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Research Article

HİSAR TERMAL SPRINGS (DEMİRCİ-MANİSA) DISTRIBUTION of CHIRONOMIDAE (DIPTERA-INSECTA) SPECIES

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ABSTRACT. Sampling was made from 6 stations in 2019 around the Hisar thermal springs, which is approximately 8 km away from the Demirci district of Manisa province. A hand scoop was used in the sampling process and the collected benthos samples were passed through 60 and 80 mesh sieves. As a result of the study, 7 taxa from Chironominae, 5 taxa from Orthocladiinae and 3 taxa from Tanypodinae, a total of 15 taxa were identified.

Keywords: *chironomidae, hisar, demirci, manisa*

INTRODUCTION

In our country, irregular flow regime is observed in many rivers. Irregular flow regime is also observed in the study area. In previous years, many researchers in close regions related to macroinvertebrates and chironomidae have carried out many studies [4, 6].

The longest period during the life cycle of Chironomidae is in the larval stage. Chironomidae larvae are an important part of benthic biomass production. They can be found in many different environments because they have high tolerance ranges [9].

Therefore, Chironomidae larvae play an important role in determining water quality. May be the only insect species that can live in waters with low dissolved oxygen [1].

MATERIALS AND METHODS

Sampling was made from 6 stations in 2019 around Hisar thermal springs, which is approximately 8 km away from Demirci district of Manisa province **(Fig. 1)**. The coordinates of the stations are given in **Table 1**. A hand scoop was used in the sampling process and the collected benthos samples were passed through 60 and 80 mesh sieves. The samples were placed in 4% formaldehyde in the field. The samples brought to the laboratory were sorted under the microscope and placed in 70% alcohol. After the preparations of the samples to be diagnosed, they were examined under a binocular microscope. In the diagnosis of samples; Cranston (1982), Fittkau ve Roback (1983), Hirvenoja (1973), Klink ve Moller Pillot (2003), Şahin (1980, 1987, 1991, 1998), Wiederholm (1983) were used [2, 3, 5, 7, 10, 11, 12, 13, 14].

Fig. 1. *Study area and stations.*

Table 1. *Sampling stations coordinates.*

Station number	Coordinate
1	39°01'55.4"N 28°42'31.4"E
2	39°01'56.7"N 28°42'00.4"E
3	39°01'52.4"N 28°41'37.2"E
4	39°01'42.8"N 28°41'31.0"E
5	39°01'35.8"N 28°41'02.6"E
6	39°01'22.6"N 28°40'21.6"E

RESULTS AND DISCUSSION

As a result of the study, 15 taxa were identified. The systematic distribution of these taxa according to the stations is given in **Table 2**. Chironominae took the first place with the most taxa (7 taxa). Orthocladiinae follows it with 5 taxa and finally Tanypodinae with 3 taxa. The most common species was *Polypedilum (T.) scalaenum* (Schrank, 1803) at 4 stations. The least amount of *Microtendipes pedellus* (De Geer 1776) was seen in only 1 station. When we examine the stations, it is the 6th station with 9 taxa where the most taxa are seen. There is a 3rd station with at least 3 taxa.

Table 2. *Distribution of taxa belonging to Chironomidae at stations.*

Taxa	Stations
Tanypodinae	
Conchapelopia sp.	1, 2, 3
Ablabesmyia (A.) monilis (Linnaeus, 1758)	1, 2,
Procladius (Holotanypus) sp.	4, 6
Orthocladiinae	
Cricotopus (Isocladius) sylvestris (Fabricius 1794)	4, 5, 6
Paratrichocladius rufiventris (Meigen, 1830)	1, 2, 3
Cricotopus (C.) viereriensis Goetghebuer 1935	1, 2,
Rheocricotopus (R.) fuscipes (Kieffer, 1909)	5, 6
Orthocladius sp.	4, 6
Chironominae	
Polypedilum (T.) scalaenum (Schrank, 1803)	3, 4, 5, 6
Chironomus (C.) anthracinus Zetterstedt, 1860	4, 5, 6
Chironomus (C.) plumosus (Linnaeus, 1758)	5, 6
Cryptochironomus defectus (Kieffer 1913)	4, 5
Micropsectra sp.	5, 6
Tanytarsus sp.	5, 6
Microtendipes pedellus (De Geer 1776)	4

Chironomidae species are among the most common benthic invertebrates in almost every season [8].

The highest number of individuals found in rivers in high altitude regions is Orthocladiinae in Chironomidae. However, when we look at the general distribution, we see that Chironominae species are dominant. Chirominea species can tolerate living in high temperature and low oxygen [1].

As we said above, Chironomidae species are among the important groups in determining the water quality. However, many factors affecting water quality also affect biological existence.

4 taxa were determined at the first and second stations. Among these 4 taxa, the species with the highest population density is *Paratricochladius rufiventris* (Meigen, 1830). The species with the least population density is *Ablabesmyia (A.) monilis* (Linnaeus, 1758).

At the third station, the most common species was *Polypedilum (T.) scalaenum* (Schrank, 1803). The least common species is *Conchapelopia sp.* has been.

Microtendipes pedellus (De Geer 1776) was seen only at station 4. Both the benthic structure of the station and its biological structure reveal the tolerance range of this species to pollution.

Polypedilum (T.) scalaenum (Schrank, 1803) stands out as the species with the highest density at the fifth and sixth stations. This shows us that *Polypedilum (T.) scalaenum* (Schrank, 1803) is one of the species with the highest tolerance.

CONCLUSION

With this study, we aimed to reveal the chironomidae species diversity of the Hisar thermal springs area. However, it will be easier to determine the species diversity of chironomidae with the data to be obtained as a result of more comprehensive studies. In future studies, it would be beneficial to investigate other benthic invertebrates as well as chironomidae species. Because chironomidae larvae use other invertebrates as food.

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