

Using Fish Community Assessments to Predict Percent Stream Miles Impaired for Aquatic Life Use

Stacey L. Sobat

Indiana Department of Environmental Management (IDEM), 100 N. Senate Ave., P.O. Box 6015 (Shadeland), Indianapolis, IN 46206-6015

Biographical Sketch of Author

Stacey Sobat is an environmental manager in the Office of Water Quality within the Indiana Department of Environmental Management's Biological Studies Section. Since 2000, she has served as project leader for the probabilistic fish community-sampling program. Stacey is a field and laboratory supervisor for fish community sampling. She also manages the data collected to calculate Index of Biotic Integrity Scores using Indiana Reference Conditions, assesses the condition of waterbodies as attaining or impaired for aquatic life use, and works closely with other staff in the Assessment Branch to make predictions of the overall health of the watersheds studied.

Abstract

The Surface Water Quality Monitoring Strategy was initiated in 1996 by the Indiana Department of Environmental Management (IDEM), Office of Water Quality, Assessment Branch. One of the goals of the Strategy is to assess the ability of Indiana waters to support aquatic life use (ALUS) within five years using a rotating basin approach. As part of the Strategy, the Watershed Monitoring Program was developed to provide a comprehensive, unbiased assessment and characterization of the overall water quality and biological integrity for all Indiana streams by using randomly selected sampling sites. Initial site selection is conducted by the National Health and Environmental Effects Research Laboratory (NHEERL) in Corvallis Oregon and focuses on all stream sizes within the targeted river basins. Data collected are numerous including water, nutrient, and bacteriological samples for laboratory analysis, in-situ water chemistry measurements, fish and macroinvertebrate community information, and qualitative habitat evaluations. Once the data are collected, stream segments are classified as fully supporting or non-supporting based on water quality standards and the definition of a "well-balanced aquatic community". After classifications are agreed upon by a workgroup of field scientists, staffs calculate the percentage of resource impaired for each basin via statistical packages provided by USEPA NHEERL. These percentages are used to report the comprehensive aquatic life use support status for streams in the Integrated Water Quality Monitoring and Assessment Report. This presentation will focus on the development of biological reference conditions in Indiana to assess fish community samples and the use of these assessments to predict the percent of resource (stream miles) in Indiana impaired for ALUS given the fish community results.