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A Report on the Occurrence of Raiamas Senegalensis (Steindachner, 1870) In the River Gora, Ethiopia.

[1]Alemu Kbede Abdi, [2]Prabhadevi L.* and [3]Sreenivasa V

[1]Animal Health Institute, Sebeta, Ethiopia,
[2]Gujarat Institute of Desert Ecology, Bhuj, India,
[3]Dept.of Biology, Bangalore University, India.

Abstract
The fish *Raiamas senegalensis* collected from the Gora River has been described. Only three specimens were collected from the pools located inside the river channel during the non rainy period.

Introduction
The species *Raiamas senegalensis is* commonly known as silver fish as well as Senegal minnow. The genus *Raiamas* was previously known as *Barilius* and later renamed as *Raiamas.* Pter et al**.** (2000) mentioned that African bariliines constitute a separate lineage among them *Raiamas* is the most primitive. There are closely related species reported to occur from the Niger and Bénoué basins of Ghana, Nigeria and Cameroon such as *Raiamas nigeriensis* (Daget,1959), *Raiamas steindachneri* from Guinea,western Africa. According to Lévêque (1990) *Raiamas steindachneri* is found in the river basins of Guinea, Sierra Leone and Liberia. Pter et al (2000) reported that th**e** karyotype of the species *Raiamas steindacneri* (Pellegrin, 1908) collected from Guniea, western Africa is different from the known karyotypes of bariliine species. The members of the genus *Raiamas* are considered as threatened species (IUCN, 2016). According to fish base *Raiamas senegalensis* occurs in river basins of the Nile, Chad, Niger, Gambia, Senegal, Volta and coastal basins of Sassandra, Bandama, Comoé, Tano, Pra, Ouémé, Ogun and Sanaga and Cameroon. Tadlo (2015) stated that the Ethiopian river fish fauna is a mixture of Nilo Sudanic, East African and Endemic forms of which the Nilo-Sudanic forms are predominantly found in the Baro-Akobo, Omo-Gibe, Tekeze and Abay drainage basin. However the fish fauna of several rivers in the highlands of Ethiopia still remains unexplored. The fish *Raiamas loati (synonym)* has been reported to occur in the Tekeze Reservoir (Tewabe *et al*. 2008; Malaku *et al* 2017;Gebru et al 2019),Upper head of Blue (Omer,2010; Awoke *et al*.2015) and Jemma river (Tewabe *et al*. (2016).The present paper describes the morphometry and food of *Raiamas senegalensis* collected from the River Gora a tributary of Blue Nile in the Jeldu Woreda, Ethiopia.

Synonyms of the Species *Raiamas Senegalensis*
Barilius loati (Boulenger, 1901)
Barilius macrostoma (Boulenger, 1913)
Barilius senegalensis (Steindachner, 1870)
Barilius senegalensis orientalis (Blache & Miton, 1961)
Barilius senegalensis senegalensis (Steindachner, 1870)

Materials and Methods

Description of the Study Area

The River Gora is a tributary of the Blue Nile runs around 90 km through Jeldu Woreda of Dendi district of Oromia region, Ethiopia. The River Gora is perennial, spring fed, montane forest origin, with riparian vegetation of shrubs, partly open canopy, slightly turbid during rainy season. The Ichthyofauna of this part of the upper Blue Nile section has not been explored well even though the local villagers make use of the fishes as their food supplement. The fishing gears employed are gill net, hook and line and seine net. The rural people use some plant extracts also to anesthetize and aggregate the fishes as they do not have proper fishing gears to fish in the inaccessible areas where the fishes generally inhabit. According to the fishers there are three major type fishes available in the river Gora, viz., Carp (locally Duba), *Garra* (local name Tukure) and major consumable fish *Labeo* spp., (locally called Hado gingel).Three study sites were chosen along the 12km stretch of the river. *Raiamas senegalensis* specimens were obtained from Halloye and Maksa regions along the course of the river.

