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Research Article

GOKCEKAYA DAM (ESKİSEHİR) DISTRIBUTION of CHIRONOMIDAE (DIPTERA-INSECTA) SPECIES

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ABSTRACT. Samples were collected from 8 predetermined stations on Gökçekaya Dam. In the sampling process, sieves with 60 and 80 mesh sizes were used. The collected samples were brought to the laboratory in 4% formaldehyde. In the examinations made in the laboratory, 9 taxa belonging to Chironomidae were identified.

Keywords: *chironomidae, gokcekaya, eskisehir, dam*

INTRODUCTION

Gökçekaya Dam is located 65 km from Eskişehir and 37 km from Alpu district. Sarıyar dam is located on the upper side of this dam, which was built on the Sakarya river, and the Yenice dam, which was built for irrigation purposes, on the lower side. It is located within the provincial borders of Ankara-Eskişehir. The volume of the water body, which covers an area of approximately 20 km2, is 950,000 m3 on average. It is Turkey's first concrete arch dam.

In addition to electricity production, fisheries farming is also carried out on the dam. In addition to fish farming, fishermen living in the surrounding villages hunt for their livelihood. While the dam level rises to 390 meters in winter, it decreases to 375 meters in summer.

There are very few trees on the north side of the dam lake, which is forested on the south side. However, some small areas have been afforested by the villagers living in the vicinity.

The dam lake is frequented by migratory birds and heron birds. It is also home to many vertebrates and invertebrates.

MATERIALS AND METHODS

In June 2022, Chironomidae specimens were collected from 8 stations on the coastline of Gökçekaya dam near the concrete belt **Figure 1**.

The samples were collected by benthos scanning method from stations determined by hand scoop and passed through 60 and 80 mesh sieves. The sludge samples, which were separated from the sieves and accumulated in the bucket, were placed in glass jars

containing 4% formaldehyde. The samples brought to the laboratory were sorted under a stereo microscope and taken into 5 ml plastic tubes containing 75% alcohol.

The sources of Cranston (1982), Fittkau and Roback (1983), Hirvenoja (1973), Klink and Moller Pillot (2003), Şahin (1980, 1987, 1991, 1998), Wiederholm (1983) were used for the identification of the samples [2, 3, 5, 7 , 9, 10, 11, 12, 13].

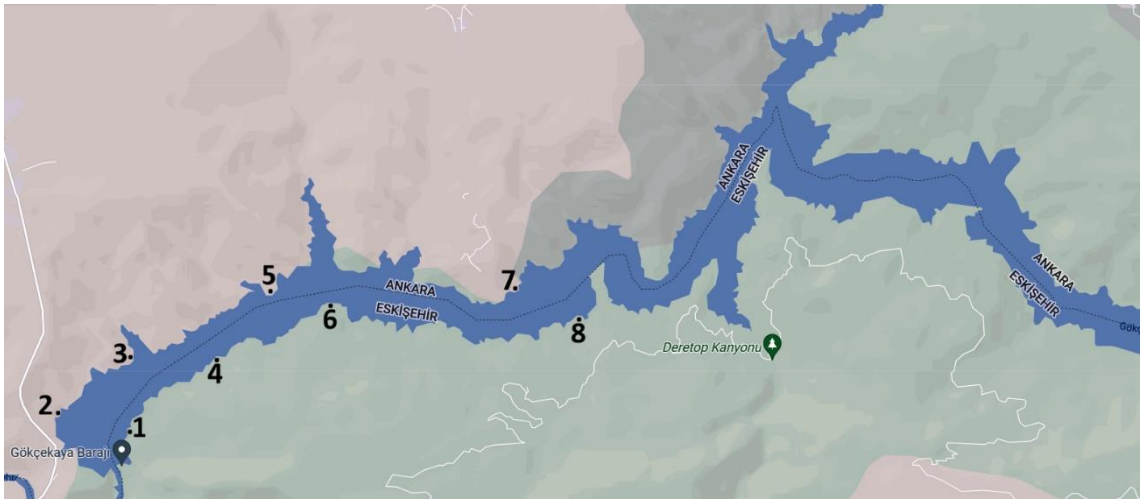

Fig. 1. *Study area and stations.*

RESULTS AND DISCUSSION

As a result of the study, 9 taxa belonging to Chironomidae were identified. The systematic distribution of the identified taxa according to the stations is given in **Table 1**.

Table 1. *Distribution of Chironomidae taxa by stations.*

Taxa	Stations
Tanypodinae	
Arctopelopia barbitarsis	7, 8
Pentaneurella katterjokke	7, 8
Procladius sp.	5, 7, 8
Orthocladiinae	
Cricotopus (C.) bicinctus	1, 2, 3, 4, 5
Cricotopus (C.) triannulatus	1, 2, 3, 4, 5
Orthocladius sp.	1, 2, 3, 4, 5, 6
Chironominae	
Chironomus sp.	1, 2, 3, 4, 5, 6, 7
Chironomus anthracinus	1, 2, 3, 4, 5, 6
Dicrotendipes tritomus	4, 5, 6, 7

9 taxa were identified as Tanypodinae 3 taxa, Orthocladiinae 3 taxa and Chironominae 3 taxa.

The most common species is *Chironomus sp.* It was seen in all of the other stations except station 8. In second place, *Orthocladius sp.* and *Chironomus anthracinus.* These

species were seen at stations 1, 2, 3, 4, 5 and 6. The least detected species are *Arctopelopia barbitarsis* and *Pentaneurella katterjokke*. It was detected only at stations 7 and 8.

When we examine the sample distributions on a station basis, only 3 species are detected at station 8, while the highest number of species is seen at station 5 with 7 species.

