THE GREAT RIVERS NEWSLETTER

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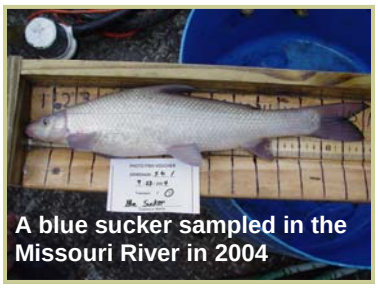
THE ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM FOR GREAT RIVER ECOSYSTEMS (EMAP-GRE)

River Darter Range Extension in Lower Missouri River **Jason Crites (MDC)**

The Environmental Monitoring and Assessment Program of the Great Rivers Ecosystem (EMAP-GRE) has successfully completed its first year of sampling and has already made some interesting observations. The Missouri Department of Conservation (MDC) is responsible for sampling the unimpounded section of the upper Mississippi River and the Missouri River from Kansas downstream to the confluence of the Mississippi River. MDC sampled a few Missouri state-listed and threatened species, as well as range extensions of known fish species to new locations on the rivers.

Several blue suckers, *Cycleptus elongates,* were collected along the lower Missouri River. They are a state-listed species, and their decline has been attributed to overfishing and dam construction.



A blue sucker sampled in the Missouri River in 2004

Three Ohio shrimp, *Macrobrachium ohione*, were collected on the Mississippi River near Cairo, IL. They were once abundant from St. Louis, MO to Cairo, IL in the Mississippi River drainage. Overharvesting in the 1930s, river channelization, and habitat loss have drastically reduced their numbers, and they are also a state-listed species.

While sampling a Missouri River site near Jefferson City, MO, an MDC electrofishing crew collected a river darter, *Percina shumardi*. This fish was sampled at approximately river mile 121.

File photo of an Ohio shrimp

William Pflieger demonstrated in "The Fishes of Missouri" fish key that river darters had not been documented any farther on the Missouri River than St. Charles Co. (just west of St. Louis, MO). This makes the range extension approximately 100 miles west of its last known collection.

River darter, a likely range extension in the Lower Missouri River

In our 2005 sampling season, we hope to substantiate and further document these unusual occurrences of fish in the Mississippi and Missouri Rivers.

EMAP-GRE Training 2005 **Debra Taylor (USEPA)**

Over 50 leaders and members of EMAP-GRE field crews met in St. Louis on June 14-15 for a refresher course on EMAP data collection, sample handling, and Quality Assurance procedures. Crews from the Missouri, Mississippi, and Ohio Rivers gathered to learn from each other's 2004 sampling experiences and to hear updates and changes in EMAP-GRE techniques for 2005. Training included both classroom and field sessions, and featured a ten-boat flotilla of researchers reviewing their EMAP-GRE skills on the Mississippi River near Alton, IL. Emphasis was on Quality Assurance — since a number of crews are collecting data over a very large geographic area, it is important that data be collected with uniform standards across all crews and sites. Consistent sampling procedures will insure that the data will be comparable when conclusions are drawn on the condition of our Central U.S. Great River ecosystems.

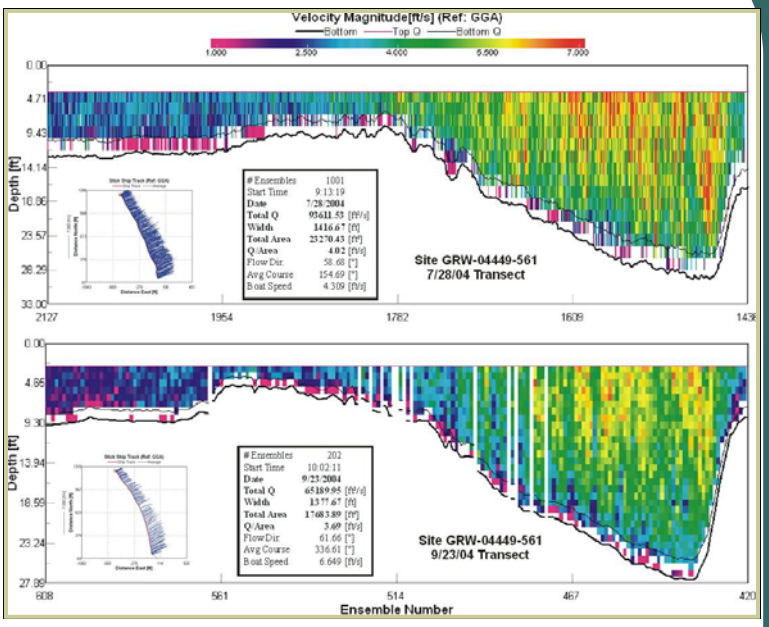
A flotilla of training on the Mississippi River near Alton, IL. This area is upstream of lock and dam No. 26 which is the last lock and dam on the upper Mississippi River.

