

Microcrustacean Fauna of Lake Sazlıgöl (Menemen, İzmir)

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Abstract: Thirty-five microcrustacean taxa, comprising 21 species of cladocerans, eight species and one subspecies of copepods, and five species of ostracods were identified from Lake Sazlıgöl during a 17-month research period in 1998-1999. Of these species, *Eucypris ornata* (Müller, 1776) (Ostracoda) was recorded as new species for the freshwater fauna of Turkey.

Key Words: Crustacea, Cladocera, Copepoda, Ostracoda, Fauna, Sazlıgöl

Sazlıgöl'ün (Menemen, İzmir) Mikrokrustase Faunası

Özet: Sazlıgöl'de 1998-1999 yılları arasındaki 17 aylık araştırma periyodu boyunca, 21 tür kladoser, 8 tür ve 1 alttür kopepod ve 5 tür ostrakod olmak üzere toplam otuzbeş takson saptanmıştır. Bu türlerden, *Eucypris ornata* (Müller, 1776) (Ostracoda) Türkiye tatlısu faunası için yeni kayıtadır.

Anahtar Sözcükler: Crustacea, Cladocera, Copepoda, Ostracoda, Fauna, Sazlıgöl

Introduction

Turkey has a remarkable bio-diversity because of its geographical and climatic status.

Presently, these assets are in danger. The destruction of many natural habitats has increased rapidly because of the pollution of water, air and soil, irregular structure, and faulty land use. Our biological diversity is under threat and certain species are endangered.

Turkey has very rich inland water sources. Many studies have been carried out with the purpose of identifying cladoceran, copepod and ostracod species in many lakes in several regions. However, there is no study dealing with these groups in Lake Sazlıgöl.

In recent years, very fast urbanization has been occurring in the area surrounding Lake Sazlıgöl. As a result, the water level of this lake has changed and organic pollution has increased, possibly affecting the present fauna and flora of the lake. The effects which may have negative or positive influences on the lake's aquatic richness will be shown during future studies comparing results with those from the present study.

The purpose of this study was to contribute to the knowledge of the species richness of Lake Sazlıgöl by investigating the microcrustacean fauna.

Materials and Methods

To identify the microcrustacean fauna of Lake Sazlıgöl, specimens were collected monthly, using a hand dip-net with a mesh size of 60 µm, and the materials were immediately fixed in 4% formaldehyde. The samplings were performed between February 1998 and July 1999.

Identification of the species was performed according to various publications (1-19). Water temperature was measured using a thermometer with 0.1 °C sensitivity. The pH values were obtained using a Hanna 8014 pH meter. Dissolved oxygen concentration (Winkler method) and salinity evaluations (Mohr-Knudsen method) were performed by volumetric methods.

Properties of the Study Area

Lake Sazlıgöl is located at sea level (38°35'54"N; 26°54'20"E) in the delta of Gediz River, on the

northwestern part of İzmir province. Because the lake is very shallow, its water is wholly under the influence of environmental abiotic factors such as light, air temperature and rainfall. The surface of the lake is covered by aquatic vegetation, particularly in the summer with the decreasing water level and increasing temperature.

The water temperature of the lake ranged from 11 °C (December 1998) to 32.5 °C (May 1998). Measurements of the water samples were taken from the site giving pH, dissolved oxygen concentration and salinity values of 7.42 (May 1999) to 8.84 (July 1999), 4.2 mg/l (April 1999) to 16 mg/l (March 1999), 1.11‰ (May 1999) to 2.41‰ (August 1998), respectively.

Results

The samples collected during the research period indicated the presence of 21 species of cladocerans: *Ceriodaphnia reticulata* (Jurine, 1820); *C. laticaudata* P.E. Müller, 1867; *Daphnia longispina* O.F. Müller, 1785; *D. hyalina* Leydig, 1860; *D. curvirostris* Eylmann, 1887; *D. magna* (Straus, 1820); *Megafenestra aurita* (Fischer, 1849); *Simocephalus vetulus* (O.F. Müller, 1776); *S. exspinosus* (Koch, 1841) belonging to the family Daphnidae; and *Macrothrix laticornis* (Fischer, 1851); *M. hirsuticornis* Norman & Brady, 1867; and *M. groenlandica* Lilljeborg, 1900; belonging to the family Macrothricidae; and *Acroperus harpae* (Baird, 1843); *Alonella nana* (Baird, 1850); *A. excisa* (Fischer, 1854); *Disparalona rostrata* (Koch, 1841); *Chydorus sphaericus* (O.F. Müller, 1776); *Dunhevedia crassa* King, 1853; *Oxyurella tenuicaudis* (Sars, 1862); *Pleuroxus aduncus* (Jurine, 1820); and *Tretocephala ambigua* (Lilljeborg, 1900) belonging to the family Chydoridae. There were eight species and one subspecies of copepods: *Arctodiaptomus stephanidesi bulgaricus* (Kiefer, 1971) belonging to the family Diaptomidae, and *Canthocamptus staphylinus* (Jurine, 1820) belonging to the family Canthocamptidae, and *Eucyclops macruroides* (Lilljeborg, 1901), *Megacyclops viridis* (Jurine, 1820), *Metacyclops gracilis* (Lilljeborg, 1853), *Cryptocyclops bicolor* (Sars, 1863), *Thermocyclops dybowskii* (Landé, 1890), *Microcyclops rubellus* (Lilljeborg, 1901), and *Cyclops abyssorum* Sars, 1863, belonging to the family Cyclopidae; and five species of ostracods: *Eucypris virens* (Jurine, 1820), *E. ornata* (Müller, 1776), *Herpetocypris chevreuxi* (Sars, 1896), and *Cypris pubera* Müller, 1776,

belonging to the family Cyprididae; and *Cypria ophthalmica* (Jurine, 1820) belonging to the family Candonidae. The data showing the monthly occurrence of the taxa identified in Lake Sazlıgöl, are given in the Table.

