Alestes baremoze (Joannis, 1835)

Abu Simbel, Lake Nasser, Egypt. © J.H. Larsen.

Synonyms
Myletes baremoze Joannis, 1835
Alestes baremoze baremoze (Joannis, 1835)
Alestes baremoze eburneensis Paugy, 1986
Alestes baremoze soudaniensis Paugy, 1986
Alestes baremoze tchadense Blache, 1964
Alestes kotschyi Heckel, 1847
Alestes wytsi Steindachner, 1870
Alestes splendens Werner, 1906

FAO names
None

Local names
Amharic: Beresho (Ethiopia)
Arabic: Kawara baladi (Sudan)
Dagara: Talankpol (Burkina Faso)
Dinka, Northeastern (Dinka): Alerio (Sudan), Cin (Sudan), Lang ager (Sudan), Nyadiaar (Sudan)
El Molo: Nyele (Kenya)
English: Characin (Ghana), Egyptian robber (Kenya), Silversides (Ghana)
Ewe: Asenti (Ghana), Asentiwoe (Ghana)
Foufoulde: Pelepelekou (Cameroon or Chad)
French: Péré (Niger)
Fulfulde, Pulaar (Pulaar): Giccal (Senegal)
Ga: Tewe (Ghana)
Gourounsi: Barfilew (Burkina Faso)
Gumuz: Chilentie (Ethiopia)
Guro: Klawôlè (Ivory coast)
Hausa: Mazari (Nigeria), Shemani (Nigeria)
Ijo: Oza (Nigeria)
Kanuri: Kaya (Nigeria)
Kim: Vaï (Chad), Van (Chad), Vore (Chad)
Limba, west-central: Ba-borah (Sierra Leone)
Mende: Konguy (Sierra Leone)
Mousgoum: Hackdi (Cameroon or Chad)

Nembe: Ikolokolo (Nigeria)
Language not specified: Delete (Kenya), Juse (Kenya), Lelete (Kenya), Rayah (Egypt), Kawara (Sudan), Ngara (Uganda)
Nubian: Girfiga (Sudan)
Nuer: Cien (Sudan)
Nupe: Egbagi (Nigeria)
Nyoro: Angara (Uganda)
Shilluk: Kodo (Sudan)
Soninké: Saara (Senegal)
Themne: A-gbantan (Sierra Leone)
Turkana: Dorobela (Kenya)
Wolof: Sèlinthe (Senegal)
Yoruba: Arefe (Nigeria)
Zande: Basongirino (Sudan)

Geographical distribution
Senegal, Gambia, the coastal basins of Côte d'Ivoire (Comoé, Bandama and Sassandra), Volta, Niger/Benué and Chad basin (Paugy 1990, 2003). Also present in the Omo River and lakes Albert and Turkana (Paugy 1990; Bailey 1994). The species used to be found along the whole of the River Nile in Egypt, including the delta lakes, Rashid Branch and Lower Nile (Kasozi et al 2013; Diouf et al 2020), but is now restricted to the upper Nile after the Aswan Dam (Lake Nasser) construction (Diouf et al 2020).

Habitat and Biology
Mainly diurnal. There is considerable flexibility in its diet; *A. baremoze* shifts from zooplankton to zoobenthos, detritus and macrophytes as plankton densities decline (Bailey 1994). Occurs at a temperature range of 14.6-35.0°C. In the Malamfatori area (Tchad), the species migrates upstream from Lake Chad on the River Yobe during the floods (August-December) and downstream during the dry (January-March) season (Awaïs & Lalèyè 2010). IUCN red list status least concern (Diouf et al 2020).

Key features
30-41 gill rakers on lower limb of first gill arch; 38-51 lateral line scales, with 7.5-9.5 above and 3.5 below; anal fin with three simple rays and 19-28 branched rays; dorsal fin with 10 rays, its origin distinctly behind level of pelvic-fin insertion (Durand 1978; Paugy 2003). 41-49 vertebrae (Paugy 2003).

Interest to fisheries
Only Senegal and Burkina Faso report catches of *Alestes baremoze* to FAO (Figure 1). In addition, Senegal, Ivory Coast and Kenya report catches of *Alestes* sp. to FAO (Figure 2). While both *A. baremoze* and *A. dentex* occur in Senegal and Kenya, only the former is present in Ivory Coast according to FishBase; hence these catches reported as *Alestes* sp. probably belong to *A. baremoze*.

