

UMRR
Long Term Resource Monitoring FY16 Activities (Living Document)
(Oct. 2015–Sept 2016)

Publications, Presentations, and Conference Attendance

First Quarter

Jeff Houser, Nate De Jager and Kristin Bouska will be meeting with colleagues from the US Fish and Wildlife Service, US Army Corps of Engineers, and Illinois Natural History Survey to begin developing a conceptual model describing the ecological resilience of the Upper Mississippi River. The meeting is being held at UMESC on Thursday 8 October. This effort is part of a larger project developing and indicators of resilience for the Upper Mississippi River that is funded by the US Army Corps of Engineers Upper Mississippi River Restoration Program.

Bierman attended the River Resources Coordination Team meeting (with other state, USFWS, and USACE staff) in Le Claire, Iowa – October, 2015.

Bierman gave a presentation on “Assessing the Effectiveness of a Wetland in Reducing Nitrogen Loads to a Mississippi River Backwater: The Rock Creek/Shrickers Lake Example” at the joint UMRCC fall WQ technical meeting/A-Team meeting at the Fairport Fish Hatchery – October, 2015.

Bierman participated in the quarterly Fish and Wildlife Interagency Committee (FWIC) conference call/webinar – November, 2015.

Bowler completed on-line electrofishing safety course through the USFWS – November, 2015.

Bowler submitted article on recent crystal darter and pallid shiner collections in Pool 13 for the winter edition of Lateral Lines – November, 2015.

Bierman and Vogeler completed on-line electrofishing safety course through the USFWS – December, 2015.

Bowler participated in conference call on updating the UMRCC Fisheries Compendium – December, 2015.

Bierman, Bowler, Kueter, and Vogeler completed ice auger safety training – December, 2015.

Kristen Bouska attended the UMRCC Water Quality Technical Session and the UMRR Analysis Team meeting in Fairport, Iowa on October 28 and 29, 2015.

Allison Anderson and Levi Solomon attended the River Resource Action Team (RRAT) annual meeting on the Middle Mississippi River.

Solomon, L., R. Pendleton, A. Casper. The Illinois River Biological Station: who we are and what we are up to. Platform presentation. RRAT meeting. October 21, 2015

Pendleton, R., L. Solomon, B. Ickes, and A. Casper. Insights from the Long Term Resource Monitoring: Asian Carp and Fish communities within the Illinois River. Poster presentation. Illinois River Governor's Conference, Peoria IL. Oct 28, 2015

Gibson-Reinemer, D., R. Pendleton, L. Solomon, and A. Casper. Asian carp fail to reproduce successfully most years in the La Grange reach of the Illinois River. Poster Presentation. Illinois River Governor's Conference, Peoria IL. Oct 28, 2015

Doyn Kellerhals, Rich Pendleton, and Levi Solomon met with Dr. Frank Shaw, Illinois State University emeritus. Dr. Shaw is seeking data about climate change and examples of its effect on local ecosystems in order to teach children and the general public about the issue. We provided him with literature and local water gauge data concerning the Illinois River.

Culver, E. F., and J. H. Chick. 2015. Shocking Results: Assessing the Rates of Fish Injury from Pulsed-DC Electrofishing. North American Journal of Fisheries Management 35:1055-1063.

Eric Ratcliff gave a presentation about LTRM, INHS, Mississippi River fishes, and invasive species to about 25 members of the O'Fallon, IL Christian Sportsman's Club. 11/2015.

Rob Burdis and Megan Moore attended the MNDNR's Division of Ecological and Water Resources Region 3 meeting in Hastings, MN on Oct 19th.

Rob Burdis attended the UMRCC Water Quality Technical Section meeting in Fairport, IA on October 28-29th

Rob Burdis attended the Analysis Team meeting in Fairport, IA on October 29th.

Megan Moore attended a MNDNR Mississippi River Team Steering committee meeting on Oct 30th in St. Paul to discuss river issues with the Miss. River Hydrologist and Fisheries staff, Asst. Commissioner Barb Naramore, the regional director and several regional managers.

Megan Moore and Steve DeLain attended a UMRR River Resources Forum webinar.

Second Quarter

(UMESC) Jeff Houser and Kristen Bouska will lead the workshop, "Ecological Resilience of the Upper Mississippi River System," January 5-7, 2016, in La Crosse, WI. The primary objectives for the workshop are to establish the overall scope of the resilience assessment and develop an initial draft conceptual model of the ecological resilience of the Upper Mississippi River System. The work is being done through the U.S. Army Corps of Engineers' Upper Mississippi River Restoration (UMRR) Program. Participants include staff from state and federal agencies involved in the UMRR Program.

Molly Van Appledorn traveled to Boston, MA February 25-26, 2016, to attend a multi-disciplinary workshop organized by The Nature Conservancy (TNC) with support from Science for Nature and People (SNAP). The purpose of the workshop is to outline the state of the science on regional floodplain and watershed analyses and identify potential linkages to decision-making and science strategies employed by non-profits,

municipalities, and insurance providers. Molly will be joining approximately 15 other experts on flood risk reduction, flood policy, floodplain science, and floodplain management from government agencies and academic institutions across the country.

Molly Van Appledorn presented an overview of the Ecological Floodplain Inundation Mapping initiative (Eco-FIM) to members of the Large Rivers Initiative on March 14, 2016, including motivations for the EcoFIM initiative, examples of eco-hydraulic research, and outlook for improved integration of hydrodynamic models and floodplain ecology.

Megan attended the Analysis-team conference call on Jan 28.

Megan Rob and Steve attended the annual UMRR-LTRM science planning meeting in La Crosse, WI from Feb 16-18.

Megan, Rob, Steve, and Sarah attended MNDNR Ecological and Water Resources Division all staff meeting in St. Cloud, MN March 7-8.

Megan, Rob and Steve attended the UMRCC annual meeting in Dubuque, IA on March 15-17. Megan and Steve attended the MNDNR Commissioner's Listening session in St. Paul on Feb 29th, where Steve also received a Commissioner's award for safety.

Megan attended the MNDNR Mississippi River Team Steering committee meeting with senior level managers and staff from multiple divisions on Jan 28.

(UMESC) Larry Robinson (UMESC), Mary Mitchell, and Brian Lubinski (FWS) attended training in the integration and use of specialized flight management software and a USGS-owned, high-definition thermal infrared (TIR) sensor, February 22-26, 2016, at the Reno-Stead Airport in Reno, NV. On extended loan from the Geomorphology and Sediment Transport Laboratory in Golden, CO, the addition of the TIR sensor will complement the Fish and Wildlife Refuge Midwest Region's true color (TC) and color infrared (CIR) digital aerial cameras. This enhanced remote sensing platform gives the DOI the capability to simultaneously collect TC/CIR/TIR imagery that can be georeferenced, mosaicked into a single images, and analyzed in a geographic information system. Planned projects include detecting and counting of feral hogs and horses, deer, and waterfowl on public lands in western and central U.S., locating thermal vents indicative of habitat for the endangered Iowa Pleistocene snail in northeastern Iowa, and identifying cold water refugia for fish species such as trout and salmon that have temperature-sensitive spawning requirements.

