

SPECIES COMPOSITION OF THE FISH SPECIES IN KEMER RESERVOIR AND AKCAY STREAM, AYDIN, TURKEY

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ABSTRACT

The study was carried out in Kemer Reservoir and Akcay Stream between December 2004 and June 2006. Fish samples were caught by using gill nets, cast nets and electrofishing. Fifteen species belonging to 6 families were caught during the study. Four species, *Acanthobrama mirabilis* (47.0), *Lepomis gibbosus* (18.8), *Chondrostoma meandrense* (12.8) and *Barbus pectoralis* (8.6) are dominant fish species in the reservoir.

Keywords: Biodiversity - Kemer Reservoir - economic importance - Turkey

INTRODUCTION

The fisheries sector is a very important part of the economy of rural region and provides a valuable source of employment. Türkiye is divided into 26 water catch areas and Buyuk Menderes River area is the largest one in Asia minor. Kemer Reservoir, which is built on a tributary of Buyuk Menderes River, is the most important source of inland fisheries production of Aydin city. Until recently, about 250 freshwater fish species have been reported in the inland waters of Turkey ([5], [6]). About 60 species are known as endemic in Turkish inland waters [4].

To date, fifteen fish species were reported from the Kemer Reservoir and Akcay Stream [9]. Also 8 alien invasive or introduced species were recorded in Menderes River basin (five species in Kemer Reservoir and Akcay Stream) and three endemic species were recorded in Kemer Reservoir and Akcay Stream [10].

Reservoir fisheries are conducted mainly with gillnets, trammel net, cast nets and long lines sometimes used for certain species. In artisanal economic aspect of fishery, the most important native and endemic species of Kemer Reservoir species are *Acanthobrama mirabilis*, *Chondrostoma meandrense*, *Barbus pectoralis* and *Capoeta bergamae*. In Kemer Reservoir, 4 species are fished, yielding approximately 62 tons/year.

MATERIALS AND METHODS

Kemer Reservoir was filled up after the General

Directorate of State Hydraulic Works (DSI) built a 180.50 m-high dam in 1954-58 for irrigation, flood control and hydroelectric purposes. The hydroelectric power station was constructed with an expected capacity of 143 GWh/year. The surface of the reservoir of Kemer is 14.75 km², the size of overall water volume is 544 000 m³/year. According to the measurements obtained between December 2004 and June 2006, the maximum depth measured was 51 m. The reservoir water decreased at the end of the summer-autumn months (May-September).

The samples examined in this study were taken from 10 different stations in Kemer Reservoir and Akcay Stream (37° 32' N and 28° 32' E) monthly between December 2004 and June 2006 (figure 1). The fish were caught with gill nets with mesh sizes of 18-55 mm, cast nets (12-22 mm) and electrofishing (WFC911 portable electric fishing machine). Materials obtained were fixed and preserved in 4% formaldehyde solution and deposited at the Faculty of Fisheries, Mustafa Kemal University, Turkey (in collection of Dr. G. Ozcan).

RESULT AND DISCUSSION

A total of 15 species (and a hybrid) belonging to six families were collected from one reservoir, one stream and six inlets (table 1). Analyses based on the number of individuals caught, showed that 80.2% were represented by the family Cyprinidae, 18.8% Centrarchidae, 0.5% Balitoridae, 0.3% Siluridae, 0.1% Salmonidae and

