

# Biological Assessment of Large Rivers in EPA Region 5: An Inter-Agency Collaboration

Brent Johnson<sup>1</sup>, Erich Emery<sup>2</sup>, Jeff Thomas<sup>2</sup>, Jim Lazorchak<sup>1</sup>, Joe Flotemersch<sup>1</sup>, Karen Blocksom<sup>2</sup>, Chris Yoder<sup>3</sup>

<sup>1</sup> Office of Research and Development, National Exposure Research Laboratory (NERL), Cincinnati, OH, <sup>2</sup> Ohio River Valley Water Sanitation Commission (ORSANCO), Cincinnati, OH, <sup>3</sup> Midwest Biodiversity Institute (MBI), Columbus, OH

## Issue

Large rivers are typically overlooked by biological monitoring programs because of sampling difficulties, the absence of biological indicators of disturbance, and a lack of standardized sampling protocols. Our nation's large rivers are valuable natural and commercial resources, and the need for their assessment has risen along with an increasing awareness of pollutant runoff, cumulative stressor effects, and observed degradation in coastal zones.

## Collaborative Research Effort

Utilizing multiple funding sources, NERL, ORSANCO, MBI, and multiple state agencies are working together to develop standardized sampling methods and appropriate biological indicators for large rivers in EPA Region 5. Candidate rivers are tributaries of the Ohio and Mississippi Rivers (Fig. 1). Six target rivers were selected based on land use type and location within the region (Fig. 2). Sample sites on each target river were randomly chosen following the design of the Environmental Monitoring and Assessment Program (EMAP). The study participants collaborated in collection of multiple biological indicators at the same sites on the target rivers to provide a more complete ecological assessment.



Fig. 1. Eleven candidate rivers for biological assessment in EPA Region 5.

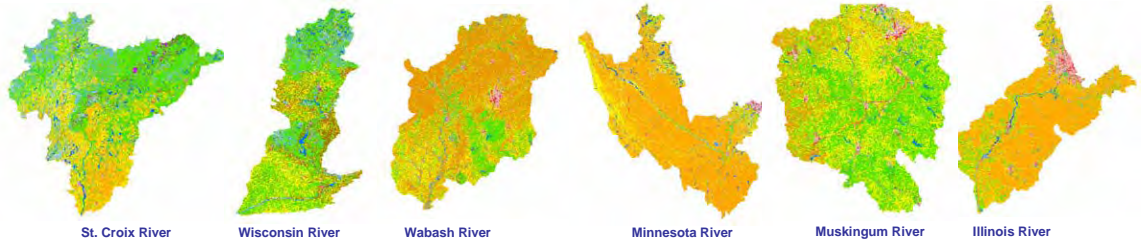
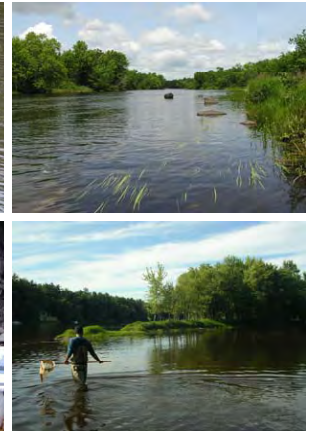


Fig. 2. Examples of land use maps used to target rivers based on varying disturbance types within the watersheds.

## Large River Bioassessment



### FISH

#### ORSANCO, MBI, & State Agencies

- ◆ Funded by Regional Environmental Monitoring and Assessment Program (R-EMAP) & Clean Water Act 104(b)(3)
- ◆ Standardized electrofishing surveys at 30 sites on each of up to 11 targeted large rivers (2004-2006)
- ◆ Comparison with fish sampling methods used by state agencies

### INVERTEBRATES, ALGAE, & WATER CHEMISTRY

#### NERL & State Agencies

- ◆ Funded by EPA Region 5 through Regional Methods Program
- ◆ Standardized sampling at 25 sites on each of 6 targeted rivers using Large River Bioassessment Protocol (LR-BP) (2004 & 2005)
- ◆ Comparison with invertebrate sampling methods used by state agencies

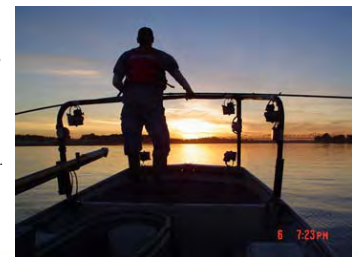
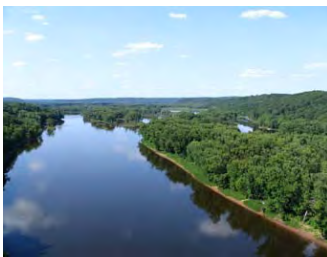
## Expected Outcomes

- ◆ Unbiased biological assessment for each of the targeted rivers
- ◆ Standardized sampling methods and appropriate biological, chemical, and physical indicators of condition for large rivers of Region 5
- ◆ Comparison of large river sampling methods for both fish and invertebrates
- ◆ Large river biological assessment methods that will allow resource managers to expand watershed monitoring and assessment strategies
- ◆ This study is being conducted concurrently with an EMAP great rivers (EMAP-GRE) assessment of the Missouri, Ohio, & Upper Mississippi Rivers. These complementary projects begin to provide the first comprehensive bioassessments for our nation's large rivers.

**ORD Contact:** Brent Johnson, NERL Cincinnati, [johnson.brent@epa.gov](mailto:johnson.brent@epa.gov), (513) 569-7335

**Regional Contact:** Ed Hammer, EPA Region 5, [hammer.edward@epa.gov](mailto:hammer.edward@epa.gov), (312) 886-3019

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