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Research Article **Araştırma Makalesi**

Structure and Spatial Distribution of the Rotifera Assemblages in Kırklareli Reservoir (Kırklareli/Turkey)

Kırklareli Baraj Gölü'ndeki (Kırklareli/Türkiye) Rotifera Faunası'nın Yapısı ve Mevsimsel Dağılımı

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Abstract: This study was carried out to determine the diversity, abundance, and seasonal distribution of Rotifera in Kırklareli Reservoir. Rotifera samples were collected from May 2018 to April 2019 at three stations in the reservoir and some water quality parameters were measured. The qualitative evaluation of the samples revealed the presence of 39 species in the reservoir. The quantitative evaluation of the samples showed that 24727 ind/m³ Rotifera on average was found in the reservoir. The maximum organism number was found in the summer season (45690 ind/m^3). The average 27.3 % of the total annual Rotifera abundance was composed of *Kellicottia longispina* in Kırklareli Reservoir followed by *Polyarthra dolichoptera* (24.6 %), *Lecane luna* (6.8 %), *Asplanchna priodonta* (6.4%), *Synchaeta oblonga* (5.3%) and *Synchaeta pectinate* (4.9 %). *Asplanchna priodonta, Synchaeta oblonga, Synchaeta pectinata, Keratella cochlearis, Keratella quadrata, Polyarthra dolichoptera, Polyarthra vulgaris* and *Mytilina mucronata* were found the most common species in the reservoir. The water quality parameters measured in the reservoir were detected among the acceptable values to support aquatic life, especially the Rotifera community. The Rotifera densities and abundance showed a positive correlation with water temperature and Chlorophyll-*a*. According to these results, we conclude that Kırklareli Reservoir has an oligomesotrophic character in terms of the Rotifera fauna and the physicochemical parameters.

Keywords

- Rotifera
- Diversity
- Seasonal distribution
- Water quality
- Reservoir

Özet: Bu çalışma, Kırklareli Baraj Gölü'nün Rotifera çeşitliliğini ve mevsimsel dağılımını belirlemek amacıyla yapılmıştır. Mayıs 2018 ile Nisan 2019' tarihleri arasında gölde belirlenen üç istasyonda Rotifera örnekleri toplanmış ve bazı çevresel parametreler ölçülmüştür. Rotifera örneklerin kalitatif değerlendirmesinde 39 Rotifera türü belirlenirken kantitatif değerlendirmeler sonucunda baraj gölünde yıllık ortalama 24727 ind/m³ Rotifera tespit edilmiştir. Kırklareli Baraj Gölünde en fazla bolluğa sahip olan tür *Kellicottia longispina* (%27,3) olurken bunu *Polyarthra dolichoptera* (% 24,6), *Lecane luna* (% 6,8), *Asplanchna priodonta* (% 6,4), *Synchaeta oblonga* (% 5,3) ve *Synchaeta pectinata* (% 4,9) takip etmiştir. *Asplanchna priodonta, Synchaeta oblonga, Synchaeta pectinata, Keratella cochlearis, Keratella quadrata, Polyarthra dolichoptera, Polyarthra vulgaris* ve *Mytilina mucronata* rezervuarda en yaygın türler olarak bulunmuştur. Rezervuarda ölçülen çevresel parametreler, başta Rotifera faunası olmak üzere sucul yaşamı desteklemek için kabul edilebilir değerler arasında tespit edilmiştir. Rotifera yoğunluğu ve bolluğu, su sıcaklığı ve Klorofil-*a* ile pozitif korelasyon göstermiştir. Bu sonuçlara göre Kırklareli Rezervuarının Rotifera faunası ve fizikokimyasal parametreler açısından oligomezotrofik bir karaktere sahip olduğu sonucuna varılmıştır.

Anahtar kelimeler

- Rotifera
- Fauna
- Mevsimsel dağılım
- Su kalitesi
- Baraj gölü

1. INTRODUCTION

The rapid population growth, development of industry, pollution, and global climate change cause to decrease in clean water resources all around the world. For this reason, reservoirs built for many reasons including flood control, drinking water supply, agricultural watering, energy production, and fisheries also contain many zooplanktonic organisms.

The zooplanktonic organisms are an important biological component in aquatic ecosystems which play a vital role in the food chain, which the main function is to act as primary and secondary connections and aquatic ecosystems of the energy transfer (Altaff, 2004). Zooplankton can also be used as a biological indicator for water pollution studies because their formation, viability, and responses change under adverse environmental conditions (Oliver, 1996). Typical zooplankton assemblage of reservoirs is commonly constituted by Protozoa, Rotifera, Copepoda, and Cladocera (Rocha et al., 1999).

