

Microalgal Assemblages Along The Downstream Of Periyar And Chalakkudy Rivers: A Pre And Post Flood Analysis

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Microalgae play a significant role in the maintenance of ecology in aquatic systems and the change in phytoplankton assemblages represent a good measure of the state of an ecosystem. The community structures of microalgae have been considered as a valuable bioindicator for water quality assessment. This investigation was conducted during different seasons along the lower reaches of River Periyar and Chalakkudy during the period of 2016-2018. The stations include, Pathalam, Manjaly, Kanakkankadavu, and Kathikudam. The physical parameters like pH temperature, salinity, dissolved oxygen, chlorophyll *a* and turbidity were measured *in situ*. Chemical variables (Nitrate, Nitrite, Phosphate and Silicate), pigment analysis, and productivity estimation were estimated as per standard methods. Sampling carried out during December 2016 to October 2018 including two sampling immediately after the flood 2018 (August 2018). A comparative analysis has been done with that of flood and other seasons.

A total of 70 species of microalgae have been identified amongst 10 species were representatives of Cyanophyceae, 31 species of Chlorophyceae, 26 Bacillariophyceae, 2 Dinophycean species and a single species from Chrysophyceae. The maximum species diversity was recorded from Kathikudam (50sp) followed by Manjali (49 species) while minimum from Kanakkankadavu (45 species). In all the stations, the abundance (biomass) of microalgae diminished (to almost half of its normal range), two week after the flood. However, there was an intensive growth of diatoms species like *Melosira* and *Nitzschia* observed in Pathalam and Manjali stations which are part of Periyar River. The mentioned species come under the *r selection* and which indicates the lack of equilibrium in the system. The concentration of phosphate was in an elevated range after the flood. However, this might not have been influenced the distribution of microalgae, since N:P ratio determines the growth and survival of microalgal composition, in general. The altered N:P

ratio obtained after the flood has influenced the sustenance of microalgae. The alteration in the nutrient characteristics might be due to higher habitat heterogeneity and hydrological change by the devastating flood, which in turn lowered the diversity of the microalgae.

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