(UMESC) Director Mark Gaikowski, Jeff Houser, Nathan De Jager, William Richardson, and Randy Hines will meet with the City of La Crosse Mayor Tim Kabat to discuss the Mississippi River Cities & Towns Initiative (MRCTI) and Upper Mississippi River research and monitoring activities on February 25. The MRCTI represents 124 cities and towns along the river's mainstem that formed in 2012 as an independent voice for the Mississippi River focused on protection, restoration, and management. Gaikowski and staff will learn about MRCTI information needs and provide the Mayor overviews of the Upper Mississippi River Restoration federal-state partnership program, the USGS Ecosystem Flood Inundation Mapping (EcoFIM), and the USGS Midwest Region's Large River Initiative efforts.

Lubinski, Benjamin J., J.A. DeBoer, M.W. Fritts, and J.H. Chick. Variation in the community structure of fishes from main channel border habitat among reaches of the Mississippi and Illinois Rivers. UMRR Science Meeting, LaCrosse, Wisconsin. February 16-18, 2016.

Culver, Edward. Monitoring populations of ancient sport fishes in the Middle Mississippi River. Joint Annual Conference of the Illinois Chapter of the American Fisheries Society and Illinois Lake Management Association in Springfield, IL. February 29 – March 2, 2016.

Chick, John. Keynote Presentation: Asian Carp, Sport Fish Declines, Major Floods and Climate Change: A Lighthearted Romantic Comedy. Joint Annual Conference of the Illinois Chapter of the American Fisheries Society and Illinois Lake Management Association in Springfield, IL. February 29 – March 2, 2016.

(UMESC) The U.S. Army Corps of Engineers' Upper Mississippi River Restoration (UMRR) Program held their bi-annual science meeting at the USGS's Upper Midwest Environmental Science Center, February 16-18, 2016, in La Crosse, WI. The science meeting is an important opportunity to maintain and improve broad awareness of ongoing and recently completed research efforts, and the implications of the findings of that work, for restoration of habitat and river management projects performed under the UMRR. Conversely, it is also an opportunity for those collecting additional biological or ecological data to assess UMRR rehabilitation projects to inform the partnership of their findings and lessons learned. UMESC is the science lead for the UMRR Program.

(UMESC) Mark Gaikowski, Jennifer Sauer, Jeff Houser, and Brian Ickes participated in the February quarterly meetings of the Upper Mississippi River Basin Association (UMRBA) and the Upper Mississippi River Restoration (UMRR)-Coordinating Committee (UMRR-CC), February 23-24, in Rock Island, IL. Presentations include:

- "Management-relevant fish habitat models for the Upper Mississippi River System," by Brian Ickes. Ickes will describe recent efforts to generate spatially-explicit habitat models for 28 fish species over 1900 km of river, using unprecedented data assets available through the UMRR's Long Term Resource Monitoring (LTRM) element (http://www.umesc.usgs.gov/data_library/fisheries/habitat_models.html). Products include links to the data used to create the habitat models, descriptions of the methods used, publications generated by these efforts, and spatially-explicit presumptive fish habitat maps for many species. These resources stand in support of habitat planning and design efforts across the UMRS.
- "Highlights of recent LTRMP monitoring and research projects," by Jeff Houser.
- "Project Update: LTRM workshop on developing ecological resilience conceptual models," by Jeff Houser.

The UMRR is a U.S. Army Corps of Engineers' research and restoration program for the Upper Mississippi River System. The Upper Midwest Environmental Sciences Center (UMESC) implements the LTRM element of the UMRR, combining environmental monitoring, research, systemic data acquisition, and modeling in an effort to provide a solid scientific foundation upon which resource managers and policy makers base management actions and develop environmental policy on the Upper Mississippi River System.

(UMESC) Jennifer Sauer represented the USGS Midwest Region at the Middle Mississippi River Partnership (MMRP) meeting, April 1, 2016, in East Alton, IL. The MMRP is a collaboration of twenty-one federal/state

agencies and not-for-profit organizations that have a common goal of restoring and enhancing the natural resources of the Mississippi River corridor, between St. Louis, MO and Cairo, IL.

Scientists will participate in the 48th Annual Meeting of the Mississippi River Research Consortium (MRRC), April 27-29, 2016, in La Crosse, WI. MRRC presentations include;

Oral Presentations:

- Juvenile Asian Carp Predation on the La Grange Reach, Illinois River, by Eli G. Lampo, James T. Lamer (Western IL Univ.), Brent Knights, Jon Vallazza, James H. Larson (UMESC), Andrew Casper, Rich Pendleton, and Levi Solomon (INHS).
- Linking Flood Inundation Modeling, Ecosystem Studies, and Ecosystem Services Assessments for Improved Research and Management of Floodplain Landscapes, by Molly Van Appledorn, Nathan De Jager (UMESC), Kris Johnson (TNC), Marie Pepler (USGS, OSW).
- Spatial and Temporal Patterns between the Invasive Snail *Bithynia tentaculata* and Submersed Aquatic Vegetation in Pool 8 of the Upper Mississippi River, by Alicia M. Weeks, Nathan R. De Jager (UMESC), Roger J. Haro, and Gregory J. Sandland (Univ. of WI-La Crosse).

Poster Presentations:

- Quantification of Daily Otolith Increments in Young of Year Asian Carp, by Emily A. Szott, James T. Lamer (Western IL Univ), James H. Larson, Brent Knights, John Vallazza (UMESC), Levi Solomon, Rich Pendleton, and Andrew Casper (INHS).
- Upper Mississippi River System Topobathy, by Jenny L. Hanson and Jayme M. Stone.

(UMESC) Nathan De Jager met with the Upper Mississippi River (UMR) Systemic Forest Stewardship Team to discuss future projects related to forest ecology on the UMR, April 12, 2016. The Stewardship Team is comprised of staff from all three U.S. Army Corps of Engineers' UMR district offices and focuses on forestry issues that span the entire length of the UMR.

(UMESC) Nathan De Jager participated in the first meeting of the Upper Mississippi River Restoration Program's Habitat Needs Assessment Steering Committee, April 13, 2016. The Habitat Needs Assessment is designed to use the best available data and modeling approaches to help management agencies along the Upper Mississippi River (UMR) identify priority ecosystems, species, and locations that could benefit from habitat rehabilitation and enhancement projects across the length of the UMR.

Bierman participated in the quarterly River Resources Coordinating Team (RRCT) conference call – January, 2016.