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**

ADCP Technology Helpful to EMAP-GRE

Debra Taylor (USEPA) and Gary Wilson (USGS)

Acoustic Doppler Current Profilers (ADCP) are a new technology being used to assess the condition of our Great Rivers. Great Rivers are much deeper and swifter than wadeable streams, so it is difficult to employ traditional methods of measuring depth and velocity. Historically, Great River managers and researchers collected hydrological data from cables suspended over rivers or were limited to working from highway and railway bridges. But by using an acoustic energy beam, today's ADCP technology allows researchers to quickly determine water depths, current velocities, and the concentration of suspended sediment particles in the deep water columns of Great Rivers. By comparing profiles taken at high and baseline discharges, scientists can determine which areas of riverbank have the greatest erosion potential and then use this information to prioritize shoreline areas for riverbank stabilization efforts. The graphs at the right show the same cross section of the Missouri River on two dates: in the upper graph the discharge was around 94K cfs, and in the lower graph the discharge measured about 65K cfs. Note the increased velocities at the higher discharge and the comparatively stagnant shallow water area on the left side of the profile. This is an area that may provide refuge for fish during times of high discharge and current velocity.



2005 Missouri River Natural Resources Conference Highlights

Mark Pearson (USEPA)

The 9th Annual Missouri River Natural Resources Conference was held in Pierre, SD May 22-25, 2005. The meeting is a forum dedicated to Missouri River stakeholders to exchange information, share perspectives, and solve problems. The meeting's theme was "Many Voices ● One Theme." Papers were presented with diverse topics such as recreational opportunities, changing conditions, historical perspectives, water quality and quantity, biology and habitat, sediment, and wind energy. The meeting was an excellent opportunity to present some preliminary data and show Missouri River stakeholders the benefits of the EMAP-GRE project. Terri Jicha (USEPA) presented a program overview; Kathleen Rowland (USGS) discussed water quality patterns from 21 sites in the Ft. Peck, Williston, and Garrison reaches in MT and ND; Brenda Woodward (USGS) presented water quality data from 24 sites along the NE border; Suzanne Femmer (USGS) discussed water quality data patterns from 24 sites from the Mississippi River to the NE border; and Jason Crites (MDC) discussed fish data collected on the lower Missouri River. A field trip to the Lower Brule Sioux Tribal Reservation concluded with traditional entertainment and dinner at their powwow grounds.

The Narrows of the Missouri River on the Lower Brule Sioux Tribal lands.

Updates, Meetings, Goings-On

USEPA scientists David Bolgrien and Brian Hill will be presenting preliminary EMAP-GRE data at the Mississippi River Basin Nutrients Science Workshop in St. Louis, MO Oct. 4-6, 2005. David will present a talk titled, "Demonstrating a consistent and unified approach for monitoring and assessing ecological conditions of the Missouri, upper Mississippi, and Ohio Rivers." Brian will present a talk titled, "Inter-river and downstream patterns in Si, N, and P: a preliminary assessment of the upper Mississippi, Missouri and Ohio Rivers."

An EMAP-GRE Technical Committee meeting will be held in Duluth, MN in the fall of 2005. Details are being worked out at this time, but we anticipate a workshop to discuss EMAP-GRE reference conditions to be held concurrently.