Discussion and Conclusions

In this study, 35 microcrustacean taxa, comprising 21 species of cladocerans, eight species and one subspecies of copepods, and five species of ostracods, were identified from Lake Sazlıgöl.

As shown in the Table, the number of species increased between early winter (November) and late spring (May). This was probably caused by an increase in water level due to rainfall and a decrease in water temperature.

No study has been carried out on the microcrustacean fauna of Lake Sazlıgöl; therefore, all taxa are new records for the study area. Of these, *E. ornata* is a new record for the freshwater fauna of Turkey.

Because of the unclear systematic position of *Arctodiaptomus stephanidesi bulgaricus* (Kiefer, 1971) in Turkey, it is necessary to present some remarks on this species. The first description of *Arctodiaptomus (Rh.) sensibilis* from İzmir (Güzelyalı and Karagöl) was given by Mann (6). After that, *A. (Rh.) sensibilis* was synonymized with *Arctodiaptomus stephanidesi* (Pesta, 1935) by Kiefer (13). According to this, *A. stephanidesi* exists in the western part of Anatolia (14). However, this opinion is erroneous, because *Arctodiaptomus (Rh.) sensibilis* first described by Mann (6) is a synonym of *A. stephanidesi bulgaricus*, rather than of *A. stephanidesi*. If the distinguishing features of *A. (Rh.) sensibilis*, *A. stephanidesi* and *A. stephanidesi bulgaricus* are compared, the above situation is revealed clearly. For instance, in *A. stephanidesi bulgaricus*, the 14th segment of the right antennule of the male is without a spine or tooth; this feature is consistent with the drawings of *A. (Rh.) sensibilis* given by Mann (6). However, in *A. stephanidesi* the 14th segment of the right antennule of the male bears a spine or tooth. As a result, the species that was recorded previously by Mann (6), Kiefer (13) and Reddy (14) from western Anatolia is a synonym of *A. stephanidesi bulgaricus*, rather than of *A. stephanidesi*.

E. ornata is a typical spring form in seasonal waters and was recorded previously from Sweden, Germany,

Table. The monthly occurrence of the microcrustacean taxa identified in Lake Sazlıgöl.

Species	1998										1999						
	F	M	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
CLADOCERA																	
<i>Ceriodaphnia laticaudata</i>	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-
<i>C. reticulata</i>	+	+	+	+	-	-	+	+	+	+	+	+	+	+	-	+	+
<i>Daphnia longispina</i>	-	+	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-
<i>D. hyalina</i>	-	-	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>D. curvirostris</i>	+	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
<i>D. magna</i>	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>Megafenestra aurita</i>	+	-	-	-	-	-	-	-	+	+	+	+	+	-	-	-	-
<i>Simocephalus vetulus</i>	-	-	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+
<i>S. exspinosus</i>	+	+	-	-	-	-	+	+	+	+	+	+	-	+	-	-	-
<i>Macrothrix laticornis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
<i>M. hirsuticornis</i>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>M. groenlandica</i>	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>Acroperus harpae</i>	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Alonella nana</i>	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>A. excisa</i>	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+
<i>Disparalona rostrata</i>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Chydorus sphaericus</i>	+	+	+	-	-	-	-	-	+	-	+	+	+	+	-	+	+
<i>Dunhevedia crassa</i>	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	+	+
<i>Oxyurella tenuicaudis</i>	+	+	+	-	-	-	-	-	+	+	+	+	+	+	-	-	-
<i>Pleuroxus aduncus</i>	-	+	+	-	-	-	-	-	+	+	+	+	+	+	-	-	+
<i>Tretocephala ambigua</i>	-	+	-	+	-	-	-	+	+	-	+	+	+	+	-	-	+
COPEPODA																	
<i>Arctodiaptomus</i>																	
<i>stephanidesi bulgaricus</i>	+	+	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
<i>Canthocamptus staphylinus</i>	-	+	-	-	-	-	-	-	+	+	+	-	-	+	-	-	-
<i>Eucyclops macruroides</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
<i>Megacyclops viridis</i>	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+
<i>Metacyclops gracilis</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+	+	-
<i>Cryptocyclops bicolor</i>	-	-	-	+	+	-	+	+	-	-	-	-	+	+	+	+	+
<i>Thermocyclops dybowskii</i>	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	+	-
<i>Microcyclops rubellus</i>	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-
<i>Cyclops abyssorum</i>	+	-	-	-	-	-	-	+	-	+	+	+	-	-	-	-	-
OSTRACODA																	
<i>Eucypris virens</i>	+	+	+	-	-	-	-	-	-	-	+	+	+	+	+	-	-
<i>E. ornata</i>	+	+	+	-	-	-	-	-	-	-	-	+	+	+	+	-	-
<i>Herpetocypris chevreuxi</i>	+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	+
<i>Cypris pubera</i>	+	+	+	-	-	-	-	-	-	+	+	+	+	+	+	-	-
<i>Cypria ophthalmica</i>	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-

Switzerland, and England (17). According to previous studies of freshwater ostracod fauna in Turkey (19-28), only eight species of *Eucypris* (*E. clavata*, *E. virens*, *E.*

inflata, *E. lutaria*, *E. lilljeborgi*, *E. hamadanensis*, *E. serrata* and *E. pigra*) have been recorded. *E. ornata* was the first record for the western Anatolia in Turkey.

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