Bierman participated in the quarterly UMRR A-Team conference call – January, 2016.

Bierman participated in conference calls and planning meetings for water quality sampling during flood events on the Maquoketa River floodplain at Green Island – February, 2016.

Kueter completed on-line electrofishing safety course through the USFWS – February, 2016.

Bierman presented “Assessing the Effectiveness of a Wetland in Reducing Nitrogen Loads to a Mississippi River Backwater: The Rock Creek/Shrickers Lake Example” at the quarterly Fish and Wildlife Interagency Committee meeting in Le Claire, Iowa – February, 2016.

Bierman, Bowler, and Kueter attended UMRR-LTRM/UMESC/USACE Science Meeting in La Crosse, Wisconsin – February, 2016.

Bierman presented “Pool 12 Overwintering HREP Adaptive Management and Monitoring” at the UMRR Science Meeting in La Crosse, Wisconsin – February, 2016.

Bierman attended the UMRR Coordinating Committee quarterly meeting in Rock Island, Illinois – February, 2016.

Bierman, Bowler, Hupfeld, and Kueter attended the 72nd annual UMRCC in Dubuque, Iowa – March, 2016.

Bierman, Bowler, and Kueter completed on-line cyber security training “Securing the Human” – March, 2016.

Bierman, Bowler, and Kueter attended Fisheries Statewide meeting at Honey Creek State Lodge – February/March, 2016.

Bierman, Bowler, and Kueter attended the Iowa Chapter of the American Fisheries Society meeting at Honey Creek State Lodge – March, 2016.

Bierman, Bowler, and Kueter completed on-line training “Blood Borne Pathogens” – February, 2016.

Third Quarter

Molly Van Appledorn will be presenting a research seminar entitled "Floods and Forests: disentangling complex relationships in bottomland ecosystems" at UMESC on May 12. The seminar will examine how hydrologic, hydraulic, and biotic factors influence distributions of trees and shrubs across multiple scales using examples from Michigan and Maryland rivers.

Molly Van Appledorn will be presenting a research seminar entitled "Floods and Forests: disentangling complex relationships in bottomland ecosystems" to the USGS Eastern Geographic Science Center and the National Research Program in Reston, VA on Tuesday, May 17. The seminar will explore multi-scalar eco-hydraulic interactions using novel applications of geospatial and hydrodynamic models.

(UMESC) Richard Erickson presented a case study of how UMESC is using HTCondor technology to develop new models for estimating trends from available long term fish and vegetation data for the Upper Mississippi River, during HTCondor Week in Madison, WI, May 17-20, 2016. The conference brings together a wide variety of data scientists from organizations such as CERN, Fermilab, and Brookhaven National Laboratory to find innovative ways to process data. Activities include presentations and tutorials on high-throughput computing and cycle scavenging to process large data sets.

(UMESC) Jennifer Sauer and Jeff Houser will participate in the May quarterly meetings of the Upper Mississippi River Basin Association (UMRBA) and the Upper Mississippi River Restoration (UMRR)-Coordinating Committee (UMRR-CC), May 24-25, in St. Louis, MO. Presentations include:

- “Assessing the Resilience of the UMRS” by Jeff Houser. Houser will update the UMRR CC on the progress that he, Kristen Bouska, Nate De Jager, and the Resilience Working Group have made applying resilience concepts to the understanding and management of the UMRS.
- “Highlights of recent LTRMP monitoring and research projects,” by Jeff Houser.

(UMESC) Jennifer Dieck, Tim Fox, John (JC) Nelson, and Jayme Stone gave a presentation on the Upper Mississippi River System (UMRS) Topobathy integration project for the USGS Large Rivers Initiative (LRI), June 13, 2016. The U.S. Army Corps of Engineer’s Upper Mississippi River Restoration (UMRR) Program’s Long Term Resource Monitoring (LTRM) element has invested heavily in the collection of lidar and bathymetry data. While lidar and bathymetry data are both powerful research and mapping information products, their ability to enhance knowledge of the UMRS increases when combined to create an integrated elevation dataset. These data are being used by researchers to assist with the future implementation of ecosystem restoration programs and projects, hydrodynamic modeling projects at all water levels, landscape modeling, near-shore habitat use, and much more.

Mississippi River Habitat Needs Assessment-II (UMESC) - Nate De Jager, Mark Gaikowski, and additional UMESC Long Term Resource Monitoring Branch staff participated in a Habitat Needs Assessment-II (HNA-II) Steering Committee meeting in Rock Island, IL, July 19-20, 2016. The HNA-II is being conducted under the U.S. Army Corps of Engineer’s Upper Mississippi River Restoration (UMRR) Program which was authorized by the Water Resources Development Act (WRDA) of 1986, Sec 1103 (P.L. 99-662). The HNA is a re-occurring effort of the UMRR which provides a re-assessment of the rivers’ ecosystems in relation to historic, existing, projected future, and desired future conditions. The information developed during the Habitat Needs Assessment will be utilized in the sequencing and planning of UMRR restoration efforts. (Nate De Jager; ndejager@usgs.gov; Ecosystems)

Rob Burdis and Steve DeLain attended Mississippi River Research Consortium in La Crosse, WI on April 27-29.

Rob Burdis gave a presentation on Mississippi River water quality conditions to approximately 25 attendees of the Bittersweet Garden Club in Lake City on May 25.

Megan Moore presented an overview of the UMRR-LTRM program to MNDNR senior level division leadership team on June 1st.

Bierman and Hupfeld attended statistics training in La Crosse, Wisconsin – April, 2016.

Bowler co-authored buffalo and bullhead chapters for the 4th edition of the UMRCC Fish Compendium – April, 2016.

Bierman attended A-Team meeting in La Crosse, Wisconsin – April, 2016.

Bierman participated in the quarterly River Resources Coordinating Team (RRCT) conference call – May, 2016.

Hupfeld and Rutledge attended vegetation sampling training in Lake City, Minnesota – June, 2016.

Fourth Quarter

Megan Moore attended a boat tour with US Senator Al Franken and US Representative Tim Walz at a Mississippi River bridge dedication ceremony in Winona on Aug 27th. Megan presented LTRM data and provided a handout that described a detected ecological shift that occurred in Pool 4. Rob provided useful edits of the handout prior to the event. Following the event, Megan sent an electronic version of the handout to Al Franken's staff, Gretchen Benjamin of TNC and UMRBA who intend to use the handout in future meetings.

Megan Moore attended the Upper Mississippi River Restoration program's 30th Anniversary commemoration in La Crosse on Aug 8th.

Megan Moore attended the quarterly meetings of Upper Mississippi River Basin Association (UMRBA) and Upper Mississippi River Restoration – Coordinating Committee meeting in La Crosse on Aug 9th. Megan attended UMRR – HREP workshop on Sept 27th -29th in Davenport , IA.

