. At present a species is considered to be <i>B. neumayeri</i> of which the specimens of most populations show a variable pattern of black spots along the midline. In most populations there are fish with three such black spots of irregular sizes. These spots may merge with each other and even form an interrupted longitudinal band. According to Fischer (1884: 31) the upper part of the body was dark to black, the lower part light to whitish in the types of <i>B. neumayeri</i> . The size of the two types is 10.1 and 11 cm, which is enormous for <i>B. neumayeri</i> in the present sense. The more recent collections from the Southern Uaso Nyiro, Kenya, which are at the British Museum of Natural History (BMNH) contained barbs with well corresponding colouration as described by Fischer; the specimens, however, did not show a black mid-lateral band or black spots. It is therefore presently unclear if the black spotted/banded form previously described for East Africa, and the Southern Uaso Nyiro fish are colour morphs of one species only or if both are distinct
<i>Barbus paludinosus</i> Peters, 1852 - straightfin barb	Lakes and rivers in the drainage (Greenwood 1962)	Actually <i>B. paludinosus</i> occurs in lakes and rivers throughout Kenya
<i>Barbus stigmatopygus</i> Boulenger, 1903 - mid spot barb	Lake Turkana drainage (Boulenger 1911; Hopson & Hopson 1982)	<i>Barbus wernerii</i> Boulenger, 1905 is a synonym of <i>B. stigmatopygus</i> according to Banister (1987)
<i>Barbus turkanae</i> Hopson & Hopson in Hopson, 1982 - Turkana barb	Lake Turkana	Lake Turkana is the type area
<i>Barbus zanzibaricus</i> Peters, 1868 - Zanzibar barb	Lake Baringo drainage	-
<i>Chelaethiops bibie</i> (De Joannis, 1835) - Turkana sardine	Lake Turkana (Hopson & Hopson 1982)	-

<i>Labeo cylindricus</i> Peters, 1852 - redeye labeo	Lake Baringo drainage (Worthington & Richardo 1936; Mann 1971); upper reaches of Turkwell/Kerio systems (Hopson & Hopson 1982)	-
<i>Labeo horie</i> Heckell, 1846 - Assuan labeo	Lake Turkana drainage (Worthington & Richardo 1936; Hopson & Hopson 1982)	-
<i>Labeo niloticus</i> (Forsskål, 1775) - Nile labeo	Lake Turkana (Reid 1985)	Hopson & Hopson mentioned two <i>Labeo</i> species from the Lake Turkana drainage only: <i>L. cylindricus</i> from the upper reaches of rivers flowing into the lake and <i>L. horie</i> from the lake itself. The problem encompassing the identity of the Lake Turkana Labeo(s) is therefore not sufficiently solved
<i>Leptocypris niloticus</i> (De Joannis, 1835) - Nile Minnow	Lake Turkana drainage (Worthington & Richardo 1936; Hopson & Hopson 1982)	Hopson & Hopson (1982) recorded the name of the fish species as <i>Barilius niloticus</i>
<i>Neobola bottegoi</i> Vinciguerra, 1895 - Bottego's minnow	Lake Turkana drainage, Omo River (Howes 1984)	-
<i>Neobola stellae</i> (Worthington, 1932) - Turkana minnow	Lake Turkana (Hopson & Hopson 1982)	Lake Turkana is the type area. Hopson & Hopson 1982 recorded the name of the fish species as <i>Engraulicypris stellae</i>
Distichodidae - Distichodines		
<i>Distichodus niloticus</i> (Linnaeus, 1762) - Nile distichodus	Lake Turkana (Günther 1896; Hopson & Hopson 1982)	Günther (1896) recorded the name of the fish species as <i>Distichodus rodolphi</i>
Citharinidae - Citharines		
<i>Citharinus citharus intermedius</i> Worthington, 1932 - Turkana citharine	Lake Turkana (Hopson & Hopson 1982)	Lake Turkana is the type area. This apparently is the fish species Hopson & Hopson 1982 recorded its name as <i>C. Citharus</i>
Characidae - Characins		
<i>Alestes baremoze</i> (De Joannis, 1835) - Egyptian robber	Lake Turkana (Boulenger 1909; 1916; Hopson & Hopson 1982)	-
<i>Alestes dentex</i> (Linnaeus, 1758) - Nile robber	Lake Turkana (Boulenger 1909; Hopson & Hopson 1982)	-
<i>Brycinus ferox</i> (Hopson & Hopson in Hopson, 1982) - large-toothed Turkana robber	Lake Turkana (Hopson & Hopson 1982)	Lake Turkana is the type area. The fish was originally described as <i>Alestes ferox</i> , but is currently placed in the genus <i>Brycinus</i> by Lévêque <i>et al.</i> (1991)
<i>Brycinus macrolepidotus</i> (Valenciennes in Cuvier & Valenciennes, 1849) - large scaled robber	Lake Turkana (Hopson & Hopson 1982)	Fowler (1936) reported this fish species also to occur in Lake Victoria, using only one specimen of a total length of 328 mm, collected from Katala, Uganda; Paugy in Daget <i>et al.</i> (1984) gives Lake Victoria as a locality; but these reports are doubtful. There is no substantiated indications that the fish species is present in Lake Victoria
<i>Brycinus minutus</i> (Hopson & Hopson in Hopson, 1982) - dwarf Turkana robber	Lake Turkana (Hopson & Hopson 1982)	Lake Turkana is the type area. The original name of the fish species was described as <i>Alestes minutus</i> Hopson, 1982, which is currently placed in the genus <i>Brycinus</i> by Lévêque <i>et al.</i> (1991)

