

Texas USGS Fish Crew Finds Upper Missouri River Challenging, But Interesting Kathleen Rowland (USGS)

The USGS fish crew from Texas found the Upper Missouri River challenging and different from many Texas rivers they usually work on. They are used to rivers with well-defined banks and channels in Texas. In the Upper Missouri River they found more sediment and sandbars; a not-so-well-defined main channel that often split into smaller, multiple channels; or a main channel that would wander back and forth from left to right bank or vice versa with no clear direction or definition.

Everyone agreed that sediment in the Missouri River made it difficult to spot and net fish once they were electroshocked. Given the low-flow conditions due to a multi-year drought in the Upper Missouri River Basin,

the USGS - Texas group was surprised to find high velocities at some of the sites. Those velocities coupled with high wind conditions on some day made it a real challenge to keep the boat on course for some of the EMAP work. Defining the actual shoreline for some of the sites in the Upper Missouri River also was interesting. The crew found that when they placed flagging at the different stations along the main channel shoreline, during the course of sampling the flagging would disappear under water due to increased discharges from the Garrison Dam or from area power plants.

The crew from Texas also enjoyed getting to see some species of fish they've read about

but are not normally found in Texas like the walleye, northern pike, and sturgeon. However, they had their fill of gizzard shad (too many to count) by the end of the sampling season. They gave a "thumbs up" to North Dakota scenery and the pristine conditions found in many places in the Garrison Reach. Would they like to come back and work on the Upper Missouri River? Most definitely!



Texas Fish crew sampling the Upper Missouri River

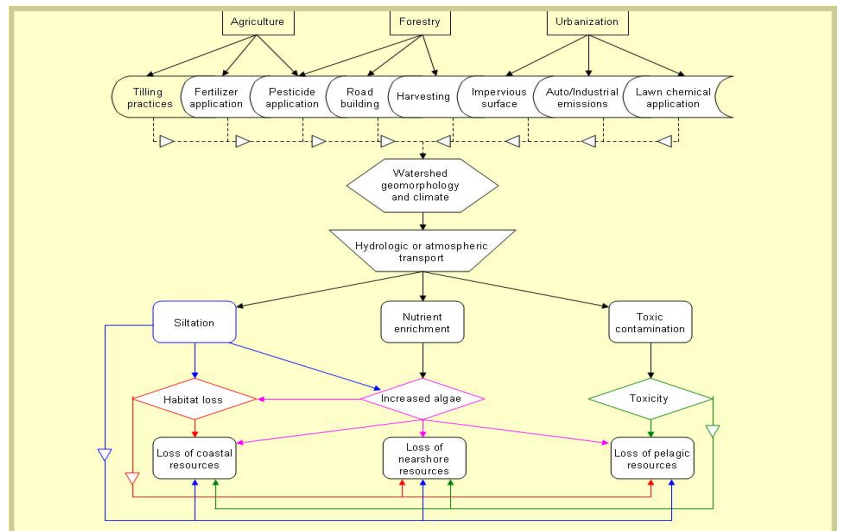
Algal Indicator Development Cooperative Agreement Awarded to University of Minnesota

Brian Hill (USEPA)

The University of Minnesota's Natural Resources Research Institute was recently awarded a cooperative agreement for the development of algal indicators for the Great Rivers. The research team, led by Dr. Euan Reavie, will be working closely with the EMAP staff in Duluth to 1) develop indicators based on phytoplankton and periphyton assemblages, 2) interpret river condition based on these assemblages, 3) evaluate algal-environment relationships and how the effects of

human disturbances can be separated from natural gradients, and 4) contribute to the development of reference expectations for the Great Rivers. For more information on this cooperative agreement contact Dr. Brian Hill at 218-529-5224.