Alestes baremoze is an important and widespread species for which however few fisheries data are available (Kolding et al 2019). The species is part of the routine diets of families in northern Uganda, South Sudan, the Sudan and the Democratic Republic of Congo (Kasozi et al 2014). Detailed studies report overfished stocks, declining catches and associated changes in biological characteristics.

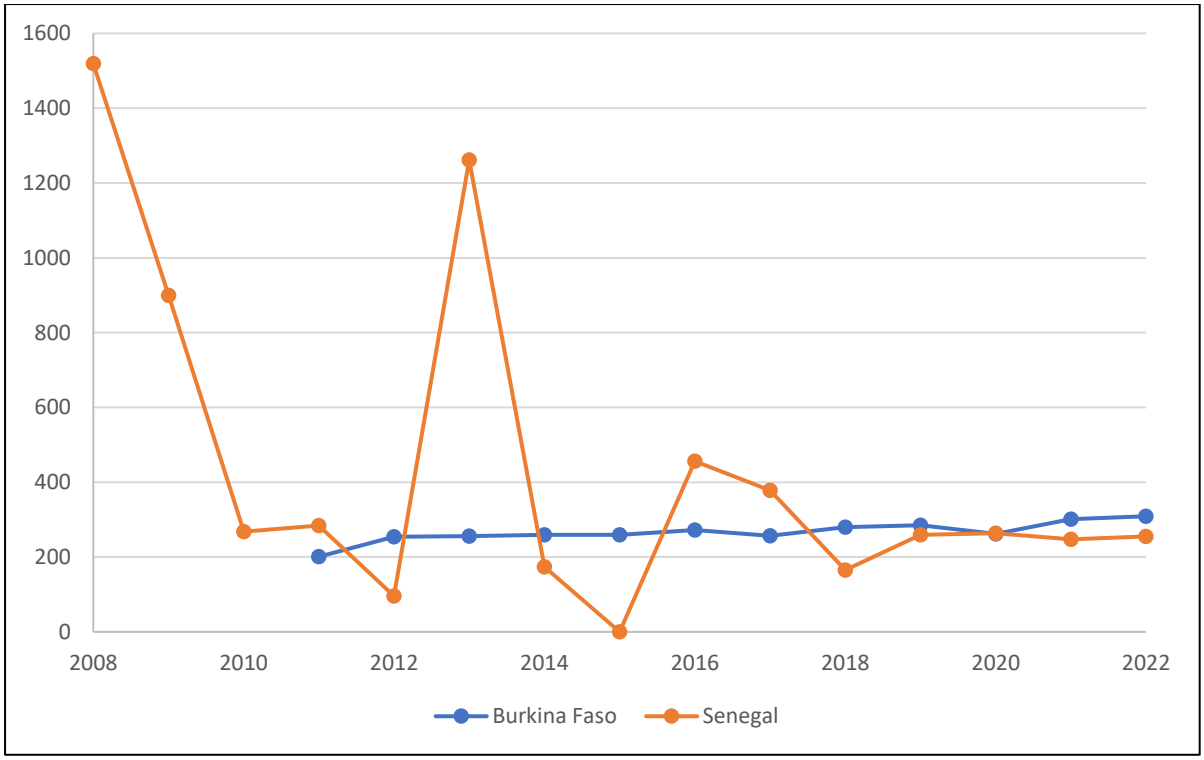

Figure 1: Catches (in tonnes) of Alestes baremoze *as available from FAO (April 2024).*