Methods

The fishes were collected by using small seine net and hand nets when the water is clear and flow rate was minimum. The river bed is covered with small boulders and gravel so that fishes are visible in the pools. The fishes were brought to the Ambo university laboratory for identification and morphometric analysis. The total length, standard length, fin formula and scale count were recorded. The identification of the fish was done by consulting available literature (www.fishbase.org/summary/5276www.;fishbase.org, (06/2016). The fishes were dissected out to reveal the nature of alimentary canal, gills and the food composition.

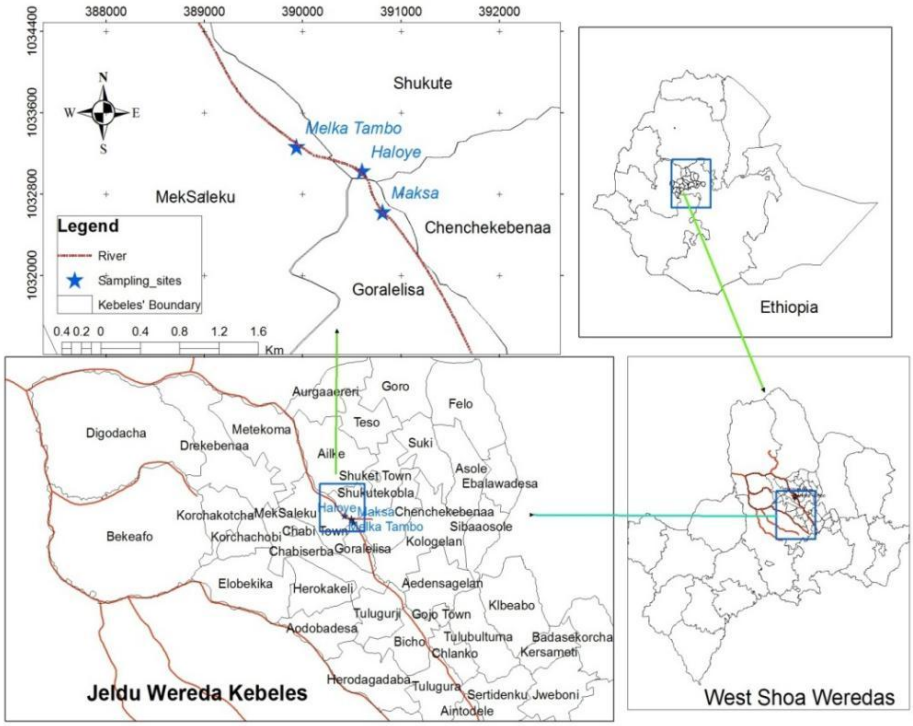

Figure.1. Study sites along the Gora river

Results

Morphological Characters

Body is elongated, narrow, laterally compressed, covered with dorsal dark and ventral pale colored small scales. There are 12 dark blotches present on the lateral side. Body is silvery with orange tinge at the ventral side of the body and on the fins.

Body Length

Total length of the fish is 20.4 cm, the standard length is 18 cm. The pre dorsal space behind the head is 6.5 cm and post dorsal up to tail fin origin is 4.5 cm. Maximum body depth (width) is 4 cm.

Head: length 4.8cm, bony roofed, with many soft bony plates and slightly flattened dorsally. The snout is pointed. The upper jaw bony, thick and continuous. Mouth is sub-terminal, wide with thick lips. Upper jaw is formed of pre maxilla and maxilla. The pre maxilla is small divided and continuous with snout which is 1.4 cm in length. Maxillary bones are large with smooth margin. The length of maxillary bone is 2.4 cm. Mandible is muscular and have thick lip, measuring about 1.6 cm length. Teeth are absent on the jaws. Nostrils are superior, large and visible, separated by a septum. Eyes are larger, supra- lateral in position with large pupil. The orbital length is 0.7cm. The inter-orbital space is 1.1cm. The cheek bones are larger in size, and distinguished into pre orbital, post orbital and infra orbital and small sub orbital bones surrounding the orbit.

Operculum: It is formed of large bony plates, superior large pre opercular, and inferior small sub opercular bone. There are few interstitial bones present just below the sub-opercular bone. The margin of the operculum is soft and membranous with branchiostegal bones.

