

## ABSTRACT

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This study was carried out to find diversity and density of rotifers. For the study, Changa Manga Lake, Lahore was selected because no work has been done on this lake so far. The whole area was divided into 4 different sites. Sampling was carried on monthly basis from September 2015 to August 2016. The physico-chemical parameters including turbidity, dissolved oxygen, electrical conductivity, atmospheric temperature, transparency, salinity, pH and water temperature were determined.

Plankton samples were preserved and extracted properly. Rotifer counting was done by using Sedgewick-Rafter chamber at 60–100 x magnification with the aid of an inverted OLYMPUS microscope. Photographs were taken by LEICA HC 50/50 microscope with 5.0 megapixel Cannon camera fixed on it. Identification of Rotifers was up to species level on the basis of their shape, morphological features and behavior.

In total, 32 species were identified belonging to 13 genera. Rotifer population was highest in May and lowest in February. The relative (%) representation of genera indicated that dominant genera were in order *Keratella* > *Brachionus* > *Trichocerca*. The relative (%) representation of Rotifers species and their mean population density was in order *Keratella cochlearis* (47.2%), *Euchlanis calpidia* (35.7%), *Keratella valga* (32.3%), *Synchaeta pectinata* (23.5%).

Analysis of variance (ANOVA) showed that salinity, turbidity, pH, electrical conductivity, transparency, water temperature, dissolved oxygen and air temperature were statistically significant throughout the study period.

Pearson correlation indicated that air temperature, water temperature, pH, dissolved oxygen, electrical conductivity were positively correlated with rotifers density and diversity. Turbidity, transparency, salinity and total dissolve salts were negatively correlated with rotifer density and diversity.

Shannon- Weaver index in Changa Manga Lake ranged from 1.44 to 1.88. Simpson's index of dominance ranged 0.27 to 0.33. It was lowest in January and highest in November. Simpson's index of diversity was highest (13.72) in May and lowest (5.68) in February.

Shannon- Weaver index showed low diversity of rotifers during the study period. These results have been reinforced by Simpson index of dominance, Simpson Index of diversity and Simpson reciprocal index. Species evenness was lowest in September (0.70) and highest in February (0.89). This indicated uneven distribution of Rotifers in some months but even distribution in April and some other months. Species richness ranged 0.45 to 1.11. It showed the presence of a small food chain. Population density of rotifers was low in winters and high in summer.

Species abundance curve indicated the lowest and highest rotifer abundance throughout the study period. *Keratella valga* had the highest peak spot in the curve. It has maximum abundance throughout the months. At the end of the curve *Asplanchna herricki*, *Anuraeopsis navicula* and *Lecane mira* were present with least abundance. The left over Rotifer species lied among these extremes.

Eight major clusters were observed in cluster analysis showing 32 Rotifer species. 6 clusters were formed at eucleadian distance 3.9. Cluster one was formed at 5.4. All clusters were merged at a eucleadian distance 8.5.

Biplot of Principal Component Analysis (PCA I) reflected the relationship of Rotifers with the months. In biplot of PCA I, *Brachionus falcatus* and *Keratella valga*, *Keratella crassa*, *Keratella cochlearis*, *Asplanchna priodonta*, *Trichocera rousselti* showed strong positive relation with the months. *Asplanchna brightwelli*, *Euchlanis calpidia*, *Monostyla lunaris*, *Filinia longiseta*, *Filinia terminalis*, *Brachionus angularis*, *Brachionus bidentatus* had strong negative relation with the months.