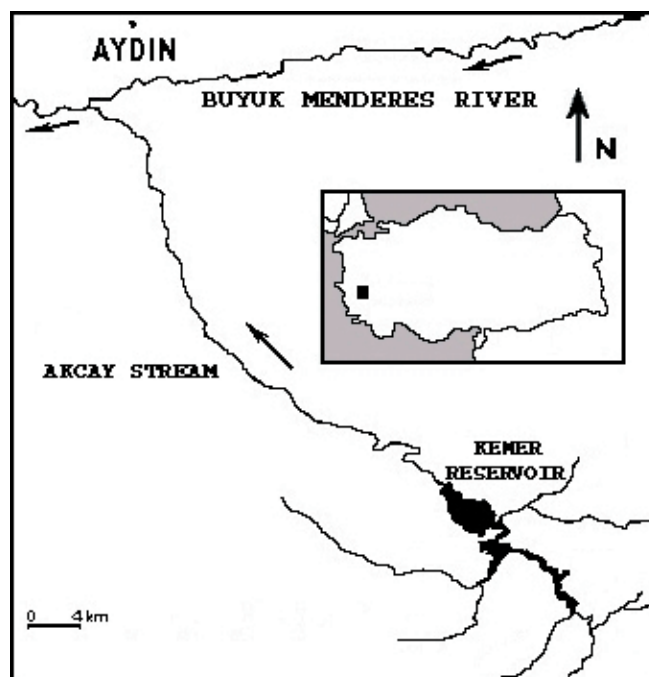


Figure 1. The map of Kemer Reservoir and Akcay Stream

Moronidae 0.1% (figure 2). *Acanthobrama mirabilis* and *Lepomis gibbosus* were the dominant species of fish caught.

The reservoir located in Buyuk Menderes River Basin are productive and their fishery is dominated by major carps. Kemer Reservoir was medium productive, and its fishery was mainly dominated by Cyprinids (*Acanthobrama mirabilis*, *Chondrostoma meandrense*, *Barbus pectoralis* and *Capoeta bergamae*). The Cyprinidae family is dominant in the reservoir and stream. *Acanthobrama mirabilis* was the most abundant fish species (47.0 %).

Also, *Lepomis gibbosus* is second most abundant species of region (18.8 %) (figure 3).

The rapid expansion of *Lepomis gibbosus* and *Carassius gibelio* prevailed in the reservoir causing severe economic, biodiversity and environmental impacts ([1], [2], [3], [4], [7], [8], [11]). The decline in fish species in and around reservoir is the largest documented loss of biodiversity caused by humans and alien species in an ecosystem. *Lepomis gibbosus* and *Carassius gibelio* are potential competitors for the food of numerous endemic fish species: *Acanthobrama mirabilis* Ladiges,

Table 1. List of the species of fish found and their number of individuals at the area, as well as their percentage of the total number caught.

Family	Fish species	N	%N
CYPRINIDAE	<i>Cyprinus carpio</i>	92	3.9
	<i>Acanthobrama mirabilis</i>	1122	47
	<i>Chondrostoma meandrense</i>	307	12.9
	<i>Barbus pectoralis</i>	206	8.6
	<i>Capoeta bergamae</i>	125	5.2
	<i>Leuciscus cephalus</i>	24	1.0
	<i>Petroleuciscus smyrnaeus</i>	18	0.8
	<i>Barbus plebejus escherichi</i>	9	0.4
	<i>Alburnoides bipunctatus</i>	3	0.1
	<i>Carassius gibelio</i>	11	0.5
SILURIDAE	<i>Silurus glanis</i>	7	0.3
CENTRARCHIDAE	<i>Lepomis gibbosus</i>	449	18.8
BALITORIDAE	<i>Nemacheilus angorae</i>	12	0.5
SALMONIDAE	<i>Oncorhynchus mykiss</i>	2	0.1
MORONIDAE	<i>Morone chrysops</i> X <i>Morone saxatilis</i>	2	0.1
TOTAL		2389	100.00