Rotifers are one of the most important components in the zooplankton community. They are frequently abundant in eutrophic freshwater ecosystems and are more abundant than other zooplankton groups, because of their short generation time and high reproductive rate (Herzig, 1987). They play a crucial role in the interlinking food chain in the aquatic ecosystem. They are considered to be one of the most sensitive indicators of water quality (Sladecek, 1983; Pontin and Langley, 1993). It is of the opinion of many researchers that the rotifer species composition and their abundance can be used as indicators of trophic status (Berzins and Pejler 1987; Matveeva, 1991). The distribution, abundance, and diversity of zooplankton in aquatic ecosystems depend mainly on the physicochemical properties of water and biological parameters. (Barnett and Beisner, 2007). Also, the temporal variations in the Rotifera community may depend on changes in the availability of edible phytoplankton which often vary depending on the physical processes and nutrient availability in the water bodies (Sarmento et al., 2008). Hence Rotifera association, abundance, seasonal variation, richness, and diversity can be used for the assessment of water pollution and lake management applications. Therefore, studies on seasonal variations of Rotifera in aquatic ecosystems are very important.

A number of studies have been carried out to examine the distribution and diversity of Rotifera in Turkey reservoirs (Buyurgan et al., 2010; Yıldız, 2012; Saler and Alış, 2014; Tuna and Ustaoğlu, 2016; Saler et al., 2017; Güher and Çolak, 2015; Gökçe and Turhan, 2014, Dorak et al., 2019; Dorak, 2019). But there are still reservoirs in Turkey that its zooplanktonic organisms have not been studied yet. This study aims to determine the Rotifera fauna, abundance, seasonal distribution of Kırklareli Reservoir, and some environmental parameters.

2. MATERIAL and METHODS

2.1. Study Area

Kırklareli Reservoir was built between the years 1985-and 1995 for irrigation and flood control on Şeytandere Stream. The reservoir provides drinking and using freshwater supplies to the province of Kırklareli. The reservoir is located 7 km to the northeast of Kırklareli city center (41°44'08.6"N and 27°16'59.0"E) the coordinates. The volume of the reservoir is about 112 hm^3 and the surface area is 6 km^2. The depth of the reservoir varies depending on the months and seasons, but when fully filled it is about 67 m. Although the reservoir is fed mainly by the Ana stream and Büyük stream, it is also fed by other creeks in the basin and by rainfall (Figure 1). The reservoir is surrounded by forests and partially agricultural areas. The reservoir is subjected to temporal fluctuations in water volume with high water volume in the rainy season and less water in the dry season due to high evaporation, agricultural irrigation, and drinking water supply (Anonymous, 2019).

