

Title. Development of an Optimal Macroinvertebrate Bioassessment Index for Prairie Lakes in Northeastern South Dakota.

Project Type. Research

Focus Categories.

- a. ECOLOGY
- b. SURFACE WATER
- c. WATER QUALITY

Research Category. Biological Sciences

Keywords. Bioassessment Index, lakes, water quality, trophic state

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Congressional District. *First District*

Abstract.

Three lakes in Northeastern South Dakota will be sampled during the summer 2006, to develop an optimal macroinvertebrate bioassessment Index for use as a lake management tool. Enemy Swim Lake, Clear Lake and Lake Minnewasta were chosen for the study since they represent a range of trophic states from mesotrophic to hyper-eutrophic. Composite surface and bottom water samples will be collected from three in-lake sites in each lake using methods described in several previous short-term water quality studies. These water samples will be analyzed to determine current trophic state of the three lakes. Invertebrate samples will be collected at several shoreline habitats including rocky/rubble, sand/gravel, and muddy vegetation. Mid-lake invertebrate samples will be collected in three locations in each lake to represent deeper water habitats. Samples will be collected by a variety of methods appropriate for each habitat. The objective is to determine current trophic state of these lakes and to develop a multimetric lake bioassessment index for prairie lakes in northeastern South Dakota that relates trophic state to biological integrity. The index can be used to evaluate water quality in other area lakes.