



## **Dynamics of Plankton Succession in a Eutrophic Lake: Effects of Varied Nutrient Loading and Hydraulic Conditions**

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Water quality deterioration with significant losses of biodiversity due to anthropogenic impacts is a worldwide problem in many lakes and enclosed water bodies. One of the examples includes Lake Manyas (Bird Paradise), Turkey, which is a shallow eutrophic lake with a class A Diploma from the European Council. This National Park and an important worldwide natural reserve for migratory birds suffer from untreated discharge from nearby industries, agricultural runoff, water diversion for irrigation purposes in addition to migratory bird borne nutrient loading, all of which affect the ecological health of the Lake drastically. In this study we developed a detailed numerical model to study the impacts of varied nutrient loading and varied hydraulic conditions on a planktonic food web. The model included multiple inorganic nutrients (dissolved inorganic nitrogen, phosphorus and silica), multiple phytoplankton competitors (siliceous and non-siliceous algae), multiple zooplankton competitors (copepods, cladocerans and rotifers) and the microbial loop. Our results indicated that manipulation of the through-flow and other anthropogenic processes affected the outcome of the competition, phytoplankton species diversity and accumulation of phytoplankton biomass as well as the secondary productivity.