Executive Summary of UGC Minor Research Project

Topic: Comparative Study of Lakes for Evaluating Oligotrophic, Mesotrophic and Eutrophic Conditions in Chandrapur District of Maharashtra

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Conducted By

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Executive Summary of UGC Minor Research Project

The context of this research was evaluating the trophic status of lakes and their comparative analysis and also categorizing them into oligotrophic, mesotrophic, eutrophic and hypereutrophic on the basis of different variables. The study was undertaken for 2 yrs i.e. from 2014-2016, for the purpose 3 lakes were selected according to their location and usage. Seasonal variations i.e. in summer, monsoon and winter were studied for these lakes. Taking into consideration the degraded condition of lakes in Chandrapur district current study was implemented. Since lakes are one of the natural surface water resources and having much more importance in human life.

Physico-chemical analysis of lake water was done to assess the changes in summer, monsoon and winter and also for evaluating the trophic status of lakes. One Carlson Trophic State Index (CTSI) for parameters Chlorophyll *a*, Total phosphorous and Secchi disc was also calculated for categorizing the lakes into oligotrophic, mesotropic, eutrophic and hypereutrophic. The range of the index is from approximately zero to 100. Carlson Trophic state index from zero to 40 represent the oligotrophic state of the lake (i.e. clean water, little algae) from 40 to 50 indicate mesotrophic state (moderately clean water, some algae), from 51 to 65 indicate

eutrophic states (blue green algae prevent swimming impaired) and from 65 and above hypereutrophic state (frequently noxious algae blooms). Statistical analysis of data was also done.

From the results obtained Carlson trophic State Index of lake Junona for Chlorophyll *a* was found to be 93.825 (hypereutrophic), for total phosphorous i.e. 97.76 (hypereutrophic) and for secchi disc was found to be 58.73 (hypereutrophic). By averaging the three indices average Carlson Trophic State Index for lake Junona was found to be 83.43 which indicate the hypereutrophic condition (i.e. frequently noxious algae blooms). Carlson Trophic State Index of lake Ramala for Chlorophyll *a* was found to be 102.27 (hypereutrophic), for total phosphorous i.e. 86.397 (hypereutrophic) and for secchi disc i.e. 77.119 (hypereutrophic). By averaging these indices average Carlson Trophic State Index was found to 88.594 which indicate the hypereutrophic state of lake Ramala. For lake Ghodazari CTSI for Chlorophll *a* was found to be 86.27, for total phosphorous i.e. 71.664 and for SD i.e. 79.41. Thus by averaging these three indices average Carlson Trophic Status Index for lakes Ghodazari was found to be 79.114 which indicate hypereutrophic condition i.e. frequently various algae blooms.

If we compare the average Carlson Trophic State Index for these three lakes Ramala ranked first having average CTSI value i.e. 88.594. Junona ranked second having average CTSI i.e. 83.438 and lake Ghodazari ranked third having average CTSI value i.e. 79.114. These results proved the general observations also.