

# Developing Benchmarks of Biological Integrity for Iowa Lake and Reservoir Restoration Success

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**Goals and Objectives:**

- To provide ecological benchmarks of lake and reservoir restoration through an integrated, interdisciplinary approach combining measures of macroinvertebrate and fish assemblages, and water quality.
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## **Introduction:**

Iowa lakes and reservoirs provide Iowans with numerous social and economic benefits (e.g., recreation, municipal water, flood control) whose value is often dependent on the quality of the water resources (i.e., ecological integrity). In many cases, water quality improvements can restore benefits lost from decades of degradation, introduction of exotic species, and natural aging of lakes and reservoirs. However, quantifying restoration success of lake and reservoir ecological integrity is difficult due to the complexity of aquatic systems.

## **Progress:**

To accomplish the above objective, protocols for sampling macroinvertebrate and fish assemblages must first be evaluated to determine standard methods for collection across Iowa lakes and reservoirs. Six water bodies have been sampled, in the spring (late April-May), summer (late June-July), and fall (late September-October) of 2008. Data collected from the subset of Iowa lakes and reservoirs will be analyzed this fall to determine standard methods for future sampling.

## **Future Plans:**

After the development of standard methods for collection, approximately 10-15 lakes and reservoirs will be sampled per year for the next three years (2009-2011). The lakes and reservoirs sampled will be either from “high water quality” water bodies (e.g., Spirit Lake, Dale Maffitt Reservoir) or “restoration priority” water bodies (e.g., Storm Lake, Clear Lake) as designated by Iowa DNR. Data collected will be used to identify fish and macroinvertebrate community and population data that discriminate between lakes with “good” and “poor” water quality characteristics, and develop indices of biological integrity. This information will be combined with water quality monitoring data to establish benchmarks for assessing biotic impairment and lake/reservoir restoration success.