Fin formula: D 10; P 14; V10; A16; C 22
Dorsal fin: situated behind the origin of ventral fin (pelvic), consists of one spinuous ray followed by nine branched soft rays.
Caudal fin: homo-cercal, forked, equal with 22 soft rays.
Pectoral fin: ventrally situated, one spinuous ray followed by 13 soft rays.
Ventral fin: formed of 10 soft and branched rays.
Anal fin: situated behind the dorsal fin base. It is formed of 14 rays of which six are longer than the rest eight soft rays behind.
Lateral line: single, sub-ventral in position. Starts above the opercular bone and runsdown latero-ventrally and ends at the end tip of the caudal peduncle in the center. A total of 61 scale present along the lateral line. There are nine rows of scales above andsix rows below the lateral line.
Scale: minute, cycloid with smooth margin.
Gills: There are four pairs of gill arches with unequal limbs. The gill filaments have secondary lamellae. The gill arches possess 15 horny gill rackers, arranged in two rows. **Air Balder:** Two chambered, anterior short and posterior elongated with pneumatic duct connecting to oesophagus.
Alimentary canal: There is short oesophagus, followed by thick walled elongated muscular stomach with a short and narrow intestine. The gut analysis revealed the presence of more number of fish scales, small bones and spines, and insects and their parts. These food items were found more in the fish collected in the month February. No food items could be identified in the stomach of the specimens collected during December and January.

Discussion

The morphological features of the present specimen is similar to the that of the description of the species *Raiamas senegalensis* available in fish base. However, there is slight variation in the number of soft fin rays in the dorsal fin. In all other respects the fish follows the Fish base description of *Raiamas senegalensis* and differs from *Raiamas nigeriensis* and *Raiamas steindachner*i,

Raiamas senegalensis

Head

References

[1] Awoke T., Mingist, M and Getahun, A., 2015, Abundance and species compositions of fishes in Blue Nile River, Ethiopia. IJFAS 2(6): 334-339

[2] Getahun, A., 2007A, n overview of the diversity and conservation status of the Ethiopian freshwater fauna. J. Afrotrop. Zool. Special Issue: 87-96.

[3] Gebru, S, Getahun, A and Teferi, M., 2020, Diversity and abundance of fishes in Tekeze Reservoir, Tekeze Basin, Ethiopia. Ethiop. J. Biol. Sci. 18(1): 55–75.

[4] Froese, R, and Pauly, D. , eds. 2006, "*Raiamas nigeriensis*".

[5] Lévêque, C., 1990, Cyprinidae. p. 269-361. In C. Lévêque, D. Paugy and G.G. Teugels (eds.) Faune des poissons d'eaux douces et saumâtres d'Afrique de l'Ouest. Tome I. Coll. Faune Tropicale n° XXVIII. Musée Royal de l'Afrique Centrale, Tervuren, and O.R.S.T.O.M., Paris, 384 p.

Melaku ,S,Getahun,A and Wakjira,M. 2017..Population Aspects of Fishes in Geba and Sor Rivers, White Nile System in Ethiopia, East Africa. International Journal of Biodiversity https://doi.org/10.1155/2017/1252604

[6] Olaosebika, B.D., 2010, *Raiamas steindachneri*. The IUCN Red List of Threatened Species 2010: e.T182235A7838490

[7] Omer, M., 2010, Diversity Relative Abundance and Biology of Fish in Upper Head of Blue Nile River, Blue Nile Basin, Ethiopia. MSc. Thesis Bahir Dar University.

[8] Pter, R.A.B., Machordom, A., Rabova, M., and Doadrio, I., 2000, karyotype of African bariliine fish *Raiamas steindachneri* (Osteichthyes,Cyprinidae) Folia Zool 49(1): 7-80.

[9] Tewabe, D., Goshu, G, and Aragaw, C., 2008, Survey of a newly constructed reservoir, Tekeze hydropower dam, Ethiopia.

[10] Tewabe, D., Mohamed, B., Endalew, M, and Hailu, B .,2016, Composition, Distribution, Fishing Activities, and Physico-Chemical Characteristics: The Case of Jemma and Wonchit Rivers, Amhara Region, Ethiopia. Glob J Allergy, 2(1): 010-014.