A-Team Meeting 10 25 2022 Notes

Voted on Final Notes

Chairperson: Scott Gritters Iowa DNR

Attendance

A-Team Reps:

Scott Gritters (Chair and IA Rep)
Nick Schlesser (MN Rep)
Shawn Giblin (WI Rep)
Matt O'Hara (IL Rep)
Matt Vitello (MO Rep)
Steve Winter (USFWS Rep)

USGS:
Jennie Sauer
Jennifer Dieck
Kristen Bouska
Nate De Jager

USACE:
Karen Hagerty
Marshall Plumley
Davi Michl
David Potter
Eric Hanson

Lane Richter

UMRBA:
Andrew Stephenson

MN:
Nichole Ward

WI:
Shawn Giblin
Jim

IA:
Dave Bierman

IL:

John Chick
Jim Lamer

MO:
Dave Herzog

USFWS:

Note *** means an Action or "to do" item

Next Meeting

Discussion on placing the next meeting before the March 1, 2023 coordinating committee meeting. Karen and Scott will send out a doodle poll early and get it set on people's calendar: note: post meeting the next A-team meeting was set for February 8th at 1pm

Minutes

Minutes from the August 4th, 2022 meeting were discussed and Shawn Giblin moved to approve, Matt Vitello Second with unanimous approval. Chairperson Gritters complimented Andrew Stephenson and Karen Hagerty with assisting with note taking and editing. Getting them completed in a timely manner is a big lift for the Chairperson.

A-Team Corner

Scott Gritters bought up the fact that the A-team corner is not up to date and needs some work. This was discussed at the previous meeting and team leaders were to look through their corners and get the changes in to Jennie.

Jennie noted we now have all the A-team minutes are UTD through April 20, 2022 and previous minutes from last meeting need to be loaded so some progress was made.

Scott Gritters commented that the Corps UMRR A-team page is completely UTD, however the A-team corner field station descriptions and staff etc. are mostly outdated. If they are going to be depicted they need to be correct.

***Field station team leaders are to review their information on the A-team corner and email Jennie and Mike Caucutt (mcaucutt@usgs.gov) with updated information before the next meeting and this seemed a doable item to the team leaders.

To get the "Yearly Highlights" UTD after especially the lull of the covid years will need to be completed as well.

Jennie Sauer: in previous years I put out call to PIs and field station leaders to ID all activities that are LTRM adjacent but may not be in SOW (e.g., outreach activities, providing data on request). Typically, people would submit emails or word documents with nine pages of activities in FY19 that are not on milestone chart. Want to maintain and track all the things that are not typically tracked on milestone chart. Jennie discussed using a word form to maybe simply retrieve back the missing information.

Andrew S - Jennie, I would suggest adding that semicolon instruction into the question field itself.

from Nicole Ward - MN DNR she/her to everyone: 1:18 PM - yes, I second umrba suggestion above

Jennie S – could also provide a word document in teams.

Nicole Ward – I like the Google Forms approach.

from Jim Lamer to everyone: 1:21 PM - I agree, form seems like a good option and will allow things to be organized a little more efficiently than a working word document

from Dave Bierman - Iowa DNR to everyone: 1:21 PM - I like the Form approach as well. Microsoft Teams is rather clunky IMHO, but I will do whatever is decided.

from Matt O'Hara to everyone: 1:21 PM - agree I like the form

from umrba to everyone: 1:21 PM - Would you want to include a date field as well?

John Chick: If I do something for IRBS, we may both submit items.

Andrew Stephenson: One-time activity to get missing dates? Or are we going to use form to collect activities going forward that is collected maybe quarterly?

JS: I would send out different form for those two years such as FY20, FY21 and FY22 probably and then going forward, would have individual forms for each quarter. I send reminders every quarter with request to update milestone charts as well.

SG – keep it simple, I don't want to create a lot of work for folks but also want to display complete and UTD information. Thanks for the discussion and thank you to team leaders for volunteering to get this task completed and we will revisit progress at the next A-team meeting.

