Nutrient Trends in the Upper Mississippi and Illinois River Ecosystems

UMRBA Upper Mississippi River Basin Association

Upper Mississippi River Restoration

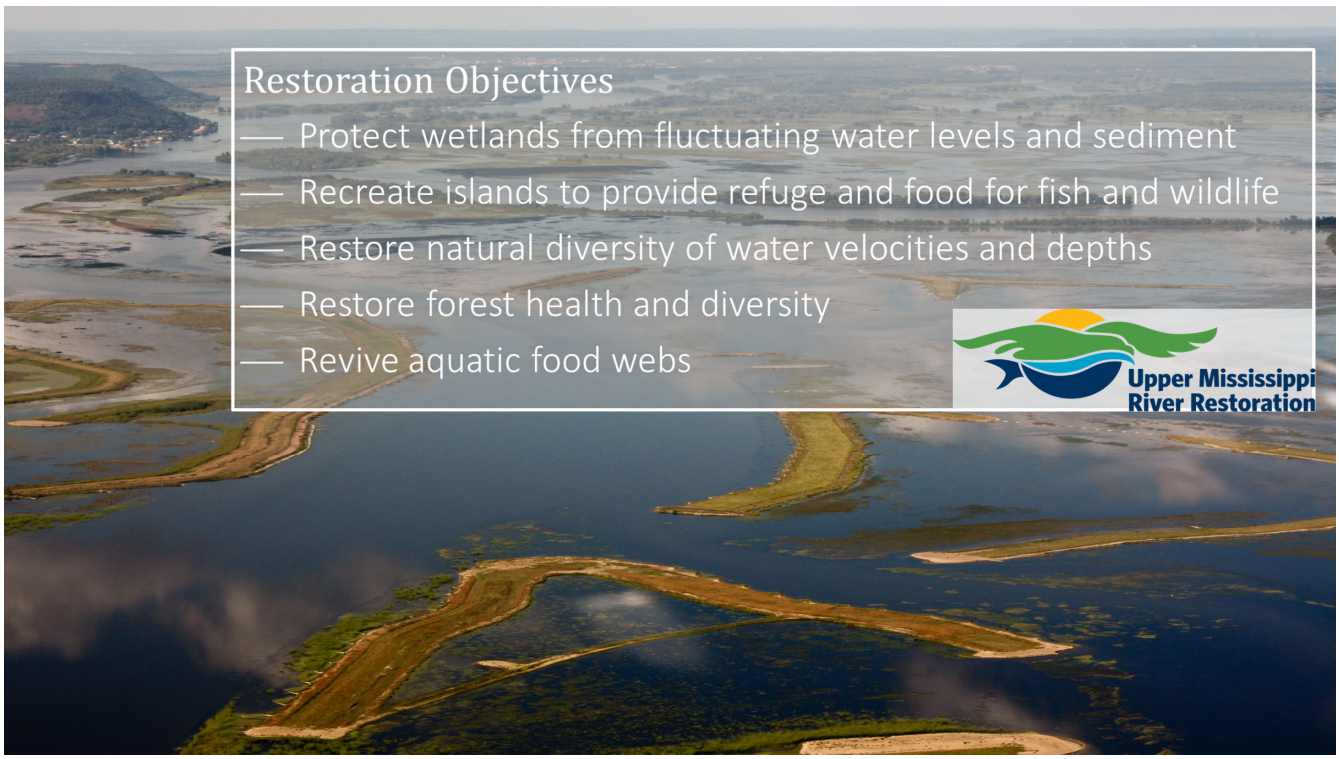
