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Zooplankton of Çat Dam Lake (Malatya-Turkey) with a new record for Turkish rotifers *Lecane intrasinuata* (Olofsson, 1917)

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Introduction

There are many studies on the zooplankton of Turkish lakes, many of which are about seasonal fluctuations, distribution and hydrological changes. In recent years many scientists focused their attention on the zooplankton of Turkish inland waters (Dumont and De Ridder, 1987; Segers *et al*., 1992**).**

The family Lecanidae consists of one genus, *Lecane* Nitzsch, 1827 with about 200 species. This genus is the most common rotifer species inhabiting in various aquatic environments (Segers 1994, 1995, 2008). They are from Monogonont rotifers and are diagnosed by the retractile head, the structure of the foot and toes and by the trophy in the female (Segers, 1995). Lecanids have got a loricate body and the body is compressed dorso-ventrally. The dorso-ventral plates are connected by a flexible membrane. The feet have got two primitive segments of which only the posterior is movable. Toes varied remarkably within individuals of the same species (Arora, 1965). Their bodies resemble each other which causes difficulties in identifying species (Segers *et al*., 1992).

Materials and methods

Çat Dam Lake was established on Abdulvahap Stream for irrigation and is located 68 km south of Malatya. The Dam lake volume is 240 hm^3 and lake area is 14 km^2. Sampling stations are shown in Fig. 1, and listed with sampling coordinates in Table 1.

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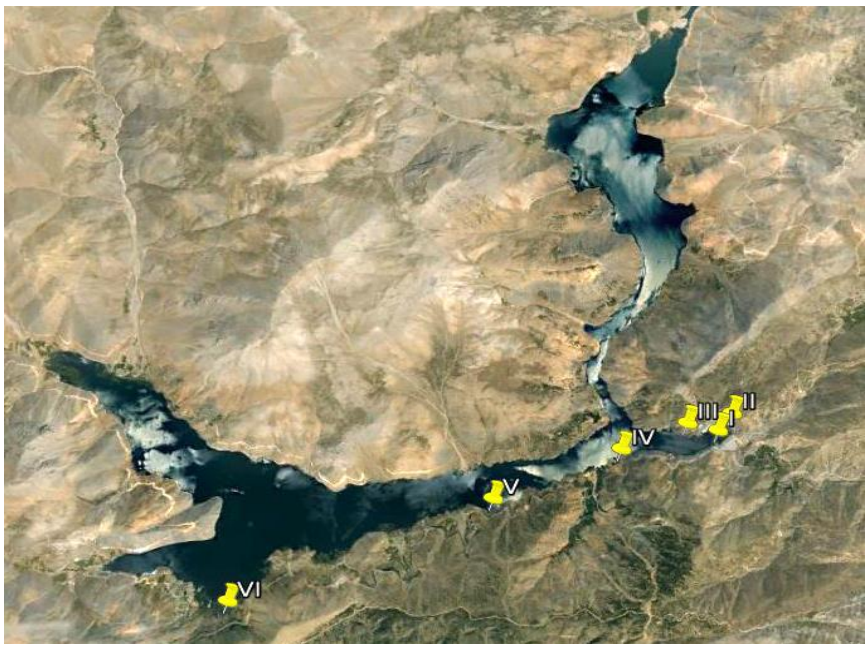

Figure 1: Çat Dam Lake and the sampling stations.

Table 1: Sampling coordinates.

Stations	Coordinates
I	38° 4′40.22″N, 38° 18′38.11″E
II	38° 4′12.73″N, 38° 18′45.48″E
III	38° 4′70.93″N, 38° 18′21.27″E
IV	38° 3′55.05″N, 38° 17′46.73″E
V	38° 3′30.98″N, 38° 16′38.55″E
VI	38° 2′40.49″N, 38° 14′17.52″E

Plankton samples were collected using a standard Hydro-bios plankton net (55 µm mesh size) from Çat Dam Lake on 02.20.2013 from six stations. Zooplankton samples were fixed in 4 % formalin solution. Specimens were analysed under Leitz inverted microscope and identified under Nicon Eclipse 80i microscope and drawings were made using camera lucida.