Jayme Stone and Jenny Hanson (USGS) participated in a Lidar Science Workshop, August 2-4, 2016, in Fort Collins, CO. Stone and Hanson presented the poster, "Upper Mississippi River System Elevation," which highlights lidar techniques, processes, and applications used at UMESC.

Several oral and poster presentations were given at the 146th Annual Meeting of the American Fisheries Society, August 21-25, 2016, in Kansas City, MO.

- Can resilience concepts improve management and restoration?, by Kristen Bouska, Jeff Houser, and Nathan De Jager.
- Development and Potential Use of Broad-Scale Inundation Metrics to Evaluate the Role of Floodplain Inundation on Fishes in the Lower Missouri River, by Kristen Bouska, Garth Lindner, Edward Bulliner, Craig P. Paukert, and Robert B. Jacobson.
- Quantification of Daily Otolith Increments in Young of Year Asian Carp, by Emily A. Szott, James T. Lamer, James Larson, Brent Knights, Jon Vallazza, Levi Solomon, Rich Pendleton, and Andrew F. Casper.
- Using Maxent to Generate a Fundamental Niche Model for Diverse Mussel Assemblages within the Northeastern Ozark Region of Missouri, by Kayla Key, Garth Lindner, Kristen Bouska, Amanda Rosenberger, and Stephen McMurray.
- Lampo, E., J. Lamer, B. Knights, J. Vallazza, J. Larson, A. Casper. R. Pendleton, and L. Solomon. 2016. Juvenile Asian carp predation on the La Grange Reach, Illinois River. Platform Presentation. National AFSs 2016
- Solomon, L., D. Herzog, R. Hrabik, C. Kennedy, S. Mondragon, D. Ostendorf, Q. Phelps, S. Sherif, M. Taylor, N Grider, R Hilsabeck, T. Thomas. Alligator gar in Southeast Missouri and Central IL. Invited Platform Presentation, National AFS, Kansas City, MO.

Kristen Bouska also co-moderated for the session, “Documented and Documenting the Effects of Climate Change on Inland Fish and Fisheries”

Bouska, K. L., G. A. Lindner, C. P. Paukert and R. B. Jacobson. 2016. Stakeholder-led science: engaging resource managers to identify science needs for long-term management of floodplain conservation lands. *Ecology and Society* 21 (3):12. [online] URL: <http://www.ecologyandsociety.org/vol21/iss3/art12/>

UMESC Scientists from the Long Term Resource Monitoring Branch will participate in a U.S. Army Corps of Engineers’ Upper Mississippi River Restoration (UMRR) Program, Habitat Rehabilitation and Enhancement Program (HREP) meeting, September 27-29 in Davenport, IA. This is an opportunity for enhancing coordination and communication among all those involved in the various aspects of developing habitat projects, including those improving our understanding of the river ecosystem. Objectives for this workshop are to; build relationships and facilitate dialogue among UMRR’s restoration practitioners, planners, engineers, and scientists; discuss insights gained about project design, construction, monitoring, and Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R); and strengthen UMRR’s restoration efforts by learning from insights gained as discussed above

Jennifer Sauer participated in a Visioning workshop at the USGS Powell Center for Analysis & Synthesis, October 12-13, 2016, in Fort Collins, CO. The workshop solicited input from monitoring practitioners, program managers, and information scientists to inform enhancements to an existing web resource, MonitoringResources.org. The goal is to develop enterprise capacity and tools to better support monitoring design, data management, and documentation of data collection protocols used by federal agency and associated stakeholders charged with monitoring and managing natural resources.

Bouska, K., J. Houser, and N. De Jager. 2016. Applying ecological resilience concepts to the restoration and management of the Upper Mississippi River System. Upper Mississippi River Restoration Habitat Restoration and Enhancement Program Workshop. 28 September 2016.

Bouska, K. and G. Lindner. 2016. Science to inform management of floodplain conservation lands under non-stationary conditions. U.S. Geological Survey Large River Monitoring Forum. 8 September 2016.

Bouska, K. and J. Houser. 2016. Assessing the ecological resilience of the Upper Mississippi River System. Joint Upper Mississippi River Basin Association and Upper Mississippi River Restoration Coordination Committee Meeting. 9 August 2016.

L. Solomon, A. Casper, A. Anderson, J. DeBoer, D. Gibson-Reinemer, and D. Kellerhals. Water depth issues on the lower UMRS: perspectives from the Illinois River. UMRR Analysis Team Quarterly meeting, August 1, 2016

Levi Solomon and Doyn Kellerhals attended the quarterly Emiquon Partners meeting at Dickson Mounds Museum.

Levi Solomon attended the FWIC meeting and gave a brief update of the ongoing efforts of the HNA II and what it means for the FWIC moving forward.

Eric Ratcliff and Eric Gittinger attended a USACE meeting held for partners and stakeholders of the Piasa-Eagle's Nest Islands HREP. 10/2016.

Chick, J.H., D.K. Gibson-Reinemer, L.A. Soeken-Gittinger, and A.F. Casper. 2016. Empirical evidence of a negative influence of invasive silver carp on sport fishes in the Upper Mississippi River System. Oral Presentation. Annual Meeting of the Ecological Society of America. Fort Lauderdale, FL. 8/2016.

Soeken-Gittinger, L.A. and J.H. Chick. 2016. Efficacy of automated sampling buoys used in the Great Rivers Observatory Network (GREON). Oral Presentation. Annual Meeting of the Ecological Society of America. Fort Lauderdale, FL. 8/2016.

The Great Rivers Field Station held an open house in conjunction with the Mississippi River Earth Tones Festival on September 17th. In addition to field station staff discussing our research and monitoring, Karen Hagerty of the US Army Corps of Engineers presented information on the Upper Mississippi River Restoration program, and IDNR biologists Mike McClelland and Rob Maher presented information on Mississippi River fisheries issues.

Bierman participated in the quarterly A-Team conference call/webinar – August, 2016.

Hupfeld and Kueter attended R workshop in Ames, Iowa – August, 2016.

Hupfeld attended national AFS meeting in Kansas City, Missouri – August, 2016.

Bierman attended quarterly FWIC meeting in Dubuque – August, 2016.

Bierman attended HREP workshop in Davenport, Iowa – September, 2016.

Technical activities and assistance:

First Quarter

Brian Ickes shared the fisheries graphical browsers (and beta bubbleplots developed by Ickes and Schlifer) with Jennifer Graham (USGS). Jennifer is interested in using similar applications for algal biomass.

Brian Ickes provided sample size tables to Shawn Giblin on the Benthic Macroinvertebrate Sampling Plan for the Pre-assessment Screen following the Derailment at Alma, Wisconsin. Brian was able to utilize the LTRM Invert. data to develop the tables.

