



## **The Rotifera fauna from Algeria**

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**Received:** 23 November 2010 / **Accepted:** 07 December 2010 / **Published online:** 02 February 2011

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### **Abstract**

With the aim of identifying the rotifer fauna of Lake Boukourdane (Algeria), samples were collected between April 2005 and March 2007 using a plankton net with a mesh size of 75  $\mu\text{m}$ , and were preserved in 5% formaldehyde.

As a result, 78 taxa in 16 families were identified, and 36 are new recorded species for Algeria water fauna.

**Key words:** Rotifera, Qualitative composition, Lake Boukourdane, Algeria.

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**Article citation:**

**Hamaidi\* F, Hamaidi MS., Benouaklil F and Saidi F.** 2011.  
The Rotifera Fauna from Algeria. *BioResearch Bulletin* 4: 236-244.



## INTRODUCTION

In the lake ecosystems, zooplanktonic organisms which form the second step of the food chain are important food sources of some invertebrate animals and fishes. Copepods, cladocerans and rotifers are the main groups of zooplanktons.

Rotifera is one of the most interesting groups of freshwater invertebrates. They are characterized by a corona and a specialized pharynx called a mastax which serves as a jaw. Their size ranges between 45 $\mu$ m and about 2.5mm, the most common length being 100-500 $\mu$ m. Bacteria, small algae, flagellates and detritus filtered from the water are the most common food.

It has been indicated by some scientists that certain species of rotifers have indicator characteristics showing water quality, pollution and eutrophication (Kolkwitz & Marsson, 1902, 1908, 1909; Sladeczek, 1956, 1977, 1978, Berzins & Pejler, 1987 and Mikschi, 1989).

Studies on rotifers have been conducted in Algeria by Maupas (1889), Gurney (1909), Gauthier (1928) and Seurat (1930). As a conclusion, 37 taxa of rotifers were known from

Algeria, when De Ridder (1991) started the investigations between 1976 and 1978. The number of rotifers taxa known is raised from 37 to 131. Of them are cosmopolitan, 20% are thermophilus with large distribution and 12% are pansubtropical-pantropical., Samraoui and *al.*, (1998) studied the eastern region of Algeria, and determined 19 new species. The number of known rotifers nowadays is about 150 species.

This study was carried out with the aim of identifying the rotifer fauna of Lake Boukourdane, which is located in Tipaza and of contributing to Algeria water fauna.

## MATERIAL AND METHODS

Lake Boukourdane is located 50 Km North-West of Algiers (**Fig.1**). The reservoir was constructed in 1985 on the bed of lake El-Hachem for the aim of supplying of drinking water, as well as the irrigation of the valley of lake El-Hachem and of the regions of Hadjout and the Sahel (National agency of dams). It is supplied by two principal lakes: lake Menaceur and lake Fedjana with a maximum depth of 40 m.



Fig. 1: Geographical location of the study area.



Sampling was carried out using the plankton net of mesh size 75 µm between April 2005 and Marsh 2007. Specimens were fixed in 5% formaldehyde for investigation.

The taxonomical investigations of samples were performed according to the key given by Ruttner-Kolisko (1974), Kost (1978) and Pourriot and Francez (1986). Water temperatures were measured with a thermometer sensitive to 0.1°C. pH and conductivity measurements were performed with a W.T.WPH340 and PHYWE conductivimeter. Dissolved oxygen concentrations were also measured. Spectrophotometer was used to determine chlorophyll a. Nitrate, nitrite and phosphate analyses were done spectrophotometrically under laboratory conditions (Wood, 1975; Parsons and al., 1984).

Sampling in October 2006, February and Marsh 2007 was not performed, because of the weather conditions were not suitable.

## RESULTS AND DISCUSSION

During 20 months of research it was determined that the surface water temperature in the lake ranged from 9°C to 27.8°C, dissolved oxygen concentrations from 69% to 100%, pH from 6.30 to 8.10 and chlorophyll a from 0.52 µg/l to 6.6 µg/l. Among nutrients, NO<sub>2</sub><sup>-</sup> at 0 – 0.088 mg/l, NO<sub>3</sub><sup>-</sup> at 0 – 11 mg/l and PO<sub>4</sub><sup>-3</sup> at 0 – 2.142 mg/l were measured.

The lowest electrical conductivity (EC) was 0.69 – 0.90 Ms/m.

