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If you have questions or comments about the GLMRIS Newsletter or have suggestions for future topics you would like to see addressed, please contact the Chicago District Public Affairs Office at ChicagoDistrict.PAO@usace.army.mil, or call us at 312-846-5330.

Additional information about GLMRIS, including previous issues of the newsletter, press releases and Interim Products are available online at glmr.is.anl.gov.

The purpose of GLMRIS is to evaluate a range of options and technologies to prevent aquatic nuisance species transfer via aquatic pathways between the Great Lakes and Mississippi River basins by aquatic pathways.

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Study on Asian carp environmental DNA released

The U.S. Army Corps of Engineers (USACE) and other members of the Asian Carp Regional Coordinating Committee (ACRCC) released a report in February on what all the positive Asian carp DNA samples could really mean.

“The ACRCC is committed to preventing these invasive fish from becoming established in the Great Lakes to include participating in extensive monitoring of the waterways and increasing the understanding of the link between DNA detection and presence of live fish using Asian carp environmental DNA surveillance programs,” said GLMRIS Program Manager Jack Drolet.

Environmental DNA (eDNA) analysis has been used since 2009 to help determine the presence of the fish by detecting the genetic material (DNA from shed cells in slime, feces, urine, etc.) in water samples.

“Partnership is key in successful planning, research and implementation of a comprehensive aquatic nuisance species prevention plan,” said USACE eDNA Program Manager Kelly Baerwaldt.

USACE, U.S. Fish and Wildlife Service and U.S. Geological Survey are conducting a three-year [Asian Carp Environmental DNA Calibration Study \(ECALS\)](#) to improve the understanding and interpretation of eDNA results.

“Our goal is to make this relatively young and complex monitoring tool the most effective to detect live Asian carp and to provide this data to the resource managers, so they can make informed decisions, perhaps for rapid response or other management efforts,” said Baerwaldt.

The majority of the ECALS work accomplished so far has focused on sources for Asian carp DNA to enter the CAWS without, or in addition to, originating from a live, free-swimming bighead or silver carp.

Preliminary findings in the interim report are: storm sewers, fisheries sampling gear, fish-eating birds, dead fish carcasses, barges, and sediments may contribute to a positive eDNA detection without a live fish being present; DNA can stay on these sources for a number of days; tagged-bird studies show large variations in bird movement and consumption of Asian carp in the wild, which may lead to positive detection of Asian carp eDNA in bird feces; shedding rates of DNA from Asian carp were not affected by different temperatures or flow rates of water and DNA from Asian carp sperm can be detected for over two weeks after release from an Asian carp.



DNA seeps into water from a dead silver carp on a barge. Asian carp DNA surveillance programs help determine the presence of Asian carp by detecting their genetic material in water samples.

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Q&As with PM Dave

The team welcomes back GLMRIS Project Manager Dave Wethington, who was on temporary assignment providing legislative affairs and congressional relations support to the USACE Headquarters Civil Works Program Integration Division (CW PID). The CW PID is responsible for budget development and defense, program execution, and overall management of the USACE Civil Works Program. Wethington has been GLMRIS PM since the inception of the study in summer 2009.



Q: First of all, how does it feel to be back? Was it hard putting GLMRIS on the back burner for a while?

A: It's great to be back! Although I thoroughly enjoyed my time and experiences in Washington, it's been great to be reunited with all of my colleagues and friends at the Chicago District. It's funny, I didn't realize how much I'd missed everyone until I got back; I'm very fortunate to be a part of a great team here in Chicago. At first, I had mixed emotions about leaving GLMRIS. On one hand, I was excited to begin and fully embrace the

developmental opportunity working at the Headquarters. On the other hand, I fully realized the challenges that the team was facing with the legislation ([Moving Ahead for Progress in the 21st Century Act or MAP-21](#)) that expedited the study and was a bit anxious about leaving. However, I knew that we had a great team and that my departure would be an opportunity for Nicole Roach (the interim PM) and others on the team to step up into more of a leadership role.

Q: Were you still involved in any way with GLMRIS at Headquarters?

A: Yes, in a number of ways. I had the opportunity to help facilitate the transmittal of the [MAP-21 90-Day Interim Report](#); which outlines anticipated milestones, required resources and a plan for the completion of the December GLMRIS Report, through Headquarters and the Assistant Secretary's office early in my tenure of the detail. Following that, there were several occasions in which I, with the assistance of the GLMRIS Team, helped address specific questions on the study from congressional interests. I even had the opportunity to join GLMRIS Program Manager Jack Drolet in a meeting with staffers from Rep. Camp and Sen. Stabenow's office, regarding the status and path forward of GLMRIS following the enactment of the MAP-21 legislation. I would also support the team, on occasion, during briefings for senior leadership or key stakeholders; it was as much of a desire to help out as it was to continue to stay involved on some level.