Jennifer Sauer provided a review for Shawn Giblin on the Benthic Macroinvertebrate Sampling Plan for the Pre-assessment Screen following the Derailment at Alma, Wisconsin

Bierman and Ogden tracked radio-transmitted crappie in Pool 12 – October, 2015.

Bowler, Reed, and Vogeler collected yellow perch specimens from regular LTRM sampling for aging study – October, 2015.

Bowler and Reed collected sub-adult common carp from routine LTRM fisheries monitoring for Quinton Phelps of the Missouri Department of Conservation as part of a large-scale effort in microsatellite research in the Upper Mississippi River – October, 2015.

Bowler pre-filled electrofishing and netting data sheets for Pool 12 HREP project – October, 2015.

Bowler, Bierman, Reed, and Vogeler conducted pool-wide random electrofishing in conjunction with the Pool 12 overwintering HREP project – October, 2015.

All LTRM staff assisted Bellevue Research with seven nights of fall tailwater sauger and walleye population assessments in Pool 13 – October, 2015.

All LTRM staff assisted in collecting silver chubs from fall night electrofishing sampling for Dave Herzog of the Missouri Department of Conservation for assessing age, demographics, environmental history, and genetics of the species – October, 2015.

Bowler completed data entry and QA/QC for the pool-wide random electrofishing segment of the Pool 12 overwintering HREP project from the 2015 field season – October, 2015.

All LTRM staff conducted fyke netting segment at eight backwater complexes in conjunction with the Pool 12 overwintering HREP project – November, 2015.

Bowler completed data entry and QA/QC for the fyke netting segment of the Pool 12 overwintering HREP project from the 2015 field season – November, 2015.

Bierman sent 2014 water quality data from Browns Lake to Chuck Theiling, Rock Island USACE, for the Browns Lake HREP Performance Evaluation Report – November, 2015.

Bowler entered incidental turtle catches from Pool 13, 2015 into master dataset – November, 2015.

Bierman, Bowler, Kueter, and Vogeler extracted and catalogued 924 bluegill otoliths in conjunction with the Pool 12 overwintering HREP project – November, 2015.

Bowler entered data of catalogued bluegill otoliths from Pool 12 – November, 2015.

Bierman and Kueter assisted Bellevue Research with crappie collections in Kehough Lake via fyke netting for the telemetry segment of the Pool 12 overwintering HREP project – November, 2015.

Kueter and Vogeler digitized 158 yellow perch otoliths from Pools 12 and 13 – December, 2015.

Bierman and Kueter assisted Maquoketa Wildlife Unit staff with CWD collections in Jackson County – December, 2015.

Bierman, Kueter, and Vogeler tracked radio-transmitted crappie in Pool 12 – December, 2015.

Bierman provided comments to Kristen Bouska of the USGS for consideration by the “UMRR Resilience Group” during their upcoming workshop in early January, 2016 – December, 2015.

Kueter and Vogeler completed independent aging of 158 yellow perch otoliths from Pools 12 and 13 – December, 2015.

Bowler entered age data for Pools 12 and 13 yellow perch into database – December, 2015.

Kueter and Vogeler digitized 924 bluegills from Pool 12 – December, 2015.

Kueter completed initial aging of 924 bluegills for the Pool 12 HREP project – December, 2015.

Levi Solomon provided the updated LTRM fish component methodologies (Ratcliff et al. 2014) and two other pulsed DC electrofishing (Burkhardt and Gutreuter 1995; Justus 1994) documents to Tad Locher, Herman Brothers Lake and Land Management.

Rich Pendleton and Levi Solomon provided powerpoint slides concerning Asian carp to Clint Morgeson, INHS, for his lecture at Davison College.

Levi Solomon and Rich Pendleton provided skipjack herring collected during routine LTRM sampling to Josh Egan, University of Minnesota.

Rich Pendleton and Levi Solomon provided gar spp. and bowfin specimens, pectoral spines, and data collected through routine LTRM monitoring to Sara Huck, INHS.

Levi Solomon and Rich Pendleton provided gut content and associated LTRM data from sportfish collected via LTRM SOW project 2016B7 to Eli Lampo, Western Illinois University.

Megan Moore provided Upper and Lower Pool 4 wild rice trend data and discussed the increase in wild rice and its growing needs in separate conversations with John Sullivan (retired WQ specialist from WI and current free-lance writer for Big River magazine), Ed Swain (MPCA), and Tim Schlagenhaft (Audubon).

Megan Moore provided technical information on observed Mississippi River wild rice species to Matt Jacobson (UMRBA) and Stephen Winter (USFWS).

Megan Moore provided edits and comments on UMRCC Wildlife Tech Committee vegetation proposal template.

Megan Moore provided Lake Pepin SAV data to Steve Heiskary (MPCA) and Nick Schlessner (MNDNR Large Lake Fish Specialist).

Rob Burdis communicated with Tony Sindt (MNDNR Fisheries Specialist on Minnesota River) on phytoplankton sampling and provided methodology suggestions.

Rob Burdis sent ammonia data to Kevin Stauffer (MNDNR Area Fish manager) to serve as baseline information related to dam removal of Lake Shady Dam on Zumbro River.

Rob Burdis instructed MNDNR Fish staff on use, maintenance, and calibration of Hydrolab for water sampling.

Steve DeLain communicated with UMESC staff regarding a USGS spatial data query tool.

Steve DeLain advised Tony Sindt (MNDNR Fisheries Specialist on Minnesota River) on techniques to set hoop nets and how to handle the data under various circumstances.

Steve DeLain responded to request by Brenda Kelly (WI DNR) for UMRR-LTRM macroinvertebrate sampling protocols.

Second Quarter

Rob and Steve attended Radiological Emergency Preparedness (REP) training on March 29. Steve, Rob, Megan and Sarah completed Active Shooter Training.

Rob provided summer 2015 Lake Pepin secchi data to Nick Schlessner (MNDNR Lake Pepin Large Lake Specialist).

Steve provided an LTRM Fish/Veg/WQ summary to Ann Kuitunen (MNDNR river ecologist) who provided the program updates to MN chapter AFS meeting.

Steve provided Pool 4 LTRM mudpuppy data to Krista Larson for MCB survey study.

Steve provided LTRM 1993-2015 fish data from Pools 4 & 8 to Andrew Herberg (student worker) to input into MNDNR Fish Mapper.

Megan provided veg data and data review to former veg intern for her senior capstone thesis project at University of Wisconsin – Eau Claire.

Brian Ickes provided documents to Greg Schneider-Bateman, UW-Stout to give examples to students interested in the lifecycle of a project: proposal, the report, the more popular or public facing document, the follow up study, and others that fit into that sequence.

