

## **Developing a lake classification system for Michigan inland lakes**

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Problem Statement: If our goal is to assess, manage, and monitor aquatic resources at the statewide level, it cannot occur through detailed studies of every individual water body. With no or little data on a particular lake, managers must form their management decisions using other data. One way for managers to make these decisions is to use data from similar lakes that have been sampled. Unfortunately, we currently have no methods or tools to determine accurately what makes two lakes similar to each other. In the absence of such data, one might assume that lakes within apparently homogeneous regions (i.e. ecoregions) are similar to each other. However, particular lake variables such as nutrient concentrations, macrophyte communities, fish growth rates, and fish community assemblages can differ widely among such seemingly similar lakes. A lake classification system is needed to inform management decisions in which information from well-studied lakes can be accurately extrapolated to lakes with little or no existing data.

### Objectives:

- 1) Develop version 1 of a lake classification system for Michigan lakes that is based on landscape and hydrological map-based data that supports multiple management goals: water quality, sport fisheries, and biological conservation.
- 2) Test the classification system using existing databases (water quality and sport fisheries).

Identify reference (or minimally-impacted) lakes that can serve as benchmarks for future management and conservation efforts.