



Effect of water level decline in Saffia restoration site on the density and diversity of Rotifer, Al-Hawaizah Marshes, Iraq

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Abstract

The community of Rotifers in Al Saffia was investigated during December 2008 to April 2009. List of species is given which consists of 24 species belonging to 16 genus. The genus *Brachioums* consists of the highest number of species (5), *Keratella* (4), *Lepadella*(2). The highest density was recorded during December 2008 (27.18 ind./ L) and the lowest density was during April 2009 (7.82 ind./ L).

1- Introduction

Mesopotamia marshes are deemed of the most large marshes in the middle east and of the most large natural Reservation area in the world exposed for reflooding leading to increase the temperature and the level of salinity so that many water plants ceased to grow thus affecting negatively the fish and birds resources (Salih, 2007). The natural Reservation areas are identified as the areas of limited geographical borders, its protection is imposed upon special laws

to identifying its geographical dimensions applying laws for its administration (Younis *et al.*, 2008). Generally speaking, invertebrates of fresh water are deemed an important part in the nutrition sequence of the aquatic environments as it formed directly a natural nutrition for a lot of fish of different types (Al Salman, 1990). Zooplankton is deemed of the most important groups of invertebrates in fresh water, especially Rotifera which plays a great role in the ecosystem as it is

almost used to supply food in aquaculture, the characteristics of these organisms are of their transformation of organic material found in plankton into protein and peptides which are used in the nutrition fish. Also, their movement has great importance in conveying their contents of organic material at different depths within the water column providing nutrition sources for the animals found under these depths (Ahmed *et al.*, 2005). Rotifera are found in the marine and fresh water environments and in the estuaries as it includes 2000 species of sizes ranging between 50 - 2000 μm and as it is characterized by their short life cycle (3.4 - 4.4 days under 25 °C) so that their larvae become mature within 0.5-1.5 day upon the temperature (Fernando, 2002).

Al-Saffia was setup as a natural reservation area, and in order to make an assessment of this water body, the Rotifer group was monitored.

3- Description of the study area

Al-Saffia Reservation site is located at Al - Hawaizah marshes (N:31° 10.887' E:47° 40.413') it receives water from the Iranian side and discharges it into the Khabita Marsh (Hasan *et al.*, 2011). It was formed in 2006 by the Basrah Agriculture Directorate, Ministry

of Agriculture as a natural Reserve in the south of Iraq . It has been administratively linked with Qurna town which is at 85 km north of Basrah city. In the north it is bordered Maysan Governorate in the east by the Iranian part of Al-Udhaim Marsh. Its area is about 44 km, 11 km long and 4 km wide. In these Marshes reeds, cane in addition to fish, invertebrates and different aquatic birds (Younis *et al.*, 2008).

2- Material and Methods:

Samples were collected monthly from Dec.2008 to Apr. 2009 using Zooplankton net of a mesh size of 53 μm and a mouth diameter of 40 cm. The samples were preserved in Formalin (4%). Examination was done with the aid of a Zeiss compound microscope and identification was according to Edmondson, (1959) and Fernando, (2002).

4- Results and Discussion:

Reservation site in Al- Hawaizah marsh is deemed the first attempt in Iraq aims to protect the biological diversity. During the present study 24 taxa of Rotifera were recognized and are attributed to 16 genera (Table 2) most of which were recorded in other studies in the marshes and its neighboring areas (Ahmed and Ghazi, 2009, Ghazi and Ahmed, 2008). *Brachionus* was re[re]sulted

by 5 species, *Keratella* by four and *Lepadella* by two species. Two species *B. Plicatilis* and *K. quadridentatus* were present throughout the sampling period. These two species were recorded in the marshes before (Ahmed and Ghazi, 2009). This is apparently due to optimum prevailing condition for their existence (Al-Lami, et al., 2002). It is expected that the increase of Rotifera in the Reservation, but unfortunately due to stoppage of water supply to reservation which is eventually dried (Hasan et al., 2011).

The highest number of species was recorded on March (16 species) with density of 18.85 (ind. / L) in compare is on with six species or taxa on April (density 7.82 (ind. / l)). The highest diversity on March is due to that this

period witnessed the flourishing of planktons formed a natural nutrition to rotifers, while the reduction on April is related clearly to the shortage of water level in the Reservation and the increase of salinity.

Figure(1) showed the total density of Rotifera during the period of the study, the highest density was recorded on Dec. 2008 (27.18 ind./l) and the lowest density on April 2009 (7.82 ind./L.). It was planned to continue the study for one year but due to the shortage of water supply destroyed. The destruction a natural reservation site is due mainly to closing of rivers on the Iranian side such as Dowaireej, Teeb and Karkha were supply the Al- Hawaizah marshes.

Table (1): Some environmental factors at Al-Saffia Reservation site during the period from Dec. 2008 to April 2009.