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<i>Brycinus nurse</i> (Rüppell, 1832) - nurse tetra	Lake Turkana (Boulenger 1909; Pellegrin 1935; Hopson & Hopson 1982)	Pellegrin (1935) recorded the fish species as <i>Alestes nurse</i> var. <i>nana</i> Pellegrin, 1935 "Nanoropus (lac Rodolphe)"
<i>Hydrocynus forskahlii</i> (Cuvier, 1819) - elongate tigerfish	Lake Turkana (Boulenger 1909; Hopson & Hopson 1982)	Boulenger (1909) Recorded the fish species as <i>Hydrocynon forskalii</i> Boulenger, 1909
<i>Hydrocynus vittatus</i> Castelnau, 1861 - tigerfish	Lake Turkana (Worthington & Richardo 1936; Hopson & Hopson 1982)	Hopson & Hopson 1982 recorded the name of the fish species as <i>Hydrocynus lineatus</i> Hopson & Hopson, 1982; as to the status of this species see Brewster (1986) and Paugy & Guegan (1989)
<i>Micralestes elongatus</i> Daget, 1957 - elongated robber	Lake Turkana (Hopson & Hopson, 1982)	Hopson & Hopson (1982) recorded the name of the fish species as <i>Micralestes acutidens</i> (Peters, 1952). <i>M. acutidens</i> , however, does not naturally occur in the Nile System of which Lake Turkana belongs. The characin listed by Hopson & Hopson (1982) under the name <i>M. acutidens</i> in fact is <i>M. elongatus</i> according to Paugy (1990) and Lévêque <i>et al.</i> (1991)
Bagridae - Bagrid Catfishes		
<i>Bagrus bajad</i> (Forsskål, 1775) - black Nilecatfish	Lake Turkana (Worthington & Ricardo 1936; Hopson & Hopson 1982)	-
<i>Bagrus docmak</i> (Forsskål, 1775) - Sudan catfish	Lake Turkana (Hopson & Hopson 1982)	-
Claroteidae - Calaritid Catfishes		
<i>Auchenoglanis occidentalis</i> (Valenciennes in Cuvier & Valenciennes, 1840 - giraffe catfish	Lake Turkana drainage (Vinciguerra 1898; Boulenger 1911; Hopson & Hopson 1982)	Vinciguerra (1898) recorded the fish species name as <i>Oxyglanis sacchi</i> Vinciguerra, 1898 "fiume Omo a Murzu"
<i>Chrysichthys auratus</i> (Geoffroy Saint Hilaire, 1809) - golden Nile-catfish	Lake Turkana (Hopson & Hopson 1982)	-
Schilbeidae - Butter Catfishes		
<i>Schilbe uranoscopus</i> Rüppell, 1832 - Egyptian buttercatfish	Lake Turkana (Worthington & Richardo 1936; Hopson & Hopson 1982)	-
Amphiliidae - Mountain Catfishes		
<i>Andersonia leptura</i> Boulenger, 1900) - whiptailed Nile catfish	Lake Turkana (Hopson & Hopson 1982)	-
Clariidae - Catfishes		
<i>Clarias gariepinus</i> (Burchell, 1822) - Sharptooth Catfish, Common Catfish	All habitable lakes and rivers; Lake Turkana (Worthington & Richardo 1936; Hopson & Hopson 1982), Suguta River (Mann 1971), Lake Baringo (Worthington & Richardo 1936), Wasages River, Lake Bogoria drainage (Mann 1971)	Occurs throughout the drainage system. Mostly listed in the literature under its synonym <i>Clarias mossambicus</i> Peters, 1852 (Teugels 1986). Hopson & Hopson (1982) recorded the fish species name as <i>Clarias lazera</i> Valenciennes, 1840 in the lake.

