

**UMRR Analysis Team Meeting February 6, 2019  
Muscatine, IA**

Attendance:

A-Team Reps:

Shawn Giblin - WI

Scott Gritters – IA

Matt O’Hara – IL

Nick Schlessler - MN

Matt Vitello – MO

Stephen Winter - USFWS

WI:

Jim Fisher

UMRBA:

Andrew Stephenson

Kirsten Wallace

USGS:

Jeff Houser

Jennie Sauer

Nate De Jager

KathiJo Jankowksi

Jennifer Dieck

Kristen Bouska

USACE:

Karen Hagerty

Kat McCain

Kjetil Henderson

Marshall Plumley

Kjetil Henderson

Dave Potter

IA:

Dave Bierman

IL:

John Chick

Ben Lubinski

Levi Solomon

Jim Lamer

MO:

Dave Herzog

Molly Sobotka

Jessica Fulgoni

**Time and place for next meeting:** Meeting will be April 24 in La Crosse preceding the Mississippi River Research Consortium Annual Meeting

**Approval of April Minutes:** Approved minutes with revisions suggested by Karen Hagerty.

**UMRR Update:**

- Special thanks to partners during the shutdown for staying as engaged as possible. Had potential to significantly impact program execution.
- UMRR CC meeting coming up February 27. Will be having a communications team meeting in the afternoon following. Goal to improve outreach to stakeholders and interested public in the meeting
- HREP Workshop – May 6,7,8. Hopefully you have received information or an invite from UMRBA.
- FY 19: Full authorization of \$33.17M
  - o LTRM Monitoring and Research
    - Base Monitoring SOW in place and work is underway
  - o Opportunities to take advantage of planned Illinois waterway closure – what monitoring can be done?
- Finished FY18 with an obligation of 99% of our appropriated money.
- HREP Projects: 56 Projects completed by the program to date benefitting 106,000 acres.
  - o Rock Island District:
    - Beaver Island – new contract awarded on December 27. Project moving forward.
    - Rice Lake – working to evaluate and repair pumps
    - Keithsburg – has been approved to move into construction. Accelerated from FY20 to potential award for construction in August of 2019
    - Steamboat Island – in feasibility
  - o St. Louis District:
    - Piasa/Eagles Nest – report approved by Division office, moving into design stage;
    - Harlow Island – waiting for Division approval
    - Crains Island – Stage 1 contract award expected in spring
    - Clarence Cannon – potential contract award in spring for levee setback
    - Oakwood Bottoms – identified alternatives and working towards TSP milestone
  - o St. Paul District:

- Conway Lake HREP – contract awarded
- MacGregor Lake in feasibility currently. Has completed public review.
- Bass Ponds – TSP Milestone in the near future
- HNA 2 – both documents published and posted on program website
- HREP Planning and Sequencing – have been working towards updating the process (last defined in 2003). Looking at how to structure the process to take advantage of new tools developed and lessons learned. Planned two day workshop in January was cancelled due to government shutdown, will be planning a new meeting in the coming weeks with Coordinating Committee and River team chairs.

**LTRM Update:**

- *Indicators of ecosystem structure and function for the Upper Mississippi River System.* Part of broader HNA-2 effort. Fully published and available online.
- *Spatial and temporal changes in species composition of submersed aquatic vegetation reveal effects of river restoration.* Assess the role of HREP islands in community abundance and composition.
- *Fact Sheet: UMRR LTRM Spatial data query tool.* Can use specifications about conditions/component you are looking for tool will show where on the landscape sites are available
- *Effects of flood inundation, invasion by Phalaris arundinacea, and nitrogen enrichment on extracellular enzyme activity in an Upper Mississippi River floodplain forest.* Part of a series of studies looking at how invasive reed canary grass interacts with flood inundation to effect ecological processes on the floodplain. Processes driven most strongly by inundation patterns.
- Illinois River closures learning opportunities. Group is having discussions on what is currently available on the IL River, how we might use that data and what additional data we might be interested in collecting.
  - Significance of closure: Have not had a closure during growing season since locks were in place. Will be navigation traffic intra-pool but not between pools. Purpose of studies is to better understand how navigation traffic impacts the ecosystem to better inform how we can address recovery efforts.
  - Currently there are no plans for water level management to coincide with the closure. Requests have been submitted to Corps districts and division requesting water level management be implemented.
  - Trying to identify modest increase in sampling to accomplish this effort
  - Efforts could inform future research projects and future “consolidated closures”
  - Currently hope to have science meeting (similar to 2018) in 2020. Have part of that meeting be focused on this topic.

