

**UMRR**  
**Long Term Resource Monitoring FY17 Activities (Living Document)**  
**(Oct. 2016–Sep. 2017)**

**Publications, Presentations, and Conference Attendance**

Kristin Bouska, Attended Social Ecological Systems Training & Education Program at University of Idaho.  
October 24-28

Kristin Bouska, Presented a summary of recent publication on floodplain science needs to the USGS Large Rivers Initiative. October 17

Megan Moore prepared oral presentation of LTRM data Pool 4 data describing an Ecological Shift for the traveling Smithsonian Waterways expo in Goodhue county MN.

Rob Burdis attended the A-team meeting on Oct 26th in Cape Girardeau, MO where he presented a PowerPoint entitled Water Discharge, Residence Time and Current Velocity Examination of Pool 4 LTRM data. Eric conducted data veg trend analysis in support of Rob's presentation.

Megan Moore and Eric Lund participated on A-team meeting via conference call on Oct 26th.

Rob Burdis attended the UMRCC water quality Technical section meeting in Cape Girardeau, MO on Oct 27th.

Megan Moore attended UMRBA and UMRR-CC quarterly meetings in St. Paul, MN on Nov 15th and 16th.

Kris Maxson, Andrya Whitten, and Ollie Mendenhall attended the UMRCC Fall Fish Technical section meeting at Golden Eagle Farms in New London, MO; 6 October 2016.

Solomon, L. E., Pendleton, R. M., Hrabik, R. A., and Casper, A. F. 2016. Population Trends and a Distributional Record of Selected Fish Species from the Illinois River. Transactions of the Illinois State Academy of Science. Vol 109, pp57-61

Eric Ratcliff and Eric Gittinger participated in a planning meeting with the St. Louis District Army Corps of Engineers for partners and stakeholders of the Piasa-Eagle's Nest Islands Habitat Rehabilitation and Enhancement Project.

Scientists from the Upper Midwest Environmental Sciences Center will participate in the 2017 biennial meeting of the Association for the Sciences of Limnology and Oceanography (ASLO), February 26-March 3, 2017. The conference theme, "From the Mountains to the Sea," emphasizes the connectivity of our planet's aquatic systems, and underscores the urgent need to share knowledge, insights, discoveries, and different world views about the lakes, rivers, streams, aquifers, wetlands, and oceans that comprise our Earth's hydrosphere.

- Land Use Change Alters Nutrient Export and Uptake in Streams Along Brazil's Agricultural Frontier, by Jankowski, K.J., Deegan, L.A., Neill, C., Macedo, M.N., Coe, M.T., Brando, P.M., and Maracahipes, L. (abstract: 29752).
- Quantifying the Effects of Connectivity on the Spatial Patterns of Submersed Aquatic Vegetation in the Upper Mississippi River, by Yin, Y., Rogala, J.T., and Ingvalson, D. (abstract: 29482).
- The Patch Mosaic of Total Nitrogen (TN), Total Phosphorous (TP), and TN:TP in the Upper Mississippi River, USA, by De Jager, N.R. and Houser, J.N. (abstract: 29423).
- Using Spatially Extensive, Long-Term Data to Understand the Structure and Function of a Changing, Flood-Plain River System, by Houser, J.H., Bierman, D.W., Burdis, R.M., Casper, A.F., DeLain, S.A., Drake, D.C., Fischer, J.R., Giblin, S.M., Moore, M.J., Solomon, L.E., Pendleton, R.,M., Kreiling, R.,M., and Jankowski, K.J.

Freshwater Mollusk Conservation Society Symposium (UMESC) - Scientists from UMESC's native mussel team will participate in the 10th International Symposium of the Freshwater Mollusk Conservation Society to be convened in Cleveland, OH, March 26-30, 2017. Presentations include (Teresa Newton, tnewton@usgs.gov, Ecosystems),

- "A mussel community assessment tool for the Upper Mississippi River," by Heidi Dunn, Steve Zigler, and Teresa Newton (invited)
- "Small scale spatial patterns of freshwater mussels in the Upper Mississippi River," by Patty Ries, Nate DeJager, Teresa Newton, and Steve Zigler

US-International Association for Landscape Ecology (UMESC) - Nate De Jager and Molly Van Appledorn have organized the special symposium, "Floodplain Landscape Ecology: Patterns, Processes and Management Implications," at the 2017 Annual Meeting of the US-International Association for Landscape Ecology (IALE), April 9-13, 2016, in Baltimore, MD. The symposium was created to discuss challenges and advances in characterizing floodplain ecosystem patterns and processes, and how such research can address the grand management challenge of maintaining biophysical interactions that sustain essential natural resources while reducing flood-related damage to property and loss of life

- Interactive effects of flood inundation, browsing, and an invasive grass on vegetation and soil nutrient dynamics on the Upper Mississippi River floodplain, by Nate De Jager.
- Hydro-geographic analyses of floodplain forest ecosystems: quantifying ecologically-relevant patterns of inundation from continental to local scales, by Molly Van Appledorn (UMESC), Matthew E. Baker, and Andrew J. Miller (University of Maryland Baltimore County).

Bierman participated in the Resilience Work Group conference call – January, 2017.

Bierman participated in the quarterly UMRR A-Team conference call – January, 2017.