<i>Heterobranchus longifinis</i> Valenciennes in Cuvier & Valenciennes, 1840 - Vundu	Lake Turkana (Hopson & Hopson 1982)	-
Melapteruridae - Electric Catfishes		
<i>Malapterurus electricus</i> (Gmelin, 1789) - electric catfish	Lake Turkana (Pellegrin 1935; Hopson & Hopson 1982; Golubtsov & Berendzen 1999)	-
Mochokidae - Squeakers and Sucker-mouths		
<i>Mochokus niloticus</i> De Joannis, 1835 - dwarf Nile catfish	Lake Turkana (Vinciguerra 1898; Boulenger 1911; Hopson & Hopson 1982)	Vinciguerra (1898) recorded the name of the fish species as <i>Rhinoglanis vannutelli</i> Vinciguerra, 1998 "Iago Rodolfo"
<i>Synodontis frontotus</i> Vaillant, 1895 Sudan squeaker	Lake Turkana (Vinciguerra 1898; Hopson & Hopson 1982)	Vinciguerra (1898) recorded the name of the fish species as <i>Synodontis citernii</i> Vinciguerra, 1898
<i>Synodontis schall</i> (Bloch & Schneider, 1801) - Nile squeaker	Lake Turkana (Günther 1896, pl. IX; Hopson & Hopson 1982)	Günther (1896, pl. IX) recorded the name of the fish species as <i>Synodontis smithii</i> Günther, 1896
Aplocheilichthyidae - Topminnows or Lampeyes		
<i>Aplocheilichthys jeanneli</i> (Pellegrin, 1935) - Omo lampeye	Lake Turkana drainage (Hopson & Hopson 1982)	Lake Turkana is the type area. There is an <i>Aplocheilichthys</i> species in the Baringo basin (Mann 1971; Seegers 1986, photo) which may be <i>A.</i> <i>jeanneli</i>
<i>Aplocheilichthys rudolfianus</i> (Worthington, 1932) - Turkan lampeye	Lake Turkana (Hopson & Hopson 1982)	Lake Turkana is the type area
<i>Aplocheilichthys</i> sp. "Naivasha" (Extinct species) - Naivasha lampeye	Lake Naivasha	This fish species is extinct from Lake Naivasha. This fish species was named <i>Aplocheilichthys</i> <i>antinorii</i>
Centropomidae - Nile Perch and related forms		
<i>Lates (Lates) longispinis</i> Worthington, 1932 - Turkana perch	Lake Turkana (Hopson & Hopson 1982)	Lake Turkana is the type area
<i>Lates (Lates) niloticus</i> (Linnaeus, 1758) - Nile perch	Lake Turkana (Worthington 1932; Hopson & Hopson 1982)	Worthington (1932) recorded the name of the fish species as <i>Lates niloticus rudolfianus</i> Worthington, 1932
Centrarchidae - Sunfishes and Freshwater Basses		
<i>Micropterus salmoides</i> (Lacepède, 1802) - largemouth bass	Introduced into Lake Naivasha	-
Cichlidae - Cichlids		
<i>Haplochromis (Thoracochromis)</i> <i>macconneli</i> Greenwood, 1974 - McConnel's haplo	Lake Turkana (Hopson & Hopson 1982)	Lake Turkana is the type area
<i>Haplochromis (Thoracochromis)</i> <i>rudolfianus</i> Trewavas, 1933 - Lake Rudolf haplo	Lake Turkana (Hopson & Hopson 1982)	Lake Turkana is the type area