Jeff Houser provided Mark Fritts, USFWS Fish Biologist, with WQ tributary data. Mark is starting up a larval fish/egg monitoring program in Pools 8-13 of the Mississippi along with some additional monitoring to be conducted in the Maquoketa, Turkey, Upper Iowa, and Wisconsin Rivers.

Bierman, Kueter, and Matthews tracked radio-transmitted crappie on Pool 12 – January-March, 2016.

Bowler calculated age, growth, and mortality metrics for 2015 yellow perch in Pools 12 and 13 – January, 2016.

Bowler entered bluegill age data into the Pool 12 HREP project database – January, 2016.

Kueter analyzed long-term trends of suspended solids, total nitrogen, total phosphorus, and turbidity by stratum in Pool 13 from 1994-2015 for the 2015 IDNR Operational Report – January, 2016.

Bowler compiled and submitted the Bellevue LTRMP Operational Report for 2015 to district supervisor – January, 2016.

Bowler calculated bluegill mortality rates in the eight HREP study lakes in Pool 12 for 2015 – January, 2016.

Bowler compiled and provided geo-referenced records of threatened and endangered fish species in Illinois collected in 2015 from Pools 12, 13, 17, and 18 for Tara Kieninger (Heritage Database Program Manager for the Illinois Department of Natural Resources) – February, 2016.

Bowler compiled and provided geo-referenced records of threatened and endangered fish species in Iowa collected in 2015 from Pools 10, 11, 12, 13, 17, and 18 for Kelly Poole and John Olson of the Des Moines office – February, 2016.

Bowler provided mean length at age summaries of bluegill in Pool 12, 2013 to Manchester Management for comparisons to northeast Iowa inland populations – February, 2016.

Bowler provided geo-referenced records (1993-2015) of threatened and endangered fish species in Illinois collected from Pools 12, 13, 17, and 18 to Jeremy Tiemann of the Prairie Research Institute in Champaign-Urbana – February, 2016.

Bowler edited Loras student Amanda Fitzpatrick's manuscript "Fish Species Tolerance as a Means of Assessing Watershed Quality in Catfish Creek" for her undergraduate thesis – February, 2016.

Bowler compiled and distributed Pool 13 Fisheries Highlights, 2015 to UMRS personnel and to Manchester Research for the Rivers and Streams Technical Committee meeting and the AFS NCD annual report – March, 2016.

Bowler generated and disseminated catch/unit-effort figures for multiple fish species across various gear/strata combinations of the six LTRM field stations (LTRM fish data; 1993-2015) to UMR personnel for the 4th edition of the UMRCC Fish Compendium – March, 2016.

Aaron Matthews was hired to track radio transmitted crappies for the telemetry segment of the Pool 12 overwintering HREP project – March, 2016.

Third Quarter

Jim Rogala assisted Gretchen Benjamin, TNC, with choosing random sample points for vegetation monitoring during pool-wide drawdowns. Pools 24-26 are being held "below full pool" for as long as possible but hopefully at least 90 days, maybe more.

Larry Robinson provided Kristin Piljay, photo researcher with www.wanderlustphotos.com, with an example of lidar imagery for a geography textbook:

Geosystems: An Introduction to Physical Geography 10e
Christopherson
ISBN: 9780134597119
c. 2018

Rob Burdis attended statistical training at UMESC in La Crosse, WI on April 12-14.

Rob Burdis provided technical expertise to Tony Stindt (MNDNR River Fish Specialist) regarding zooplankton sampling using a tube sampler.

Steve DeLain provided assistance to Nick Schlessler (MNDNR large lake specialist) with regard to the UMRCC Fish Compendium related to LTRM fish data.

Megan Moore and Rob Burdis reviewed the UMRR Report to Congress, which includes a section highlighting the research conducted by our field station. Rob sent edits and comments to Kirsten Mickelson (UMRBA).

Steve DeLain and Rob Burdis completed web based Radiological Emergency Preparedness training; Rob participated in the Radiological Emergency Preparedness training drill on May 17th.

Megan Moore completed 6 days of Supervisory Core Training May 10-12 and June 7-9.

Steve DeLain coordinated with Quintin Phelps (LTRM Big Rivers and Wetlands Field Station) to collect black crappie specimens for age and growth data.

Steve DeLain provided LTRM fish data on percent overall catch of largemouth bass from time periods 1993-2004 and 2005-2015 to Dan Dieterman (MNDNR fisheries biologist and habitat specialist) for the UMRCC fish compendium.

Megan Moore and Yao Yin (USGS) provided LTRM vegetation monitoring training to all permanent and seasonal LTRM veg staff from MN, WI and IA in Wabasha, MN on June 13th.

Steve DeLain coordinated and conducted MNDNR watercraft safety training on June 1st. He trained approximately 20 state employees with the assistance of 3 C.O.'s.

Rob Burdis and Steve DeLain attended webinar training on delineation of habitat enhancement rehabilitation projects (HREP) on June 8th with staff from multiple state and federal agencies. The training may be used to help design and establish research projects within and outside of HREP's.

Bierman and Matthews tracked radio-transmitted crappie in Pool 12 – April, 2016.

Matthews assisted Green Island Wildlife with prairie burn at Indian Bluffs Wildlife Management Area – April, 2016.

Bowler generated pool maps of walleye locations and made summary tables of walleye collections by strata in Pools 4, 8 and 13 (LTRM; 1993-2015) for the walleye chapter of the 4th edition of the UMRCC Fish Compendium for Brian Brecka of the Wisconsin Department of Natural Resources – April, 2016.

Bowler calculated, graphed, and tabulated largemouth bass I/f, relative stock densities, and Wr from day electrofishing (all LTRM field stations; 1993-2015) for the largemouth bass chapter of the 4th edition of the UMRCC Fish Compendium for Dan Dieterman of the Minnesota Department of Natural Resources – April, 2016.

Matthews assisted Green Island Wildlife with Canada goose nest searches in Pool 9 – April, 2016.

Bowler assisted Green Island Wildlife with spring spotlight surveys in Jackson County, Iowa – April, 2016.

Bowler calculated and graphed c/f of age-1+ bluegill from day electrofishing (all LTRM field stations; 1993-2015) for the bluegill chapter of the 4th edition of the UMRCC Fish Compendium for Jeff Janvrin of the Wisconsin Department of Natural Resources – April, 2016.

Bowler generated and disseminated catch/unit-effort figures for ten Cyprinid species from day electrofishing and mini-fyke netting across the six LTRM field stations (LTRM; 1993-2015) to UMR personnel for the 4th edition of the UMRCC Fish Compendium – April, 2016.

Bowler sent c/f summaries of fisheries Special Projects Outpool data (Pools 9-11 and 16-18; 2003-2015) to Kristen Bouska, river ecologist of the USGS – April, 2016.