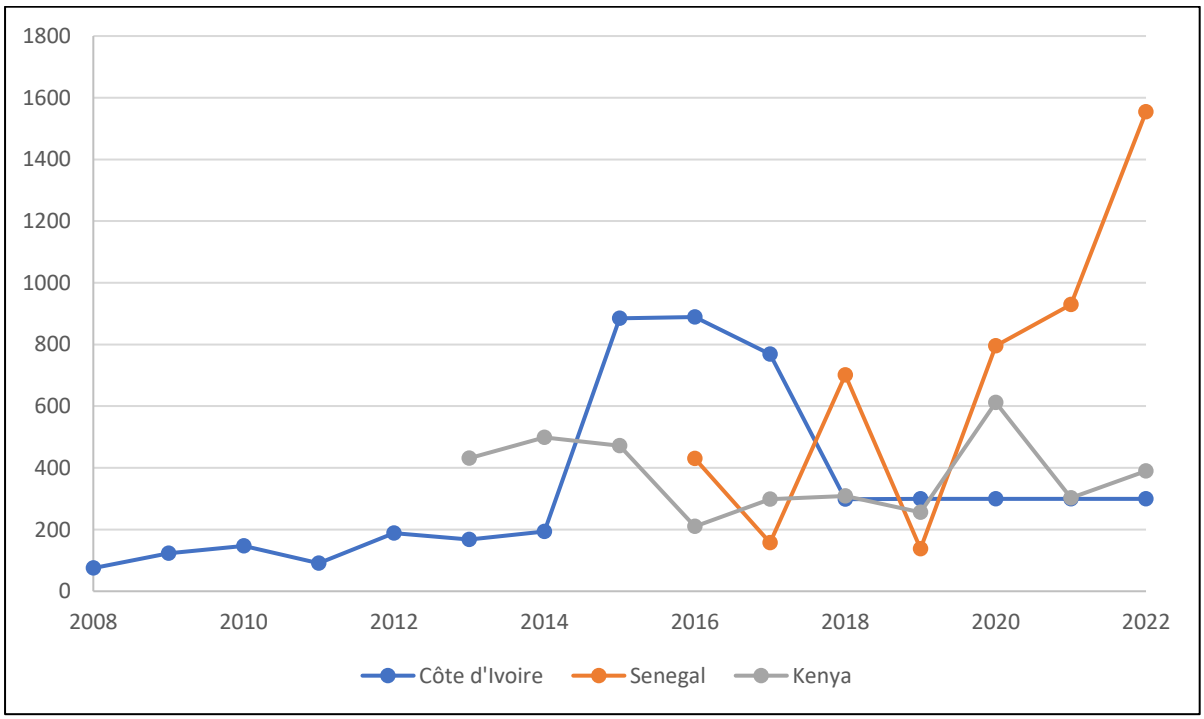

Figure 2: Catches (in tonnes) of Alestes sp. *as available from FAO (April 2024). Catches from Ivory Coast likely belong to* A. baremoze*, while catches from Senegal and Kenya are probably a mix of* A. baremoze *and* A. dentex.

Durand (1983) studied the collapse of the *A. baremoze* fishery in the Lake Chad region. From 1969 to 1971 and to a lesser extent in 1972, most of the catches were made in the river system and the delta region. While in the river system, the decrease of catches was continuous from 1970 to 1976 (from more than 8000 tons to an apparent disappearance), the proportion of lake catches increased rapidly from 1972 (13.7%) to 1974 (60.3%). On the whole during the period 1975-77, an average of

50 to 100 times less *A. baremoze* were fished than during a normal year. The fishing effort, corresponding to traditional techniques until 1960-65, though significant, had not been considerable. Through the introduction of nylon and industrial gill nets the total effort was considerably increased and became excessive between 1970 and 1972. The Sahel drought led to the disappearance of stocks in 1975. Contrary to several species whose stocks were either maintained or developed after 1973, *A. baremoze* was very vulnerable to the deteriorating environmental conditions. On the other hand, during November 1977, *A. baremoze* again began to be caught in the delta fisheries. The nets used were catching *Alestes* specimens of 180 to 200 mm and two-years old in September 1975, when the presence of older *Alestes* appeared much more sporadic. It appeared that the recruitment of *Alestes* was practically stopped for three years, from 1972 to 1974, and it was only in 1975 that reproduction enabled a rebuilding of the stock. This can only be explained by the very high fecundity of the species: it was enough that a small group of spawners survived to be able to reproduce in 1975 (Durand 1983). However, since 1970, and up to now, the fisheries of the Lake Chad Basin have witnessed a significant decline in catches of *Alestes*. Its life cycle and migration have been severely disrupted. Instead, highly resilient and fast-breeding omnivorous fish, such as *Clarias*, which now overall dominates the fishery, have taken their place (Neiland et al 2004).

