

Analysis of bathymetry and spatial changes of Vembanad Lake and terrain characteristics of Vembanad Wetlands using GIS

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Abstract A number of artificial interventions, such as large-scale reclamation of water bodies to form polders for rice cultivation, and unscientific construction activities have led to the degradation of the environmental status of the Vembanad Wetlands of Kerala State in India. Increased flood proneness is one of the many major environmental issues faced in the region during the recent decades. A dynamic view of spatial changes in the wetland and knowledge on its relation to the various environmental issues are essential for scientifically planning the land and water resources management of the wetlands. In this study, through the development of geographic data sets and their analysis in GIS, benchmarks are established for the extent of Vembanad Lake and its changes due to reclamation during the 20th century, the bathymetry of the lake and its area–elevation–capacity relationship, the wetland topography and its water holding capacity at different elevations.

Key words Vembanad Wetlands; bathymetry; spatial changes; elevation–area–capacity relationship