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<i>Haplochromis (Thoracochromis) turkanae</i> Greenwood, 1974 - Lake Turkana mouthbrooder	Lake Turkana (Hopson & Hopson 1982)	Lake Turkana is the type area
<i>Hemichromis letourneuxi</i> Sauvage, 1880 - Nile jewel cichlid	Lake Turkana (Trewavas 1933, Hopson & Hopson 1982)	Trewavas (1933) recorded the name of the fish species as <i>Pelmaiochromis exsul</i> Trewavas, 1933. Hopson & Hopson (1982) recorded the name of the fish species as <i>Hemichromis bimaculatus</i> (Boulenger, 1915)
<i>Oreochromis alcalicus alcalicus</i> (Hilgendorf, 1905) - Lake Natron tilapia	Lake Natron drainage: Shombole Swamps (Fischer 1884; Coe 1969; Seegers & Tichy 1999)	Lake Natron drainage is the type area. Fischer (1884: 28) recorded the name of the fish species as <i>Chromis niloticus</i> var. <i>mossambicus</i> Fischer, 1884
<i>Oreochromis alcalicus grahami</i> (Boulenger, 1912) - Lake Magadi tilapia	Lake Magadi; introduced into Lake Nakuru in 1953, 1959 and 1962 (Vareschi 1979; Seegers & Tichy 1999)	Lake Magadi is the type area
<i>Oreochromis leucostictus</i> (Trewavas, 1933) - blue spotted tilapia	Introduced into Lake Naivasha	-
<i>Oreochromis niloticus baringoensis</i> Trewavas, 1983 - Baringo tilapia	Lake Baringo drainage (Worthington & Richardo 1936; Seegers 1986)	-
<i>Oreochromis niloticus sugutae</i> Trewavas, 1983 - Suguta tilapia	Suguta river and tributaries	Suguta River and tributaries is the type area
<i>Oreochromis niloticus vulcani</i> (Trewavas, 1933) - Turkana tilapia	Lake Turkana drainage (Arambourg 1948; Hopson & Hopson 1982)	Lake Turkana drainage is the type area. Arambourg (1948) recorded the name of the fish species as <i>Tilapia crassispana</i> Arambourg, 1948 (fossil fish). Hopson & Hopson (1982) recorded the name of the fish species as <i>Sarotherodon niloticus</i> (Harbott, 1982)
<i>Oreochromis spilurus niger</i> (Günther, 1894) - Athi River tilapia	Introduced into Lake Naivasha in 1925 (Trewavas 1933)	Trewavas (1933) recorded the name of the fish species as <i>Tilapia nigra</i> (Boulenger, 1899)
<i>Sarotherodon galilaeus galilaeus</i> (Linnaeus, 1758) - Galilaea tilapia	Lake Turkana (Worthington & Richardo 1936; Hopson & Hopson 1982)	-
<i>Tilapia zillii</i> (Gervais, 1848) - Zill's tilapia	Lake Turkana (Boulenger 1915; Hopson & Hopson 1982; ? introduced into Lake Naivasha)	-
Tetraodontidae - Puffers		
<i>Tetraodon lineatus</i> Linnaeus, 1758 - Nile puffer	Lake Turkana (Sterba 1959; Hopson & Hopson 1982)	Sterba (1959) recorded the name of the fish species as <i>Tetraodon fahaka rudolfianus</i> Sterba, 1959. Hopson & Hopson (1982) recorded the name of the fish species as <i>Tetraodon fahaka</i> Rüppell, 1829

Distribution

The general distribution (Table 1) of fish species of the drainage shows more concentration, 50 (76%) in the Lake Turkana catchment area, 38 (58%) of which (e.g. Nile bichir, Senegal bichir, African bonytongue, ngai, aba aba, Nile barb, Turkana barb, Turkana sardine, Turkana minnow, Nile distichodus, Turkan citharine, Egyptian robber, Nile robber, large-toothed Turkana robber, large scaled robber, dwarf Turkana robber, nurse tetra, elongate tigerfish, tigerfish, elongate robber, black Nilecatfish, Sudan catfish, golden Nile-catfish, Egyptian buttercatfish, whiptailed Nile catfish, vundu, electric catfish, dwarf Nile catfish, Sudan squeaker, Nile squeaker, Turkana lampeye, Turkana perch, McConnel's haplo, Lake Rudolf haplo, Lake Turkana mouthbrooder, Nile jewel cichlid, Galilaea tilapia, Nile puffer) are mainly lacustrine and tend to be restricted only to the lake (Table 1). The rest of the fish species, 14 (21%) in Lake Turkana catchment area (e.g. elephant-snout fish, Neumayer's barb, mid spot barb, redeye labeo, Assuan labeo, Nile labeo, Nile minnow, Bottego's minnow, giraffe catfish, Sharptooth Catfish, Omo lampeye, Nile perch, Turkana tilapia, Zill's tilapia) are lacustrine as well as riverine and may occur elsewhere in the drainage (Table 1). The bulk of Lake Turkana fishes have been exploited commercially.