In the central delta of the Niger, a clear decrease in average catch length of *A. baremoze* was observed between the 1950s (Daget 1952, 1956) and 1989 (Laë 1992; Laë et al 2004) (Figure 3). The shift of length frequencies towards lower values was clearly observed for long life-cycle species, such as *A. baremoze* (disappearance of a 230 mm peak) in which length frequency peaks present in the past had disappeared by 1990 (Laë 1995). In Mali, yields showed a rising trend from 40 kg/ha in 1968 to 120 kg/ha in 1990 due to an increase in productivity caused by the shift of the fishery to younger and smaller fish, which was a consequence of increasing fishing pressure resulting from floodplain area reduction and concentration of fishing activities (Laë et al 2004).

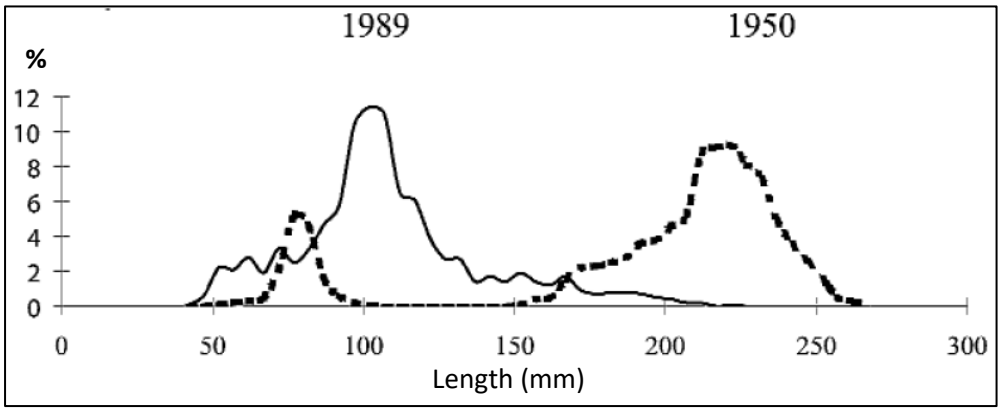

Figure 3: Comparison of catch length of Alestes baremoze *between 1950 and 1989 in the Central Delta of the Niger River. Image from Laë et al (2004).*

In Lake Nasser/Nubia, *A. baremoze* is one of the most important species (Dumont 2009). Ahmed (1985) already reported that the exploitation in the Jebel Aulia reservoir (White Nile, Sudan) was at its maximum. However, 20 years later, Yousif & Ahmad (2012) reported that exploitation was excessive and observed a reduced abundance, a majority of the catch composed of undersized fishes, reduction in fish production and use of illegal gears.

The high-value *A. baremoze* historically formed one of the most important commercial species in Lake Albert (Dumont 2009; Kamugisa et al 2010; Mbabazi et al 2012; Nakiyende et al 2013) but has shown a persistent decline in catch rates, mean sizes and weights of individuals and annual catches since the 1970s. The Catch Per Unit Effort showed a two-fold decline from 45.6 kg/boat/day in 1971,

to 22.6 in 2007, and only 7 in 2013 (Figure 4). From 1971 to 2013, the contribution to the lake-wide annual catches sharply declined from 42% to to 1.1%. Catch landed in the commercial fisheries on Lake Albert was dominated by mature individuals in 2007 but gradually shifted to small-sized, immature fish in 2013-2014 (Nakiyende et al 2013). The catch of immature fish in gillnets targeting the two species was already reported by Kamanyi (1996) and the species became a main target of the undersized gill nets used (Nakiyende et al 2013). Length at maturity decreased from 27 cm fork length (FL) to 17 cm FL by 2012 (NaFIRRI 2012). The average weight also reduced from 0.8 kg per individual in the 1980s to 0.3 kg in 2004 and 0.2 in 2013. With decreasing catches, the average price per kilogram of *A. baremose* increased from 1000 to 3500 Uganda shillings between 2007 and 2013 (Nakiyende et al 2013).