UMRR Update – Marshall Plumley

98.5% of the UMRR funds were obligated for FY22 which speaks to the dedicated work by the partners to get projects and work completed in this program and want to thank everyone for their help and continue to make this program look good (and it is).

Pres Budget, House, and Senate bills include $55M for UMRR in FY23.

The Federal budget is on a continuing resolution until December 15. The message is we have a $55M UMRR program which is incredible and a tremendous opportunity. We're ready for this in many ways. Lots of good work being done that can help us execute these dollars. Proceeding in FY23 with $55M program.

HREP's: Reno Bottoms had a successful TSP and is now completing District quality control.

Quincy Bay: PDT has alternatives workshop scheduled for November 2nd.

Lower Pool 13 has I'd a TSP and is moving forward with public review Nov 4th and virtual public meeting is scheduled for November 17th. There is a second phase of LP13 may include water level management elements.

Lower Pool 10: The SOW is complete SOW and now in AE stage 1 design.

Bass Ponds: Completed with a dedication held October 11.

Harpers Slough and Conway Lake: completed construction

McGregor Lake: Award Stage II in September.

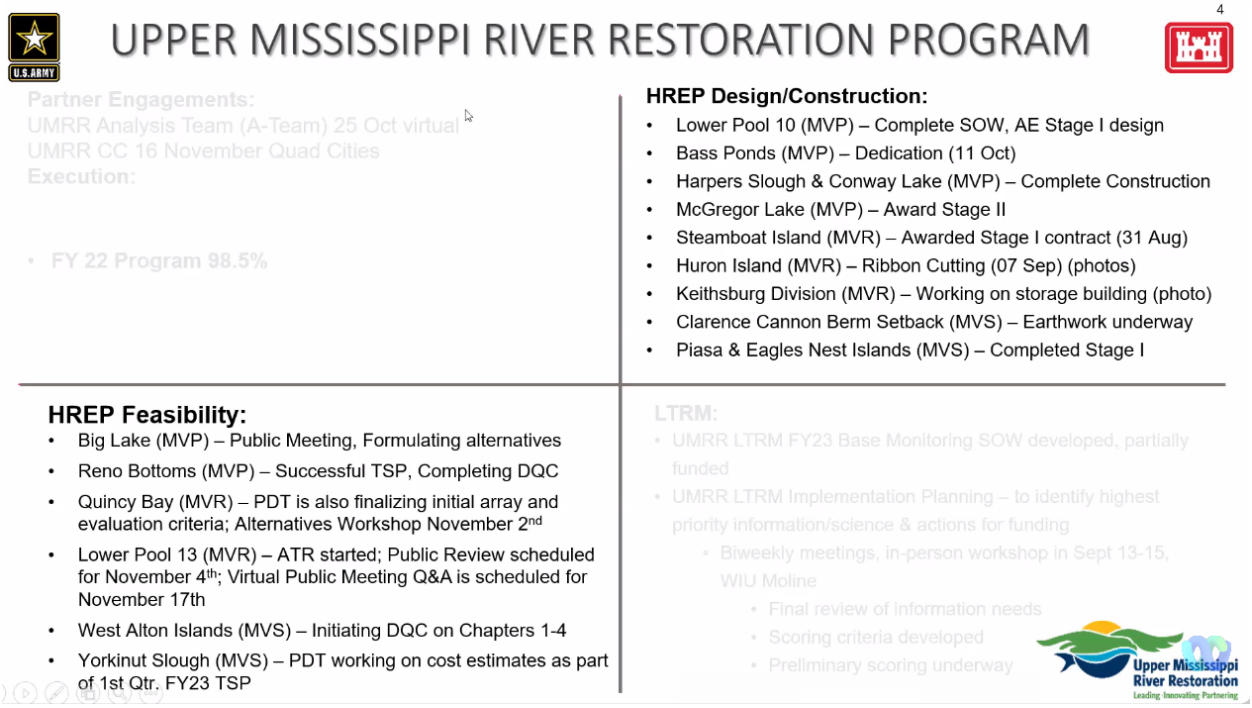
Steamboat Island: Awarded Stage I contract August 31.