Q: What's one thing you learned during your assignment that you're eager to incorporate in GLMRIS?

A: Spending time at Headquarters helped me to develop a better understanding of the more big-picture, policy-driven mindset of senior leadership in our organization. At the district level, we're very focused on -- even consumed by -- the day-to-day problems and issues. It was very helpful to take a step back and try to examine GLMRIS and its opportunities and challenges from an agency perspective.

Q: What should stakeholders be looking out for in the next few months?

A: We've got a lot of work to do! These are exciting times for the GLMRIS Team, as we tackle the monumental task of finalizing the report to Congress by this fall. We've got so much great information that we've been developing; the challenge now is finding a constructive end to some activities that we've had to cut short due to the MAP-21 language and weaving it all together into a cohesive, robust report.

Calendar of events -- 2013 --

April 2013

April 15-19 – International Joint Commission Spring Semi-Annual Meeting, Washington D.C., www.ijc.org

May 2013

May 6-9 - Great Lakes Panel, Duluth, Minn.
May 29-30 – Annual Meeting of Great Lakes Fishery Commission, Montreal, www.glfcc.org

Spring 2013

Focus Area 2 reports finalized with public input and re-issued

June 2013

June 2-6 - Annual Conference Great Lakes Research, West Lafayette, Ind., www.iaglr.org/iaglr2013/
June 19-21 – Annual Meeting of Great Lakes-St. Lawrence Cities Initiative, Marquette, Mich., www.glsccities.org

July 2013

July 29-August 2 – 5th National Conference on Ecosystem Restoration (NCER), Chicago, Ill., www.conference.ifas.ufl.edu/ncer2013/

September 2013

TBD – Great Lakes Commission Semi-Annual Meeting, Milwaukee, Wis., www.glc.org
TBD – Healing Our Waters' 9th Annual Great Lakes Restoration Conference, <http://healthylakes.org/>

October 2013

TBD – Great Lakes Wind Collaborative 6th Annual Meeting, www.glc.org/energy/wind/

December 2013

GLMRIS Report sent to Congress

Q&As with PM Dave

I wish we had more time to be as thorough as we'd originally planned, but I'm confident that we'll put together a product that decision makers can reliably depend on for future determinations. In the coming months, we'll be outlining a dozen or so aquatic nuisance species alternatives, then evaluating and refining that list into about a handful for which we'll provide more detailed design, mitigation and cost information. Around mid-summer, we'll have a product that's ready to be reviewed by a number of external experts, then tweaked into the report. We'll do our best to keep stakeholders engaged through regular meetings of our Executive Steering Committee and other partner meetings. Of course, anyone can always find the latest on the GLMRIS website or on our social media sites.

Q: What's going on with the hydro-sep alternatives? Where are the location(s)?

A: As a part of ongoing analysis, the GLMRIS Team refined the aquatic nuisance species (ANS) organism types warranting further consideration to include fish, algae, crustaceans and plants. Using the information provided in the ANS Control Paper, the team identified which of the 90+ technologies may be effective at preventing ANS transfer through an aquatic pathway for these organism types in all life stages. [Through a screening and review process, this list was narrowed down.](#) Hydrologic separation is one of the alternatives being analyzed.

We've made a lot of great progress looking into various types of hydrologic separation (hydro-sep). We've completed a number of detailed numerical models and are using them to predict and optimize the responses that the Chicago Area Waterway System's (CAWS) uses and users would have to a physical barrier. We've created hydrologic models for the various components of the CAWS itself - including the Chicago River, Chicago Sanitary and Ship Canal, Grand Calumet River and Little Calumet River, as well as predictive models that will help us understand potential flooding of the sewer systems in the Chicago metro area and nearby suburbs.

We have also created water quality models that will help us make decisions by looking at the impacts of key pollution indicators, such as phosphorous, dissolved oxygen, chloride, and fecal coliform - both in the CAWS and Lake Michigan. Navigation models will help us predict how commercial cargo shipments may be impacted by changes in the CAWS and what measures may be needed to offset potential impacts. All of this information is being compiled. Imagine if you place a physical barrier in a location that has minimal impacts to commercial navigation and water quality, but has huge impacts to flooding. Our models will help us understand how we could move/optimize that barrier's design - either by changing its location up or downstream, or by adding tunnels or reservoirs, for example, to help relieve the flood risk.

As you can imagine, the team has a lot of work to do to optimize the locations of the hydro-sep scenarios. We will include important information about these options, along with other technology-based or hybrid (combination of physical and technology barriers) controls, in a GLMRIS Report due to Congress in December 2013. This document will contain information describing a number of ANS Controls that could be further developed for future implementation. Once that report is produced to Congress, we'll be looking forward to working with all stakeholders - including the public - to try and identify the best option to solve the problem of ANS transfer through the CAWS.