Month	Salinity ppt.	Hydrogen index (pH)	Temperature C°
December	5.08	8.3	20
January	5.76	7.5	18.5
February	6.59	8.9	16.6
March	6.68	8.8	23
April	8.0	8.3	24

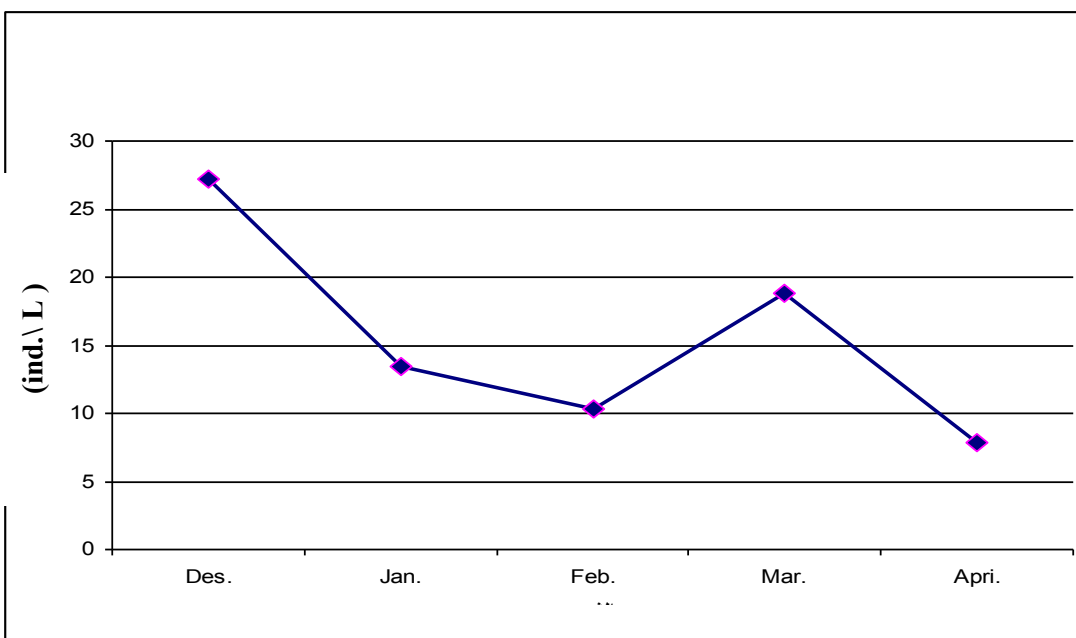


Fig. (1): Monthly Density of Rotifer (ind./L) at Al-Saffia Reservation from Dec. 2008 to April 2009

Table (2): List of Rotifera taxa recorded at Al - Saffia Reservation site during the period from Dec.2008 to April 2009.

Species	Monthly density (ind.\ L.)				
	December	January	February	March	April
<i>Ascomorpha</i> sp.	--	0.19	--	--	--
<i>Asplanchna</i> sp.	--	0.39	--	2.39	--
<i>Brachionus angularis</i>	0.88	0.07	--	--	--
<i>Brachionus calyciflorus</i>	0.12	0.03	--	0.07	0.99
<i>Brachionus plicatilis</i>	0.49	3.27	0.15	0.15	8.29
<i>Brachionus</i> sp.	--	0.03	--	0.03	--
<i>Brachionus quadridentatus</i>	--	1.63	0.11	6.49	--
<i>Cephalodella</i> sp.	0.08	3.14	0.07	0.07	--
<i>Colurella</i> sp.	--	--	--	0.11	0.07
<i>Epiphnas</i> sp	--	0.19	--	0.63	--
<i>Euchlanis</i> sp.	0.12	--	--	--	--
<i>Hexarathra</i> sp.	2.33	--	--	--	--
<i>Keratella</i> sp.	9.39	--	--	--	--
<i>Keratella quadridentatus</i>	1.0	2.94	8.63	7.10	0.47
<i>Keratella</i> sp.	0.99	--	0.15	0.03	0.33
<i>Keratella valga</i>	11.67	--	--	--	--
<i>Lepadella</i> sp.	0.55	0.15	0.21	0.22	
<i>Lepadella ovalis</i>	--	--	0.51	--	--
<i>Monostyla</i> sp.	0.22	0.51	0.11	0.61	--
<i>Notholca</i> sp	--	--	--	0.67	--
<i>Polyarthra</i> sp.	0.12	--	--	0.13	--
<i>Synchaeta</i> sp.	--	0.75	0.15	0.15	0.67
<i>Trichocerca</i> sp.	0.21	--	0.19	0.03	--
<i>Trichotria tetractis</i>	--	0.19	0.07	--	--
Total (ind. \ L)	27.18	13.48	10.35	18.85	7.82
No. of species recorded	13	14	11	16	6

5- Conclusions:

There are important types of Rotifera in the reservation site indicating the suitability of this reservation site in integrating other nutrition sequence making it a suitable place for the presence fish. However, the shortage of water supply destroyed the reservation site.

6- Recommendations:

- Working seriously to reflooding the reservation site through agreements with Iran.
- Reconsideration future water supply projects especially the building of dams.
- Implement programmers for investment of water and land resources internally and diplomatically with the neighboring countries to render Iraqi water rights through the available agreements and conventions.
- The necessity of erection of reservations site in places under full control of the Iraqi Government insure continuous water supply.

7- References:

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تأثير انخفاض منسوب المياه في محمية الصافية على كثافة وتنوع
الدولابيات، هور الحويزة – العراق

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الخلاصة

درست التغيرات الشهرية في كثافة ونوعية الدولابيات في محمية الصافية التي تقع في هور الحويزة جنوب العراق للفترة من
نانون الاول 2008 ولغاية نيسان 2009. سجل خلال الدراسة 24 نوع من الدولابيات تعود الى 16 جنساً. شكل الجنس
Brachionus الاكثر تواجداً كما ونوعاً بخمسة أنواع، بينما ظهر الجنس *Keratella* بأربعة والجنس *Lepadella* بنوعين فقط.
سجلت اعلى كثافة في شهر كانون الأول 2008 27.18 / لتر و اقل كثافة في شهر نيسان 2009 . / .