Huron Island: Ribbon Cutting held on September 7th.

Clarence Cannon: Berm setback earthwork is underway.

Piasa and Eagles Nest: Stage 1 is completed.

So far 62 projects completed and 119,000 acres impacted over last 30 or so years, which is an incredible number and thanks to all our partnership for making it happen.



Bass Ponds – near Twin Cities metro – high number of visitors. ~$5M project – completed over approximately two construction seasons. Water control of 4 lake areas.

Photos of Huron Island which had enclosures constructed around aquatic veg. Monitoring shows that exclusion of critters that consume veg is very successful. Far different vegetation within the enclosures and outside the enclosures.

Beaver Island: Installed river rock substrate off the front of the Island now has mussels using this habitat that weren't there before. Minor cost in the project but we had been hoping to try this as a partnership to elicit mussel response potentially which can be used in other projects. Talking about follow-up mussel survey to better assess response.

SG: concur on mussel habitat at Beaver Island and am really impressed with that feature. Type of thing we could add to many riprap projects. It may make great mussel habitat but also fantastic fish spawning habitat potentially even for things like lake sturgeon and hopefully it does not silt/sand in. Maybe needs to be in a stronger flow environment.

MP: agree, talking about existing projects and how to incorporate into similar features. Relatively inexpensive compared to other parts of project and seeing immediate response.

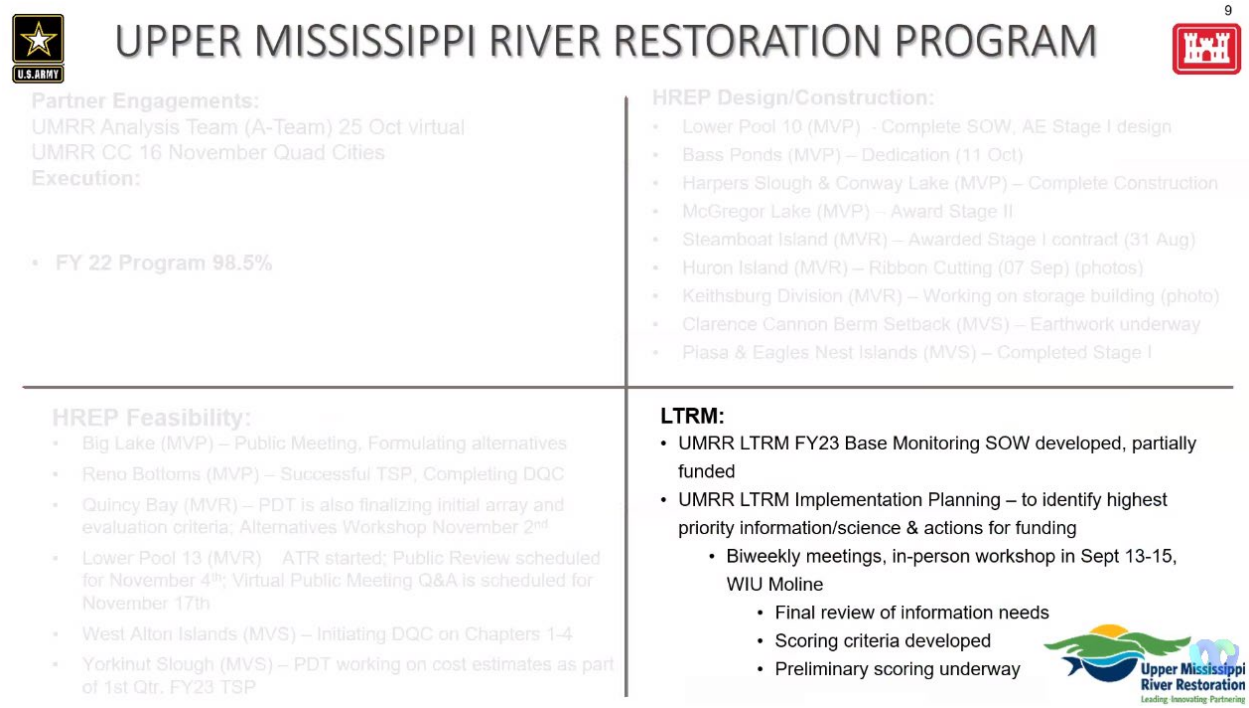
SG: See this novel way to rip rap areas to be used even with other types of riprap we see in other corps programs and maybe could offset some of the negatives of long bank rip rap projects.