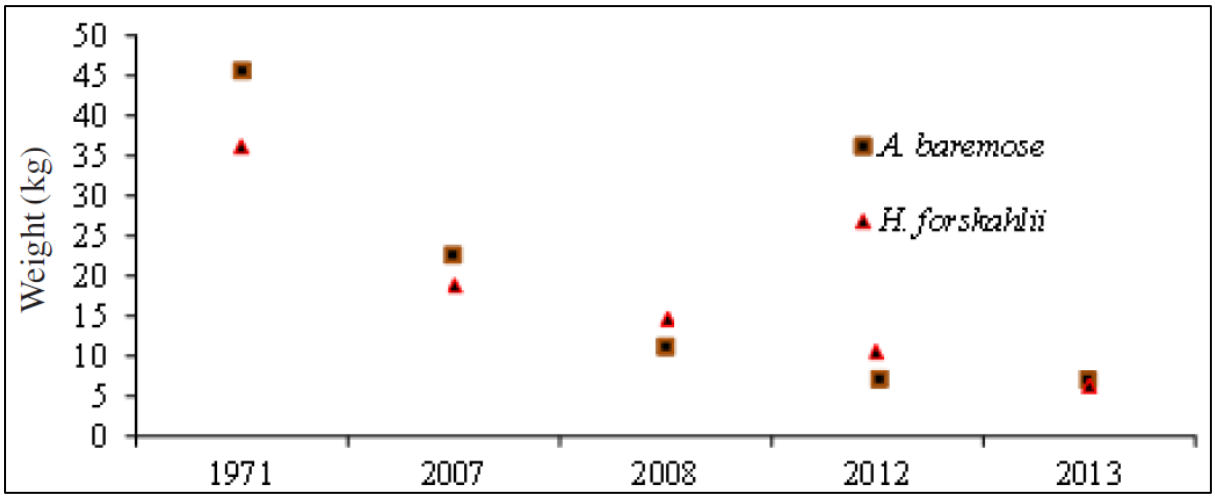

Figure 4: Trend of catch rates of Alestes baremose *and* Hydrocynus forskahlii *in the commercial catches on Lake Albert expressed as Catch Per Unit Effort (kg/boat/day). Image from Nakiyende et al (2013).*

Bibliography

Ahmed, A.A. (1985). Project of assessment of Jebel Aulia Reservoir Fisheries. Final Report, Fisheries Research Cooperation, Khartoum. 54 p.

Awaïss, A. and Lalèyè, P. (2010). *Alestes baremoze* (Western Africa assessment). The IUCN Red List of Threatened Species 2010: e.T182568A7915880. Accessed on 13 August 2024.

Bailey, R.G. (1994). Guide to the fishes of the River Nile in the Republic of the Sudan. Journal of Natural History 28: 937-970.

Daget, J. (1952). Mémoire sur la biologie des poissons du moyen Niger. Biologie et croissance des poissons du genre *Alestes*. Bulletin de l'IFAN 14A: 191-225.

Daget, J. (1956). Mémoire sur la biologie des poissons du moyen Niger. Recherches sur *Tilapia zillii* (Gerv.). Bulletin de l'IFAN 18A: 165-233.

Diouf, K., E. Akinyi, A. Awaïss, A. Azeroual, A. Getahun, P. Lalèyè and T.K. Twongo (2020). *Alestes baremoze*. The IUCN Red List of Threatened Species 2020: e.T182568A134737567. https://dx.doi.org/10.2305/IUCN.UK.2020-2.RLTS.T182568A134737567.en. Accessed on 05 July 2024.

Dumont, H.J. (2009). The Nile. Origin, environments, limnology and human use. Monographia Biologicae 89. Springer Science + Business Media B.V. 818p.

Durand, J.R. (1978). Biologie et dynamique des populations d'*Alestes baremoze* (Pisces, Characidae) du bassin tchadien. Travaux et documents de l'ORSTOM 98, Paris. 332 p.

Durand, J.R. (1983). The exploitation of fish stocks in the Lake Chad region. p 425-481. In: J.P. Carmouze, J.R. Durand and C. Lévêque (eds.) Lake Chad. Ecology and Productivity of a shallow tropical ecosystem. Monographiae Biologicae 53. The Hague: Junk Publishers. 575p.

FAO (2024). FishStat: Global capture production 1950-2022. [Accessed on 29 March 2024]. In: FishStatJ. Available at www.fao.org/fishery/en/statistics/software/fishstatj. Licence: CC-BY-4.0.

Kamanyi, J.R. (1996). Management strategies for exploitation of Uganda Fisheries Resources. FIRI Mimeo. February, 1996.

Kamugisa, G.M., D. Kassam, D.O. Owiny, J.S. Balirwa and M. Agaba (2010). Reproductive biology and cryopreservation of milt of *Alestes baremoze* (Joannis, 1835) of Lake Albert, Uganda. p. 1231-1234. Second RUFORUM Biennial Meeting 20-24 September 2010, Entebbe, Uganda.