Bowler made county distribution maps of Iowa's 2015 commercial harvest of common snapping, painted, and softshell turtles for Guttenberg Management – April, 2016.

Matthews assisted Bellevue Research with collections of shovelnose sturgeon from the Cedar River – May, 2016.

Matthews assisted Green Island Wildlife with follow-up of Canada goose nest searches in Pool 9 – May, 2016.

Bowler provided walleye CPUE analysis of LTRM wingdam electrofishing (Kruskal-Wallace; 1994-2015) in Pools 8 and 13 to evaluate pre-and-post slot limit regulation changes in Iowa for Bellevue Research – May, 2016.

Bowler provided general fishing forecast information for the Mississippi River to Scott Levine of the Clinton Herald for a newspaper article – May, 2016.

Bierman reviewed and supplied comments on the Brown's Lake HREP Performance Evaluation Report to the U.S. Army Corps of Engineers – May, 2016.

Hupfeld reviewed NAJFM manuscript "Fillet Weight and Fillet Yield: New Metrics to Assess Panfish Fisheries" – May, 2016.

Bowler sent figures and tables of bluegill mortality estimates, r/f , and W_r (Pool 12 HREP; 2006-2015) to Mark Cornish of the U.S. Army Corps of Engineers for the 4th edition of the UMRCC Fish Compendium – May, 2016.

Bowler calculated and tabulated distributed annual mean length at age of bluegill (Pool 12, HREP; 2006-2015) for Mark Cornish of the U.S. Army Corps of Engineers for 4th edition of the UMRCC Fish Compendium – May, 2016.

Bowler calculated and tabulated annual age-frequency, mean length at age, and total annual mortality of walleye in Pools 11 and 13 (Bellevue Research data; 2010-2015) for the walleye chapter of the 4th edition of the UMRCC Fish Compendium for Bellevue Research – May, 2016.

Bowler provided manuscript "Evaluating the Effectiveness of a Mandatory Catch and Release Regulation on a Riverine Largemouth Bass Population" to Dan Dieterman of the Minnesota DNR – June, 2016.

Bowler sent tables of age-0 largemouth bass mean lengths in October (Pool 13, LTRM; 1993-2015) to Gene Jones for the 4th edition of the UMRCC Fish Compendium – June, 2016.

Bowler provided c/f of age-1+ bluegill from day electrofishing (all LTRM field stations; 1993-2015) for Dave Heath of the Wisconsin Department of Natural Resources – June, 2016.

Bowler sent turtle summaries (Pool 13, LTRM; 1990-2015) to Lake Darling Management for the Turtle Sampling meeting in Des Moines – June, 2016.

Bowler, Kueter, Paulsen, and Siegwarth conducted normal LTRM fisheries sampling in Pool 13 – June, 2016.

Paulsen, Rutledge, and Siegwarth assisted Green Island Wildlife with Canada goose round-up and banding at the Green Island WMA and in Pools 12 and 14 – June, 2016.

Hupfeld reviewed Acta Hydrobiologica Sinica manuscript “A Rapid Assessment Approach for Evaluating Silver Carp Gender” – June, 2016.

Bowler, Paulsen, and Siegwarth conducted electrofishing and provided information about LTRM fisheries sampling for teacher Kathi Atkinson and regional coordinator Jeff Lang of the STEM (Science Technology Environment and Mathematics) program – June, 2016.

Fourth Quarter

Rob Burdis and Megan Moore provided airboat training to the new LTRM Vegetation specialist, Eric Lund.

Steve DeLain reviewed the UMRS draft fish indicators report with Nick Schlessner (Lake Pepin Fish Specialist) and provided comments specific to the backwater indicator species using the LTRM database.

Steve collected black crappie and freshwater drum specimens for an LTRM age and growth study for the Big Rivers and Wetlands Field Station and graduate student Joshua Abner from Southeast Missouri State University.

Steve DeLain coordinated with Nick Schlessner to collect silver chub fin clips and store in ethanol for a Patrick Kocovsky, a USGS Lake Erie researcher.

Eric Lund (new LTRM Vegetation Specialist) assisted with UMRCC Veg monitoring in Pool 8 on Aug 25th.

Megan Moore provided LTRM veg manuscripts and completion reports pertaining to aquatic vegetation in Pool 4 to USGS researcher Nate DeJager.

Eric and intern Lisa Yngsdal attended aquatic vegetation ID training conducted by Paul Skawinski (author of Aquatic Plants of the Upper Midwest) and Donna Perleberg (MNDNR aquatic plant ecologist) in Itasca State Park on August 4-5.

Megan Moore developed a draft Letter of Support for the Report to Congress on behalf of Assistant Commissioner Barb Naramore, and requested Barb’s review and submission to the UMRBA and USACE. Rob was asked to review a manuscript for River Research and Applications. Rob completed his review and submitted it on Sept 23rd.

Steve DeLain trained freshwater mussel staff on how to set and use hoop nets so they can collect fish specimens for their lab.

Rob Burdis participated in the UMRR-LTRM Analysis Team mtg in August by phone.

Levi Solomon and Kris Maxson provided fish specimens to Amanda Wilson, Illinois State University, for ongoing turtle sampling.

Kris Maxson and Levi Solomon provided fish specimens to Tih Fen Tin, University of Illinois Springfield, for ongoing IDNR project working with osprey rearing and release.

Alison Anderson and Levi Solomon met with Jason Haupt, University of Illinois Extension office Lewistown, to discuss potential restoration of Big Creek in Canton. We provided expertise on restoration techniques and their implementation to best restore the system and how to conduct any pre- and post-monitoring.

Levi Solomon and Kris Maxson provided Catostomid specimens to Dennis Richardson, Quinnipiac University, for his ongoing leech research on the Illinois River.

Levi Solomon provided Greg King, PhD student at Eastern Illinois University, summarized LTRM CPUE data.

Levi Solomon collected Silver Carp for Jennifer Jefferies, post-doctoral researcher, University of Illinois, for ongoing research and provided lab space for dissections

Levi Solomon and Andy Casper assisted Robin Calfe, USGS Columbia, and Al Mensinger, University of Minnesota Duluth, with their ongoing hydroacoustic work on Asian carp.

Levi Solomon provided Josh Bruegge, MDC, with recently published literature concerning Asian carp.

Kris Maxson and Levi Solomon assisted Sara King, researcher at the University of Illinois, in collecting bowfin and gar species for ongoing population demographics research.

Doyn Kellerhals and Andy Casper provided Doug Blodgett, Director of River Conservation at the TNC Emiquon Preserve, with expertise on water quality sampling for the recently opened Illinois River – Thompson Lake connection structure.

Bierman, Kueter, and Siegwarth assisted Bellevue Research with turtle collections in Dubuque and Jackson Counties – July-August, 2016.