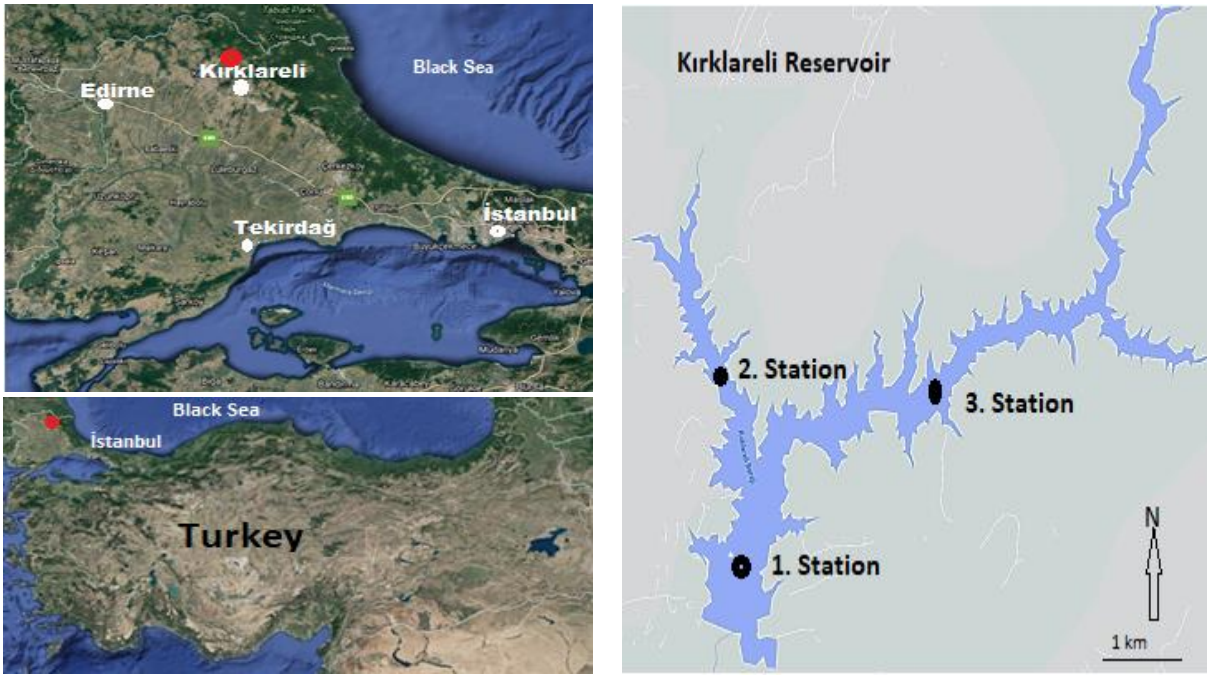

Figure 1. Location of Kırklareli Reservoir and the sampling stations.

2.2. Sampling

The Rotifera and water samples were collected at monthly intervals from May 2018 to April 2019 at three stations representing the lake's ecological characters (Table 1, Figure1). But, due to bad weather conditions, no sampling could be performed in March 2019.

Table 1. Sampling stations and coordinates in the Kırklareli Reservoir.

Sampling stations	Explanations	Geographic coordinates
1st station	This station is the middle part of the reservoir. The water in the reservoir is discharged from this place for irrigation and drinking water supply.	41°44'53,8" N 27°17'02,6" E
2nd station	This station is located on the western part of the reservoir and is where the Ana stream feeds the lake is located.	41°45'54,9" N 27°16'41,6" E
3rd station	This station is located on the eastern branch of the reservoir and is where the Büyük stream feeds the reservoir.	41°45'41,9" N 27°18'30,3" E

The Rotifera samples were collected with a Hensen type plankton net (mesh size 55 µm, mouth diameter 15 cm, length 75 cm) vertically up to the surface from the bottom point (10 m deeply) and horizontally. The samples were brought to the laboratory in 250 ml plastic bottles containing 4% formaldehyde. In the laboratory, samples were identified to species level according to Kolisko (1974); Koste (1978); Herzig (1987); De Manuel Barrabin (2000); Nogrady and Segers (2002); Ejsmont-Karabin et al., (2004) and Segers (2008). The counting of the samples was made according to Edmondson (1959) using an Olympus inverted microscope and was calculated using the following formula of Lackey (1938). Densities are presented as the number of individuals per cubic meter (ind/m^3).

$N = n \times v / V$

Where,

N = Total number of organisms/m^3 of water filtered,

n = Number of zooplankton counted in 5 ml plankton sample,

v = Volume of concentrate plankton sample (ml),

V= Volume of total water filtered through (m^3)

Some physicochemical parameters, such as water temperature (WT), conductivity (EC), pH and dissolved oxygen (DO) were measured on-site simultaneously by using Orion Star S/N 610541. Secchi disk depth (SD) of the reservoir was measured using a Secchi disk. To determine other physicochemical and biological variables of the water, sampling was made by a Ruttner water sampler. Nitrate nitrogen (NO_3-N), Nitrite nitrogen (NO_2-N) Phosphate (PO_4-P), Sulphate (SO_4^{2-}), Calcium (Ca_2^+), Magnesium (Mg_2^+), and Chlorophyll-a (Chl-*a*) were measured of the Trakya University Technology Research Development Application and Research Centre. The analysis of the ions was performed by Metrohm Ion Chromatography System using EPA 300.1 method. Metal analyzes were read on the Agilent Technologies 7700 ICP-MS System using EPA 200.7 and EPA 200.8 methods (EPA, 1994).

Simpson's diversity index was used to determine the species diversity and the species richness of Rotifera in the reservoir. The Bray-Curtis similarity index was used to examine the similarities of the sampling of the months and the seasons according to the diversity and abundance of Rotifera species (Jaccard, 1912). Spearman's correlation was used to determine the relationship of Rotifera with each other and with environmental parameters (Krebs, 1999).

3. RESULTS

3.1. Physicochemical variables

The measured in the Kırklareli Reservoir of physicochemical parameters and their minimum, maximum and average values are given in Table 2. Variations of these physicochemical parameters according to the sampling stations and months are given in Figure 2. When the mean values of each physicochemical parameter measured in the reservoir were evaluated according to Water Pollution Control Regulations (Anonymous, 2015), it has been found to vary within normal ranges.

Table 2. The measured physicochemical parameters and their minimum, maximum and average values (*below the limit of detection).