Bales and Bierman attended the UMRR Coordinating Committee quarterly meeting in Rock Island, Illinois – February, 2017.

Bowler compiled and distributed *Pool 13 Fisheries Highlights, 2016* to UMRS personnel and to Manchester Research for the Rivers and Streams Technical Committee meeting and the AFS NCD annual report – March, 2017.

Bales, Bowler, and Kueter attended district meeting in Bellevue, Iowa – March, 2017.

Bowler attended the 73<sup>rd</sup> annual UMRRCC in Red Wing, Minnesota – March, 2017.

Bales, Bierman, Bowler, and Kueter attended UMRR-LTRM/UMESC/USACE Science Meeting in Muscatine, Iowa – March, 2017.

Bouska, K., A. Anderson, N. DeJager, K. Jankowski, J. Rogala, J. Ruhser, and J. Rohweder. Are geomorphic classifications biologically meaningful? An ecological assessment of an enhanced aquatic area classification. Upper Mississippi River Conservation Committee Water Quality Technical Committee. 21 March 2017.

Ben Lubinski, Eric Gittinger, and Eric Ratcliff attended the 55<sup>th</sup> Annual Illinois Chapter of the American Fisheries Society meeting in Moline, Illinois. January 21-23, 2017.

John Chick, Ben Lubinski, Eric Ratcliff, Lori Gittinger, and Eric Gittinger attended the LTRM All-Hands Component meeting in Muscatine, Iowa March 28-29, 2017

Rob Burdis created a PowerPoint presentation on the Peterson Lake monitoring project and presented it to UMRR LTRM water quality component staff on a conference call on Jan 18th.

Eric Lund attended the Minnesota chapter of American Fisheries Society meeting in St Cloud Feb 21st – 23rd. Eric gave a presentation titled Implementation of a Submersed Macrophyte IBI on the Upper Mississippi River at the Minnesota chapter of American Fisheries Society meeting in St Cloud on Feb 23rd.

Megan Moore attended UMRBA and UMRR CC quarterly meetings in Rock Island, IL February 7th and 8th. Megan Moore participated in Leadership Safety Training module 2 on Feb 13.

Megan Moore, Steve DeLain, Eric Lund, Rob Burdis, and Chris Dawald both attended and facilitated the 73rd annual UMRCC meeting in Red Wing, MN March 21-23.

All Lake City staff attended the LTRM all-hands meeting in Muscatine, IA, March 28-29. Steve presented on his rare fish work. Eric and presented Submersed Vegetation Community Trends and Highlights from 11 Years of Clean Water Assessments and LTRM Surveys. Rob presented on “Peterson Lake – Adaptive Management Evaluation”

Rob Burdis attended the Weaver Bottoms task force meeting and Peterson Lake HREP meeting in Winona on Mar 7th.

Solomon, L. E., R. M. Pendleton, R. A. Hrabik, and A. F. Casper. 2016. Population Trends and a Distributional Record of Selected Fish Species from the Illinois River. Transactions of the Illinois State Academy of Sciences. Vol 109, pp 57-61.

Gibson-Reinemer, D., J. DeBoer, A. Anderson, L. Solomon, K. Maxson, and A. Casper. 2017. Invasive Asian carp are a poor food resource for native piscivores. Platform presentation. Midwest Fish and Wildlife Conference, Lincoln, NE.

DeBoer, J. A., A. K. Fritts, M. W. Fritts, R. M. Pendleton, L. E. Solomon, T. D. VanMiddlesworth, and A. F. Casper. 2017. Differences in and factors affecting growth of centrarchid sportfish in the Illinois River. Platform presentation. Midwest Fish and Wildlife Conference. Lincoln, NE.

Solomon, L., K. Maxson, R. Pendleton, D. Gibson-Reinemer, D. Kellerhals, A. Casper, C. Anderson, E Lampo, R. Haun, and J. Lamer. Evaluating the age structure of selected sportfish populations in the La Grange Reach of the Illinois River. Platform Presentation, IL AFS Moline IL

Szott, E., J. Lamer, T. Plate, J. Larson, B. Knights, J. Vallazza, L. Solomon, R. Pendleton, A. Casper, and J. Wang. Quantification of daily otolith increments in young of year Asian carp. 2016. Platform Presentation IL, AFS Moline IL

Anderson, C., J. Lamer, B. Knights, L. Solomon, A. Casper and J Wang. Validating Ageing structures in Asian carp. Poster presentation, IL AFS Moline IL

Kobler, D,E. Dix, D. Gibson-Reinemer, L. Solomon, K. Maxson, and A. Casper. Effects of Spring flooding on young of year Centrarchid recruitment. Poster presentation, IL AFS Moline

DeBoer, J and L. Solomon. 2017. Environmental factors affecting growth rates of popular sportfish in the Illinois River. INHS Reports. March 2017

Olivea M. Mendenhall, Jason A. DeBoer, Andrea K. Fritts, Mark W. Fritts, Richard M. Pendleton, Levi E. Solomon, Todd D. VanMiddlesworth, Andrew F. Casper. Estimating population size of largemouth bass and black crappie at The Nature Conservancy’s Emiquon Preserve prior to reconnection to the Illinois River. INHS Technical Report 2017 (12)

Andy Casper, Dan Gibson-Reinemer, Kris Maxson, Jason DeBoer, Andrya Whitten, and Ollie Mendenhall attended the Managing and Response Working Group (MRWG) meeting in Springfield, IL, January 24-26.