As a result of qualitative determinations 16 families, 24 genera and 79 species were identified. Classifications of these taxa are as follows:

### Symbols

\*= Species new to Algeria

Phylum: Rotifera

Classis: Monogonata

Order: Ploima

### Familia: Brachionidae

*Brachionus bidentata bidentata* (Anderson, 1889)

*Brachionus calyciflorus calyciflorus* (Pallas, 1766)

*Brachionus quadridentatus quadridentatus* (Herman, 1783)

*Keratella cochlearis var hispida* (Lauterborn, 1900)

\**Keratella hiemalis* Carlin, 1943

*Keratella quadrata quadrata* (O.F.M., 1786)

\**Keratella mixta mixta* (Oparina-Charitonova, 1925)

\**Keratella ticinensis* (Callerio, 1920)

\**Notholca foliacea* (Ehrenberg, 1838)

*Notholca squamula* (O.F.M., 1786)

*Notholca sp.*

### Familia: Mytilinidae

\**Mytilina bisulcata* (Lucks, 1912)

*Mytilina mucronata* (O.F.M., 1773)

\**Mytilina mutica* (Perty, 1849)

\**Lophocharis oxystemon* (Gosse, 1851)

\**Lophocharis salpina* (Ehrenberg, 1834)

### Familia: Asplanchnidae

*Asplanchna priodonta* (Gosse, 1850)

### Familia: Euchlanidae

*Euchlanis dilatata dilatata* (Ehrenberg, 1832)

\**Euchlanis deflexa deflexa* (Gosse, 1851)

*Euchlanis incisa incisa* (Carlin, 1939)

\**Euchlanis lyra* Hudson, 1886

*Euchlanis triquetra* Ehrb., 1838

*Euchlanis sp.*

### Familia: Trichotriidae

*Trichotria tetractis* (Ehrb., 1830)

*Trichotria sp.*

### Familia: Colurellidae

*Colurella colurus* (Ehrb., 1830)

\**Colurella dicentrata* (Gosse, 1886)

*Colurella sp.*

*Lepadella acuminata acuminata* (Ehrb., 1834)

\**Lepadella adjuncta* Donner, 1943

*Lepadella ovalis* (O.F.M., 1786)

*Lepadella patella patella* (O.F.M., 1786)

\**Lepadella quadricarinata quadricarinata* (Sternroos, 1898)

\**Lepadella triba* Myers, 1934

*Lepadella sp.*

\**Heterolepadella heterodactyla* Fadeew, 1925

### Familia: Notommatidae

*Cephalodella catellina* (O.F.M., 1786)

*Cephalodella gibba gibba* (Ehrb., 1832)

\**Cephalodella intuta* Myers, 1924

\**Cephalodella nana* Myers, 1924

*Scaridium longicaudum* (O.F.M., 1786)

\**Wierzejeskiella sabulosa*

### Familia: Trichocercidae

\**Trichocerca cylindrica cylindrica* (Imhof, 1891)

\**Trichocerca (Diurella) collaris* (Rouss.)

\**Trichocerca (D.) ruttneri* (Donner, 1953)

\**Trichocerca stylata* (Gosse, 1851)

\**Trichocerca (D.) tigris* (O.F.M., 1786)

### Familia: Synchaetidae

\**Polyarthra bicerca* Wulfert, 1952

*Polyarthra dolichoptera* (Idelson, 1925)

*Polyarthra remata* (Skorikov, 1896)

*Polyarthra vulgaris* (Carlin, 1943)

**Familia: Lecanidae**

- \**Lecane (Monostyla) aguessi* (De Ridder)  
*Lecane (M) bulla* (Gosse, 1886)  
*Lecane (M) closterocerca* (Schmarda, 1859)  
\**Lecane (M) lamellata thalera* (H. & M., 1926)  
*Lecane luna* (O.F.M., 1786)  
*Lecane (M) lunaris* (Ehrb., 1832)  
\**Lecane (M) lunaris var. constricta* (Murray, 1913)  
*Lecane (M) lunaris var. crenata* (Harring, 1913)  
\**Lecane monostyla* (Daday, 1897)  
\**Lecane (M) physalis* Wulfert, 1939.  
\**Lecane submagna* De Ridder, 1960  
*Lecane sp1*  
*Lecane sp2*  
*Lecane sp3*

**Familia: Gastropodidae**

- \**Gastropus stylifer* Imhof, 1891

Order : Gnesiotrocha

**Familia: Testudinellidae**

- Pompholyx sulcata* (Hudson, 1885)  
\**Testudinella carlini* Bartos, 1951  
\**Testudinella coeca* (Parsons, 1892)  
\**Testudinella emarginula* (Stenroos, 1898)  
\**Testudinella insinuata* Hauer, 1937  
*Testudinella patina patina* (Hermann, 1783)

**Familia: Conochilidae**

- Conochilus hippocrepis* (Schrank, 1803)

**Familia: Hexarthridae**

- Hexarthra fennica* (Levander, 1892)  
*Hexarthra sp*

**Familia: Collotheceidae**

- \**Collothecha stephanochaeta* Edmondson

**Familia: Filiniidae**

- Filinia longiseta* (Ehrb., 1834)  
*Filinia pejleri* (Hutchinson, 1964).