	Abbreviation	**Min.**	**Max.**	**Average**
Water temperature (^{0}C)	WT	6.00	27.00	16.50 ± 7.66
Dissolved oxygen (mg/L)	DO	7.43	13.75	9.71 ± 1.83
Secchi disk depth (cm)	SD	66.67	336.67	198.33 ± 73.53
pH	pH	8.15	9.45	8.64 ± 0.49
Conductivity (µS cm/L)	EC	213.33	322.37	248.17 ± 30.10
Nitrite nitrogen (mg/L)	NO_2-N	*	0.05	0.02 ± 0.02
Nitrate nitrogen (mg/L)	NO_3-N	0.04	2.13	0.73 ± 0.71
Ortho-phosphate (mg/L)	PO_4-P	*	0.78	0.11 ± 0.23
Sulphate (mg/L)	SO_4^{2-}	9.71	10.57	10.12 ± 0.25
Calcium (mg/L)	Ca_2^+	3.04	22.31	13.66 ± 6.60
Magnesium (mg/L)	Mg_2^+	1.90	12.30	8.19 ± 3.87
Chlorophyll-*a* (µg/L)	Chl-*a*	2.31	13.09	5.96 ± 3.49

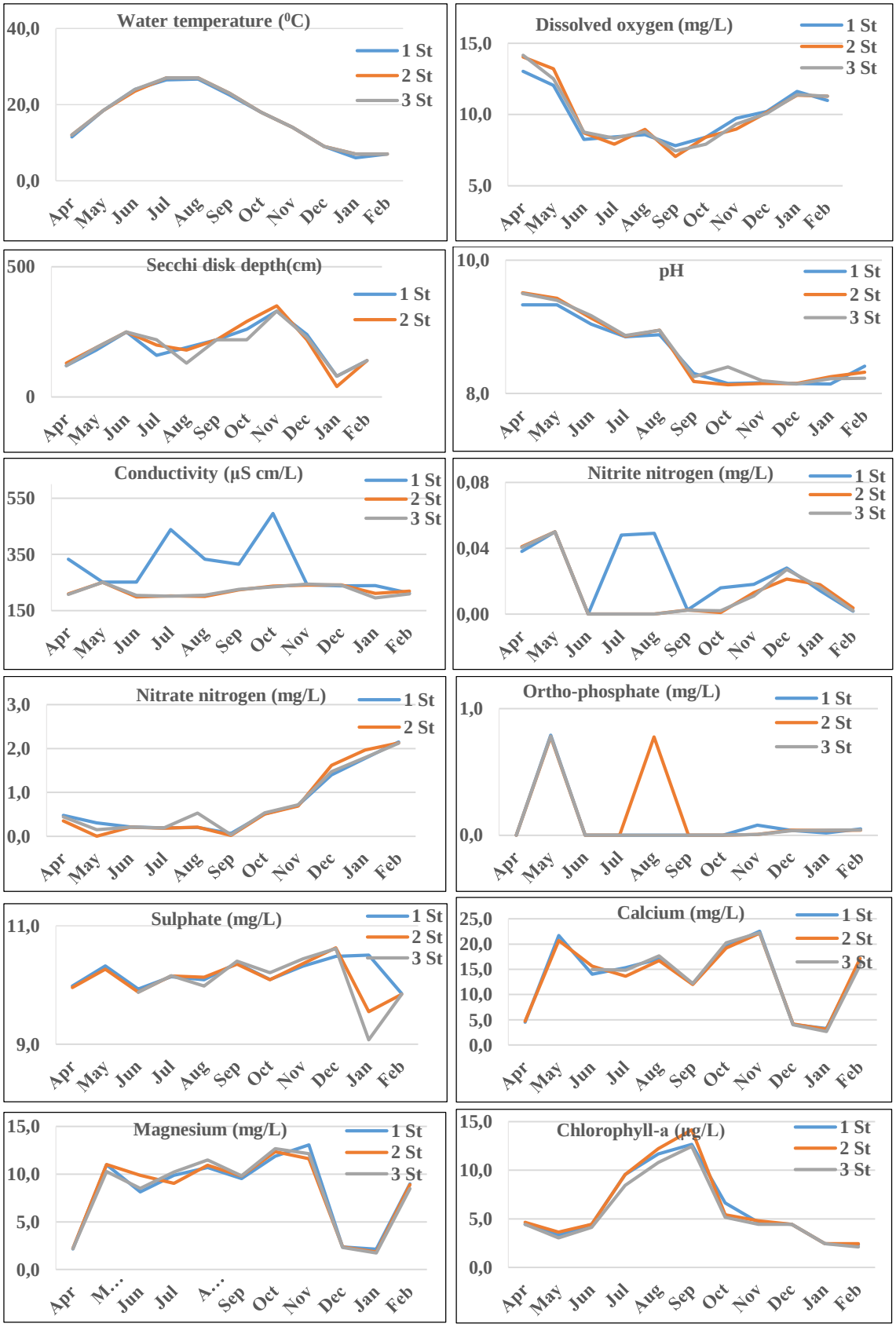

Figure 2. Variations of the physicochemical parameters according to the sampling stations and months.