- International Association for Great Lakes Research – interested in the UMRR story and how we’ve used science to inform management. Jeff H., Marshall, and Jim Fisher will be attending the 2019 Meeting of this group to present.

### **Resilience Assessment**

- Three publications completed to date:
  - o *Developing a shared understanding of the Upper Mississippi River: the foundation of an ecological resilience assessment.* “system description” brief historical overview and system breakout to lentic, lotic, and floodplain
  - o *Discontinuities and functional resilience of large river fish assemblages.* Body discontinuity theory applied to fish data. Greater diversity of traits at any scale and redundancy of traits across scales influences resilience. Used LTRM and LTEF data. Indicators of diversity and redundancy of functional traits suggest that as we move downstream in UMR the system becomes less resilient. Strongest association is with habitat diversity.
  - o *Applying principles of general resilience to large river ecosystems: case studies from the Upper Mississippi and Illinois rivers.* Tied to HNA effort. Took indicators and applied to evaluate ability of system to adapt to changing conditions. Upper impounded reach has a greater capacity to adapt to change, lower impounded and Illinois River reach have lesser capacity, and unimpounded reach has least capacity to adapt.
- Moving from general resilience to specified resilience. Applying alternate regime concepts to the river. What are the different regimes the river can exist in, what are the drivers, feedbacks? How might we use this information to prioritize management actions?
  - o Looking at 3 different alternate regimes
    - Clear, vegetated regime to Turbid, sparsely vegetated – fairly well understood
    - Diverse native fish community to Invasive dominant fish community – much more theoretical, many hypotheses to test
    - Diverse floodplain forest to reed canary grass dominant
- Resilience research framework, Resilience Workgroup will review in March and send to A-team for review in April meeting
  - o There will be section to identify “other potential regimes”
- FY2020 will continue to move down the RATA framework, synthesizing efforts and thinking within the partnership how will restoration influence general and specified resilience. How to incorporate HNA 2 efforts
- Q: Will Floodplain forest group focus solely on reed canary grass or will they incorporate some of the other invasive species?
  - o A: Likely heavily reed canary grass, but have been discussing how to incorporate a broader understanding of gap dynamics in these systems.

### **FY19 LTRM Science in Support Proposals**

Approximately \$500k funding available for these proposals

- Eco-hydrology Research and Application on the Upper Mississippi River System
  - o Proposal did not have level of detail of methods and how it relates to the focal areas. (Was discussed that PI was provided different template)
  
- Development of a standardized monitoring program for vegetation and fish response to Environmental Pool Management practices in the Upper Mississippi River System (2019-2020)
  - o Q: In year two objectives, the proposal would compare with Pool 4. Why Pool 4?
    - Wanted to tie in an Upper pool to make proposal more spatial and get a larger system view.
  - o Q: EPM has been ongoing for a number of years. What veg monitoring has been occurring? And how has this been funded in the past?
    - Have been doing LTRM methodology in Pool 26, slightly modified and tailored to lower half of pool. Have also been using the Integrated Waterbird Management and Monitoring protocol. Have also done seedhead surveys in the past as an outreach effort towards duck hunting community.
    - Funding has been primarily through the Sustainable Rivers Partnership, funding through SRP this year will be only to compare data across years.
  - o Q: Larval fish sampling method is non-LTRM, were LTRM methods considered?
    - Based on other experience, cast net will likely perform best for sampling in vegetation. To use a mini-fyke we would have to remove vegetation to set the fyke and wouldn't get a representative sample.
  - o Q: Is there a summary report that covers all the EPM veg monitoring thus far?
    - We have annual reports and hope the funding through SRP this year will allow a cross year comparison
  
- Reforesting UMRS forest canopy openings occupied by invasive species
  - o Q: How will the 2 year timeframe and the data collected address the questions being proposed?
    - What we will be able to discern in that time frame is the ability of the specific tree-planting techniques to get these trees established and growing (tree survivorship). We would want to continue monitoring canopy closure over an extended period of time.
  - o Q: How would flooding impact the study? Would it reset the study?

