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DIVERSITY AND SEASONAL OCCURRENCE OF PLANKTONIC ROTIFERS IN KEENJHAR LAKE DISTRICT THATTA SINDH PAKISTAN

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ABSTRACT:

Qualitative and quantitative Zooplankton sampling was carried out every month from November 1998 to October 1999 at three stations in Keenjhar Lake. A total of fifteen rotifer species were identified. Four species belonging to genus *Keratella* were K. *cochlearis, K. volga, K. cochlearis var. tecta, Keratella tropica* and four species belonging to genus *Brachionus* were *B. falcatus, B.buidapestinensas, B.quadridentatus* and B*rubens.* The other were *Platyias quadriconus, Monostyla sp, Mytilina sp, Lecane sp, Tetramarti opotiensis, Euchlanis sp* and *Macrochaetis sp, Keratella* and *Brachionus* were present through out the year.

INTRODUCTION:

Rotifers are the major group of Fresh water zooplankton and play a major role in the aquatic ecosystem. The importance of Rotifers is as food for fish at larval stage as well as some adult fish. These natural fish food organisms found in aquatic ecosystem are being used as substance diet by fish in different ways and means plankton constitute a vital link in the aquatic food chain and play phenomenal role in biosynthesis of organic material. The importance of rotifers as food for fish, studies concerning subtropical water has remained a neglected area of research (Edmondson 1935, 1959).

In Indian subcontinent the first detailed work on the ecology and taxonomy of the zooplankton was carried out by (Das and Sriavastava, 1959). In Pakistan some work has been done on zooplankton, *Cladocearn* and Copepod group by (*Baqai* and *Ishrat*, 1973, *Sddiqui etal, 1973; Baqai etal*, 1974; *Baig* and *Khan, 1976; Mahoon* and *Zia, 1985; Irshad etal, 1986; lqbal* and *Kazmi, 1990; & Tasneem* and *Pervaiz, 1994)* The present paper aims to provide information on the community structure and seasonal occurrence of rotifers in Keenjhar Lake.

MATERIAL AND METHOD:

Three sampling stations were established in the lake 1. Sunehri Village, inlet water source from K.B feeder through river Indus 2. Helaya Village central region of the lake 3. Khumbo Village outlet of the lake (Fig 1) mostly quantitative zooplankton samples were taken in November 1998 to

October 1999 using plankton net 25, having mesh size 75µ. Quantitative samples was collected by filtering 20 liters, of water through plankton net. All the samples were preserved in 4-5% formaldehyde solution. Identification of the rotifers was carried out by using the key and illustration given by *(Pennak, 1978; & Mizuno* and *Takahashi, 1991*

Battish, 1992). Drawings were drawn by camera lucida.

RESULTS:

A total of 15 rotifer species were identified from the lake (Table LFig.2). The most important *Brachionus* and *keratella* genera were found to be dominant. *Brachionus,* constitute four species namely *Brachionus fialcatus, B.budapestinensis, B.quadridentatus, B.rubens* and *Keratella* constitute four species namely *Keratella cochlearis, K. volga, K. cochlearis var. tecta, K. tropica.* The other species were *Plafyias quadricornus, Monostyla sp, Mytilina sp, Lecane sp, Tetramartix opotiensis, Euchlaris sp & Macrochaetis sp.*

The densities of the rotifers were usually higher at station 2 and station 3 (Fig.3). The other stations did not show any much higher population of the rotifers. The seasonal variation at station 2 showed Bimodal Maxima, the first in November, *1998* (140 animals/samples). The second and highest one was observed in May 1999 (290 animals/samples). At station 3, however, the peak in October, *1999* was higher (224 aninials/samples.) then that of in May *1999 (185* animals/samples).

DISCUSSION:

Rotifers are considered opportunists due to their highest intrinsic rate of natural increase among the major zooplankton group (Allan, 1976). These organisms respond more quickly to environmental changes in water quality *(Cannon* and *Stemberger,* 1978). The available information on rotifer biodiversity in Pakistan is Scanty. *(Akhtar* and Ali, 1976). Described 3 species of rotifers from ponds and streams of Rawalpindi area & (Mahar *etal,* 2000) described 14 species of rotifers from Manchar Lake. The present work also observed *15* species from Keenjhar Lake.

In Keenjhar Lake the most abundant and frequently occurring species found belonging to *Brachionus* and *Keratella* genera. Among *Brachionus* species B. *quadridentatus* and *B.falcatus* & K*eratella* species *K.tropica* and *K.cochlearis* were the most dominant. Both the. species are regarded as indicators of eutrophication *(Cannon* and *Stemburger, 1978; Maemets-* 1983). The dominance of these species indicates that Keenjhar Lake has eutrophic environment.