USGS science for a changing world

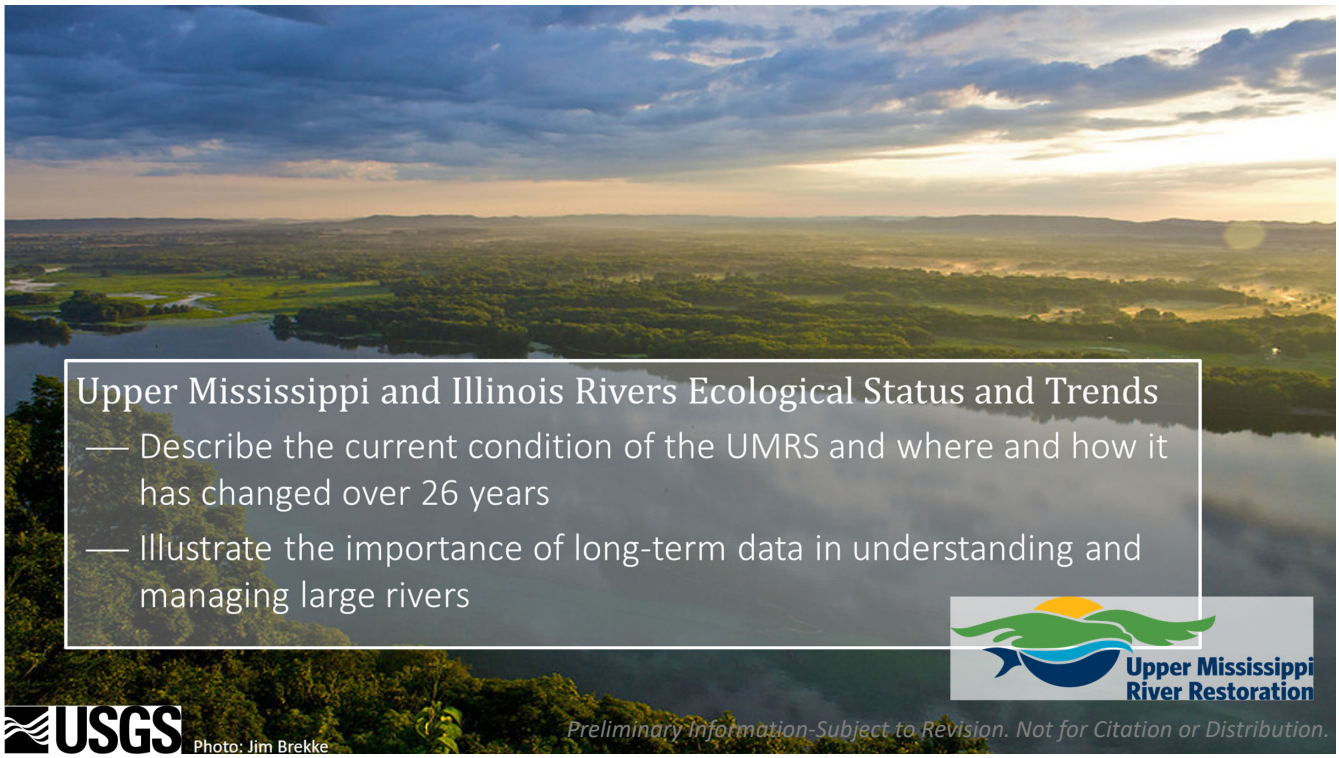
This information is preliminary and is subject to revision. It is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information.

