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Preliminary Study on Determination of Ephemeroptera Species of Dağdere-Manisa (Kayacık River)

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Abstract

Benthos samples were taken from 7 previously determined stations on Kayacık Stream in 2019. The samples were collected with the help of a scoop and sieved in 30, 60, 80 mesh sieves arranged from top to bottom. As a result of the study, 8 taxa from Ephemeroptera were determined.

Key words: *ephemeroptera, dağdere, kayacık, manisa*

Özet

Kayacık Çayı üzerinde daha önceden belirlenmiş olan 7 istasyondan 2019 yılında bentoz örnekleri alınmıştır. Örnekler kepçe yardımıyla toplanmış ve yukarıdan aşağıya sıralanmış 30, 60, 80 mesh göz aralıklı eleklerde elenmiştir. Çalışma sonucunda Ephemeroptera'dan 8 takson belirlenmiştir.

Anahtar keimeler: *ephemeroptera, dağdere, kayacık, manisa.*

INTRODUCTION

Kayacık Stream originates from Dağdere town and merges with Gördes Stream. It follows a very long road before joining the Gördes Stream. Depending on the seasons and the amount of precipitation, there is a decrease in the flow rate. It is one of the important branches feeding the Marmara Lake. However, due to the drought and irregular irrigation regime in recent years, there has been a great decrease in water volume [7].

In previous years, no work was found on the Kayacık Stream, but there are studies on various subjects in the region. Recent studies in the region; The article titled "Evaluation of the Water Quality of Karabal Stream (Gediz River, Turkey) and Comparative Performance of the Used Indices" by Ertaş et al., "Assessing water quality in the Kelebek Stream branch (Gediz River Basin, West)" by Ertaş and Yorulmaz Anatolia of Turkey) using physicochemical and macroinvertebrate-based indices" and "Assessment of river alteration using a new hydro morphological index" by Gündüz, O. and Şimşek, C. [4, 5, 6].

Ephemeroptera species spend most of their lives in water and as nymphs. After the larval (nymphs) stages, although it varies according to the species, they have an average of 3-30 pre-young or pre-adult houses. However, the adult stages are usually of very short duration, such as 1-2 days. Adult stages are in spring and summer. However, they are also known as "Mayflies" because they are most common in May [1, 2, 3, 8].

MATERIALS AND METHODS

Samples collected with benthos scoops from seven stations, which were previously determined and shown in Figure 1, were passed through 30, 60 and 80 mesh sieves placed on top of each other. The Ephemeroptera samples obtained were brought to the laboratory in 4% formaldehyde. The samples, which were examined under the Stereo microscope and pre-defined in the laboratory, were placed in a fixative solution consisting of a mixture of 70% Alcohol, 10 ml 40% Formaldehyde and 5 ml Glycerine [10]. After preliminary sorting, preparations were prepared for species identification. Pre-defined individuals; the mouthparts, 1st and 3rd legs, and gills (first and last gills) were perpetually prepared in Entellan placed on a slide for examination. As a result of the diagnoses, a total of 8 taxa were identified, 4 taxa from Baetidae, 2 taxa from Ephemeridae and 2 taxa from Heptageniidae. In the diagnosis of samples; Lehmkuhl, 1979; Macan, 1979; Macan, 1980; Malzachar, 1984; Miall, 1985; Needham, 1927; Şahin, 1998; Tanatmis, 1988; Tanatmis, 1993; Traver, 1935; used [9, 10, 11, 12, 13, 14, 16, 17, 18, 19].

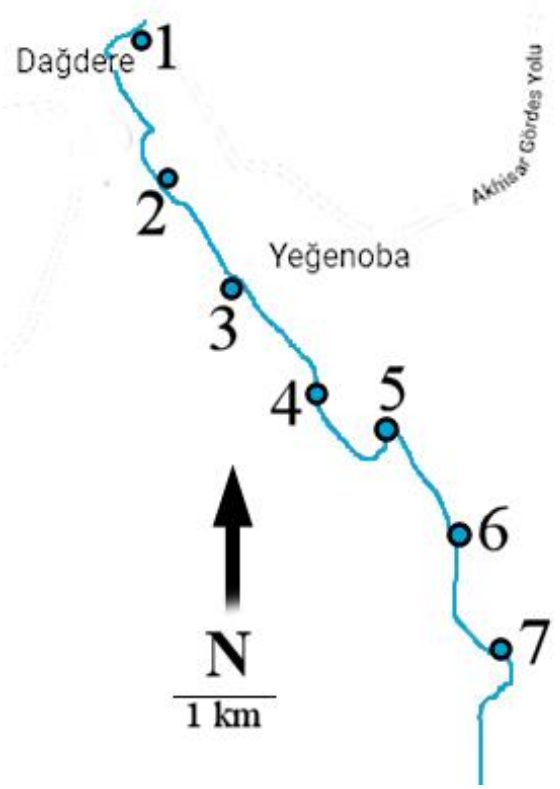

Figure 1. *Sampling stations.*

RESULTS AND DISCUSSION

At the end of the study, 8 taxa belonging to Ephemeroptera were determined. The distribution of the obtained taxa by station is given in Table 1. The highest number of taxa was determined in Baetidae. In Baetidae, a total of 4 taxa, *Baetis sp., Baetis alpinus* (Pictet, 1843), *Baetis rhodani* (Pictet, 1843), *Baetis muticus* (Linnaeus, 1758); 2 taxa in Ephemeridae, *Ephemera sp., Ephemera danica* (Müller, 1764); 2 taxa in Heptageniidae, *Heptagenia sp., Rhithrogena sp*.; 8 taxa were identified in total.

Table 2. *Distribution of Ephemeroptera taxa according to stations.*

Taxon	Stations
Baetidae	
Baetis sp.	2, 3, 4, 5, 6, 7
Baetis alpinus (Pictet, 1843)	3, 4
Baetis rhodani (Pictet, 1843)	2, 3, 4
Baetis muticus (Linnaeus, 1758)	2, 3, 4, 5
Ephemeridae	
Ephemera sp.	1, 2, 3 ,4, 5, 6, 7
Ephemera danica (Müller, 1764)	1, 2, 3, 4, 5, 6, 7
Heptageniidae	
Heptagenia sp.	2, 4, 5, 6
Rhithrogena sp.	4, 5, 6

The least taxa was determined at the 1st station, and the most at the 4th station. At station 1, only the taxa *Ephemera sp., Ephemera danica* (Müller, 1764) were detected. Other taxa were not observed at this station. Taxa *Ephemera sp., Ephemera danica* (Müller, 1764) are distributed in all stations. The reason of this; It may be due to the fact that Ephemeridae taxa have a wide tolerance range [15]. On the other hand, the taxon *Baetis alpinus* (Pictet, 1843) was found only in 2 stations. Baetidae taxa are more selective because they have a narrower tolerance range and are not seen in all kinds of river environments [15].

Ephemeroptera taxa play an important role in water quality studies [15]. Since they are sensitive to pollution, they cannot survive in polluted waters even in small amounts.

As a result, Kayacık brook travels a long way and meets Gördes brook. However, due to the limited research budget and insufficient opportunities, a limited on-site study could be carried out. We believe that this study will support future studies. In the coming years, more comprehensive research with a larger research budget is planned.

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