Tetramartix opotiensis was commonly present in the Lake. Although it did not show higher population, this rotifer is considered as an indicator of eutrophication *(Pejler,* 1965;, *Gannon and Stemberger,* 1978; *Meamets, 1983, & Baloch etal;* 2000). The seasonal fluctuation of rotifers showed two maxima in the Lake, the first one in November, 1998 and the second in May, 1999. The maximum in May probably reflects an increase in Phytoplankton in fall season. In Keenjhar Lake water also enters from River Indus through K.B.F that brings saline effluents as well as domestic sewage from the surrounding villages. This is probably the reason for increase in the salinity of water. The work of *(Akhtar* and *Ali,* 1976) is among the pioneer works in Pakistan, however, restricted to genera level, except three species which were not seen in Keenjhar Lake. Moreover, the authors did not analyse samples from any Lake water. Considering this a new addition to the rotifers biodiversity the rotifers of Keenjhar Lake could be considered as a

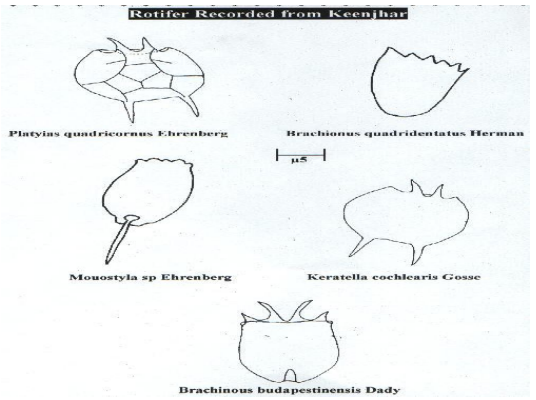
new record from Pakistan as these species have not been recorded earlier. Further studies are needed to further investigate the health of Keenjhar Lake. It will be advisable here to prevent such populated water to enter in the Lake and control the nutrient loading through flushing fresh water from River Indus for the better management of the Lake.

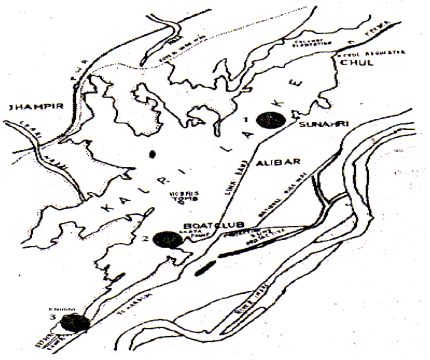
Table 1: List of Rotifer Species Occurring in Keenjhar Lake

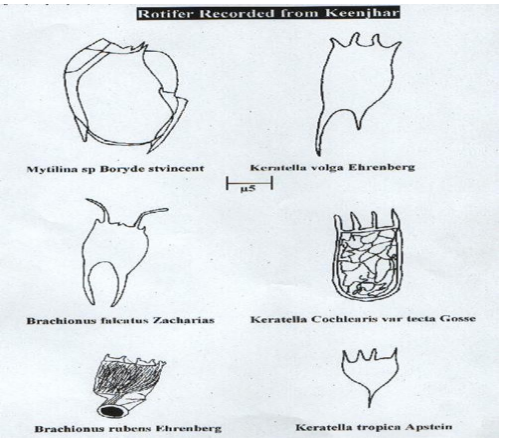
1. *Brachionusfalcatus* Zacharias.
2. *Brachionusbudapestinensis* Dady.
3. *Brachionusquadridentatus* Herman.
4. *Brachionus rubens* Ehrenberg.
5. *Euchlanis* sp Ebrenberg.
6. *Keratella cochlearis* Gosse.
7. *Keratella cochlearisvar. tecta* Gosse.
8. *Keratella* volga Ehrenberg.
9. *Keratella tropica* Apstein.
10. *Lecane* sp Nitzsch.
11. Monostyla sp Ehrenberg.
12. *Mytilina sp* Bory de st vincent.
13. *Macrochaetis* sp Perty.
14. *Platyias quadricornus* Ehrenberg.
15. *Tetramartix opotiensis.*

Table 2: Seasonal Contribution (%) of Rotifer Genera to Zooplankton Community of Keenjhar Lake (Mean of 3 Stations)

Genera	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Keratella	8	11	15	10	40	22	14	11	18	26	25	20
Brachionus	56	50	60	80	40	60	70	55	37	53	70	65
Lecane	5	6	0	0	10	6	3	2	19	0	0	0
Monostyla	10	7	14	10	5	7	6	10	17	9	0	0
Mytilina	7	6	5	0	0	5	7	8	9	10	5	15
Macrochaetis	14	20	6	0	5	0	0	14	0	2	0	0
Total	100	100	100	100	100	100	100	100	100	100	100	100







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