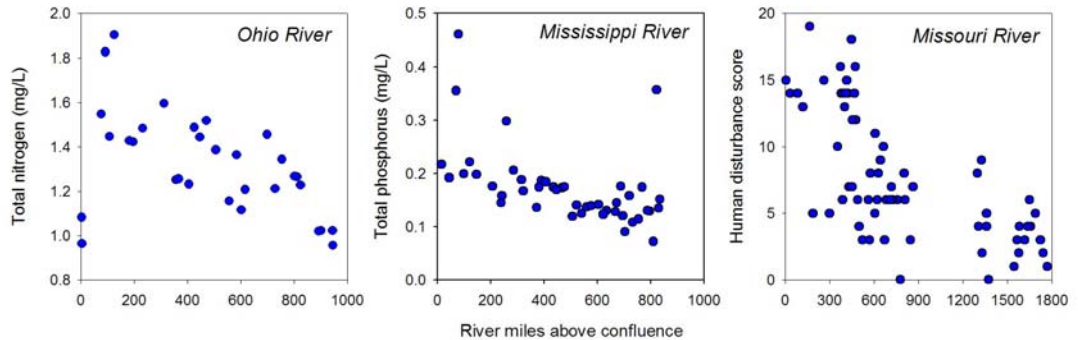
This diagram shows how potential stressors may affect algal communities in the Great Rivers of the Central Basin.



The Great Rivers Newsletter is periodic publication of the EPA's Mid-Continent Ecology Division in Duluth, MN. The newsletter is designed to disseminate timely information about the EMAP-GRE project among EPA investigators; state, federal, and tribal collaborators; and other stakeholders. Contact Mark Pearson, editor (pearson.mark@epa.gov; 218-529-5205) to obtain copies of the newsletter. The newsletter and other EMAP information can be found on this website: www.epa.gov/emap/greatriver

Strong Longitudinal Gradients For Many EMAP-GRE Metrics Ted Angradi (USEPA)

Preliminary data analysis of 2004 EMAP-GRE data reveals strong longitudinal gradients for many water chemistry and human-disturbance-related metrics. The plot shows an example of a strong gradient for each river. Nutrient concentrations generally decreased with distance from the confluence (the downriver end of the EMAP sample reach). For the Missouri River, indicators of human disturbance had lower values upriver. These preliminary findings have implications for developing an approach to reference conditions for



Great Rivers. Accounting for variation along natural gradients, in this case river mile (a

surrogate for watershed area), will produce more reliable definitions of least dis-

turbed condition for each river.

EMAP-GRE QA Audits Completed for 2005 Ted Angradi and Mark Pearson (USEPA)

EMAP-GRE project scientists (Mark Pearson, Debra Taylor, Terri Jicha, David Bolgrien, Ted Angradi, Jeff Thomas, and Erich Emery) have recently completed QA audits with field crews. During each audit, the auditor observes the crew during sampling and records compliance with a set of QA procedures and expectations. The auditor discusses QA with the crew and receives feedback on methods and the crews' field experiences. At the end of the sampling season, EPA scientists will compile the findings and share them with field crews in a debriefing meeting. The QA audits are an integral part of EMAP-GRE's comprehensive QA program de-

signed to insure the highest possible quality standard for data.

These are some of the EMAP-GRE fish and river crews for the 2005 field season. Many thanks for a job well done. From left to right and top to bottom the crews are: Iowa Dept. of Natural Resources (Bellevue, IA); Missouri Dept. of Conservation (Liberty, MO); Minnesota Dept. of Natural Resources (Lake City, MN); USGS (Rolla, MO); Wisconsin Dept. of Natural Resources (Onalaska, WI); Missouri Dept. of Conservation (Columbia, MO).



Updates, Meetings, Goings-On

Mississippi River Basin Nutrients Science Workshop

Oct 4-6; This meeting included a presentation on Inter-river & downstream patterns in Si, N, & P: preliminary assessment of the Upper Mississippi, Missouri, & Ohio Rivers by Brian Hill, Terri Jicha, Paul Buckaveckas,

Shirley Yuan, & David Bolgrien; and Demonstrating a consistent approach for monitoring and assessing ecological conditions of the Upper Mississippi, Missouri, and Ohio Rivers by David Bolgrien, Ted Angradi, Terri Jicha, Brian Hill, Mark Pearson, and Deb Taylor.

National Research Council Committee on the Mississippi River and the Clean Water Act

Oct 18; David Bolgrien gave a presentation on EMAP-GRE.

Red River of the North Ecosystem Workshop

Nov 2-3; Ted Angradi is invited to speak on Inter-habitat variation of Upper Missouri River benthos: implications for bio-assessment and An approach for determining reference Great Rivers.