
DOI: <https://doi.org/10.53555/eijaer.v5i1.51>

FISH SPECIES ENCOUNTERED OVER 47 YEARS IN LAKE ROSERIS

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INTRODUCTION:

Illustrated guides with identification keys, notes on distribution and habitats of freshwater fish species of Sudan were due to Boulenger, 1907; Sandon, 1950; Abu Gideiri, 1984, Bailey, 1994 and Neumann et al. (2016). With respect to the Blue Nile in Sudan, Abu Gideiri (1967) studied the fish species between Khartoum and Roseires. Those of Lake Roseires were recorded by Mishrighi, 1970; Mahmoud et al., 2009; SMEC, 2010 and Elsayed, 2012. In addition, two unpublished lists were made by Omer and Hagar (2014) and Hagar (2017). The list might be a useful monitor for the impact, if any, of fully operating Grand Ethiopian Renaissance Dam (GERD) on Lake Roseires fish diversity.

Material and Methods.

Lake Roseires came into existence in 1966 due to construction of Roseires Dam. The dam was elevated in 2012. Fish specimens were collected from fish markets at Damazin, Ganees and Roseires; landing sites (Elbab Elawal and Bandlees) on the left bank; (Ufud and Kerma) on the right bank in addition to numerous fishing sites (Fig. 1). Experimental fishing using traps, gill nets, trammel nets and hand lines made at Kerma, Ufud and Bandlees, supplemented the data.

Fish species identification followed Abu Gideiri (1984) and Bailey (1994) and nomenclature followed Bailey (1994).

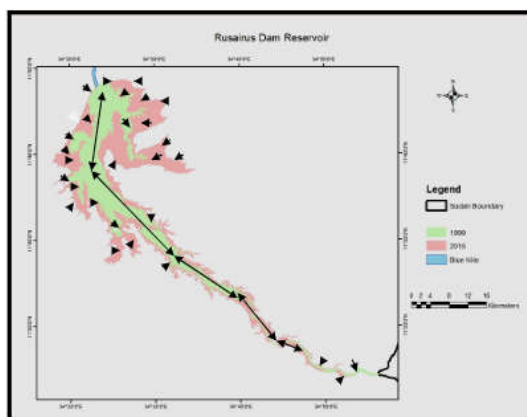


Fig. 1. Major landing and fishing sites at Lake Roseires (green triangle is the Lake zone prior to elevation, double head arrows prior and after elevation, black triangle landing sites).

Results

The fish families, genera and species encountered over 47 years in Lake Roseires were given in Table 1. The list covered data prior to Roseires Dam heightening (Mishrighi, 1970; Mahmoud et al., 2009); during heightening (SMEC, 2010; Elsayed, 2012) and after heightening (Omer and Hagar, 2014; Hagar, 2017). The table indicated the presence of 16 families, 19 genera and 53 fish species in the lake.

Table 1. Fishes of Lake Roseires (1=Mishrighi, 1970; 2=Mahmoud et al., 2009; 3=SMEC, 2010; 4=Elsayed, 2012; 5=Omer and Hagar, 2014; and 6=Hagar, 2017). √=present).

Taxon	Reference					
	1	2	3	4	5	6
Family: Protopteridae						
<i>Protopterus aethiopicus</i>			√	√		
Family: Polypteridae						
<i>Polypterus bichir</i>				√	√	√
<i>Polypterus sp.</i>			√			
Family: Mormyridae						
<i>Hyperpius bebe</i>			√			
<i>Marcusenius cyprinoides</i>		√				
<i>Mormyrops anguilloides</i>	√	√	√		√	√
<i>Mormyrus kannone</i>	√	√	√		√	√
<i>Mormyrus cashive</i>			√	√		
<i>Mormyrus hasiquilisti</i>			√			
<i>Pteroccephalus bane</i>	√	√	√			
<i>Gnathonemus cyprinoides</i>	√					
<i>Gnathonemus sp.</i>						