Results and discussion

From Çat Dam Lake, 19 zooplankton species (15 species from Rotifera, 2 species from Cladocera and 2 species from Copepoda) were identified. The species *L. intrasinuata* was not reported in any study in Turkey until now (Ustaoğlu *et al*., 2012; Ustaoğlu, 2015). Therefore, this species is a new record for the Turkish rotifer fauna.

List of zooplankton species recorded in Çat Dam Lake was given below.

Phylum Rotifera Cuvier, 1817

Class Euroatoria De Ridder, 1957

Subclass Monogononta Plate, 1889

Superorder Pseudotocha Kutikova, 1970

Order Ploimia Hudson & Gosse, 1886

Family Brachionidae Ehrenberg, 1838

Genus Keratella Bory de St Vincent, 1822

Keratella cochlearis (Gosse, 1851)

K. tecta (Lauterborn, 1900)

K. quadrata (Müller, 1786)

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Genus *Notholca* Gosse, 1886
Notholca squamula (Müller, 1786*)*
Genus *Kellicottia* Ahlstrom, 1938
Kellicottia longispina (Kellicott, 1879)
Family Euchlanidae Ehrenberg, 1838
Genus *Euchlanis* Ehrenberg, 1832
Euchlanis dilatata Ehrenberg, 1832
Family Lecanidae Remane, 1933
Genus *Lecane* Nitzch,1827
Lecane luna (Müller, 1776)
L. lunaris (Ehrenberg, 1832)
L. intrasinuata (Olofsson, 1917)
Family Trichocercidae Harring, 1913
Genus *Trichocerca* Lamarck, 1801
Trichocerca capucina Wierzejski & Zacharias, 1893
Trichocerca similis (Wierzeski, 1893)
Family Synchaetidae Hudson & Gosse, 1886
Polyarthra dolichoptera (Idelson, 1925)
Family Asplanchnidae Eckstein, 1883
Genus *Asplanchna* Gosse, 1850
Asplanchna priodonta Gosse, 1850
Superorder Gnesiotrocha Kutikova, 1970
Order Floscullariacea Harring, 1913
Family Conochilidae Harring, 1913
Genus *Conochilus* Ehrenberg, 1834
Conochilus dossuarius (Hudson, 1885)
Family Filinidae Harring & Myers, 1926
Genus Filinia Bory de St. Vincent, 1824
Filinia terminalis (Plate, 1886)
Phylum Arthropoda Latreille, 1829
Subphylum: Crustacea Brünnich, 1772
Subclass Phyllopoda Preuss, 1951
Order Diplostraca Gerstaecker, 1866
Suborder Cladocera Latreille, 1829
Family Daphniidae Sars, 1865
Genus *Daphnia* Müller, 1785
Daphnia longispina Müller, 1875
Family Bosminidae Baird, 1845
Genus *Bosmina* Baird, 1845
Bosmina longirostris (Müller, 1785)
Class Maxillopoda Dahl, 1956
Subclass Copepoda H.Milne-Edwaeds, 1840
Infraclass Neocopepoda Huys & Boxshall, 1991
Superorder Gymnoplea Giebesbrecht, 1882
Order Calanoida Sars, 1930
Family Diaptomidae Sars, 1903
Genus *Acanthodiaptomus* Kiefer, 1932
Acanthodiaptomus denticornis (Wierzejski, 1887)
Superorder Podoplea Giesbrecht, 1882
Order Cyclopoida Sars, 1918
Family Cyclopoidae Sars, 1913
Subfamily Cyclopinae Kiefer, 1927
Genus *Cyclops* Müller, 1785
Cyclops vicinus Uljanin, 1875

Distribution of zooplankton species among 6 stations in Çat Dam Lake is given in Table 2.

Table 2: Distribution of zooplankton species among 6 stations in Çat Dam Lake.

