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Seydi Stream (Eskişehir, Seyitgazi) Ephemeroptera Population Relation with Plant Density

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ABSTRACT

Samples were collected from 11 stations between 2017-2018 in order to determine the population density of Ephemeroptera fauna of Seydi Stream (Eskişehir, Seyitgazi) which is an important branch of Sakarya River System in the Central Anatolia region. As a result of the examination of the collected samples, 7 species belonging to 5 families were identified. These species; Baetis vernus Curtis, 1834, Baetis rhodani (Pictet, 1843), Baetis scambus Eaton 1870, Ephmera vulgata Linneaus, 1758, Ephemerella ignita (Poda, 1761), Potamanthus luteus (Linneaus, 1767), Caenis luctuosa (Burmeister, 1839). During the sample collection, The base and water edge plant densities of 11 stations were examined and their effects on the spread of the species and population density were discussed.

Keywords: Seydi Stream, Fauna, Ephemeroptera, Population

INTRODUCTION

Seydi Stream is born from the upper parts of the village of Yapdak within the provincial boundaries of Eskisehir and joins the Sakarya River after the Körhasan village. It is one of the important branches that feed the Sakarya River. After Yarbasan village, it is poured into Çatoren dam. Seydi River, which continues its way from the dam exit, merges with the branches of the Balık Damı Wetland and enters the Sakarya River System [8].

Over the years, Seydi Stream has had the flow and discharge bed width. However, due to the use of irrigation water for agricultural areas in recent years, it has decreased from time to time to very low levels. This situation negatively affected the life in and around the water. First, the surrounding plant populations were affected. Of course, a decrease in the plant population is closely related to the living organisms [1].

Ephemeroptera species spend most of their lives in water. Therefore, the vitality in the water is important. Although vitality in water is important for life, it is important in geographical factors [2,3]. Factors such as base structures of water and plant density affect species diversity and number of individuals [4].

MATERIALS AND METHODS

Random samples were collected from 11 points determined between 2017-2018. During this process, soil condition and plant density were noted. Samples were collected by sieve having a 30x30 cm base size. With this method, the number of individuals per m^2 was calculated. The collected samples were fixed in 4% formaldehyde and brought to the laboratory. Samples belonging to other groups collected during sample collection were separated and labeled in the laboratory.

Determination of Ephemeroptera; Macan, 1979-80; Tanatmış, 1988; Tanatmış, 1993; Öntürk, 2018, used [5, 6, 7, 9, 10].

RESULTS AND DISCUSSION

The working area consists of 11 stations (Fig. 1). A total of 7 species were collected from 11 stations. The distribution of these species by stations is given in Table 1.

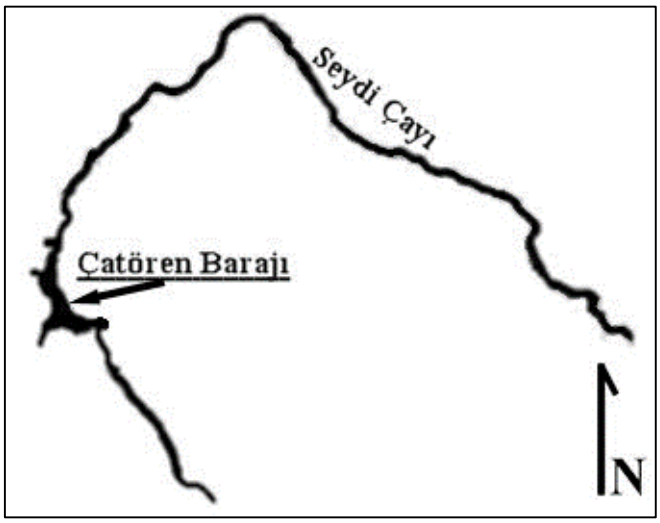

Fig. 1. Seydi Stream

Table 1. Species distributions by stations.

Stations	Species						
Kümbet	*Baetis vernus*	*Baetis rhodani*	*Baetis scambus*				
Karaören	*Baetis vernus*	*Baetis rhodani*	*Baetis scambus*				
Yarbasan	*Baetis vernus*	*Baetis rhodani*	*Baetis scambus*				
Seyitgazi	*Baetis vernus*	*Baetis rhodani*	*Baetis scambus*		*Ephemerella ignita*	*Potamanthus luteus*	*Caenis luctuosa*
Yazıdere	*Baetis vernus*	*Baetis rhodani*	*Baetis scambus*	*Ephmera vulgata*	*Ephemerella ignita*	*Potamanthus luteus*	*Caenis luctuosa*
Doğançayır	*Baetis vernus*	*Baetis rhodani*	*Baetis scambus*	*Ephmera vulgata*	*Ephemerella ignita*	*Potamanthus luteus*	*Caenis luctuosa*
Yeşilyurt	*Baetis vernus*	*Baetis rhodani*	*Baetis scambus*	*Ephmera vulgata*	*Ephemerella ignita*	*Potamanthus luteus*	
Hamidiye		*Baetis rhodani*	*Baetis scambus*	*Ephmera vulgata*	*Ephemerella ignita*		
Mahmudiye			*Baetis scambus*	*Ephmera vulgata*	*Ephemerella ignita*	*Potamanthus luteus*	
Saithalimpaşa				*Ephmera vulgata*	*Ephemerella ignita*		
Körhasan				*Ephmera vulgata*	*Ephemerella ignita*	*Potamanthus luteus*	*Caenis luctuosa*

The observations made at the stations revealed a different population of plants. Plant densities; It will be rated between 1 and 10. This rating will be taken into account in the percentage covered by the sampling area. 1 = 10%, 10 = 100%.