Levi Solomon, Kris Maxson, and Doyn Kellerhals attended the Upper Mississippi River Conservation Committee (UMRCC) annual meeting in Red Wing, MN, March 21-23.

Chris Dawald, Rob Burdis, Steve DeLain, and Eric Lund attended the Mississippi River Research Consortium in La Crosse, WI April 26-28. Eric judged student presentations.

Megan Moore attended a Water Level Management workshop in Dubuque, IA April 4th-5th. The meeting was well attended by representatives from the 5 Upper Mississippi River states, USACE, USGS, USFWS, Navigation industry, USEPA, National Weather Service, TNC, Audubon, and American Rivers.

Megan Moore presented Mississippi River issues and highlights to Regional Management Team meeting on May 1st. In the presentation she highlighted the accomplishments of the UMRR-LTRM program and field station.

Megan Moore attended UMRBA and UMRR CC quarterly meetings in St. Louis, MO May 23rd and 24th. Mississippi River Research Consortium, April 26-28, 2017, in La Crosse, WI.

- Mapping Ecologically-Relevant Flood Attributes in the Upper Mississippi River System: Development and Application of a Systemic Floodplain Inundation Model, by Molly Van Appledorn and Nathan De Jager.
- Phosphorus Uptake in Streams within the Fox River Basin of Eastern Wisconsin, by Eric A. Strauss, Katie J. Bohrman, Nick Leisz, Marissa McKeenan (UW-L), Becky Kreiling, Lynn Bartsch, and William B. Richardson (UMESC).
- Quantification of Daily Otolith Increments in Young of Year Asian Carp, by Emily A. Szott, James T. Lamer, Thomas Plate (WIU), James H. Larson, Brent Knights, Jon Vallazza (UMESC), Levi Solomon, Rich Pendleton, Andy Casper (IL NHS), and Jun Wang (Shanghai Ocean University).
- Reduced Habitat Diversity and Longitudinal Connectivity Limit the Functional Diversity and Redundancy of Fishes in the Upper Mississippi River, by Kristen Bouska (UMESC).
- Spatial Patterns within Freshwater Mussel Beds in the Upper Mississippi River, by Patricia Ries, Nathan De Jager, Teresa Newton, and Steve Zigler (UMESC).
- Using Physical Metrics of Hydrologic Connectivity to Describe Limnological Conditions in Backwaters of the Upper Mississippi River, by KathiJo Jankowski, James T. Rogala, and Jeff N. Houser (UMESC).
- Validating Aging Structures in Asian Carp, by Charmayne L. Anderson, James T. Lamer (WIU), Brent C. Knights (UMESC), Jun Wang (Shanghai Ocean University), Levi Solomon, and Andy Casper (IL NHS).
- Establishing Baseline Rotifer Community Information in Lake Pepin Prior to Invasion of Planktivorous Carp by Chris Dawald and Rob Burdis, MDNR

American Water Resources Association (AWRA) Specialty Conference (UMESC) – KathiJo Jankowski will present results of an ongoing Upper Mississippi River Research-Long Term Resource Monitoring research project evaluating connectivity among habitats in the Upper Mississippi River, at the AWRA conference, “Connecting the Dots: The Emerging Science of Aquatic System Connectivity,” April 30-May 4, in Snowbird, UT. Jankowski’s presentation will discuss linking landscape metrics of connectivity to limnological conditions in backwater habitats. These results are intended to inform our understanding of how the physical river template is linked with ecological conditions across the Upper Mississippi River

- How well do simple metrics of hydrologic connectivity explain limnological conditions in backwaters of the Upper Mississippi River?, by Jankowski, K.J., J.T. Rogala, J.N. Houser, and N.R. De Jager.

Bierman attended A-Team meeting in La Crosse, Wisconsin – April, 2017.

Bierman participated in UMRR Resilience Working Group conference call – May, 2017.

Bierman attended UMRR Habitat Needs Assessment II/Resiliency Workshop in Moline, Illinois – May, 2017.

Kristen Bouska; May 16-18, 2017 - presented Resilience Assessment update and general resilience indicators at the UMRR Joint Resilience and HNA-II Workshop, Moline, IL

Kristen Bouska; May 22-25, 2017 - participated in the USGS Large River Monitoring Forum Conceptual Modeling Workshop, Hood River, OR. Funding provided by USGS.

Molly Van Appledorn attended training workshops at the 16th annual Scientific Computing with Python conference in Austin, TX July 9-12, 2017. The goal of the workshops were to improve technical proficiency in the Python computer programming language via classroom instruction and hands-on tutorials.

Brian Gray (UMESC) served as the discussant of presentations at a special symposium on Statistical Challenges and Opportunities for Supporting National Ecological Monitoring Programs at the Joint Statistical Meetings in Baltimore, MD, July 29-August 3, 2017. The symposium will be chaired by Kathi Irvine (NOROCK), and include a presentation titled “Designing a Robust Monitoring Scheme for Natural Resources at a Continental Scale” for monarch butterflies and the resources that sustain them with authors that include Emily Weiser (UMESC), Darius Semmens (GECSC) and Wayne Thogmartin (UMESC) (Brian Gray, brgray@usgs.gov, Ecosystems).