There are no records of fish occurring naturally in Lake Ogi. Two (2 (3%) fish species of the drainage system (line-spotted barb, *Barbus lineomaculatus* Boulenger, 1903, Sharptooth catfish, *Clarias gariepinus* (Burchell, 1822)) are caught exclusively within Lake Baringo; but 4 (6%) more fish species (Baringo barb, *Barbus intermedius australis* Banister, 1973, Zanzibar barb, *Barbus zanzibaricus* Peters, 1868, redeye labeo, *Labeo cylindricus* Peters, 1852, Baringo tilapia, *Oreochromis niloticus baringoensis* Trewavas, 1983) also occur in Lake Baringo catchment area (Table 1).

No fish naturally occurs in Lake Bogoria, which contains saline water; but the Waseges River, which contains fresh water, and which enters the lake from the North, contains two fish species (Neumayer's barb, *Barbus neumayeri* Fischer, 1884, Sharptooth catfish, *C. gariepinus* in it. The river dries up in dry periods; but evidently there must remain some 'rest-water' pools for the fishes to prosper in the river.

The fish species, which inhabits Lake Nakuru, Lake Magadi tilapia, *O. alcalicus grahami*, has been introduced repeatedly. Lake Nakuru has dried up from time to time since exploration. The Lake Magadi tilapia seems to be the only fish, which is able to live in this alkaline water.

There are no fishes, which naturally occur in the catchment area of Lake Elementaita. Lake Elementaita is a salt lake. There are, however, recent reports of unidentified tilapia species, which may have been introduced (Kenneth Mavuti, University of Nairobi, Kenya, pers. Com.). Perhaps the fish species ended up into the lake through affluents from aquaculture ponds, which exist at the banks of the lake's main drainage system, River Kariandusi (per. observ.). Lake Magadi is the natural habitat for the Lake Magadi tilapia, *O. alcalicus grahami*; the life of the fish in the lake is only made possible by the springs, which supply relatively fresh water. Lake Magadi has historically been the source for seed fish used for introduction into Lake Nakuru.

Lake Natron basin occupies largest parts of the southern areas of the Kenyan portion of the East Arm of The Rift Valley drainage system. The southern end of the Kenyan portion of the drainage system is concluded by this lake, and the Shombole Swamps which are situated to the North of the lake; the Shombole Swamps is home for one fish species, the Lake Natron tilapia, *Oreochromis alcalicus alcalicus* (Hilgendorf, 1905) (Table 1).

The exact distribution of 3 (5%) fish species in the Kenyan portion of the East Arm of The Rift Valley drainage system is not determined in this paper. The occurrence of the Ethiopian barb, *Barbus intermedius intermedius* Rüppell, 1835, may spread out throughout northern Kenya and into Ethiopia, while the straightfin barb, *B. paludinosus* and the Sharptooth catfish, *C. gariepinus*, occur in almost all habitable lakes and rivers.

Endemism

Three (3 (5%)) of fish species, two belonging to the minnow family and one belonging to the cichlid family, in the entire drainage system, are exclusively riverine: Loveridge's barb, *?Barbus loveridgii* Boulenger, 1916, occurring in "Amala River", an affluent of Lake Baringo; Neumayer's barb, *B. neumayeri*, which is spread out in several rivers (Suam, Mount Elgon; Subukia, Lake Bogoria catchment; Seya, Isiolo District; Sinet, near Liotoktok; Waseges, Lake Bogoria catchment; Kerio affluent, Lake Turkana catchment); and Suguta tilapia, *Oreochromis niloticus sugutae* Trewavas, 1983, occurring in Suguta River and tributaries (Table 1). These rivers dry up during most parts of low rainy seasons suggesting that some pools of water exist and which support the fish populations! It is not yet clear why the riverine fishes have not adapted to living in the lakes associating with these rivers.

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