- Flooding will definitely have an impact. Hope is that newer planting techniques will improve tree survivorship. Flooding is occurring more frequently so we need to understand the management techniques that can work within the that paradigm.
    - We can plant trees during the Feb-March timeframe and can measure the success of plantings or biomass of Japanese hops.
- The impact of UMRR elevation data: filling existing gaps and analyzing change detection of UMRS lidar and bathymetry datasets
  - Q: Does a sequencing plan exist for updating lidar and bathymetry or has it been opportunistic?
    - There is no plan. That will be one of the major outcomes of this work, how will we update in the future. How many years to update lidar and bathymetry, how often is an update needed, how do we maintain the data, etc.
    - Need to work with each Corps district's survey crews. Districts are collecting lidar and bathymetry annually for certain reaches of the river. How do we coordinate that and stitch that in to the system wide data.
  - There needs to be a discussion and synthesis of what is available, what is necessary, and what really are the next things that need to be done. Also need to increase awareness of the value of what we currently have.
- The role of large wood in the restoration of habitat in the Upper Mississippi River System
  - Q: Hester-Dendy samplers – Will the wood be conditioned and how? Will it be freshly cut or aged?
    - Been having discussions on that topic. Want to be consistent across all samplers. Will be using downed wood, not something cut green, so need to identify a sufficient source.
  - STL District has already done substantial work on large woody debris under Biological Opinion and incorporate wood already into HREPs. For HREPs within proposal, has woody debris been evaluated in Performance Evaluation Reports and were those reports reviewed?
    - Reports have been reviewed, did not see any monitoring data in PERs specific to wood. One thing this proposal builds on is looking across sites and across environmental gradients that make it scalable to other areas. Are we getting natural recruitment of additional wood and colonization across sites?
- Patterns in gross energy of waterfowl food items contained in benthic samples collected from Upper Mississippi River Navigation Pools 4, 8, and 13
  - Q: Illinois has Forbes Biological Station which has done several food item studies, why weren't they involved and the focus of the study is only Pools 4, 8, 13?

- Did have discussion with Forbes about them doing analysis with their Bomb calorimeter. Forbes indicated they had other studies ongoing and were not interested in participating. This study also builds on a currently funded LTRM study looking at SAV data and links between food items SAV provides so data is only available for Pools 4, 8, and 13.
  - Q: How would we use the caloric value information?
    - Would be better able to assess effectiveness of restoration efforts and correlate rake data to caloric content.
    - Q: Wouldn't it be better to understand the correlation of rake data to winter bud density before we try to understand caloric content?
      - Yes, but this project will take the winter buds that are collected in the current project rather than throwing them away or resampling later. Concerned about long-term storage of samples
  - Q: Could a bomb calorimeter be borrowed instead of purchased?
    - Was explored with UW-L and Forbes, but not feasible.
- Response of macroinvertebrates to invasion of planktivorous fishes in the lower Illinois River
  - Q: Will there be a control pool?
    - Not opposed to having a control pool but haven't reached out to others for a control pool.
  - Q: Are there too many variables in the intervening 20 years for it to be possible to see impact from carp?
    - We could look at it as year 1 of the 3 years as a pilot study and incorporate a control pool from another reach
  - This proposal could tie in well with Illinois lock closures to evaluate impact to macroinverts during lock closures
  - This project touches on multiple ongoing LTRM efforts – 2020 IWW closure, resilience efforts, systematic approach (modeling for other reaches of river)
- Combining genetics, otolith microchemistry, and vital rate estimation to inform restoration and management of fish populations in the UMRS
  - Q: The list of species being analyzed do not include species we actively manage for, how does this information inform management?
    - Looking at life history traits across the system, believe we can have inferences to other species.
    - Some species of concern and game fish are not systemic as well as concerns about culling large amounts of these species. The species selected make the project more applicable to a larger area.
  - Q: Are there other species groups that we could consider that could inform conservation genetics?
    - Something to build on in the future

- Habitat Specific Biological Activity of Suspended Particles
  - o Currently have no information on this but other large river systems are showing this to be an important driver. If TSS is driving nutrient processing, this is an important thing to understand. Control of TSS is one of the things we can influence through HREPs and management.
  - o Study is limited in spatial extent.
    - Lessons learned would be applicable across the system.
  