Brian Gray (UMESC) will co-lead a discussion of methods to address challenges to environmental and ecological statisticians arising from geographical isolation from other statisticians at the Joint Statistical Meetings in Baltimore, MD, July 29-August 3, 2017. Such challenges may be faced by statisticians and quantitative scientists within DOI. Other co-leads include Kathi Irvine (NOROCK) and Megan Higgs (Neptune & Company, Inc.).

Veilleux, J., K. Maxson, L. Solomon, D. Gibson-Reinemer, A. Casper (2017). The status and trends of Smallmouth Buffalo in the La Grange Reach of the Illinois River. Poster presented at: 2017 Annual NGRREC Intern Symposium; July 31-August 1, 2017; Lewis and Clark Community College, Godfrey, Illinois.

Veilleux, J., K. Maxson, L. Solomon, D. Gibson-Reinemer, A. Casper (2017). The status and trends of Smallmouth Buffalo in the La Grange Reach of the Illinois River. Paper presented at: 2017 Annual NGRREC Intern Symposium; July 31-August 1, 2017; Lewis and Clark Community College, Godfrey, Illinois.

Szott, E., J. Lamer, T. Plate, J. Larson, B. Knights, J. Vallazza, L. Solomon, R. Pendleton, A. Casper, and J. Wang. Quantification of daily otolith increments in young of year Asian carp. Platform Presentation. 2017 National Meeting of the American Fisheries Society

Anderson, C., J. Lamer, B. Knights, L. Solomon, A. Casper and J Wang. Validating Ageing structures in Asian carp from the La Grange Reach of the Illinois River and known age Asian carp from China. Poster presentation. 2017 National Meeting of the American Fisheries Society  
Publications:

Pendleton, R. M., C. Schwinghammer, L. E. Solomon, and A. F. Casper. 2017. Competition among river planktivores: are native planktivores still fewer and skinnier in response to the Silver Carp invasion. *Environmental Biology of Fishes*. DOI 10.1007/s10641-017-0637-7.

Gibson Reinemer, D. K., L. E. Solomon, R. M. Pendleton, J. H. Chick, and A. F. Casper. 2017. Hydrology controls recruitment of two invasive cyprinids: bigheaded carp reproduction in a navigable large river. *PeerJ* 5:e3641 <https://doi.org/10.7717/peerj.3641>

Lampo, E. G., B. C. Knights, J. M. Vallazza, C. A. Anderson, W. T. Rechkemmer, L. E. Solomon, A. F. Casper, R. M. Pendleton and J. T. Lamer. 2017. Using Pharyngeal Teeth and Chewing Pads to Estimate Juvenile Silver Carp Total Length in the La Grange Reach, Illinois River. *North American Journal of Fisheries Management*. Vol 37, Issue 5

Bales attended Iowa AFS’s continuing education workshop on electrofishing in Spirit Lake, Iowa – August, 2017.

Bierman attended the Pool 12 Overwintering HREP site visit with USACE, USFWS, and local DNR staff – August, 2017.

Bierman participated in the quarterly A-Team conference call/webinar – August, 2017.

Bierman participated in the quarterly Fish and Wildlife Interagency Committee conference call/webinar – August, 2017.

Bales attended the Iowa AFS EXCOM meeting in Webster City, Iowa – September, 2017.

## Technical activities and assistance:

Kristin Bouska, KathiJo Jankowski, Jeff Houser & Molly Van Appledorn toured the Upper Mississippi River Refuge with Steve Winter (FWS)

Kristin Bouska had a field day with Jeff Janvrin (WDNR) sampling near Conway Lake HREP

Megan attended UMRR – HREP workshop on Sept 27<sup>th</sup> -29<sup>th</sup> in Davenport , IA.

Megan and Steve discussed the fish IBI developed by UMRR staff and relevant LTRM sampling methodologies with Nick S (MN A-team rep). The purpose of the fish IBI is to develop an indicator of ecosystem health that can be used in the UMRR-LTRM Status and trends report.

Steve and Chris completed processing of Silver Chub for special USGS projects on Nov 4<sup>th</sup>. He completed a custody log sheet for all fish samples. Fish were packaged and shipped to USGS Lake Erie Biological Station and DNA samples were sent to Nathan Lovejoy at the University of Toronto.

Steve processed and sent black crappie and fresh-water drum specimens to Southeast Missouri State University researcher Tyler Ham on Nov 28<sup>th</sup>.

Steve conducted NMDS analyses on LTRM Pool 8 fish species from the impounded strata to assist a multi-agency and NGO team with describing and promoting the value of the UMRR program to the new federal administration and new congress. Steve's analysis indicates a shift in fish community pre and post restoration projects and highlights the beneficial impacts of restoration projects on the biological community.

Eric attended an Invasive Species Partnership meeting coordinated by the River Alliance of WI on Dec 15

Kris Maxson collected Silver Carp for Jennifer Jefferies, post-doctoral researcher, University of Illinois, for ongoing research and provided lab space for sample processing; 7 November 2016.

