

## 7 CONCLUSION

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The current study has helped in understanding the trend in the water quality parameters, sediment quality and their probable implications on diversity of phytoplankton and avifauna. During the study period, the higher concentrations of water soluble salts (i.e. TDS) were observed during the summer seasons which may be attributed to the evaporative losses of water but nutrients viz., Nitrate and Phosphate showed a hike from the monsoon season. This increase in the concentration can be attributed to the input of the same by the process of surface runoff from the surrounding areas. Higher chlorophyll concentrations were observed during the summer season when the water temperatures were higher. This indicates higher productivity of the systems governed by temperature driven biological activity. Higher chlorophyll – a content during the hotter months of the year, coupled with lesser concentration of nutrient, show that the rate of nutrient uptake by primary producers of the systems are also higher during summer months. This can be supported with the fact that there is no identifiable exit of these nutrients from the water bodies. The possibilities of nutrient deposition in the sediments for long term basis is also scarce since the concentration of Nitrates and Phosphate in sediments didn't show gradual increase during the study period. Similar was the case with organic carbon and organic matter in the sediments. The equilibrium and balance amongst such parameters show that all the three study sites are in homeostasis with special reference to nutrient dynamics. The pH remained alkaline during the study period but well within the range suitable for healthy aquatic system and the Dissolved Oxygen (DO) concentrations did not go below the critical levels for aerobic life during the study period. The Total Dissolved Solids (TDS) concentration was comparable to the drinking water standards which is better than the required standards for aquaculture as well as agricultural practices. The Total Suspended Solids were negligible and showed hike during the monsoon system, primarily because of the soil particles carried by the water from surrounding areas to the water bodies. Chloride estimation in water bodies is important especially when the water is being used for irrigation as in the case of study sites under investigation. The chloride concentration in all the three water bodies was suitable for

agricultural purposes. Considering the aquaculture practices, the water and sediment quality appeared to be good since none of the parameters under investigation showed extreme values or concentrations. The phytoplankton diversity at the study sites seldom exhibited the presence of indicator species which are inhabitants of eutrophicated or polluted water bodies. Moreover, the notable diversity of diatoms are indicative of good water quality as well as good productivity of the system. Avifaunal diversity was highest at Timbi reservoir which is geographically distant with the other two study sites. Dhanora and Vadadala show similar properties with respect to avifaunal diversity.

Considering the above mentioned aspects it can be concluded that the quality of the reservoirs under investigation is best suited for aquaculture and agriculture practices. If it is considered that there is no hazardous pollutant present in the system, the water quality is comparable to that of drinking water quality standards. In addition to this, Timbi has exhibited itself as one of the best habitats for wetland birds and the rest two also have great potential for harbouring higher diversity. With respect to nutrient status, all the three reservoirs were between Oligotrophic to Mesotrophic status.