3.2. Rotifer species composition and abundance

A result of the qualitative evaluation of the samples in Kırklareli Reservoir revealed the presence of 39 species belonging to Rotifera (Table 3).

When Rotifera species were evaluated in terms of the seasonal species richness, it was listed from the highest to lowest as 34 species in the summer season, 19 species in the autumn season, 14 species in the spring season, and 12 in the winter season.

According to the stations, the highest species number was found in 31 species in the 1st station, followed by the 2nd (30 species) and the 3rd stations (29 species). The maximum species diversity was recorded as 23 species in August, followed by June (16 species) and July (15 species) while the least diversity was found as 3 species in December and 2 species in January.

Table 3. The Rotifera species in Kırklareli Reservoir and the average values of their annual numbers per m^3.

ROTIFERA	**Annual average (ind/m^3)**	**%**
Anuraeopsis fissa Gosse, 1851	153 ± 483	0.6
Anuraeopsis navicula Rousselet, 1911	217 ± 442	0.9
Ascomorpha ecuadis Petry, 1850	844 ± 2558	3.4
Ascomorpha ovalis (Bengendahl, 1892)	193 ± 451	0.8
Ascomorpha saltans Bartsch, 1870	402 ± 933	1.6
Asplanchna priodonta Gosse, 1850	1592 ± 2452	6.4
Brachionus angularis Gosse, 1851	290 ± 667	1.2
Brachionus bidentatus Anderson, 1889	8 ± 25	0.02
Brachionus calyciflorus Pallas, 1766	185 ± 531	0.7
Brachionus falcatus Zacharias, 1898	8 ± 25	0.02
Brachionus plicatilis Müller, 1786	16 ± 51	0.1
Brachionus urceolaris Müller, 1773	225 ± 685	0.9
Colurella uncinata (Müller, 1773)	16 ± 51	0.1
Epiphanes macroura (Barrois & Daday, 1894)	8 ± 25	0.03
Euchlanis lyra Hudson, 1886	16 ± 51	0.1
Filinia longiseta (Ehrenberg, 1834)	161 ± 331	0.7
Gastropus minor (Rousselet, 1892)	113 ± 329	0.5
Hexarthra mira (Hudson, 1871)	32 ± 68	0.1
Kellicottia longispina (Kellicott, 1879)	6747 ± 20864	27.3
Keratella cochlearis (Gosse, 1851)	460 ± 587	1.9
Keratella quadrata (Müller, 1786)	499 ±1174	2.0
Keratella tecta (Gosse, 1851)	80 ± 254	0.3
Lecane bulla (Gosse, 1886)	80 ± 162	0.3
Lecane luna (Müller, 1776)	1685 ± 5065	6.8
Mytilina mucronata (Müller, 1773)	193 ± 284	0.8
Notommata glyphura Wulfert, 1935	8 ± 25	0.03
Polyarthra dolichoptera Idelson, 1925	6072 ± 18146	24.6
Polyarthra euryptera Wierzejski, 1891	16 ± 51	0.1
Polyarthra remata Skorikov,1896	724 ± 2233	2.9
Polyarthra vulgaris Carlin, 1943	796 ± 1820	3.2
Synchaeta oblonga Ehrenberg, 1832	1303 ± 1810	5.3
Synchaeta pectinata Ehrenberg, 1832	1206 ± 1437	4.9
Testudinella patina (Hermann, 1783)	24 ± 76	0.1
Trichocerca bicristata (Gosse, 1887)	24 ± 76	0.1
Trichocerca capucina (Wierjeski & Zacharias, 1893)	56 ± 132	0.2
Trichocerca cylindrica (Imhof, 1891)	80 ± 124	0.3
Trichocerca elongata (Gosse, 1886)	56 ± 132	0.2
Trichocerca iernis (Gosse, 1887)	24 ± 76	0.1
Trichocerca longiseta (Schrank, 1802)	113 ± 283	0.4
TOTAL	**24727 ± 35506**	**100**

The most common species in the reservoir was *A. priodonta* and was found for nine months. *S. oblonga* and *S. pectinata* were sampled for seven months and *K. cochlearis, K. quadrata, P. dolichoptera, P. vulgaris* and *M. mucronata* were sampled for five months. *A. fissa, B. bidentatus, B. falcatus, B. plicatilis, K. tecta, C. uncinata, P. euryptera, E. macroura, E. lyra, T. bicristata, T. iernis, N. glyphura,* and *T. patina*, were sampled only in one month during the study (Table 3). According to the Simpsons diversity index, while the maximum species diversity was recorded as, D=7.873 in August, followed by the June (D=6.272), May (D=6.013), February (D=4.183), and September (D=3.621), it's were found in the lowest value in November (D=1.44) and July (D=1.688).