Kris Maxson aided Ben Lubinski and Ed Culver, LTEF (Great Rivers Field Station), with IL River electrofishing sampling near Naples, IL; 28 October 2016.

Levi Solomon provided selected LTRM data to Sarah Molinaro and Sarah King, Illinois Natural History Survey, Champaign. Data is to be used for ongoing research into ancient sportfishes (gars and bowfins) in Illinois

Levi Solomon provided selected LTRM data to Ray Geroff, IL DNR, concerning LTRM sampling of state T & E species.

Levi Solomon provided safety information to Cassie Moody, fisheries researcher at Eastern Illinois University. This included examples of trainings and documentation of field, lab, and chemical safety.

Jeff Houser provided Robert Romic (USACOE) with LTRM water quality journal articles.

Brian Ickes assisted Sarah Peper, Fisheries Management Biologist, Missouri Department of Conservation with information on blue catfish (BCF). Sarah is writing the BCF chapter for the UMRCC Fisheries compendium

Brian Ickes assisted Alison Anderson (IRBS) on background information for the report Fish Indicators of Ecosystem Health: Upper Mississippi River System.

Brian Gray reviewed a draft of the logistic regression chapter of the pending second edition of Helsel and Hirsch's classic text, "Statistical Methods in Water Resources"; review comments were supplied in Jan 2017.

Brian Ickes assisted Zhenduo Zhu, PhD, Assistant Professor, Department of Civil, Structural and Environmental Engineering, University at Buffalo, the State University of New York in his request on fish population dynamics study. He was especially interested in learning about the calculations for mass per unit of effort.

Brian Ickes assisted Shane Simmons, Biologist, Regional Planning and Environment Division North, U.S. Army Corps of Engineers. has been tasked with creating a fish community model that could be used to calculate the benefits of various project alternatives, rather than having to rely on the outdated blue book HSI models. He was looking for input from Brian on his 2014 report - Spatially Explicit Habitat Models for 28 Fishes from the Upper Mississippi River System (AHAG 2.0)

Bowler provided data and summaries of 2016 special projects fisheries sampling for Pools 9, 10, 16, 18 and Huron Island HREP to Guttenberg and Fairport Management – January, 2017.

Bowler compiled and provided geo-referenced records of threatened and endangered fish species in Illinois collected in 2016 from Pools 12, 13, 16, and 18 for Tara Kieninger (Heritage Database Program Manager for the Illinois Department of Natural Resources) and Jeremy Tiemann of the Prairie Research Institute in Champaign-Urbana – January, 2017.

Bowler compiled and provided geo-referenced records of threatened and endangered fish species in Iowa collected in 2016 from Pools 9, 10, 12, 13, 16, and 18 for Kelly Poole and John Olson of the Des Moines office – January, 2017.

Bowler provided c/f of common carp from day electrofishing (all LTRM field stations; 1993-2015) to Bob Hrabik of the Missouri Department of Conservation for the 4th edition of the UMRCC Fisheries Compendium and the new Fishes of Missouri book – January, 2017.

Bales, Bierman, and Kueter assisted Bellevue Research with radio-transmitted crappie tracking on Pool 12 – February-March, 2017.

Kueter digitized 922 bluegills from Pool 12 – February, 2017.

Bales completed Iowa's new employee online training courses: access to employee medical records, blood borne pathogens, confined spaces awareness, GHS labels, GHS safety data sheets, hand tools, haz/comm, ice auger safety, lockout/tagout, mower safety, personal protective equipment, sexual harassment, slips trips and falls, and state of Iowa policy videos – February, 2017.

Bowler reviewed and edited the first draft of the Iowa Bass Management Plan for Cold Springs Management – February, 2017.

Bowler provided comments on Asian Carp sampling areas in Pool 13 to Kyle Mosel of the FWS – February, 2017.

Bowler provided age assignment and age analysis of white bass summer collections in Pool 16, 2016 to Fairport Management – February, 2017.

Kueter completed aging of 922 bluegills for the Pool 12 HREP project – February, 2017.

Bowler entered bluegill age data into the Pool 12 HREP project database – February, 2017.

Bowler consolidated red shiner records from the special project database (Pools 16-19; 2003-2016) and the Illinois Natural History Survey's Long Term Electrofishing database (Pools 19 and 20; 2013-2014) for Bob Hrabik of the Missouri Department of Conservation and John Olson of the Des Moines office – February, 2017.

Bowler calculated bluegill mortality rates in the eight HREP study lakes in Pool 12 for 2016 – March, 2017.

Eric Ratcliff, Ben Lubinski, and Eric Gittinger provided information regarding Pool 26 side channel connectivity for Kristen Bouska of the Upper Midwest Environmental Sciences Center for a project to classify side channels into those that are permanently connected and those that are seasonally disconnected.

Eric Ratcliff and Eric Gittinger provided spotted gar specimens for Bob Hrabik of the Missouri Department of Conservation for genetic analysis.

Levi Solomon provided field and lab safety related documentation to Cassi Moody, Eastern Illinois University, to help update their safety procedures and protocols.

Levi Solomon continued to provide technical assistance to Sarah Molinaro, graduate student University of Illinois, for her ongoing gar population demographic study.

