

Physico-chemical characteristics and macro, micro algal observations of Kolleru Lake, Andhra Pradesh, India

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SUMMARY

Kolleru (16° 15' and 16° 30' N and 81° 00' and 81° 25' E) is located the deltas of Godavari and Krishna rivers. The drainage area of this lake has been identified as the area pesticides and fertilizers are intensively used. In turn the ecosystem of the lake gradually degraded. In the present study hydrographical and climatic observations were made at 4 different stations of the lake during various seasons of 2007. Physico- chemical studies reveals that accumulation of high amount of nitrogen and phosphorus in the Kolleru lake. 49 algal forms including micro algae and macro algae reported in this study. Dominant forms in macro algae were *Chara*, *Oedogonium*, *Spirogyra*, *Ulothrix* and *Zygnema*. In microalgae, *Chlorella*, *Scenedesmus*, *Volvox*, *Pediastrum*, *Melosira*, *Navicula*, *Nostoc* and *Spirulina* were dominant forms during winter season. Among the algal flora, some pollution indicator species were also reported in this lake. Presence of increased amount of N and P and pollution indicator species reflects some levels of pollution in the lake, if it continues further without any control, it may leads to eutrophication

Key words : Kolleru lake, Hydrography, Macro and micro algae

Algae are the primary producers of the aquatic ecosystem. Fluctuations in temperature and nutrients conditions influence the algal biomass of the aquatic ecosystems (Kumar, 1991), algal forms may be used for indicators (Schubert, 1984). The algal forms and their response to environmental changes and nutrient fluctuations have been suggested in several studies (Tilman *et al.*, 1982; Sudhakar *et al.*, 1991) Studies related to ecology and tropical lakes in India by Singh and Swaroop (1979), Parvateesam *et al.* (1991). Kolleru is one of the largest fresh water lakes in India. So far no authentic report was available on the algal population of Kolleru Lake. In this present study information was collected on Physico-chemical parameters and composition of macro and micro algal flora of Kolleru Lake.

MATERIALS AND METHODS

Kolleru Lake is one of the largest fresh water lakes in India. It is an important sanctuary for indigenous and for migratory birds, particularly in water seasons. Kolleru is located between Krishna and Godavari delta. The lake is fed directly by water from the seasonal rain fed drains such as Badameru and Tammileru. The Lake is connecting Krishna and Godavari systems by over 68 inflowing drains and channels. The wild life sanctuary covers an area of 308 km² rich in flora, organic matter and fauna, it attracts

migratory birds from northern Asia and Eastern Europe between October and March. In the present study five study sites were selected at different regions of lake. Data were collected on temperature, pH, turbidity, dissolved oxygen and nutrients of the lake during different seasons (monsoons, winter and summer) in 2007. A preliminary survey was conducted on the algal flora of the lake at different stations.

Surface water samples were collected in 250 ml sampling bottles for chemical analysis and phytoplankton identification. Algal samples were fixed in 4% formalin, and samples were identified by following the standard references of Prescott (1951), Desikachary (1959), Fritsch (1979). Water samples were analyzed by the standard methods of APHA (1985).

RESULTS AND DISCUSSION

Data was collected in 4 different stations of the lake. But, no significant variation in Physico-chemical parameters was noticed among these stations, and data along with ranges in each parameter are presented in Table 1. Maximum air and surface water temperature of the lake was observed during summer months and minimum values were reported in winter months. pH values were ranged from 7.0 to 8.4 with maximum values in winter and minimum values were observed in summer months. Turbidity values of the lake reveals that during monsoon months due to runoff from drains and other irrigated fields lake waters became more turbid than winter and summer months (Table 1). Dissolved oxygen

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