Family: Alestiidae						
<i>Alestes baremoze</i>	✓	✓	✓	✓	✓	✓
<i>Alestes dentex</i>	✓		✓	✓	✓	
<i>Alestes macrolepidotus</i>	✓	✓	✓	✓	✓	✓
<i>Brycinus nurse</i>	✓	✓	✓	✓	✓	✓
<i>Hydrocynus brevis</i>	✓	✓		✓	✓	✓
<i>Hydrocynus forskalii</i>	✓	✓	✓	✓	✓	✓
<i>Hydrocynus vittatus</i>				✓	✓	
<i>Hydrocynus lineatus</i>		✓	✓			
Family: Distichodidae						
<i>Distichodus rostratus</i>	✓	✓			✓	✓
<i>Distichodus previpinis</i>	✓	✓				✓
Family: Citharinidae						
<i>Citharinus citharnus</i>	✓	✓				✓
Family: Cyprinidae						
<i>Labeobarbus bynni</i>	✓	✓	✓	✓	✓	✓
<i>Labeo coubie</i>	✓	✓	✓	✓	✓	✓
<i>Labeo forskalii</i>			✓			
<i>Labeo horie</i>	✓	✓	✓	✓		✓
<i>Labeo niloticus</i>	✓	✓	✓	✓		✓
Family: Bagridae						
<i>Auchenoglanis occidentalis</i>	✓	✓		✓	✓	
<i>Auchenoglanis sp.</i>			✓			
<i>Bagrus bajad</i>	✓	✓	✓	✓	✓	✓
<i>Bagrus docmak</i>	✓	✓	✓	✓	✓	✓
<i>Chrysiichthys auratus</i>			✓	✓		
<i>Clarotes laticeps</i>	✓	✓				✓
Family: Schilbeidae						
<i>Schilbe mystus</i>	✓		✓	✓		✓
<i>Schilbe uranoscopus</i>	✓	✓	✓	✓		✓
<i>Schilbe arabi</i>	✓				✓	✓
<i>Schilbe intermedus</i>				✓		✓
<i>Eutropis niloticus</i>		✓	✓			
Family: Clariidae						
<i>Clarias gariepinus</i>	✓	✓	✓	✓	✓	✓
<i>Clarias anguillaris</i>						✓
<i>Heterobranchius bidorsalis</i>						✓
Family: Malapteruridae						
<i>Malapterurus electricus</i>			✓	✓	✓	✓
Mochokidae:						
<i>Synodontis schall</i>	✓	✓		✓	✓	✓
<i>Synodontis serratus</i>				✓	✓	✓
<i>Synodontis clarias</i>				✓		✓
<i>Synodontis sp.</i>			✓			
Family: Latidae						
<i>Lates niloticus</i>	✓	✓	✓	✓	✓	✓
Family: Cichlidae						
<i>Oreochromis niloticus</i>	✓	✓	✓	✓	✓	✓
<i>Sarotherodon galilaeus</i>	✓	✓	✓	✓	✓	✓
<i>Coptodon zilli</i>						✓
Family: Anabantidae						
<i>Ctenopom amuriei</i>						✓
Family: Tetraodontidae						
<i>Tetraodon lineatus</i>			✓	✓		
Number of Families total 16	11	11	13	10	12	13
Number of Genera total 30	19	20	23	20	16	19
Number of Species total 53	29	28	34	29	24	33

It is apparent from the table that *Alestes baremoze*, *A. macrolepidotus*, *H. forskalii*, *B. bynni*, *B. bajad*, *B. docmack*, *C. gariepinus*, *L. niloticus*, *O. niloticus* and *S. galilaeus* occurred throughout. On the other hand the following species were recorded once: *G. cyprinoides* by Mishrighi (1970; Polypterussp., *H. bebe*, *M. hasiquilisti*, *L. forskalii*, *Auchenoglanis sp.* and a *Synodontis sp.* by SMEC (2010) and *C. anguillaris*, *H. bidorsalis*, *C. zilli* and *C. amuriei* by Hagar (2017). *Gnathonemus cyprinoides*, *P. bane* and *E. niloticus* seemed to have disappeared after the elevation. On the other hand, *P. bichir*, *M. electricus* and *S. serratus* seems to flare up to be detectable in catch after elevation.

Discussion

This study indicated the presence of 16 families, 19 genera and 53 fish species in the lake. The discrepancy in the number of families, genera and species listed in Table 1 can be attributed to differences in methods, sites and time of collection. Mahmoud et al. (2009) and SMEC (2010) studied the characteristics of Lake Roseires fisheries and listed the fish species observed before elevation. Kara (1999) in his biological studies on (*M. cashive*, *G. cyprinoides*, *O. niloticus* and *S. galilaeus*) stated the presence of more than 14 species falling in nine families and their peak of abundance. Elsayed (2012) concentrated on Roseires Dam fisheries and produced a list of the prevailing fish species.

The objective of this study should be looked upon with respect to fish diversity in Abay (Blue Nile in Ethiopia) basin. In Ethiopia studies of fish species of the Blue Nile (Nagelkerke, 1997; Berie, 2007; Oumer et al., 2011; Awoke et al., 2015 and Mengesha, 2015) indicated the existence of at least 36 species (Getahun, 2007). Of those 23 species are endemic (Golubtsov and Mina, 2003 and Getahun, 2007) of which 13 are confined to Lake Tana (Mengesha, 2015). Tisisat Falls is a natural boundary isolating Lake Tana fish species from the rest of the Nile (Thieme and Brown, 2007). In line with this are the findings of Oumer et al. (2011) who recorded 17 fish species from the Blue Nile before the fall and Awoke et al. (2015) who recorded 8 fish species below the fall. These are *Labeobarbus intermedius*, *Labeo nedgia*, *Labeocrassibarbis*, *L. forskalii*, *M. Kannume*, *B. docmak*, *C. gariepinus* and *O. niloticus*. *Labeobarbus intermedius*, *L. Nedgia* and *L. crassibarbis* which are potential indicators if detected in Lake Roseris of the impact of GER Don fish diversity of the Lake.