Rob Burdis, Chris Dawald, and USGS scientist Jim Rogala conducted sediment transect surveys on Jan 12th and 19th.

Rob Burdis and Chris Dawald maintained and downloaded data from the Peterson Lake HOBO loggers on Jan 17th.

Steve DeLain conducted NMDS fish community analyses from the impounded strata on LTRM Pool 8 to assist a multi-agency and NGO team with describing and promoting the value of the UMRCC program to the new federal administration and new congress. Steve's analysis indicates a shift in fish community pre and post restoration projects and highlights the beneficial impacts of restoration projects on the biological community.

Steve DeLain provided common carp data and insight to Bob Hrabik for the UMRCC fish compendium.

Steve DeLain consulted with Nick Schlessor on YOY fish lengths for UMRCC fish compendium.

Steve DeLain provided hydrograph data and insight on LTRM data to Tyler Ham (Southeast Missouri State) for his fish project on black crappie and freshwater drum growth rate analysis.

Megan Moore and Eric Lund reviewed UMRCC FY17 Science Proposals and provided input to MN State A-Team representative (Nick Schlessor). Rob reviewed a manuscript for the Journal of Freshwater Ecology.

Rob Burdis, Chris Dawald, and USGS scientist Jim Rogala conducted sediment transect surveys on Feb 10th.

Rob Burdis prepared for Peterson Lake HREP spatial sampling. Rob, Chris and Eric conducted Peterson Lake HREP spatial sampling on Feb 14th, 15th and 16th.

Rob Burdis and Steve Dawald retrieved the HOBO continuous temperature and dissolved oxygen meters from Peterson Lake on Feb 22nd.

Rob Burdis began to compile and QA/QC Peterson Lake winter water quality data.

Rob Burdis provided all of Lake Pepin secchi transparency data to Heidi Rantala, Program Consultant with the division of fish and wildlife.

Rob Burdis provided 2016 Lake Pepin secchi transparency data to Nick Schlessor, large lake specialist for fisheries.

Steve DeLain talked with Patrick Short from the Wisconsin DNR about rare fish sampling techniques that could be used in sampling HREP projects

Eric Lund prepared the vegetation boat for field season, including installing new fuse box, gps and transducer, and replaced faulty battery.

Eric Lund collaborated with Deanne Drake in preparation for vegetation pre-sampling project.

Eric and Chris Dawald conducted vegetation SRS pre-sampling at 40 sites in pool 4 over 4 days (May 18,22,24,25) in collaboration with Deanne Drake's curly-leaf pondweed phenology study.

Eric Lund provided pre-sample curly leaf pond weed biomass data from 40 sites to Deanne Drake (WI DNR, LTRM) on June 5th.

Eric Lund consulted with Molly Van Appledorn (USGS) and KathyJo Janikowski (LTRM) on proposal for on depth gauge installation and water level monitoring in pool 4 ; Eric and Chris built and installed 2 depth monitoring gauges in lower Pool 4 (Big Lake and Peterson Lake) on May 25th.

Eric Lund and Chris Dawald conducted high water inundation line mapping at 108 sites in pool 4 over 3 days (May 8, 11, 12) in contribution to modeling efforts being conducted at USGS (Van Appledorn

Eric Lund obtained all historical elevation, flow and temperature data from all Pool 4 USACE gauges that was made re-available; formatted and compiled all data into a shared MS Access database.

Eric Lund reviewed draft report by Drake et al on Potamogeton crispus chemistry and detectability.



Eric Lund prepared for inundation mapping work including consultation with model development PI Molly VanAppledorn at UMESC.

Eric Lund provided inundation mapping data to Molly Van Appledorn (USGS) on June 7th.

Eric Lund procured materials, built and installed 34 data loggers for USGS inundation modeling project at 2 sites in pool 4 on June 15th and June 20th.

Steve DeLain provided insight and information on LTRM fish data and MN fishing regulations for black crappie to Tyler Ham (Southeast Missouri State) for his fish project on Black Crappie.

Rob Burdis provided Peterson Lake HREP water quality monitoring data to Dan Kelner with the Army Corps of Engineers

Rob Burdis provided Lake Pepin phytoplankton data to Will Bouchard of the MN PCA.

Rob Burdis participated in Onset software (HOBO's) webinar on May 17th.

Eric Lund joined conference call discussing Lake Koronis vegetation trends and sampling methods on May 3rd (Perleberg et al).

Eric Lund participated in R statistical software training via Lynda.com

Rob Burdis, Chris Dawald and Megan Moore maintained the Peterson Lake HOBOs.

Rob Burdis and Megan collected mayfly nymphs on June 29th to be filmed on the cinematic event series, ONE STRANGE ROCK for the National Geographic Channel.

Steve DeLain provided LTRM Silver chub data to Brian Brecka (Wisconsin DNR)

Chris Dawald gathered historical LTRM fish data for use in upcoming analyses to inform potential restoration projects in Upper Pool 4.

Megan Moore and Eric Lund provided aquatic plant identification training to a class organized by Jen Wahls (Wabasha County SWCD) at Wilcox boat landing on June 19th.

Rob Burdis participated in Onset (HOBO's) deployment webinar on June 28th.