Rutledge assisted Guttenberg Management with outpool electrofishing sampling in Pool 10 – July, 2016.

Bierman assisted Mississippi River Wildlife with tour of the Pool 12 overwintering HREP's for members of The Nature Conservancy – July, 2016.

Paulsen and Siegwarth assisted Guttenberg Management with outpool electrofishing sampling in Pool 9 – August, 2016.

Bowler, Kueter, and Paulsen collected largemouth bass specimens from regular LTRM sampling for age and growth study – September, 2016.

Bowler, Kueter, and Paulsen collected black crappie from routine LTRM fisheries monitoring for Quinton Phelps of the Missouri Department of Conservation as part of a large-scale effort to determining black crappie age, growth, habitat usage, and floodplain production in the Upper Mississippi River – September, 2016.

Bowler, Kueter, and Paulsen collected silver chub specimens from routine LTRM fisheries monitoring for Patrick Kocovsky of the USGS in Sandusky, Ohio and Nick Mandrak of the University of Toronto for taxonomic assessments and comparisons across its distributional range through DNA analysis – September, 2016.

Bierman assisted with the fisheries renovation of Three Mile Lake in Union County – September, 2016.

Bierman assisted Mississippi River Wildlife with roadside survey in Jackson County – August, 2016.

Outreach

First Quarter

(UMESC) Andrea Ostroff, Science Advisor for the USGS Fisheries Program, visited the Upper Midwest Environmental Sciences Center October 6-7, 2015, to meet with the Center's Principal Investigators, tour the facility, and visit an Upper Mississippi River Habitat Rehabilitation and Enhancement Project in navigation Pool 8 near La Crosse, Wisconsin.

Levi Solomon co-hosted administrators from the Emiquon Partnership for a tour the Illinois River. Tour included demonstration of LTRM gears, mission and some noteworthy findings of LTRM, ID and discussion of fishes commonly sampled, and discussion of differences between the Emiquon Preserve and permanently connected backwater lakes on the Illinois River.

Eric Ratcliff, Ben Lubinski, and Eric Gittinger presented information about the LTRM, INHS, and careers in science to approximately 160 high school seniors attending a "Who Works on the River" career fair event at the National Great Rivers Research and Education Center. 11/2015).

Megan Moore provided Upper and Lower Pool 4 wild rice trend data and discussed the increase in wild rice and its growing needs with John Sullivan (retired WQ specialist from WI and current free-lance writer) for an article in Big River magazine.

Megan Moore discussed UMRR-LTRM program with Patrick Donnell (MNDNR Grants Specialist) to help add the LTRM information to the MNDNR's Federal Grant webpage on the MNDNR intranet. She then reviewed and edited website contents.

Second Quarter

Megan provided outreach contact information to Barb Peichell (watershed project manager and CWC coordinator for PCA) and Leya Charles (Environmental Health Specialist with Prairie Island Indian Community). Megan supplied an aquatic vegetation manuscript and data.

Ben Lubinski and Ed Culver gave a demonstration about Mississippi River fishes and their biology and ecology to 92, 5th grade students from Keysor Elementary School in Kirkwood, MO. The demonstration took place at the Riverlands Migratory Bird Sanctuary in West Alton, MO. March 23, 2016.

Eric Ratcliff presented information about Mississippi River ecology, LTRM fish sampling, and fish and mussel identification to approximately 60 high school students enrolled in advanced placement biology courses at Lindbergh High School, St. Louis, Missouri. Two presentations: March 29th and March 31st, 2016.

Ed Culver presented information about ancient fishes of the Mississippi River to approximately 60 high school students enrolled in advanced placement biology courses at Lindbergh High School, St. Louis, Missouri. Two presentations: March 29th and March 31st, 2016.

(UMESC) Nathan De Jager met with the Upper Mississippi River (UMR) Systemic Forest Stewardship Team to discuss future projects related to forest ecology on the UMR, April 12, 2016. The Stewardship Team is

comprised of staff from all three U.S. Army Corps of Engineers' UMR district offices and focuses on forestry issues that span the entire length of the UMR.

(UMESC) Nathan De Jager participated in the first meeting of the Upper Mississippi River Restoration Program's Habitat Needs Assessment Steering Committee, April 13, 2016. The Habitat Needs Assessment is designed to use the best available data and modeling approaches to help management agencies along the Upper Mississippi River (UMR) identify priority ecosystems, species, and locations that could benefit from habitat rehabilitation and enhancement projects across the length of the UMR.

Kristen Bouska presented Assessing the resilience of the Upper Mississippi River System at the LTRM Science Meeting, February 18, 2016, La Crosse, WI (with Jeff Houser);

Kristen Bouska presented Assessing the ecological resilience of the Upper Mississippi River System at the UMRCC, March 17, 2016, Dubuque, IA (with Jeff Houser)

Third Quarter

(UMESC) Center Director Mark Gaikowski and Randy Hines hosted a visit by Congressman Ron Kind (WI-03) staffers, Alex Eveland (DC office) and Karie Jackelen (Wisconsin office) on May 6. This was Eveland's first visit for a briefing on UMESC science programs, followed by a facility tour.

Bierman provided information for a 2016-17 Upper Mississippi River backwater ice fishing forecast article to M. D. Johnson, outdoor writer for Game and Fish magazine – June, 2016.

Fourth Quarter

Megan Moore interviewed with Jeff Weiss (MNDNR Clean Water Specialist in Rochester) describing the LTRM work for the Region 3 Clean Water newsletter.

Suzette Kimball (USGS Director) represented the USGS and speak at the 30th Anniversary Celebration of the U.S. Army Corps of Engineers' (USACE) Upper Mississippi River Restoration (UMRR) Program, August 8, 2016, in La Crosse, WI. Suzette discussed the UMRR's continued relevance and USGS' role in assisting the Partnership with understanding ecosystem conditions, trends, and resilience.

Levi Solomon provided IRBS reports and information to George Donaldson, a local angler curious about ongoing research done at the Emiquon Preserve and what it means for the system moving forward.

Kris Maxson and Levi Solomon hosted Fisheries Techniques Class, University of Illinois, at IRBS. Included standard tour of lab and facilities along with field netting and electrofishing demos.

Kris Maxson and Andrya Whitten hosted Ichthyology Class, University of Illinois, at IRBS. Included standard tour of lab and facilities along with electrofishing demos.

Kris Maxson hosted a station at the Menard County Ag Discovery Days, a competition among local fifth grade classes. Included description of fish sampling gear and description/life histories of live fish on display.

Eric Ratcliff and Eric Gittinger presented Mississippi River fish and freshwater mussel ecology and identification to approximately 250 fifth-grade students attending the annual Water Festival event at Lewis and Clark Community College. 9/2016.

Hupfeld worked the fish aquarium at the Iowa State Fair in Des Moines, Iowa – August, 2016.