Clarence Cannon photo so berm setback work that is underway.

from Davi Michl to everyone: 1:33 PM

Did management gain any more insights into inflation costs increasing in contracts after Steamboat was awarded 31 Aug.? (discussed at our last A-team mtg)

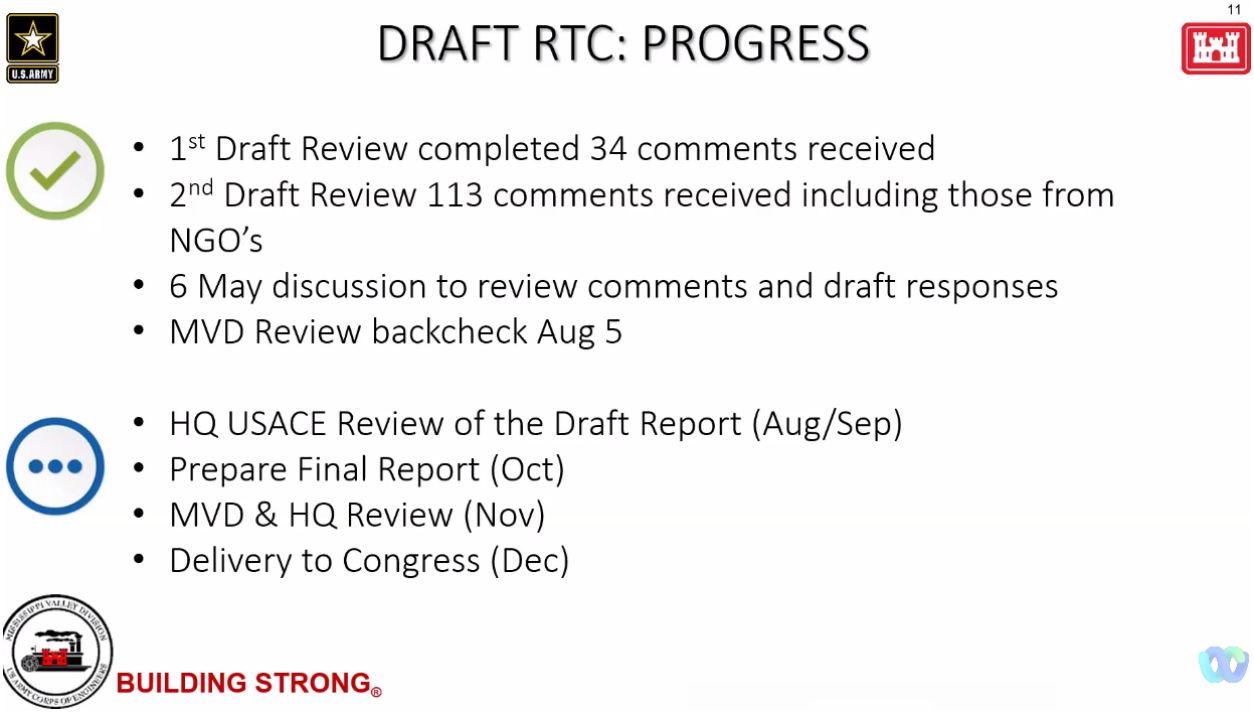
MP: cost or Steamboat was higher and on McGregor Lake as well. Signal that prices are going up. We had options on McGregor and Steamboat that we were not able to award previously, but may be able to award this year.



LTRM update by Karen Hagerty: Hope to fully fund base monitoring this quarter.

