SUMMARY AND CONCLUSIONS

Rishi Lake of Karanja (Lad) District Washim (M.B.) is the historical, natural and perennial water body associated with denizens, aquatic plant and animal population and rich macrophytic vegetation. An attempt was made to know the present taphonomic status of Rishi lake in relation to biodiversity and conservation.

SUMMARY AND CONCLUSION

The range of water temperature during the present study varied between 21°C to 30°C, which followed the similar trend of atmospheric temperature. It was negatively correlated with various physico-chemical and biological parameters.
SUMMARY AND CONCLUSIONS

Rishi lake of Karanja (Lad) District Washim (M.S.) is the historical, natural and perennial water body; associated with dense phytoplanktonic population and rich macrophytic vegetation. An attempt was made to know the present trophic status of Rishi lake in relation to floral diversity and productivity.

Water samples from six sampling spots of Rishi lake were investigated for various physico-chemical and biological parameters during the period of December 2001 to January 2003.

The range of water temperature during the present study fluctuated between 21°C to 30 °C , which followed the similar trend of atmospheric temperature. It was negatively correlated with maximum physico-chemical and biological parameters.
The atmospheric humidity of lake site was ranged between 49% to 75.3 %.

The pH of lake water was ranged between 7.3 to 9.1 showing its alkaline nature. It showed positive correlation with dissolved oxygen and transparency.

Conductivity ranged between 110 to 313 µmhos/cm. Its maximum values was recorded in summer and minimum in rainy reason.

The range of total solids was fluctuated between 135.5 to 215 mg/l. Its peak was recorded during monsoon period.

The Rishi lake contained higher dissolved oxygen during winter months and minimum during rainy season. It showed positive correlation with transparency and phytoplankton.

The transparency ranged between 5 to 28.2 cm. During monsoon months reduced transparency was seen which could be due to turbid water.

In the present investigation, free CO₂ was absent throughout the year except spot no. 3. It’s absence might be due to its utilization in photosynthetic activity and also due to formation of bicarbonates raising the alkalinity of the lake water. The lake water exhibited high values of total alkalinity throughout the year and ranged between 94 to 250 mg/l. It’s maxima and minima was recorded during summer and rainy season respectively.
It showed highly positive correlation with total hardness, magnesium hardness and chloride.

The water of Rishi lake was found to be moderately hard and the total hardness ranged between 56 to 210 mg/l. Its maximum value was recorded in the month of May while minimum in November. The total hardness showed positive correlation with magnesium hardness. The magnesium hardness ranged between 4.37 to 34.48 mg/l. The calcium hardness as CaCO₃ was ranged between 31.5 to 84 mg/l and as Ca between 12.61 to 33.64 mg/l.

The chloride content in the Rishi lake was ranged between 14.01 to 39.08 mg/l and its presence showed a positive correlation with hardness.

Sulphate content of the Rishi lake was ranged between 0.12 to 1.35 mg/l. The minimum values were recorded in the monsoon while maximum in summer.

The total phosphates recorded were maximum in the winter (1.78 mg/l) during the period of investigation.

Nitrate was fluctuated in the range of 0.18 to 0.9 mg/l. Comparatively higher concentration of nitrate was found during winter than in summer.

Percentage contribution of different groups of phytoplankton of Rishi lake showed 50 % Chlorophyceae, 26.92 %
Bacillariophyceae, 17.31 % Cyanophyceae, 1.92 % Dinophyceae and 3.85 % Euglenophyceae.

In the total phytoplankton the Chlorophyceae ranked high and is represented by 26 species. The genera *Spirogyra*, *Hydrodictyon*, *Volvox*, *Ankistrodesmus* and *Stigeoclonium* were found to be dominating Chlorophyceans throughout the period of investigation.

14 species of Bacillariophyceae were recorded from the lake water and among them *Pinnularia*, *Synedra*, *Fragelaria* and *Gomphonema* were dominant.

Among Cyanophyceae, out of 9 species *Microcystes*, *Anabaena*, and *Gloeotrichia* were dominant, throughout the year.

In the Rishi lake Dinophyceae was represented by only one species namely *Peridinium*. While Euglenophyceae was represented by two species like *Euglena* and *Phacus*.

The gross primary productivity ranged between 0.9 to 2.95 gC/m³ d⁻¹ net primary productivity from - 1.5 to 1.35 gC/m³ d⁻¹ and community respiration from 0.3 to 3.45 gC/m³ d⁻¹. The maximum gross primary productivity was recorded in winter, while minimum in rainy season. The two peaks of net primary productivity were recorded during pre winter and post winter, while minimum during winter. Community respiration was recorded maximum in winter and minimum in rainy season.

38 species belonging to 18 families of macrophytes were recorded
in and around the Rishi lake. The whole macrovegetation was dominated by Chara, Nitella, Cyperus, Ipomoea, Scirpus and Hydrilla.

On the basis of the above findings in the present investigation it may be inferred that the Rishi lake is rich in macrophytic vegetation due to high nutrient load receiving from surface run off water from agricultural fields, increased human and cattle activities and sewage dumpings. Higher concentration of nutrients and dominance of Chlorophyceae is an indication of organic pollution and eutrophic status of the lake.

However following suggestions can be made to improve polluted and eutrophic status of the lake so that it may regain it's original non-polluted and trophic status.

1. Sewage dumpings should be banned.

2. Human and cattle activities in the catchment areas of the lake should be checked.

3. Construction of embankment towards agricultural side is suggested to check nutrient load.

4. Removal of aquatic weeds to make lake suitable for boating and Pisciculture.

If above suggestions are not followed by the concerned authorities, it is highly impossible to conserve the Rishi lake in future.