Yao Yin, Eric Lund, Deanne Drake, Kyle Bales, and Dustin Patrick met in La Crosse, WI for aquatic vegetation field training at Goose Island on June 13<sup>th</sup>.

Bierman and Fitzpatrick assisted Bellevue research with tracking of radio-transmitted crappie in Pool 12 – April-June, 2017.

Kueter plotted black crappie telemetry locations in Pool 12 (November-February) and provided aquatic maps to Bellevue Research – April, 2017.

Bowler compiled and provided geo-referenced records of Minnesota fish considered to be of greatest conservation need from Pools 9-11 (special projects database; 2012-2016), Pool 12 (Pool 12 HREP monitoring; 2006-2016), and Pool 13 (LTRM; 1993-2016) for Steve DeLain of the Minnesota Department of Natural Resources – April, 2017.

Bowler assisted Green Island Wildlife with spring spotlight surveys in Jackson County, Iowa – April, 2017.

Bales assisted Green Island Wildlife with spring spotlight surveys in Dubuque County, Iowa – April, 2017.

Bierman, Fitzpatrick, and Kueter completed Ecological Floodplain Inundation Mapping (ECO-FIM) sampling in Pool 13 in coordination with Molly Van Appledorn, USGS-UMESC Ecologist – April-May, 2017.

Bowler sent catch/unit-effort figures (LTRM; 1993-2016) and other shovelnose sturgeon population dynamics summaries (LTRM – Pool 13; 1993-2012) to Levi Solomon of the Illinois Natural History Survey and Sara Tripp of the Missouri DOC for the 4th edition of the UMRCC Fish Compendium – May, 2017.

Bowler sent graphics and summaries of Pool 13 fisheries highlights with management implications to Jeff Houser of UMESC for inclusion to the science presentation for the quarterly UMR CC meeting – May, 2017.

Bowler provided freshwater drum L/F histogram (LTRM – Pool 13; 2016) to Lewis Research for the statewide mercury project completion report – May, 2017.

Bales assisted Bellevue Research with collections of shovelnose sturgeon from the Cedar River – May, 2017.

Bowler provided American eel geo-referenced length/weight data (LTRM – all pools; 1993-2016) to Bellevue Management for the 4th edition of the UMRCC Fish Compendium – May, 2017.

Bowler provided catch/unit-effort statistics of centrarchids and bluegill mortality graphs from the Pool 12 Overwintering Study to Bellevue Research for Study Report 7049 – May, 2017.

Bowler generated and plotted random hoop netting points in Pool 16, 2016 for a channel catfish age/growth study for Fairport Management – June, 2017.

Bowler provided mean lengths of age-1 bluegill (Pool 12 HREP monitoring; 2006-2015) to Ken Krier of the Iowa DNR's Biological Monitoring and Fish Tissue Monitoring Team – June, 2017.

Bowler calculated and provided northern pike age assignments, length at age, and length at age comparisons between sexes and river pools (Bellevue Research data; Pools 10 and 13, 2012-2013) to Bellevue Research for Study Report 7038 – June, 2017.

Bowler provided CPUE and L/F graphs of northern pike (LTRM – Pools 8 and 13; 1993-2016) to Bellevue Research for Study Report 7038 – June, 2017.

Kueter assisted USACE with HREP water quality monitoring in Pools 11 and 12 – June, 2017.

Molly Van Appledorn attended a Floodplain Forest Research Group (FFRG) field trip and workshop on August 29, 2017 in Wabasha, MN. The FFRG is an informal network of forest ecologists and forest managers from federal and state government, non-profits, and academia focused on the floodplain forests of the Upper Mississippi River system. The event was organized by foresters from the St. Paul district of the U.S. Corps of Engineers with the goals of facilitating knowledge of regional floodplain forest ecology, identifying potential research needs, and creating new networking opportunities.

Levi Solomon and Kris Maxson provided fish specimens to Andrew Kuhns, University of Illinois, for ongoing turtle sampling.

Kris Maxson and Levi Solomon provided skipjack herring specimens to Josh Eagan, University of Minnesota.

Kris Maxson and Levi Solomon provided silver carp specimens to Emi Tucker, University of Illinois, for ongoing research.

Levi Solomon provided field assistance to Robin Calfe and Katelyn Lawson, USGS, Columbia, for ongoing

Eric Lund completed LTRM vegetation analysis and Rob Burdis compiled water quality data for Upper Pool 4/ Lake Pepin Island study and provided data to Shawn Giblin July 12-13th. Data will be used to help determine habitat needs and potential location for future islands as part of a CAP204 restoration project.

Eric Lund and intern Jaci Ullrich assisted with USFWS wild celery sampling and collected submersed vegetation biomass data in Lake Onalaska, Pool 7 on August 2nd.

Eric Lund conducted additional LTRM based veg sampling at 26 sites in Peterson Lake on August 14th -15th to help inform results of HREP modification scheduled to occur in 2018.

Rob provided Dan Kelner (Fisheries Biologist/Malacologist, U.S. Army Corps of Engineers, St. Paul District) Peterson Lake HREP data for use in the Corps' Environmental Assessment report for the Peterson Lake HREP modification.

Megan Moore participated on conference call with Field Station team leaders, Jennie Sauer (UMESC), Jeff Houser (UMESC) to discuss direction to take FY17 and FY18 science proposals work with Asian carp in the Illinois River.