Q: If you could make one point to the public about this study, what would it be?

A: We have a laser-like focus on producing the best document we can in the GLMRIS Report, given the time and financial constraints we're facing. I can promise that we'll do our best to continue to engage our public stakeholders; we're more than happy to speak to anyone about the current status of our efforts. Nevertheless, I need to ensure that the team is focused on putting as much time and diligence into the GLMRIS Report as possible. We're also looking ahead to what we will need to accomplish after the GLMRIS Report has been completed. Rest assured, we won't be dormant after December 2013; there will be plenty of work to do to further develop supporting information for alternatives, hopefully leading to the beginning of the next phase of project development. We are up to the challenge!



Great Lakes network meeting on ecological separation, from left, USACE, Chicago District Deputy Commander Lt. Col. Jim Schreiner, Alliance for the Great Lakes President Joel Brammeier, U.S. Environmental Protection Agency Great Lakes National Program Office Senior Advisor Bill Bolen and Metropolitan Water Reclamation District of Greater Chicago Executive Director David St. Pierre at the Shedd Aquarium, Jan. 30, 2013. The goal of the meeting was to set a path forward on building a curriculum for students in science, technology, engineering and math to better understand the nature and complexities of potentially separating the Great Lakes from the Mississippi River Basin. Though this was not a meeting directly related to GLMRIS, hydrologic separation is one of many potential ANS controls being evaluated.

Study on Asian carp environmental DNA released, continued...

Future ECALS work will focus on increasing efficiency of the eDNA process and looking at how fish size, number, behavior and diet as well as water temperature influence eDNA loading or shedding by an Asian carp.

“The reason we put out these products in an interim fashion is so that we can use this data immediately in the field,” said Baerwaldt.

For example, based on preliminary conclusions from this study, the Illinois Department of Natural Resources is purchasing new nets to be used strictly above the Chicago Sanitary and Ship Canal electric barriers to minimize any contamination that may cause a positive eDNA sample.

“Great strides have been taken in aquatic nuisance species prevention efforts and research, and we will continue to work diligently towards finding the best solutions,” said Drolet.

It is important to note that no bighead or silver carp were captured or observed above the barriers in both 2011 and 2012 after several interagency monitoring outings and hundreds of routine monitoring trips to include 192 hours of electrofishing and 81.7 miles of netting, which collected nearly 100,000 fish of 65 different species.

“I am floored by the teamwork at all levels that has already taken place within this Asian carp fight; it is a great puzzle that, together, can be solved,” said USACE Chicago District Deputy Commander Lt. Col. Jim Schreiner. “We are taking a prudent approach in considering the threat as real.”



Congratulations to USACE Fish Biologist and Asian Carp Environmental DNA Program Manager Kelly Baerwaldt (left), who is a member of the GLMRIS Natural Resources Team, for being awarded by the Quad City Engineering and Science Council as 2013 Junior Scientist of the Year at a ceremony held Feb. 20, 2013.

Last of the Focus Area 2 reports sent for public comment

The Ohio and New York draft aquatic nuisance species pathway reports were the last Focus Area 2 assessments to be released on Feb. 22.

“This is another great milestone for the team and for the ANS fight,” said GLMRIS Other Pathways Project Manager Marty Wargo. “The results of these assessments are a great resource for the various local, state and federal stakeholders across the region, as they help enable limited resources to be focused on where they can do the most good in the fastest amount of time.”

The Focus Area 2 Team released reports by state for public comment for each of the 18 potential aquatic pathways found along the basin divide outside of the Chicago Area Waterway System, or Focus Area 1. The team will review and incorporate public input before finalizing and re-issuing the Focus Area 2 reports this spring.

Further efforts and dialogue are ongoing regarding those pathways that were assigned an overall rating of medium or high. Eagle Marsh, Ind., was the only potential pathway rated as high, and, thus, had its own controls report produced to identify available options to prevent the spread of ANS, including Asian carp, between the basins across this pathway. In the Eagle Marsh controls report, nine structural alternatives are compared and at least three were determined to have a high likelihood of preventing the inter-basin spread of ANS. The team is working with state and local partners to solidify the best path forward at Eagle Marsh.



GLMRIS is one of the USACE ANS prevention efforts featured in a new video narrated by USACE Chicago District Deputy Commander Lt. Col. Jim Schreiner. Other highlights include operating the electric barriers in the Chicago Sanitary and Ship Canal, extensive monitoring of the waterways and aggressive research on environmental DNA. [Click to view the video.](#)