The highly diversified fish species of Lake Tana, above and below of Tisisat Falls, and Lake Roseris qualifies them as distinct ichthyofaunal provinces in Africa.

References

- [1]. Abu Gideiri, Y. B. (1967). Fishes of the Blue Nile between Khartoum and Roseires. *Rev. de Zoologie et de Botanique Africanies*, 76:345-348 .
- [2]. Abu Gideiri, Y. B. (1984). Fishes of the Sudan, Khartoum University Press, 166pp.
- [3]. Awoke, T.; Mingist, M. And Getahun, A. (2015). Abundance and species compositions of the fishes in Blue Nile River, Ethiopia. *International Journal of Fisheries and Aquatic Studies*; 2(6):334-339.
- [4]. Bailey, R. G. (1994). A guide to the fishes of the river Nile in the republic of Sudan. *Jorn. Nat. Hist.* 28: 937-970.
- [5]. Berie, Z. (2007). Diversity, relative abundance and Biology of fishes in Beles and Gilgel Beles Rivers of Abay basin. M. Sc. Thesis, Addis Ababa University, pp: 112 .
- [6]. Boulenger, G. A. (1907). Zoology of Egypt. The fishes of the Nile. Hugh Rees Ltd., London.
- [7]. Getahun, A. (2007). An overview of the diversity and conservation status of the Ethiopian freshwater fish fauna. *J. Afrotropical Zoology special Issue*, pp: 87-96.
- [8]. Golubtsov, A. S. and Mina, M. V. (2003). Fish species diversity in the main drainage systems of Ethiopia: current state of knowledge and research perspectives. *Ethiop. J. Natu. Reso.*, 5(2):281-318. Hagar, S, A. (2017). Fisheries survey of Rosaries reservoir. Personal Communicatios.
- [9]. Elsayed, M. A. R. (2012). Some characteristics of Roseries Dam Fisheries. M. Sc. Theises. Sudan Academy of Sciences Kara, A.M. (1999). Biological studies on indicator fish species prior to expected heightening of Roseires Dam. M.Sc. Thesis, Institute of Environmental Studies, University of Khartoum.
- [10]. Mahmoud, Z. N.; Ahmed Eiman E. and Osman, S. Y. (2009). Proposed Fisheries Projects. A technical report requested by Roseires Lake Roseris Dam Heightening Projects Through Khartoum University Consultancy House, 39pp.
- [11]. Mengesha, T. A. (2015). Fish Species Diversity in Major River Basins of Ethiopia: A Review. *World Journal of Fish and Marine Sciences* 7(5):365-374.
- [12]. Mishrigi, S. Y. (1970). Fishes of Lake Roseires, on the Blue Nile. *Rev. de Zoologie et de Botanique Africanies*, 82:193-199.
- [13]. Nagelkerke, L. A. J. (1997). The Barbus of Lake Tana, Ethiopia: Morphological diversity and its implication for taxonomy, trophic resource partitioning and fisheries. Ph. D. Thesis, Agricultural University, Wageningen, the Nether lands .
- [14]. Neumann, D.; Obermaier, H. and Moritz, T. (2017). Annotated Checklist for fishes of the Main Nile Basin in the Sudan and Egypt based on recent specimens records (2006-2015). *Cybiu* 40(2):287-317.
- [15]. Omer, Omeima, M. And Hagar, S, A. (2014). Fisheries survey of Rosaries reservoir. Personal Communicatios.
- [16]. Oumer, M.; Mingist, M. and Dejen, E. (2011). Divesity and relative abundance of fishes in the head of Blue Nile River, Ethiopia. *Ethiop. J Biol Sci.* ISSN: 1819-8678 2011; 10(2):207-212.
- [17]. Sandon, H. (1950). An illustrated guide to the freshwater fishes of the Sudan. McCorquodale and Co., London.
- [18]. SMEC (2010). Roseires Dam Heightening ESIA. Vol.2. Draft Aquatic Ecology and Fisheries Report, July 2010. A technical report requested by Rosiers Dam Heightening Projects.
- [19]. Thieme, M.L. and Brown, A. (2007). Lake Tana. In: Fresh water Ecoregion of Africa and Madagascar, pp:180-181.