CHAPTER 11: FUTURE RESEARCH
Current research explored the diatom flora across wetlands with the different quality regime. The current investigation has proved that diatoms are appropriate bioindicators to assess the status of urban wetland ecosystems. Diatom distribution and its relevance in cost effective regular monitoring along with physio-chemical and hydrological parameters of urban wetlands have provided the vital information on the role of physical, chemical and hydrological parameters on diatom community structure, seasonality and habitat specificity of benthic diatom community and the ecological status of wetlands. This has helped in the formulation of diatom indices specific to tropical regions. Comparative assessment of wetlands during pre and post restoration period has helped in the assessment of the effectiveness of restoration programs. However, due to the time and resource constraints, the following aspects relevant to urban wetlands could not be implemented but merits attention by the wetland researchers.

- Investigation of habitat specific diatoms in both lentic and lotic ecosystems through artificial substrata.
- Food preference of primary, secondary and tertiary consumers (zooplankton, fish and macroinvertebrates) with changes in diatom species composition and distribution due to changes in the quality of aquatic ecosystems.
- Significance of autecological range of indicator species with larger expanse of biogeographic zone.
- Role of nutrients stress especially different forms of nitrates and phosphates on species distribution.
- Suitability of diatom based biomonitoring studies in aquatic ecosystems (lentic as well as lotic) across wider biogeographic regions of Indian subcontinent.
- Applicability of PIDI (Peninsular India Diatom Index) indices in local and region level monitoring programs (lakes, wetlands, rivers and streams) in other region of Peninsular India.
- Paleolimnological investigations to reconstruct historical wetland water conditions based on the deep sediment diatom analysis.
- Detailed study of the indicator taxa such as *Gomphonema* sp., *Navicula* sp., *Achnanthidium* sp. and *Nitzschia* sp.
• Exploring distribution of taxa belonging to genus *Nitzschia* of entire Peninsular India for understanding complexity in taxonomical aspects and easy biomonitoring studies.

• Typification of previously described *Nitzschia* and comparison with European taxa description using literatures.