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Fishing activities in Gendwuha, Guang, Shinfa and Ayima rivers in Tekeze and Abbay basins, Ethiopia: preliminary study

Dereje Tewabe[1], Abebe Getahun[2], Eshete Dejen[1]

[1] Amhara Regional Agricultural Research Institute (ARARI), Bahirdar Fisheries and Other Aquatic Life Research Center, P.O.Box 794, Bahir-Dar, Ethiopia,
e-mail: drjetewabe@yahoo.com
[2] Addis Ababa University, Department of Biology, P.O. Box 1176, Addis Ababa, Ethiopia

Abstract

We sampled fishes of the rivers Gendwuha, Guang, Shinfa, and Ayima with 6, 8, 10, 12 and 14 cm stretched mesh gillnet, monofilament of different mesh sizes, hook and line, fykenet and castnet. During October 2007 through January 2008 in both dry and wet seasons. 27 fish species were identified from the four rivers represented by the families: Centropomidae, Cichlidae, Bagridae, Schilbeidae, Clariidae, Mochokidae, Malapteruridae, Osteoglossidae, Mormyridae, Characidae, Citharinidae and Cyprinidae. Species richness was slightly highest in the rivers Shinfa and Ayima - 20 species each, whereas 16 and 18 species were identified from Gendwuha and Guang rivers, respectively. Most destructive fishing methods used in the region include plant poisons and chemicals (Malathion) which are nonselective and dangerous for all biota. Action towards awareness creation in this respect should be urgently undertaken before extinction of species.

Key words: ichthyofauna, diversity, guraba, *Milletia ferruginea*, relative abundance, physical water parameters.

1. Introduction

Ethiopia could be called the "water tower of Eastern Africa" on a continent where aridity is the rule. Inland water bodies of Ethiopia are estimated to be about 7400 km^2 of lake area and about 7000 km of river length (Wood, Talling 1988). These water bodies support large populations of commercially important fish species.

Before beginning any fishery development or aquatic ecology project we require a measure of composition of fish assemblages (JERBE 1995). By knowing species composition, we can seek to conserve and sustainably use these species. Although Ethiopia has high productivity and fish diversity little work on these waters has been done. Ethiopia appears to be the least explored for their ichthyofauna of all the regions of Africa (Golubtsov *et al*. 1995).

The freshwater fish fauna of Ethiopia contains a mixture of Nilo-Sudanic, East African and endemic forms (Roberts 1975; Abebe, Stiassny 1998). The Nilo-Sudanic forms are related to West African fishes, hence supporting the hypothesis that the Nile has been historically connected to the central and West African river systems (Abebe 2002). The Nilo-Sudanic forms are the dominant forms in terms of diversity and represented by a large number of species found in the Baro-Akobo, Omo-Gibe, Tekeze and Abbay drainage basins (e.g., the genera *Alestes*, *Bagrus*, *Citharinus*, *Hydrocynus*, *Hyperopisus*, *Labeo*, *Mormyrus*). De Graaf (2003) has described some of the elements of the Nilo-Sudanic species from southern Rift Valley lakes (Chamo and Abaya). These include the families Mormyridae, Cyprinidae, Bagridae, Clariidae and Mockokidae.

Gendwuha, Guang, Shinfa and Ayima rivers are among those rivers flowing to lower course of Tekeze and Abbay, in which the fish diversity, abundance and economic potential have not been well recognised due to dificulties of accessibility, security and harsh geographical features of the area. Hence, we sought to collect baseline scientific information/data about economically important and common species for management and sustainable utilization of the resources, and to recommend ways of conserving the diversity of the ichthyofauna of the rivers. Our initial step was to document species composition, fishing activities, and physico-chemical parameters of rivers.

2. Materials and methods

2.1. General description of the study area

Gendwuha, Shinfa, Guang and Ayima are four rivers in North Gondar administrative zone, in which we select eight sampling sites (Fig. 1). Both studied rivers are perennial that make pools and rapids alternatively along the length of the rivers between the sampling sites during dry seasons of the year. Gendwuha River is smaller than Guang River by its volume and relatively clearer than Guang during rainy season, but all of them are clear just after rainy season. Ayima River is greater than Guang River by its volume. Both the rivers flow through gentle slopes resulting in the absence of waterfalls along their length between our sample sites.

Fishing occurs with gillnets, hook and lines, fykenets, castnets, spears and apply plant poison like lalo (*Balanites aegyptica*) and birbira (*Milletia ferruginea*) from bark and seed respectively, and industrial product malathion. Malathion is widely

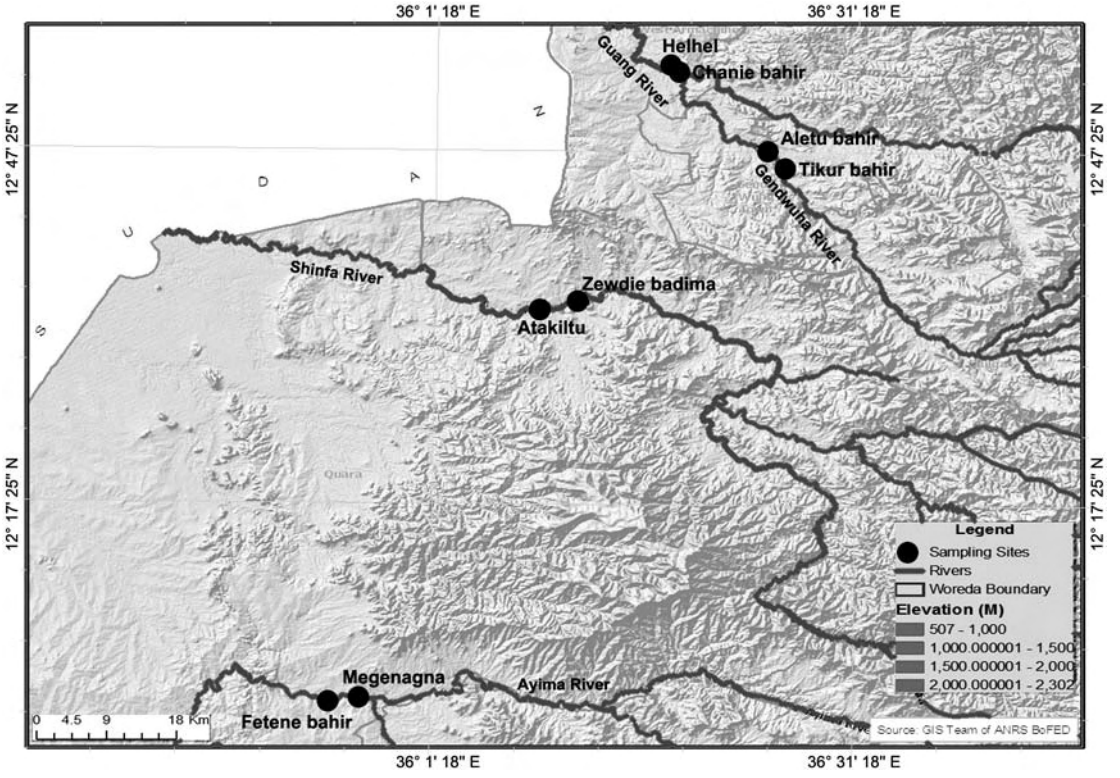

Fig. 1. Map of Gendwuha, Guang, Shinfa and Ayima rivers with the sampling sites (Source: GIS Team of ANRS BoFED).