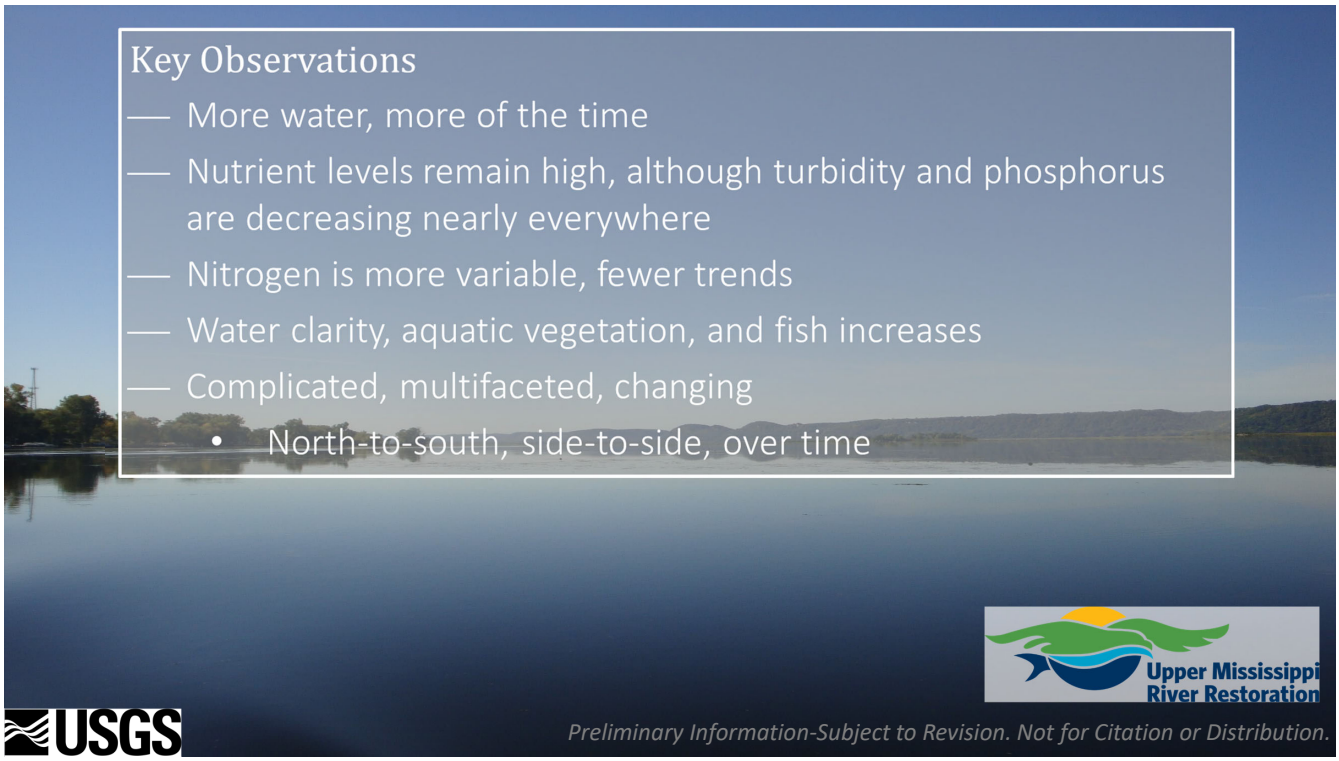
UMRBA Background

- Governor-level interstate organization for multi-purpose management
- Governor-designated interstate WQ entity
- Facilitate dialogue, cooperative action, and coordination
  - Interstate forum
  - Cooperative planning, coordinated management
  - Information exchange
  - Regional positions, advocacy on states' behalf


Upper Mississippi
River Restoration
DEPARTMENT OF
NATURAL RESOURCES
WISCONSIN
DEPT. OF NATURAL RESOURCES
DNR
ILLINOIS
Illinois Natural History Survey
PRAIRIE RESEARCH INSTITUTE
USGS
science for a changing world
USDA
NRCS
United States Department of Agriculture
Natural Resources Conservation Service


Restoration Objectives
— Protect wetlands from fluctuating water levels and sediment
— Recreate islands to provide refuge and food for fish and wildlife
— Restore natural diversity of water velocities and depths
— Restore forest health and diversity
— Revive aquatic food webs
Upper Mississippi
River Restoration

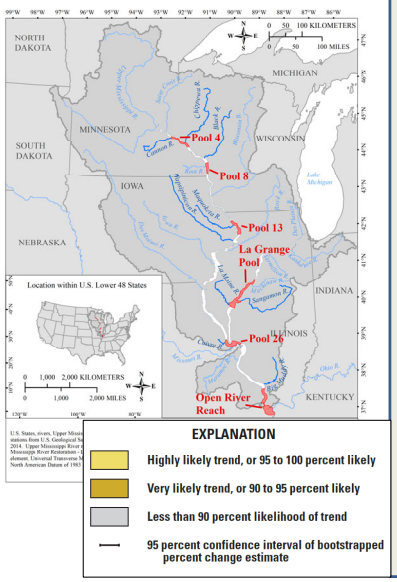

Upper Mississippi and Illinois Rivers Ecological Status and Trends
— Describe the current condition of the UMRS and where and how it has changed over 26 years
— Illustrate the importance of long-term data in understanding and managing large rivers
USGS
Photo: Jim Brekke
Upper Mississippi River Restoration
Preliminary Information-Subject to Revision. Not for Citation or Distribution.

