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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 Mishrigi, 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 In addition, two unpublished lists were made by Omer and Hagar (2014) and Hagar (2017).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 Roseris fish diversity.

Material and Methods.

Lake Roseris came into existence in 1966 due to construction of Roseris Dam. The dam was elevated in 2012. Fish specimens were collected from fish markets at Damazin, Ganees and Roseris; 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 Bandleese, supplemented the data.

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

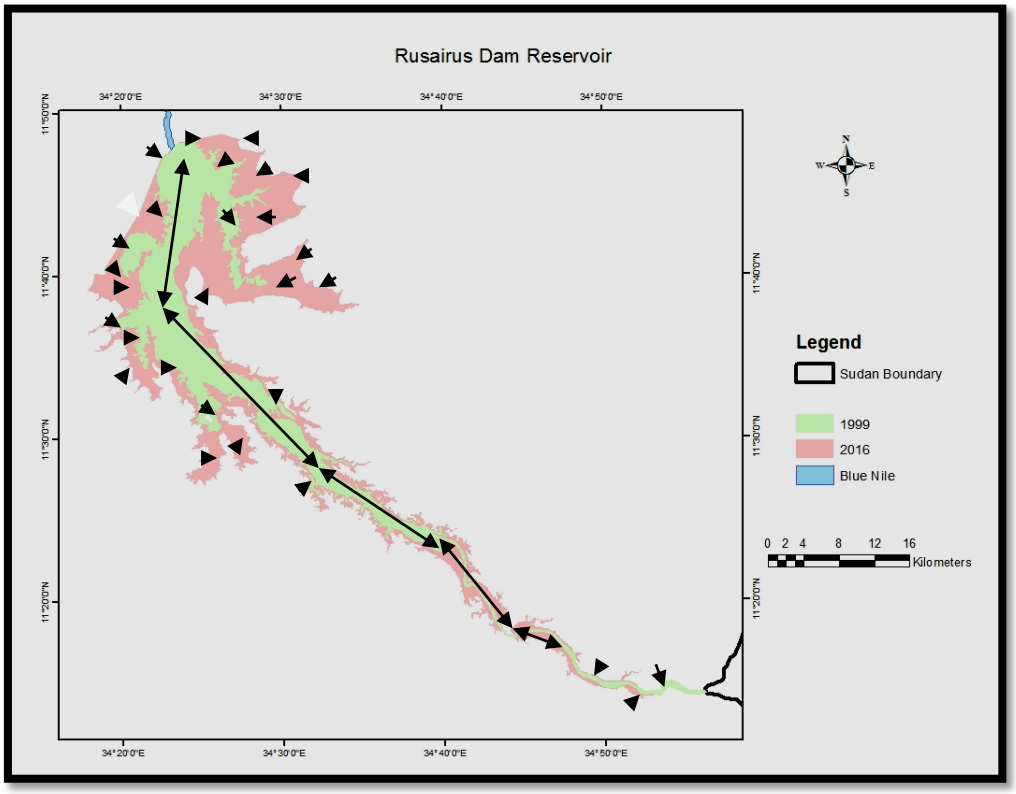

Fig. 1. Major landing and fishing sites at Lake Roseris (green triangle is the Lake zone prior to elevation, double head arrows prior and after elevation, black triangle landing sites).

Results

The fish families, genera and species encountered over 47 years in Lake Roseris were given in Table 1. The list covered data prior to Roseris Dam heightening (Mishrigi, 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.

Table1. Fishes of Lake Roseires (1=Mishrigi, 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						

Protopterus aethiopicus			√	√		
Family: Polypteridae						
Polypterus bichir				√	√	√
Polypterus sp.			√			
Famiy: Mormyridae						
Hyperpisus bebe			√			
Marcusenius cyprinoides		√				
Moromyrops anguilloides	√	√	√		√	√
Mormyrus kannume	√	√	√		√	√
Mormyrus cashive			√	√		
Mormyrus hasiquilisti			√			
Pterocephalus bane	√	√	√			
Gnathonemus cyprinoides	√					
Gnathonemus sp.						
Family: Alestiidae						
Alestes baremoze	√	√	√	√	√	√
Alestes dentex	√		√	√	√	
Alestes macrolepidotus	√	√	√	√	√	√
Brycinus nurse	√	√	√	√		√
Hydrocynus brevis	√	√		√	√	√
Hydrocynus forskalii	√	√	√	√	√	√
Hydrocynus vittatus				√	√	
Hydrocynus linneatus		√	√			
Family: Distichodonidae						
Distichodus rostratus	√	√			√	√
Distichodus previpinis	√	√				√
Family: Citharinidae						
Citharinus citharnus	√	√				√
Family:Cyprinidae						
Labeobarbus bynni	√	√	√	√	√	√
Labeo coubie	√	√	√	√	√	√
Labeo forskalii			√			
Labeo horie	√	√	√	√		√
Labeo niloticus	√	√	√	√		√
Family: Bagridae						
Auchenoglanis occidentalies	√	√		√	√	
Auchenoglanis sp.			√			
Bagrus bajad	√	√	√	√	√	√
Bagrus docmak	√	√	√	√	√	√
Chrysichthys auratus			√	√		
Clarotes laticeps	√	√			√	
Family: Schilbeidae						

Schilbe mystus	√		√	√		√
Schilbe uranoscopus	√	√	√	√		√
Schilbe arabi	√				√	√
Schilbe intermedus				√		√
Eutropis niloticus		√	√			
Family: Clariidae						
Clarias gariepinus	√	√	√	√	√	√
Clarias anguillairs						√
Heterobranchus bidorsalis						√
Family: Malapteruridae						
Malapterurus electricus			√	√	√	√
Mochokidae:						
Synodontis schall	√	√		√	√	√
Synodontis serratus				√	√	√
Synodontis clarias				√		√
Synodontis sp.			√			
Family: Latidae						
Lates niloticus	√	√	√	√	√	√
Family: Cichlidae						
Oreochromis niloticus	√	√	√	√	√	√
Sarotherodon galilaeus	√	√	√	√	√	√
Coptoton zilli						√
Family: Anabantidae						
Ctenopom amuriei						√
Family: Tetraodontidae						
Tetraodon lineatus			√	√		
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 totall 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 Mishrigi (1970; *Polypterus* sp., *H. bebe*, *M. hasiquilisti*, *L. forskalii*, *Auchenoglanis* sp. and a *Synodontis* sp. by SMEC (2010) and *C. anguillairs*, *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 obsereved 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 Roseris 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 Ethiopeia 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*, *Labeo crassibarbis*, *L. forskalii*, *M. Kannume*, *B. docmak C. gariepinus* and *O. niloticus. Labeobarbus intermedius*, *L. Nedgia* and *L. crassibarbis* which are potenial indicators if detected in Lake Roseris of the impact of GERD on 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.

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