- A year of zooplankton community data from the habitats and pools of the UMR
  - o Q: Is this building on Rob Burdis' Pool 4 work?
    - Yes that informed this proposal
  - o Q: Using 80 micron mesh, do you think this will catch rotifers?
    - Probably not, we've talked a lot about this. 80 micron is fairly common. We would be happy to include 20 micron mesh to catch rotifers but that will increase time and effort to identify

Will send out rank by A-team tally. Asking for quick turn around (one working day) if anyone would like to change the rank of a particular study based on these discussions.

### **Status and Trends**

- What is the target audience? – very similar to 2008 report. It is possible to derive smaller documents tailored to smaller audiences
- What is the feedback we've received on this report? – Cited frequently on Researchgate. Serves as foundational document.
- What is the purpose of this document?
  - o Flagship for research and monitoring part of the program. Highlights what we do and what we have learned
  - o Congressional delegation? – Yes S&T is parallel to Report to Congress. Important to inform Congress, especially tables and figures. We get questions about climate change, invasive species, and sediment and nutrients. OMB is also important audience.
  - o Opportunity to explain the why things matter rather than just display what has changed.
    - o Opportunity to explain what we know about the UMR System that we wouldn't know without the program and communicate why we need the monitoring to continue
- Need to be more strategic. We know how to display our data, but we need to provide more understanding and context.
- Do we need a large report? Or could we produce smaller pamphlets/"science notes"?



- Stories may change over time
- We can always pull information or update intermittently with small pamphlets
- For next meeting plan to discuss stories you would like to tell. Highlight really good things or obvious negatives.

**Adjourn**

<b>FY19 Science in Support of Management and Restoration Proposals</b>					
<b><u>Title</u></b>	<b><u>Final rank</u></b>	<b><u>avg</u></b>	<b><u>USGS Priority Ranking s</u></b>	<b><u>USACE</u></b>	<b><u>A-Team Rank</u></b>
<b><u>Combining genetics, otolith microchemistry, and vital rate estimation to inform restoration and management of fish populations in the UMRS</u></b>	<b><u>2</u></b>	<b><u>2.67</u></b>	<b><u>1</u></b>	<b><u>3</u></b>	<b><u>4</u></b>
<b><u>The role of large wood in the restoration of habitat in the Upper Mississippi River System</u></b>	<b><u>5</u></b>	<b><u>5.33</u></b>	<b><u>2</u></b>	<b><u>8</u></b>	<b><u>6</u></b>
<b><u>Development of a standardized monitoring program for vegetation and fish response to Environmental Pool Management practices in the Upper Mississippi River System (2019-2020)</u></b>	<b><u>1</u></b>	<b><u>2.33</u></b>	<b><u>3</u></b>	<b><u>2</u></b>	<b><u>2</u></b>
<b><u>Eco-hydrology Research and Application on the Upper Mississippi River System</u></b>	<b><u>8</u></b>	<b><u>7.33</u></b>	<b><u>4</u></b>	<b><u>9</u></b>	<b><u>9</u></b>
<b><u>A year of zooplankton community data from the habitats and pools of the UMR</u></b>	<b><u>4</u></b>	<b><u>4.67</u></b>	<b><u>5</u></b>	<b><u>6</u></b>	<b><u>3</u></b>
<b><u>Response of macroinvertebrates to invasion of planktivorous fishes in the lower Illinois River</u></b>	<b><u>9</u></b>	<b><u>7.67</u></b>	<b><u>6</u></b>	<b><u>7</u></b>	<b><u>10</u></b>
<b><u>Patterns in gross energy of waterfowl food items contained in benthic samples collected from Upper Mississippi River Navigation Pools 4, 8, and 13</u></b>	<b><u>6</u></b>	<b><u>6.33</u></b>	<b><u>7</u></b>	<b><u>5</u></b>	<b><u>7</u></b>
<b><u>Reforestation of UMRS forest canopy openings occupied by invasive species</u></b>	<b><u>3</u></b>	<b><u>4.33</u></b>	<b><u>8</u></b>	<b><u>1</u></b>	<b><u>4</u></b>
<b><u>The impact of UMRR elevation data: filling existing data gaps and analyzing change detection of UMRS lidar and bathymetry datasets.</u></b>	<b><u>7</u></b>	<b><u>6.67</u></b>	<b><u>9</u></b>	<b><u>10</u></b>	<b><u>1</u></b>
<b><u>Habitat Specific Biological Activity of Suspended Particles</u></b>	<b><u>8</u></b>	<b><u>7.33</u></b>	<b><u>10</u></b>	<b><u>4</u></b>	<b><u>8</u></b>