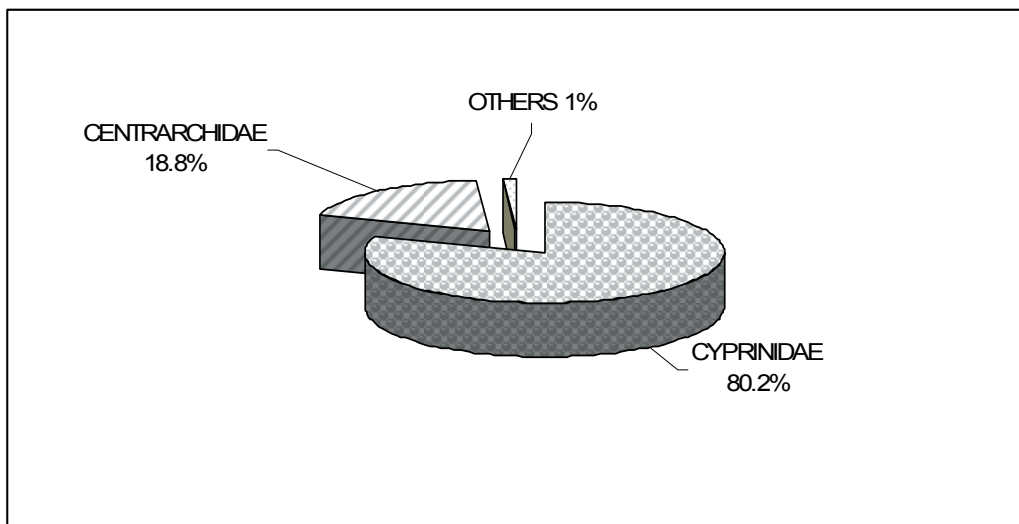


Figure 2. Relative dominance of the number of individuals of the families of fish identified

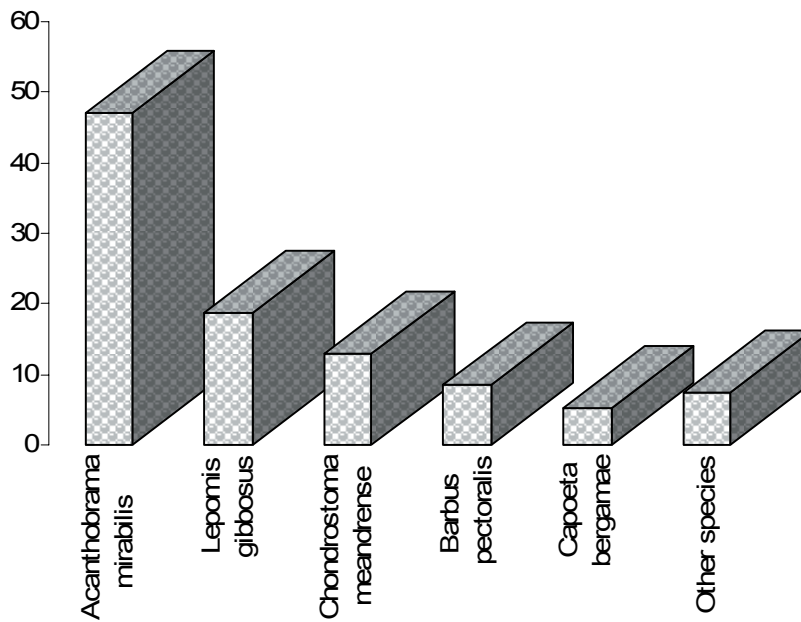


Figure 3. Relative dominance of the number of individuals of the species of fish encountered

1960; *Chondrostoma meandrense* Elvira, 1987; *Capoeta bergamae* Karaman, 1969 and *Barbus pectoralis* Heckel, 1843 ([7], [8]). The catches of these endemic fish species have declined since *Lepomis gibbosus* was introduced to Kemer Reservoir in 2003, with the density of *Lepomis gibbosus* increasing about three to four times since 2003 [7]. It is necessary to increase the population of the species like *Cyprinus carpio*, *Leuciscus cephalus* and *Silurus glanis* which are found naturally in reservoir and to minimize the release of the species like *Oncorhynchus mykiss* and *Morone chrysops* X *Morone saxatilis* whose production in cages is made in the lake and by doing these the breeding of them must be encouraged. Considering the properties of the reservoir and the stream, first of all certain measures (maintaining or improving the habitat value for fish and wildlife and not adversely affect threatened and endangered fish species. Also, to improve the stream corridor for fish and wildlife habitat, improving water quality, survival and reproductive needs of populations) should be taken and some improvements should be made in order to make the fishery here efficient. In these studies, the aim is to decrease the pressure of the potential alien species in the area on the endemic fish and to take them under control and besides to make some activities like irrigation beginning in summer by not affecting the spawning of fish.

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