

USGS-Biological Resources Division  
Columbia Environmental Research Center  
Columbia, Missouri

# River Studies Station

## MISSOURI RIVER PROJECT

The USGS-BRD River Studies Station develops and synthesizes scientific information for management of large rivers. Researchers take a multi-disciplinary approach to understanding the complex physical, biological, and chemical processes involved in a highly productive large river flood plain ecosystem.

Initial projects focus on the Missouri River system which needs a scientific foundation for river management policies and practices. Managers recognize the river's capability to sustain the natural ecosystem must be increased while

maintaining traditional economic and quality of life values such as agriculture, water supply, recreation, and navigation.

To help managers improve the ecosystem, scientists study the links between river management, physical changes in the river corridor, and responses of river corridor biological, soil, and wetland resources. Understanding the connections between water flow, river structures, and riverine land use provide information needed to determine the effectiveness of rehabilitation efforts and guide future designs.



The River Studies Station conducts hydrological readings on the river to assess fish and wildlife habitats.

### Objectives

- Evaluate historical riverine habitats to quantify pre-regulation, baseline conditions.
- Assess present-day riverine habitat availability, evaluate hydrologic and sediment-transport characteristics, and compare to baseline conditions.
- Select optimum habitat rehabilitation sites and develop site-specific rehabilitation goals.
- Determine success of rehabilitation projects in quantified physical and biological terms.
- Apply understanding to improved design of habitat rehabilitation efforts.
- Synthesize information from the lower Missouri River research to other large rivers nationwide.



Field investigations into the naturally formed chute at Lisbon Bottom, a unit of the U.S. Fish and Wildlife Service *Big Muddy National Fish and Wildlife Refuge* near Glasgow, MO, help researchers understand the physical, biological, and chemical relationships

in complex large river ecosystems. Comparing the natural chute to constructed chutes provides insight into the cost and effectiveness of different management and rehabilitation strategies.

# Current Missouri River Projects

Field studies provide the information needed to improve river management and guide habitat rehabilitation efforts for resource managers and policy makers.

## Regional

- Missouri River Environmental Assessment Program
- Historical channel configuration of the lower Missouri River
- Assessment of physical processes: continuous, longitudinal, physical classification of the Missouri River
- Assessment of physical processes: habitat modeling near Rocheport, Missouri
- Pallid sturgeon habitat use on the Missouri River
- Assessment of exotic species in the Missouri River
- Assessment of primary and secondary productivity of the lower Missouri River
- River corridor habitat dynamics
- Sampling design and quality control of the project on population structure and habitat use of benthic fishes along the Missouri River
- Evaluation of substrate/habitat preferences and biological water quality using aquatic macroinvertebrate communities in the lower Missouri River

## Site specific: Lisbon Bottom

- Community and habitat use of benthic invertebrates
- Use of floodplain wetlands by foraging great blue herons
- Waterbird use of a flood plain wetland complex during the spring flood of 1997
- Fish populations in unconnected wetlands
- Macro-habitat preferences of riverine fishes within off-channel zones

## Environmental Quality Monitoring

- Determination of bioavailable contaminants in the lower Missouri River - pre-and post- 1993 flood
- Ecological risk assessment of the non-target effects of herbicides in the Missouri River
- Development and testing of biomarkers in the Missouri River
- Biomonitoring of Environmental Status & Trends (BEST) Program: testing and implementation of selected aquatic ecosystem indicators in the Mississippi River system

### For Information, contact:

Robert B. Jacobson, Ph.D.  
Research Hydrologist  
USGS-Biological Resources Division  
Columbia Environmental Research Center  
4200 New Haven Road, Columbia, MO 65201  
phone 573-876-1844 fax 573-876-1896  
robb\_jacobson@usgs.gov

# Partnerships

The River Studies Station houses experts in fisheries, aquatic invertebrates, ecology, hydrology, flood plain processes, and remote sensing. Station researchers work in partnership with other groups:

- Missouri River Basin Association
- Missouri River Natural Resources Committee
- Mississippi Interstate Cooperative Resource Association
- Missouri Resource Assessment Partnership
- Missouri Watershed Information Network
- National Aeronautics and Space Administration
- University of Missouri
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Geological Survey  
National Mapping Divisions  
Water Resources Division

**USGS**  
science for a changing world

## Missouri River InfoLINK

A Clearinghouse of Missouri River Information

About InfoLINK | Contacts | Events  
The River | Science | Guestbook

**MAPS & DATA**

**HIGHLIGHTS**

- Pallid Sturgeon found in Lower River
- 450 people attend January SED Summit
- National Academies Missouri River Study
- New USGS Missouri River Coordinator
- Missouri River Water Improvement Act of 1999
- Delta Marsh listed in the Big 100

**InfoLINK Partners**

- USGS
- EPA
- nbt
- Missouri River Natural Resources Committee

4th Annual Missouri River Natural Resources Conference  
May 21-24, 2003  
"Missouri River Management: The Community's Perspective"  
Endeavor Inn  
Research, Meritt Building

The Missouri River InfoLINK distributes information from the River Studies Station.  
<http://infolink.cr.usgs.gov>