LTRM implementation planning has been meeting on first and third Thursday of each month since March. Held in-person meeting September 13-15 in Western Illinois University. Appreciate Jennie arranging the facility which has worked very well. We are finalizing information needs and scoring criteria. Group did preliminary scoring of information needs mainly to test information needs level of detail and scoring criteria application.

from Jennie Sauer USGS to everyone: 1:41 PM - And thanks to Davi, Matt Mangan, and Jim Lamer for pointing me to WIU!



The Report to Congress is hopefully out on Thursday for final review and routing.

WRDA 2022 may not be passed prior to election in November, but we are hopeful that will be done soon so we know where we sit budget wise.

LTRM Implementation Planning Committee update – Jennie Sauer

Four broad categories were identified floodplain ecology, hydrogeomorphic change, aquatic ecology, restoration applications.

We will share information needs and scoring criteria with the UMRR quarterly meeting agenda packet. Will also share with A-Team.

Four criteria for scoring were developed: relevance or importance, depth of current knowledge, opportunity to learn, urgency/unique capacity.

Relevance: is how information need helps understanding and assessment of ecosystem and how information need helps inform restoration and management.

Depth of current knowledge: contains questions about uncertainty of knowledge on topic. This is where scorers can ask others for assistance on that topic (e.g., JS might ask Teresa Newton for information on how much we know about mussels).

Opportunity to Learn: we constantly want to grow in this program and use each situation as a new learning platform.

Urgency and Unique: is it pressing? Do we need information in next 5 years? Unique in that it may require a unique capacity of LTRM element? Is the LTRM the most appropriate to address information need or could others address it?

IP Schedule

TASK/MILESTONE	SEP	OCT	NOV	DEC
Information Needs Revisions	28			
Group Meeting		6		
Scoring Needs		14		
Group Meeting		20		
A-Team Meeting		25		
Read Ahead Materials		28		
Group Meeting			3	
Rescoring Needs			10	
UMRR Coordinating Committee Meeting			16	
Group Meeting			17	
Cost Estimates				5
Optimization				TBD
Group Meeting - Review Final Products				TBD

The group conducted an initial scoring activity. Final scoring will be due to facilitators Dave Smith and Max Post van der Burg and will be completed by November 10. Costs are being developed as well.

Andrew Stephenson: final scoring wont' be presented at the UMRR CC meeting but will be at the UMRR CC meeting. It is an important touch point with the Coordinating Committee on progress of this effort. Also, great to be a part of this effort and appreciate everyone's input. It is good to ID needs and through process reflect on all the great work that has been done.

SG - Check with A-Team about what the team should be doing regarding integration of data and HREPs.

SG: This is just a heat check to see what the role A-team can play with LTRM integration when conducting HREP's. We discussed this at length at our last meeting and just wanted to see if we have moved the needle any on our previous discussion and if there is anything I can do as the A-team chair to facilitate the use of LTRM information on our entire program.

Steve Winter: A-Team can continue to be venue for discussion of this topic especially in learning what's working in P13 and P4. The continued use of the A-Team as a forum for those discussions would be beneficial as opposed to just individual PDTs or river team meetings.

SG: We certainly can play that role as we play that role for other Mississippi River discussions. Representation at meetings?

Shawn G: The A-team should be more active. Agree with Steve in using the A-team as a forum.

SG: How can we be more active? Should chair be on other A-Team meetings to ensure LTRM data is used or ensure A-Team rep is on PDTs?

Shawn G: It would be good for the chair or state rep from adjoining state where project is occurring to attend PDT meeting to insure data use.

Steve W: suggest that PDTs don't need more people on them. Can get unwieldy now because of number of participants. Each rep on PDT is representing an agency/state. Those states already have lead rep on PDT. If project is occurring in key pool then usually the station director is attending regularly as

well as some specialists or WQ specialists. In that sense especially in key pool LTRM has good representation with each state had rep and each agency. Think PDTs wouldn't benefit from having more people attending.

Scott G: Have been thinking PDTs have a lot of people but especially early on though, making sure the simple trend data in presented. Similar to what we'll see later today, even if not on trend pool. People on PDT could benefit from hearing the trends that we're seeing and they should be presented in PDT's especially near the kickoffs of these meetings.

