

Suggested Metrics for an Index of Wetland Biological Integrity
for Seasonal and Temporary Wetlands in North Dakota

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ABSTRACT

Fritz, Charles William, M.S., Department of Agricultural Economics, College of Agriculture, North Dakota State University, June 1997. Suggested Metrics for an Index of Wetland Biological Integrity for Seasonal and Temporary Wetlands in North Dakota. Major Professor: Dr. Jay A. Leitch.

An Index of Wetland Biological Integrity (IWBI) was described for seasonal and temporary wetlands in North Dakota. The IWBI metrics developed will estimate the magnitude of anthropogenic stressors occurring in these wetland ecosystems and can be used as an assessment and regulatory tool to ensure that the biological integrity and functions of North Dakota's seasonal and temporary wetlands are maintained or improved. The IWBI is comprised of 17 metrics developed from population characteristics of 13 reference basins in North Dakota. Metrics represent attributes of vegetation (6 metrics), invertebrates (10 metrics), and phytoplankton (1 metric) communities and were identified based on Canonical Correspondence Analysis and multimetric analysis. Metrics are also suggested from biocriteria development programs in Montana and Minnesota. Principal Components Analysis of the metric scores revealed one of the 13 sites supported a much different biological community, indicating the need for further classification or site-specific criteria for similar sites.