The density of plant populations has been observed to be effective in environmental pollutants, although it is often related to the amount of water. Both the plant population and the ephemeroptera population decreased in areas near the settlement. However, the density of Ephemeroptera near Seyitgazi was low, but no change in plant density was observed. The highest plant density was found at the 4th station. The lowest plant density is at station 3 (Fig. 2). When the number of individuals per square meter was examined, the highest was found in the 5th station with 911 individuals. The lowest number of individuals was detected in 189 station with 189 individuals (Fig. 3). When the ratio of the number of individuals to plant density was examined, it was found to be directly proportional. However, although plant density decreased at station 5,

an increase in the number of individuals was observed (Fig. 4). This can only be explained by the high reproductive ability in the environment. When the ratio of the number of individuals to plant density was examined, it was found to be directly proportional. However, although plant density decreased at station 5, an increase in the number of individuals was observed (Fig. 4). This can only be explained by the high reproductive ability in the environment.

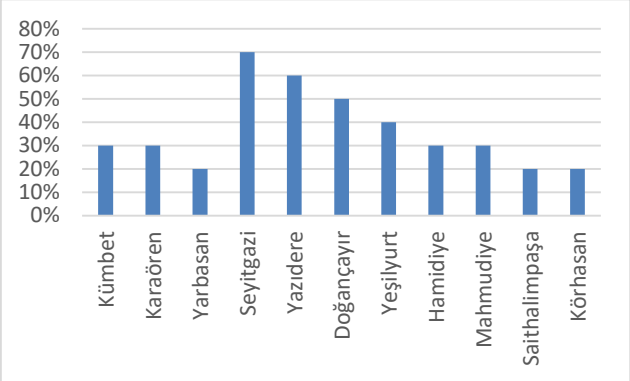

Fig. 2. Plant density.

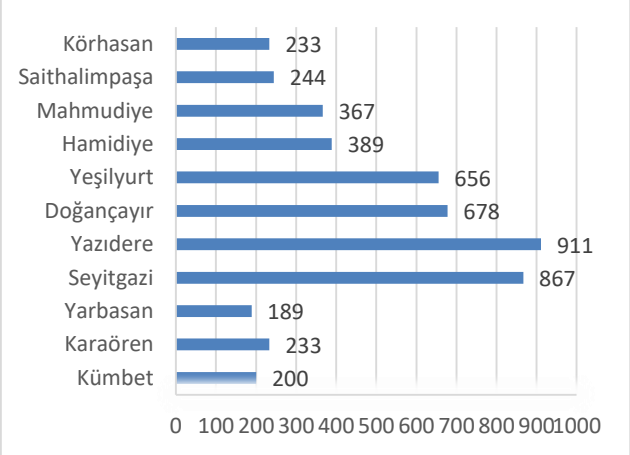

Fig. 3. Number of individuals per square meter.

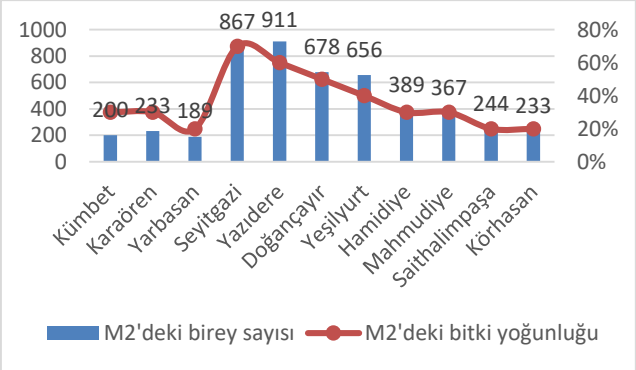

Fig. 4. The ratio of the number of individuals to plant density.

CONCLUSION

In this study, the effects of environmental factors on plant and animal population were tried to be put forward. It has been found that the water polluted by domestic and agricultural wastes becomes more and more poor quality as it progresses. This will be improved by conscious agriculture and conscious urbanization. When the graphs were examined, a direct correlation was found between plant density and number of individuals. However, at some stations this may change slightly. Although plant density decreased, an increase in the number of individuals was observed. An increase in the number of individuals is observed in the station, it is understood that the domestic waste just before the mixing. After the domestic wastes started to mix with water, a decrease in the number of plants and species was observed. As we go further, both chemicals of agricultural origin and domestic wastes increase its effect. Although domestic and agricultural wastes were mixed before, the clean water carried by small arms from outside provides balance.

It has been seen during the two-year investigation process that we pollute our waters with our own hands every day. If no measures are taken as soon as possible, we will need every drop in the future.

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