Nick Schlesser: I haven't been involved with PDTs and tend to agree with Steve that we don't need to stick an A-Team person on there. I'm on A-Team because I'm outside LTRM. A-Team can be venue about how things can be integrated and could help lay out framework when data comes in. Maybe we have a checkbox that it's being used or considered? I'm not most versed in LTRM data though as I deal with a lot of my own data.

Shawn Giblin: The fact that we have seen data not being considered that has me concerned. It is incredibly expensive data to collect and we need somehow to make sure it is shown at PDT's.

Matt Vitello: agree with Steve and Nick in that we don't need additional A-Team involvement in PDT's maybe but is there structure we could emphasize? There's LTRM data viewer, that needs to be used? Can we get that considered earlier in the process? Would be step in the right direction.

from Matt O'Hara to everyone: 2:05 PM - maybe the ATEAM should encourage the development update models using the LTRM data, such as the overwinter models maybe using a guild approach instead of specie specific models. such as Jeff J. has been doing

Steve Winter: We have a venue here where we could discuss current efforts of integrating. After P4 and P13, if LTRM data or any data needs to be incorporated or utilized in some way the key people on the project need to get that figured out before the kick off meeting. Once the kick off meeting happens there is a timeline that kicks off as well. Think maybe the HREP process is too rushed but using data to fullest extent possible may not be possible given schedule constraints. Reno Bottoms is good example where that was done. Folks knew that was going to be a forestry project and did data collection before the kick off meeting. That dataset was modeled to inform what we needed to do for the project and process started before the kickoff meeting.

from Nick Schlesser to everyone: 2:07 PM - As a caveat if we as individuals have important expertise or knowledge like Shawn certainly does for some I am not saying we can't be involved. Just not sure how we would contribute as an A-Team rep without a set goal or role laid out in advance.

Nick Schlesser: It sounds like structural process for how the HREP process is working.

SW: agree. At least structure reality. Have ability to recognize, account for, and change how we're doing stuff. Don't' need to wait for kickoff meeting to get started on project.

Nick S: if you're not able to do what you need to do within standard process that does seems problematic.

Karen H: It would be good to hear from Eric who is a PDT member in St. Paul. Also, as part of planning process to ID problems and opportunities which includes data and data needs.

Eric Hanson: For us the biggest challenge is timing. Also, data available that is not in the right form to make it usable immediately. Have to balance time to review and post-process it into form that is usable. How much time we have in planning framework in HREP or NESP projects with even shorter planning timeline. UMRR is 2-3 years, NESP is supposed to be 18 months or less. UMRR can help get data into format where it is useful immediately or more readily available and applicable.

Nicole Ward: Flip question this question. Maybe ask the various PDTs across a range of types of projects what types of data they need?

Eric Hanson: Agree that a discussion is needed, so we can define what needs are.

Scott G: If there is something that folks need and don't have, as chair I can help navigate systems.

Kristen Bouska: At implementation planning workshop I had some information needs about integration and they ended up higher level issues. Took off the list. Marshall Plumley indicated that it was something that a working group at the UMRR CC level could address and work through. Think A-Team could be involved in that as well. Not sure how that will move forward, but was detailed conversation at that meeting regarding how to move forward with integration.

SG: I emailed MP same question regarding what he envisions for A-Team role and did not get response back yet.

from Nicole Ward - MN DNR she/her to everyone: 2:13 PM

and I think more foundational than identifying data needs -- dealing with process barriers and how/what integration looks like, maybe the A-team can help there

from Karen H Hagerty to everyone: 2:13 PM

if you're talking about LTRM data, either the field station specialist or the UMESC PI could help with data needs.

from Nicole Ward - MN DNR she/her to everyone: 2:14 PM

so clarity on when I said "what PDTs need" -- meant more foundational than specific information/data

KH: Agree with Nicole, whenever MP stands up group to figure out what integration looks like and think A-Team should have a role with that.

Nicole: What do PDTs need and want to clarify that I meant, are these more encompassing needs beyond just data need for a project. For those folks who have been on multiple PDTs of various types what are broad considerations on integration and knowing barriers of LTRM and HREP processes. System and process-based, lessons learned that other PDTs could take and pick up. Not specific to location.