Kasozi, N., G.I. Degu, D. Asizua, J. Mukalazi and E. Kalany (2014). Proximate composition and mineral contents of Pebbly fish, Alestes baremoze (Joannis, 1835) fillets in relation to fish size. Uganda Journal of Agricultural Sciences 15(1): 41-50.

Kasozi, N., G.I. Degu, K. Atibuni, M. Kisekka, A. Owori-Wadunde and S. Mugerwa (2013). Classification of ovarian stages of *Alestes baremoze* (Joannis, 1835): a step towards understanding its reproductive biology. Frontiers in Science 3(4): 107-113.

Kolding, J., P.A.M. van Zwieten, F. Marttin, S. Funge-Smith and F. Poulain (2019). Freshwater small pelagic fish and their fisheries in major African lakes and reservoirs in relation to food security and nutrition. FAO Fisheries and Aquaculture Technical Paper 642. 110p.

Laë, R. (1992). Influence de l'hydrologie sur l'évolution des pêcheries du delta central du Niger, de 1966 à 1989. Aquatic Living Resources 5: 115-126.

Laë, R. (1995). Climatic and anthropogenic effects on fish diversity and fish yields in the Central Delta of the Niger River. Aquatic Living Resources 8: 43-58.

Laë, R., S. Williams, A. Malam Massou, P. Morand and O. Mikolasek (2004). Review of the present state of the environment, fish stocks and fisheries of the river Niger (West Africa). p. 199-277. In: R. Welcomme and T. Petr (eds.). Proceedings of the Second International Symposium on the Management of Large Rivers for Fisheries: Sustaining livelihoods and biodiversity in the new millenium. Vol. I. Rome: FAO. 358p.

Mbabazi, D., A. Taabu-Munyaho, L.I. Muhoozi, H. Nakiyende, S. Bassa, E. Muhumuza, R. Amiina and J.S. Balirwa (2012). The past, present and projected scenarios in the Lake Albert and Albert Nile fisheries: Implications for sustainable management. Uganda Journal of Agricultural Sciences 13(2): 47-64.

NaFIRRI (2012). Capture Fisheries in Uganda. Policy Brief No.1 of 2012. The Nile perch Fishery; Traditional and Emerging Fisheries; Overfishing and the use of illegal gears on Lake Albert. National Fisheries Resources Research Institute, Jinja, Uganda. 23p.

Nakiyende, H., D. Mbabazi, A. Taabu-Munyaho, S. Bassa, E. Muhumuza and J. Efitre (2013). The decline of *Alestes baremose* Boulenger, 1901 and *Hydrocynus forskahlii* (Cuvier, 1819) stocks in Lake Albert: Implications for sustainable management of their fisheries. Uganda Journal of Agricultural Sciences 14(2): 125-140.

Neiland, A.E., C. Béné, T. Jolley, B.M.B. Ladu, S. Ovie, O. Sule, M. Baba, E. Belal, F. Tiotsop, K. Mindjimba, L. Dara, A. Zakara and J. Quensière (2004). Chapter 7 Fisheries. pp. 189-225. In: C. Batello, M. Marzot and A.H. Touré (eds.). The future is an ancient lake. FAO, Rome, Italy.

Paugy, D. (1990). Characidae. p. 195-236. In: C. Lévêque, D. Paugy and G.G. Teugels (eds.) Faune des poissons d'eaux douces et saumâtres de l'Afrique de l'Ouest. Tome I. Coll. Faune Tropicale n° XXVIII. Musée Royal de l'Afrique Centrale, Tervuren et O.R.S.T.O.M., Paris, 384 p.

Paugy, D. (2003). Alestidae. p. 236-282. In: D. Paugy, C. Lévêque and G.G Teugels (eds.) The fresh and brackish water fishes of West Africa Volume 1. Coll. faune et flore tropicales 40. Institut de

recherche de développement, Paris, France, Muséum national d'histoire naturelle, Paris, France and Musée royal de l'Afrique Central, Tervuren, Belgium, 457p.
Yousif, F.M. and A.A.R. Ahmad (2012). Assessment and production of characid fish at White Nile River. International Journal of Environment and Bioenergy 2(3): 137-145.