Bowler, Fitzpatrick, Root, and Wassink collected freshwater drum aging structures from routine LTRM fisheries monitoring for Josh Abner of the Missouri Department of Conservation for population dynamics study – July-September, 2017.

Bowler, Fitzpatrick, Root, and Wassink collected smallmouth buffalo aging structures from routine LTRM fisheries monitoring for Levi Solomon of the Illinois Natural History Survey for population dynamics study – July-September, 2017.

Bierman, Root, and Wassink assisted Bellevue Research with statewide turtle collection study in Dubuque and Jackson Counties – July, 2017.

Bales, Bowler, Patrick, and Wassink assisted with UMRCC aquatic vegetation sampling in the Harpers Slough HREP in Pool 9 – August, 2017.

Patrick assisted Mississippi River Wildlife with roadside survey in Jackson County – August, 2017.

Bierman and Fitzpatrick completed Ecological Floodplain Inundation Mapping (ECO-FIM) low water sampling in Pool 13 in coordination with Molly Van Appledorn, USGS-UMESC Ecologist – August, 2017.

Fitzpatrick, Kueter, and Wassink assisted Bellevue Research with walleye collections in Pool 13 via electrofishing – August, 2017.

Fitzpatrick and Wassink assisted Guttenberg Management with outpool electrofishing sampling in Pool 11 – September, 2017.

Bowler generated random sampling points, made maps, and pre-filled electrofishing and netting data sheets for Pool 12 HREP project – September, 2017.

## **Outreach**

Kristin Bouska, Presented "Life After College - jobs, opportunities, and options" to UW-La Crosse Environmental Studies senior class. October 19

Molly Van Appledorn served as a panelist at the La Crosse Area Middle School Career Day on January 25, 2017. She spoke to area 8th graders about her educational background, past work experiences as a teacher and environmental scientist, and her current career path as an Ecologist with the USGS. The Career Day is organized annually by local middle school staff in an effort to expose students to a wide range of career paths and opportunities.

Ben Lubinski presented a 45 minute PowerPoint presentation titled "Fishes of the Mississippi River" to a 7th grade science class at Trinity Lutheran School in Edwardsville, Illinois.

Levi Solomon hosted the Mason, Fulton, Peoria, and Tazewell counties Master Naturalist quarterly meeting. Included brief discussion of ongoing projects at IRBS, tour of facilities and extensive discussion of Illinois River issues.

Megan and Nick Frohnauer along with USGS staff Mark Gaikowski (UMESC Center Director), Randy Hines, Brent Knights, and other USGS and USFGWS staff met with Congressman Jason Lewis (Rep MN-2) on April 20th. The meeting primarily discussed invasive carp as was requested by Congressman Lewis. Megan and Mark also discussed the UMRR program and the two main elements (HREP and LTRM). The meeting was originally intended to be on Peterson Lake of lower Pool 4, but weather prohibited that tour. The meeting was moved to the National Eagle Center in Wabasha. Center Director Rolf Thompson provided his facility free of charge for our meeting.

Jennifer Sauer provided information to Eloisa Noble, National Geographic Channel called One Strange Rock. It's a ten-part series looking at the story of how this 'Strange Rock' – Earth – evolved to be teeming with life and asking whether it is truly unique in the Universe. They have interest in filming a mayfly hatch.

Randy Hines briefed the Mississippi River Connections Collaborative in La Crosse. He provided a 15 minute presentation to the group on Wednesday morning about the UMRR program, how it benefits eco-

tourism and how the work the UMRR team does ultimately make better habitats and opportunities for the work of the organizations within the MRCC.

Doyn Kellerhals and Kris Maxson assisted with a fish identification table at the Scheels Hunting Expo, Springfield IL.

Doyn Kellerhals assisted with a fish identification table at the Illinois DNR Bowfishing Expo, Baldwin IL.

Andrya Whitten, Levi Solomon, and Kris Maxson provided station tours and electrofishing demos for the Bradley University Osher Lifelong Learning Institute

Levi Solomon hosted a University of Illinois-Springfield Large River Biology Class

Levi Solomon co-hosted Red Rock Films, working with National Geographic *Wild*, and provided a tour of the river and footage of jumping Asian carp on an upcoming documentary tentatively title "*America the Beautiful*".

Eric Lund brought Sarah and Patrick Houston (Wander Like Water videographers) out for a day on Lower Pool 4 for vegetation sampling and to discuss LTRM monitoring elements and water quality issues on August 8th. Their video excursion was published in a YouTube blog <https://www.youtube.com/watch?v=MfMxiYwsnQ>

Megan Moore and Eric Lund brought filmmakers from Icon Productions and show host Jeremy Wade (River Monsters) out on lower Pool 4 on September 15th to film a segment that will be used in 1 part of a 6 part series on the Great Rivers of the World. It will be aired on Animal Planet in spring of 2018.

Rob was interviewed by phone on July 3rd by the Lake Pepin Legacy Alliance regarding Lake Pepin water quality for upcoming article.

Rob collected mayfly nymphs on July 5th to be filmed on the cinematic event series, ONE STRANGE ROCK for the National Geographic Channel.