KH: What are lessons learned when we try to do this thing.

SW: Lesson learned is don't wait until kick off meeting. Every HREP before kickoff starts with fact sheet that has been approved by UMRR CC. Once those are approved, everyone is free to work on those. Ideally, our partnership will all start working on those projects once fact sheets are approved.

Sometimes there is 1 year and sometimes 5-6 years between approval and implementation. On top of that, all of us are overworked.

KH: Could we ID data needs as part of fact sheets?

SW: This is done to varying degrees but maybe that is a programmatic thing we could focus on with fact sheets have data needs identified in them.

from Nick Schlesser to everyone: 2:18 PM- I still think that indicates a broken system

Shawn G: WI has gone out before projects and collected pre-project data (examples). Have synthesized that data into summaries. Consternation over lack of use of data in projects. Seems like agency philosophies override data sometimes. Demoralizing. I put a lot of effort into data collection.

SW: I think there is a perception that service was not considering data that was available. How that might be reframed. Is that the data was being presented in a way to hopefully justify a change in something like a project feature that is in the project. Data being brought forward to change the teams mind that we should do a different feature. Would be a different objective. If the Service is not comfortable with shifting the project in that different direction. Then that proposed change is not acceptable. If that is not acceptable change, then the amount of data is not relevant.

AS: LP13 summary from science meeting, LP13 AAR is in progress, believe P4 will have similar effort in the future. Also reiterate programmatic effort in the future.

NS: Red River valley experience with flood mitigation on planning projects. Someone would come propose project with solution before defining problem. Think that's what I heard from SW here. Service is coming with a plan and concerned that data will refute plan versus having data support initial propose solution in the first place. If there is data that supports initial plan that is equally compelling to data that may propose change. If it's purely political choice and that needs to be told PDT upfront. Like when we make regulatory decisions that are scientifically versus socially based.

SW: Service wanted to reinforce around island, while maintaining flow to backwater area. We liked idea of some velocity going through that area to support some SAV community, particularly wild celery. Team was headed that way. Then we had data that said, the flow it too much for overwintering fish. Basically, a disagreement about what type of habitat to restore. Overwintering centrarchids or waterfowl and maybe and lotic species. We believe data should guide us but we sometimes can get upset that decisions are made different from where we thought data might have led us. It is aMistake to say we're ignoring data.

Shawn G: I take issue with this as flow reductions weren't' aimed at overwintering, it was aimed at aquatic vegetation which was the goal.

SW: Boils down to differing opinions of what was wanted and desired endpoint.

Shawn G: Want these to be test of ideas, you show up with your data and we show up with our data think that is how we make best program we can.

KH: What makes this program great is all of us being so passionate about the river and making it better. But, putting all those biologists in the room to iron this out can be a challenge. Especially since each has a different clientele they might be representing.

I sent email to Angela Deen to ask about having AAR on P4 projects and asked that Scott G be included as well.

Scott G: A-team involvement. Can be venue to ensure LTRM data is used earlier on maybe?

from Karen H Hagerty to everyone: 2:29 PM - another consideration is whether the proposed change accure habitat benefits that can be captured on the models

Eric H: As a lead biologist for HREP project. We start with fact sheet with propose project for this area, doesn't have basis for why we consider features X, Y, Z and why. If I wasn't' part of team that assembled fact sheet in beginning. I have to guess why. Think it varies widely based on who put fact sheet together and proposed it. If there was more thought put into providing basis for these fact sheets – instead of being 1 page – but have 5-6 pages – with adequate information provided.

Scott Gritters: We have been told to narrow fact sheets to 1-page to be absorbed and approved by MVD. Think that is good. It is not meant to be comprehensive overview of all issues which are supposed to come out in charettes. We spend a day on planning or charettes, a very long process and should be when ample time for those questions should come out. Specifically, ID'ing all the data that is available.

from Nicole Ward - MN DNR she/her to everyone: 2:32 PM - Maybe a-team can help define what integration looks like. One of my struggles being new to the program, is I've heard there are aspirations for "integration" but it is ambiguous as to what that means or looks like.