When we investigated the check lists of the De Ridder (1991) and Samraoui and *al.*, (1998), it transpired that 36 species are new for Algerian water fauna.

While examining the monthly distributions of samples collected from lake Boukourdane which are given in the table, the most rotifers were found in May 2006 (53 taxa) and the least were found in August 2005 (4 taxa). While *Mytilina mucronata*, *Polyarthra remata*, *Lecane luna* and *Testudinella patina patina* were determined for the 19 months of the study period. *Keratella cochlearis var hispida*, *Keratella hiemalis*, *Keratella mixta mixta*, *Keratella ticinensis*, *Notholca squamula*, *Mytilina bisulcata*, *Mytilina mutica*, *Lophocharis salpina*, *Euchlanis deflexa deflexa*, *Euchlanis lyra*, *Euchlanis triquetra*, *Trichotria sp.*, *Colurella colurus*,

*Colurella dicentrata*, *Colurella sp*, *Lepadella adjuncta*, *Lepadella quadricarinata quadricarinata*, *Lepadella triba*, *Lepadella sp*, *Heterolepadella heterodactyla*, *Cephalodella intuta*, *Wierzejeskiella sabulosa*, *Trichocerca (Diurella) collaris*, *Trichocerca (D.) tigris*, *Polyarthra bicerca*, *Lecane (M) bulla*, *Lecane (M) closterocerca*, *Lecane (M) lamellata thalera*, *Lecane (M) lunaris var. constricta*, *Lecane (M) lunaris var. crenata*, *Lecane (M) physalis*, *Lecane submagna*, *Lecane sp2*, *Lecane sp3*, *Testudinella carlini*, *Testudinella emarginula*, *Hexarthra sp* and *Collothecha stephanochaeta* were observed in only 1 month.

*Asplanchna priodonta*, *Polyarthra remata* and *Filinia longiseta* were a winter form while *Notholca sp* and *Hexarthra fennica* are dominant during summer. *Hexarthra fennica*, *Mytilina mucronata*, *Asplanchna priodonta*, *Polyarthra remata*, *Lecane luna*, *Testudinella patina patina* and *Filinia longiseta* are common in lake.

**CONCLUSION**

As a conclusion, inventories of rotifers are important for evaluating changes and understanding functional properties of freshwater ecosystem. Their population structure not only allows the estimation of the level pollution, but also can indicate the trend of general conditions over time.

Continuous studies of the plankton communities should become an inalienable feature in the management of Lake Boukourdane, due to the ability of both phytoplankton and zooplankton assemblages for rearranging their relative composition and growth in reply to changing conditions.

**ACKNOWLEDGEMENTS**

The senior author thanks Prof H. J. Dumont for the key of determination the Rotifers and National agency of dams of Soumaa (Algeria).

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**Table. The monthly distribution of rotifers identified from Lake Boukourdane.**

Taxa	2005												2006					2007				
	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
<i>Brachionus calyciflorus</i>		+										+	+	+								
<i>Brachionus quadridentatus</i>		+											+									
<i>Keratella cochlearis</i> var <i>hispida</i>																						+
<i>Keratella hiemalis</i>													+									
<i>Keratella quadrata</i>	+	+	+										+	+	+		+	+				
<i>Keratella mixta</i>														+								
<i>Keratella ticinensis</i>													+									
<i>Notholca foliacea</i>		+												+								
<i>Notholca squamula</i>													+									
<i>Notholca sp</i>				+	+	+										+	+	+	+			
<i>Mytilina bisulcata</i>														+								
<i>Mytilina mucronata</i>	+	+			+	+	+	+	+	+	+	+	+	+			+	+		+	+	+
<i>Mytilina mutica</i>														+								
<i>Lophocharis oxystemon</i>				+													+					
<i>Lophocharis salpina</i>														+								
<i>Asplanchna priodonta</i>	+						+	+	+	+	+	+								+	+	+
<i>Euchlanis dilatata</i>			+										+			+						