The quantitative evaluation of the samples revealed an average value of 24727 ± 35506 ind/m^3 in the Kırklareli Reservoir. When the sampling months were evaluated based on average individual values per m^3, the maximum number of Rotifera was found in April (100584 ind/m^3) followed by July (97310 ind/m^3) and August (22754 ind/m^3), and the minimum was found in January (176 ind/m^3) followed by December (796 ind/m^3) and October (2035 ind/m^3) (Figure 3).

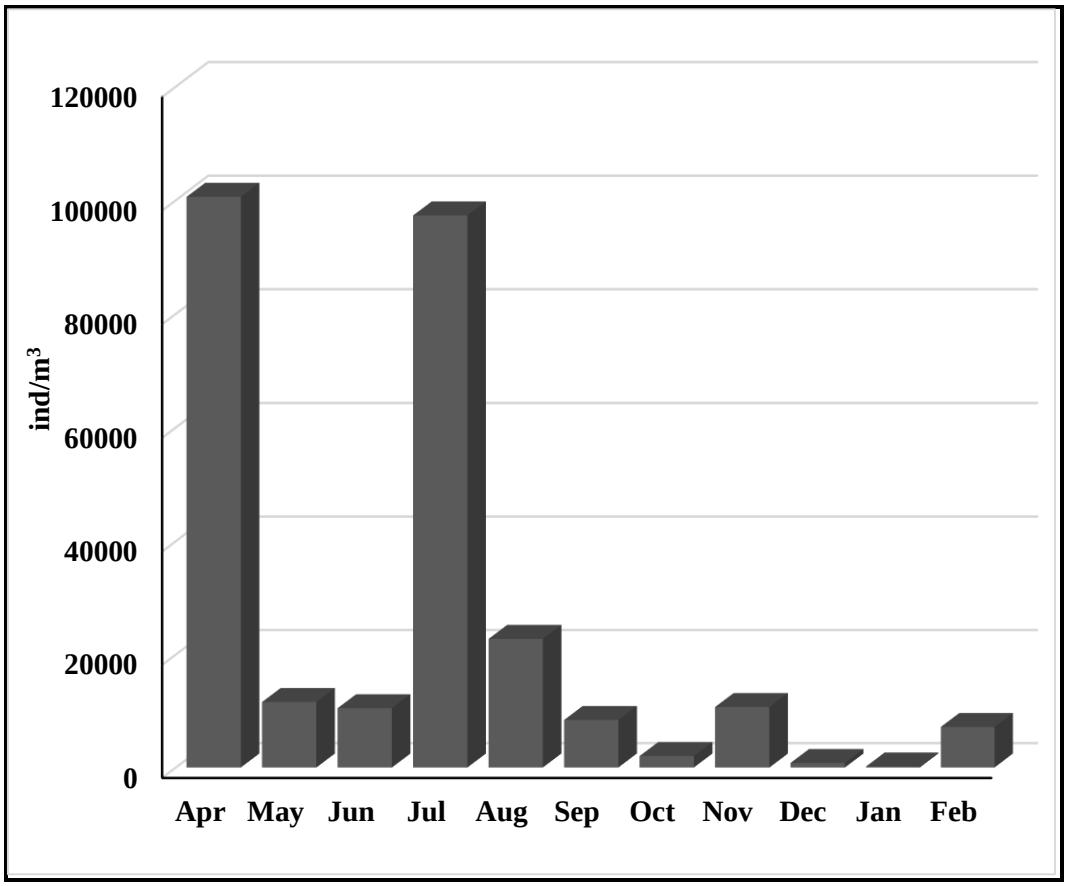

Figure 3. The abundance of Rotifera in Kırklareli Reservoir according to the sampling months.

According to the results of cluster analysis, the similarity between the month's ranges from 7 % to 60 %. The maximum organism number was found in the summer season (45690 ind/m^3), followed by the spring season (41924 ind/m^3) and autumn season (8239 ind/m^3), and the minimum was found in winter (3055 ind/m^3). The results of the cluster analysis showed that in autumn with winter (30 % similarity) and autumn with summer (18 % similarity) no obvious seasonal similarity has been identified (Figure 4).