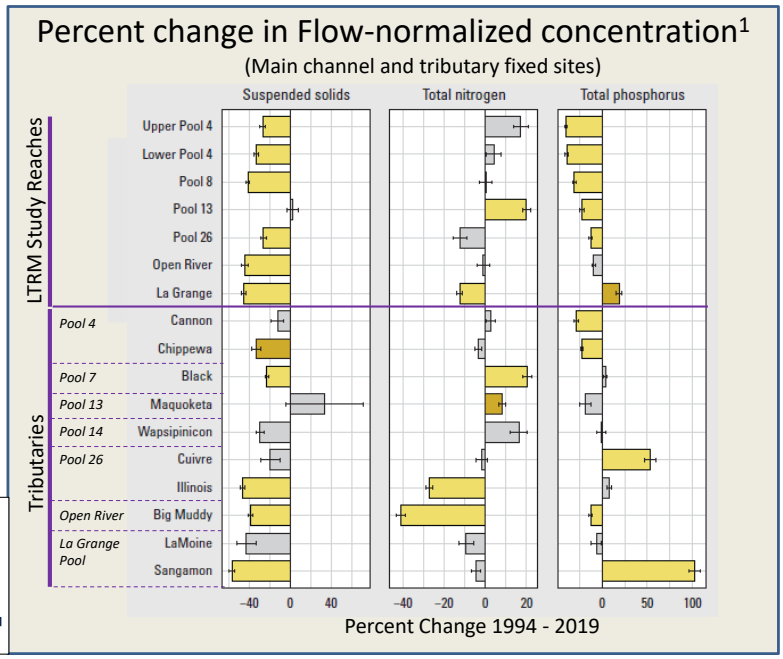

Key Observations
— More water, more of the time
— Nutrient levels remain high, although turbidity and phosphorus are decreasing nearly everywhere
— Nitrogen is more variable, fewer trends
— Water clarity, aquatic vegetation, and fish increases
— Complicated, multifaceted, changing
• North-to-south, side-to-side, over time
Upper Mississippi River Restoration
USGS
Preliminary Information-Subject to Revision. Not for Citation or Distribution.

Nutrient Trends

(fixed sites in main channel and tributaries)

Preliminary Information-Subject to Revision. Not for Citation or Distribution.





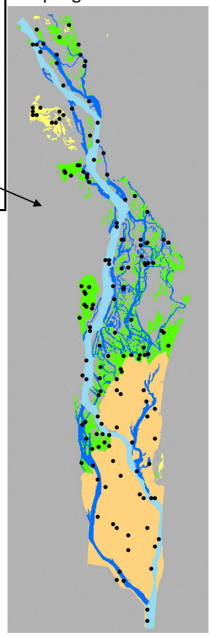
[1]Calculated using Weighted Regressions on Time Discharge and Season (Hirsch et al. 2010; Hirsch et al. 2015)

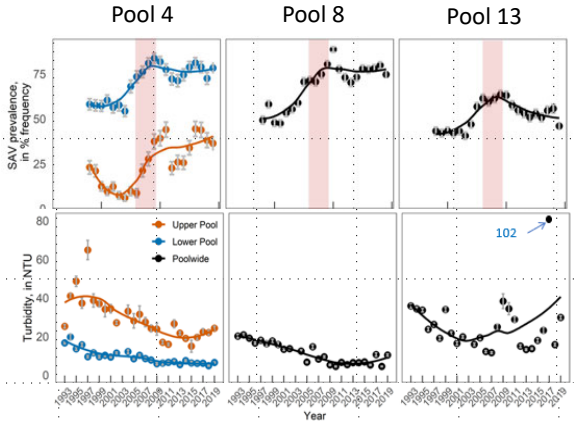
Preliminary Information-Subject to Revision. Not for Citation or Distribution.

Long-term ecological changes in water clarity, vegetation, and fish in the Upper Impounded Reach of the UMRS

- Increase in submersed vegetation
- Period of low discharge (2006,7, 9)
- Small decline in suspended solids (SS) inputs
- Substantial increase in water clarity (decrease in turbidity)
- Decline in Common Carp
- Changes in fish community composition

Stratified Random Sampling Across Habitats





Dr. KathiJo Jankowski, Research Ecologist
kjankowski@usgs.gov | 608-781-6242

Lauren Salvato, Policy and Programs Director
lsalvato@umrba.org | 952-208-1166