Illinois
Natural History Survey

Evaluating streams in Illinois based on aquatic biodiversity

Annual Project Report 2006

Leslie Bol, Ann Marie Holtrop, and Leon C. Hinz Jr.

Submitted to

Illinois Department of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702

Illinois Natural History Survey
Division of Ecology and Conservation Science
1816 South Oak Street
Champaign, Illinois 61820

November 2006

ILLINOIS
NATURAL
HISTORY
SURVEY

Illinois Natural History Survey Technical Report 2006/11

Illinois Natural History Survey
Center for Aquatic Ecology and Conservation

(July 30, 2005 - July 29, 2006)

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Dr. John Epifanio,   Dr. David Thomas,
Project Coordinator   Chief
Illinois Natural History Survey   Illinois Natural History Survey

PROJECT #: T-20-P1

PROJECT TITLE: Evaluating streams in Illinois based on aquatic biodiversity

SUMMARY of PROGRESS:

Although this project was executed on September 30, 2005, full time staff did not begin work on it until August 2006. Therefore, this performance report summarizes work for approximately two months.

Job 1. Determine approach for designating stream ratings.

Our current tentative approach is to first categorize streams by assigning letter grades A through E, similar to the previous biological stream classification (BSC) project, using multiple datasets that reflect the integrity of the stream. These would include the fish index of biotic integrity (IBI), macroinvertebrate IBI, presence of species sensitive to changes in water and habitat quality such as stoneflies, certain crayfish and a subset of the threatened and endangered species. This is more comprehensive than the previous approaches that relied heavily on the fish IBI. A subset of biologically significant streams will then be identified after an integrity class had been assigned. A stakeholder meeting has been scheduled for December 8th in order to gain input on our approach.

Job 2. Investigate availability and adequacy of statewide data for use in this process.

The data sets that have been attained from the Illinois Natural History Survey include data on the presence of amphibians, crayfish, stoneflies and reptiles. In addition, data on the presence of caddisflies, mayflies, and mussels has been requested. A partial mussel dataset for which a resource index can be calculated has been attained. A partial data set of aquatic insects from the Critical Trends Assessment Program (CTAP) has also been attained. The dataset of aquatic threatened and endangered species (amphibians, crayfish, fish, mussels, plants) has been attained from the Department of Natural Resources Heritage Database. A partial dataset of the fish IBI has been attained from the IL Environmental Protection Agency (IEPA). A partial dataset of the macroinvertebrate IBI has also been attained from the IEPA. The remainder of the datasets that have not yet been received are anticipated to be attained by November 30th, 2006. The presence of aquatic plants was also considered but a comprehensive dataset is not currently available for this taxonomic group.

Job 3. Overlay data on stream network in a geographic information system (GIS).

All of the full and partial datasets that have been attained have been overlaid on a stream network. Some analysis of the datasets in relation to stream width or order will be done in order to determine expected levels of species richness for different drainages.

Job 4. Identify stream ratings.

This task will be completed once all datasets have been attained and the input from stakeholders has been gathered.

Job 5. Document the rating process and generate map of stream ratings.

The background literature that will support the rationale underlying the stream ratings is being collected. This task is ongoing.