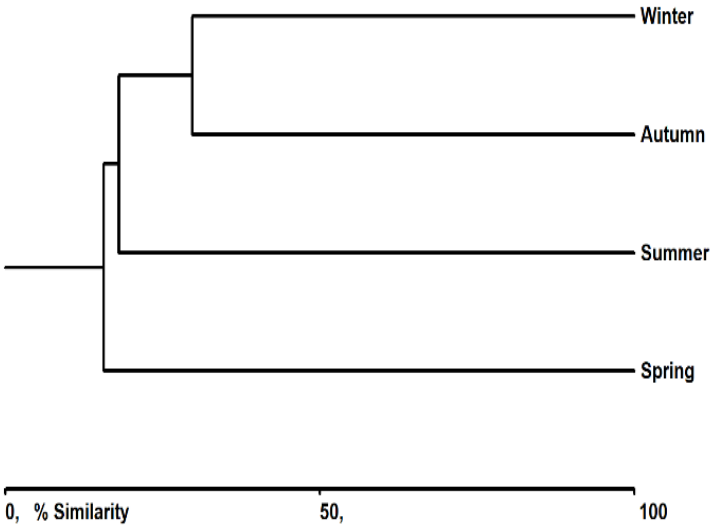

Figure 4. Cluster analysis showing the similarity index of Rotifera according to the seasonal.

The maximum number of Rotifera in Kırklareli Reservoir were recorded in the 1st station (38913 ind/m^3). This is followed by the 3rd and 2nd stations with 13806 ind/m^3 and 21462 ind/m^3, respectively. The Spearman's correlation was used to determine the relationship of Rotifera with environmental parameters. There was a positive correlation between Rotifera with pH (r=0.736) ($P< 0.01$), WT with Chl-*a* (r=0.673) ($P< 0.05$), DO with NO_2-N (r=0.651) ($P< 0.05$), Mg_2^+ with SD (r=0.645) ($P< 0.05$), EC with Chl-*a* (r=0.718) ($P< 0.05$), Ca_2^+ with Mg_2^+ (r=0.855) ($P< 0.01$) while there was negative correlation WT with DO (r=0.655) ($P< 0.05$) and NO_3-N (r=0.818) ($P< 0.01$), DO with Chl-*a* (r=0.709) ($P< 0.05$), EC with NO_3-N (r=0.664) ($P< 0.05$) (Table 4).

Table 4: According to Spearman's correlation analysis, the relationship between Rotifera and environmental parameters in Kırklareli Reservoir.

	Rotifera	WT	**DO**	**SD**	**pH**	**EC**	**NO_2N**	**NO_3N**	**PO_4**	**SO_4**	**Ca**	**Mg**	**Chl-*a***
Rotifera	1.000												
WT	**.600**	1.000											
DO	.045	**-.655***	1.000										
SD	-.118	.327	-.582	1.000									
pH	**.736****	.436	.236	-.391	1.000								
EC	.400	.582	-.464	.309	.191	1.000							
NO_2N	.321	-.165	**.651***	-.413	.202	.156	1.000						
NO_3N	-.555	**-.818****	.436	-.182	-.536	**-.664***	.000	1.000					
PO_4	-.114	-.248	.515	-.334	-.029	-.410	.433	.267	1.000				
SO_4	.064	.264	-.336	.591	-.345	.491	.183	-.391	-.010	1.000			
Ca	.291	.336	-.118	.482	.136	.255	-.128	-.173	.257	.173	1.000		
Mg	.200	.536	-.500	**.645***	-.055	.573	-.220	-.364	.019	.418	**.855****	1.000	
Chl-*a*	.382	**.673***	**-.709***	.364	-.027	**.718***	-.138	-.564	-.420	.518	.118	.545	1.000

**Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

4. DISCUSSION

As a result of the qualitative evaluation of the samples, 39 Rotifera species were found in Kırklareli Reservoir during the study period. All the species determined are recorded for the first time in Kırklareli Reservoir. According to Segers (2008); Ustaoğlu et al., (2012); Ustaoğlu (2015), and Güher (2014) all the species recorded in the present study show the widespread distribution in Turkey as well as all around the world. In this study, *A. priodonta, S. oblonga, S. pectinate, K. cochlearis, K. quadrata, P. dolichoptera, P. vulgaris* and *M. mucronata* were found the most common species in the

reservoir. The average 27.3 % of the total annual Rotifera abundance was composed of *K. longispina* in Kırklareli Reservoir followed by *P. dolichoptera* (24.6 %), *L. luna* (6.8 %), *A. priodonta* (6.4 %), *S. oblonga*, (5.3 %) and *S. pectinata* (4.9 %). The abundance of the rest of the identified species was less than 4 % individually and 24.2 % in total. In the studies carried out in Süleoğlu, Kadıköy and Kayalıköy reservoirs located in the same geographic area, 40, 32 and 33 Rotifera species were identified, respectively (Güher, 2015; Güher, 2019; Güher and Öterler, 2020). Similar results were found in this study.