We think that the topographic structure of the dam lake also affects the species distribution **Figure 2**.

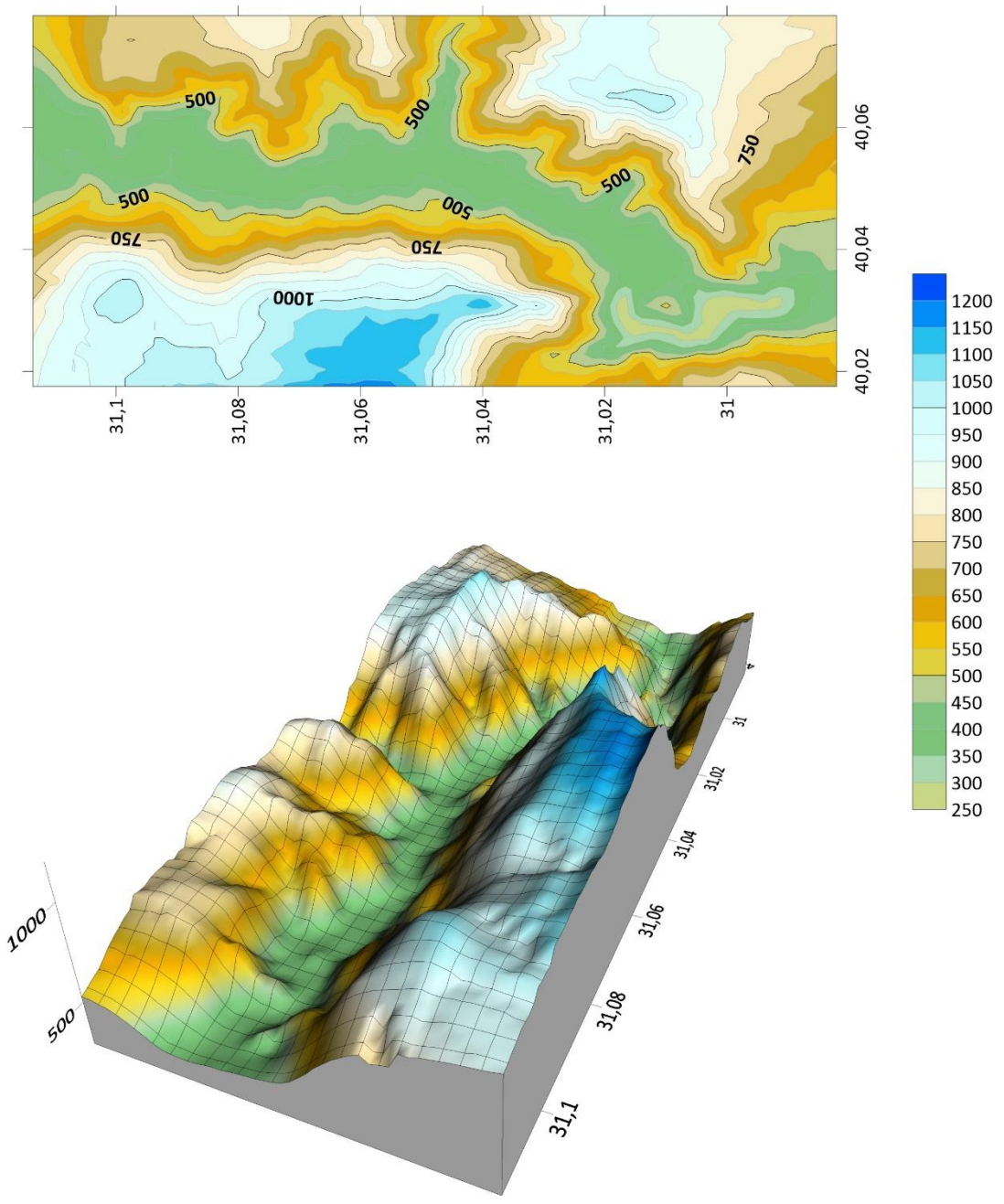

Figure 2. 2 and 3 dimensional topographic structure of Gökçekaya Dam.

Chironominea species are durable and have a high tolerance range and can be found in all kinds of environments [1, 11]. However, it is unlikely that we will find it in abundance in any habitat.

With the onset of spring, the use of water in the dam basin for agricultural purposes increases. As a result of this, due to the recession at the lake level, the larvae hatching from Chironomidae eggs left in these regions cannot survive, and accordingly, the population diversity is adversely affected.

In order to maintain fresh water resources in a healthy and continuous way, priority is given to

As a result, the irrigation regime should be controlled [8].

According to Girgin 2004; Water is an extremely valuable, economical and strategic resource both for our country and for the world. As a result of the discharge of wastewater into water resources without treatment in underdeveloped and developing countries, 1.4 billion people in the world are still trying to survive without having the opportunity to use clean water [4, 6].

CONCLUSION

With this study, we aimed to determine the species diversity of Gökçekaya Dam Chironomidae. However, we think that better and more enlightening results will be obtained with benthos samples to be taken from deep regions towards the dam lake in future studies. We think that it would be correct to make sampling from these regions with the appropriate equipment. Thus, it will be possible to fully determine the species diversity of Chironomidae. In addition, since there is a climate close to both the arid climate and the Mediterranean climate around the dam lake, examining the studies to be carried out by sampling every month throughout the year will allow more efficient results to be obtained. In addition, it is thought that collaborative work on other benthic creatures and vertebrates (birds and fish) at the stage of making these samples will contribute significantly to the determination of Chironomidae species, other benthic species and to the determination of the feeding regimes of vertebrate species (birds and fish). This study is a preliminary study and we think that it will shed light on future comprehensive studies.

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