Species	Stations					
	I	II	III	IV	V	VI
Rotifera						
A. priodonta	+	+			+	+
C. dossuarius	+					
E. dilatata			+			
F. terminalis				+		

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Table 2 continued:						
K. longispina	+	+		+	+	+
K. cochlearis	+	+	+	+	+	+
K.quadrata	+	+	+	+	+	+
K. tecta			+			
L. luna			+			
L. lunaris	+		+			
**L. intrasinuata*			+		+	
N. squamula				+		
P. dolichoptera	+		+	+		
T. capucina			+			
T. similis				+		
Cladocera						
B. longirostris	+	+	+	+	+	
D. longispina		+	+			
Copepoda						
A. denticornis		+				
C. vicinus	+	+	+	+	+	+

Family Brachionidae was found as the most dominant group (with 5 species, *K. cochlearis*, *K. quadrata*, *K. tecta*, *K. longispina* and *N. squamula*). In some dam lakes like Göksu (Bekleyen, 2003), Cip (Saler and Şen, 2000), Birecik (Bozkurt and Sagat, 2008), Beyhan (Bulut and Saler 2014), Kalecik (Bulut and Saler 2013) Dam Lakes species from Brachionidae represented most of the species.

In Çat Dam Lake *K.cochlearis* and *K. quadrata* were the most abundant species in this study followed by *Lecane* spp. Among zooplankton groups Rotifera was observed in high number of individuals and species diversity. This profile was in accordance with zooplankton distribution of dam lakes in Turkey (Bekleyen, 2003; Kaya and Altındağ, 2007; Özdemir Mis *et al.*, 2009; Saler and İpek Alış, 2014; Saler *et al*., 2014).

The first Turkish inland water zooplankton list was made by Emir (1996) and she reported 167 species. Ustaoğlu (2004), reported 229 rotifer species from Turkish inland waters. In the Tigris River Bekleyen *et al*. (2011) identified 34 new Rotifer species. Ustaoğlu *et al*. (2012) recorded 341 rotifer taxa from Turkey. Ustaoğlu (2015), updated the rotifer species number as 417. Among these rotifer species *L. intrasinuata* has not been mentioned (Fig. 2).

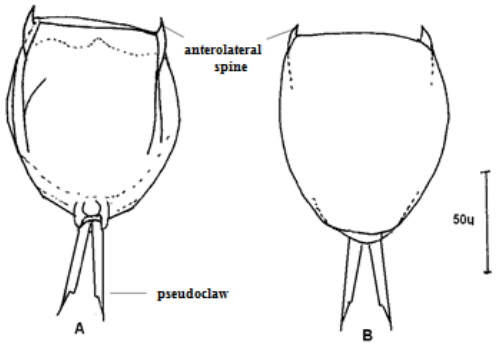

Figure 2: General view of *Lecane intrasinuata* A. Ventral B. Dorsal.

Family Lecanidae Remane, 1933

Lecane intrasinuata (Olofsson, 1917)

Syn: *L. ephestra* Harring, 1921

Syn: *L.mylacris* Harring & Myers, 1926 (Segers, 2007).

The features of *L. intrasinuata* were given below.

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Differential diagnosis

L. intrasinuata is confused with *L. stichaea. L. intrasinuata* has got a smooth lorica and the width of its lorica is greater than that of *L. stichae*. Its ventral plate width is about two thirds of its length and the plate is slightly swollen. The foot is shorter than in *L. flexilis,* and the presence of pseudoclaws distinguishes the species from *L. haliclysta, L. stichoclysta* and *L. verecunda.*

Description

Lorica is stiff, dorsal plate is anteriorly narrower, and medially wider than the ventral plate. The plate is smooth. Head aperture margins are dorsally and ventrally slightly convex or straight, coincident, with small antero-lateral spines. Ventral plate is longer than its width. Lateral margins curved, irregularly undulate, with anterior notches. Toes are parallel-sided, bearing pseudoclaws.

Measurements

DPI. 52-135, DPw. 68-101, VPI. 56-125, VPw. 36-76, toe 15-26, claw 4-6.

Distribution

According to Segers (1995), it was found in the northern temperate zone only. He also reported a record from a pond near Alexandrowsk from Norway Fig. 2.

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