In this study, the annual total number of the Rotifera was found as 24727 ± 35506 ind/m^3. The maximum Rotifera abundance was found in the summer season (45690 ind/m^3), followed by the spring season (41924 ind/m^3) and autumn season (8239 ind/m^3) and the minimum was found in winter (3055 ind/m^3). Considering the geographical region where Turkey is located, zooplankton organisms are expected to increase twice in spring and autumn during the year. But, in Kırklareli Reservoir, while Rotifera only reaches its maximum in the summer seasons, it decreases to a minimum in the winter season. In this study, the water temperature was recorded in the lowest value in winter and the highest in summer seasons. The Rotifera growth and abundance in the reservoir showed a positive correlation with WT and pH, because WT is the most important factor affecting the amount of nutrients and life in freshwater (Geller and Müller, 1981). Also, the Rotifera has a very short life cycle under suitable temperature, nutrient amount, and photoperiod conditions. Since rotifers have short breeding periods, their abundance increases rapidly under suitable environmental conditions.

To determine the trophic index of the lake, *Brachionus*:*Trichocerca* (QB/T) equality was used (Sladecek, 1983). According to this if the QB/T ratio = 1 the reservoir is considered as oligotrophic if the ratio is in the range of 1-2 the reservoir is mesotrophic and if the ratio is > 2 the reservoir is considered as eutrophic. In this study, Kırklareli Reservoir was determined (6 species of *Brachionus* and 6 species of *Trichocerca*) QB/T = 1. According to this, the reservoir showed oligotrophic property. In addition, *S. pectinata*, *P. vulgaris P. dolichoptera*, *K. cochlearis* and *A. priodonta* have been identified as the dominant species for oligotrophic conditions (Kolisko, 1974). These species were found to be common in this study. According to Sladecek (1983), *Brancionus* species indicate eutrophic habitat. They also suggested the Brachionidae family and *Brachionus* species as indicators of a highly trophic habitat. In Kırklareli Reservoir 10 species from Brachionidae were identified. For this reason, it can be said that the dam lake is closer to the eutrophic feature. However, the densities of *Brancionus* species were found to be very low in this study (Table 3).

pH is one of the important factors affecting the living life in water. In this study, the average pH value was found to be 8,64 ± 0,49 and the reservoir water was graded as alkaline water (Table 2). For the continuation of biological life in aquatic ecosystems, mean dissolved oxygen concentrations above 5 mg/L (Karpowicz and Ejsmont-Karabin, 2017) and the electrical conductivity values 250-500 µS/cm were reported to be the acceptable (Yücel, 1990). Accordingly, the values recorded in the reservoir were among the acceptable values to support aquatic life, especially the Rotifera community. Also, When the mean values of each physiochemical factor measured in the reservoir were evaluated according to Water Pollution Control Regulations (Anonymous, 2015), it was determined that the water quality of Kırklareli reservoir was generally compatible with the first-class water quality.

5. CONCLUSION

The Rotifera species in the Kırklareli Reservoir were evaluated both qualitatively and quantitatively. A total of 39 Rotifera species were determined in the qualitative evaluation of plankton samples. The maximum species diversity was recorded as 23 species in August, followed by June (16 species) and July (15 species) while the least diversity was found as 3 species in December and 2 species in January. The most common species in the reservoir were found *A. priodonta, S. oblonga, S. pectinata, K. cochlearis, K.quadrata, P. dolichoptera, P. vulgaris* and *M. mucronata.* The quantitative

evaluation of the samples revealed an average value of 24727 ind/m³ in the reservoir. While the maximum organism was found summer season (45690 ind/m^3) at 1st station (38913 ind/m^3) and in April (100584 ind/m^3), the lowest value was found winter season (3055 ind/m^3) in 3rd station (13806 ind/m^3) and in January (176 ind/m^3). When we evaluate the species identified in the reservoir, the distribution of the individuals that make up the Rotifera fauna, and physical-chemical parameters as a whole, it has been concluded that Kırklareli Reservoir is in oligomesotrophic character.

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CONFLICT OF INTEREST

There is no conflict of interest in this study.

AUTHOR CONTRIBUTIONS

No other contributors to this work.

ETHICAL STATEMENTS

Local Ethics Committee Approval was not obtained because experimental animals were not used in this study.

DATA AVAILABILITY STATEMENT

Research data is not shared.

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