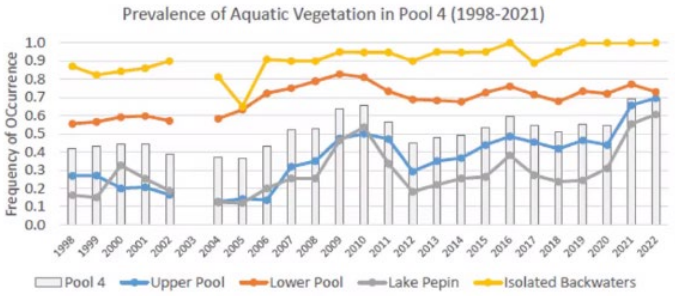
from Nick Schlesser to everyone: 2:34 PM - THis comes back to time. If you want longer fact sheets there needs to be more time. More time should also be put into the process. IF that means starting a PDT then putting meetings on hold for awhile while data is collated and prepared so be it

**** SG: When I hear back from Marshall on his thoughts for A-Team involvement in integration discussion – will report back at next A-Team meeting.

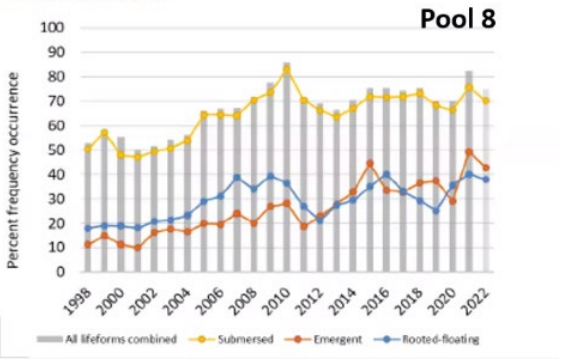
from Davi Michl to everyone: 2:39 PM - @Nicole: I've struggled with the same Re:integration...it sounds like a win, but how to define, envision, and begin to operationalize that integration?

LTRM Science Monitoring Highlights – Jennie Sauer

Successful monitoring season
(With some difficulties with low water)



Preliminary data
Lund (MDNR), Carhart (WDNR), and Fopma (IDNR)



Aquatic Vegetation Trends on UMR Pool 13

Wild rice expansion.

Fisheries

Completed sampling Periods 1 and 2
Almost complete Period 3

Sampling efficiency this season has definitely been influenced by the heavy vegetation with most sites being recorded as pseudo shorelines and or sites being moved to an alternate. Most sets are engulfed with veg making them fish poorly. We are also dealing with low water which makes some of our backwaters inaccessible. (Steve DeLain, MDNR)

We have seen little to no YoY Silver Carp or Freshwater Drum like has been typical in the past few years. High water temps and lower water levels may have contributed to the reduced spawning numbers. (Andrew Glenn, MDC)

Low water with some backwaters inaccessible. In Missouri we saw no YOY silver carp or freshwater drum. Picture is PR for Our Mississippi Magazine.

Water Quality

- SRS on-going, some field stations have completed
- WQ analysis in lab on-going
- Successful upgrade of ScanLog/data transfer to sFTP (major kudos to Ben Schlifer)
- ~950 samples are set to be shipped to contractor for phytoplankton ID samples from 2007-2021

Quivre Lake (Sara Sawicki, INHS-IRBS)

Marquette Island
(Luke Zuklic, MDC, Big Rivers)

Reviewed casework on fume hoods etc. begin constructed for new WQ lab. Aiming for March to piece and one month to install. Hopefully August 2023 renovation will be complete.

File transfer wasn't secure enough previously. And caused issues with ScanLog. It ties field application, QAQC of samples, into WQ lab system to track and very integral to keeping up high standards of WQ lab.

<u>Lots of presentations of LTRM data and research</u>

- Patterns of forest regeneration following removal of invasive Reed Canary grass under different simulated hydrological scenarios. Two different future 100-year hydrologic scenarios with one reflecting past 40 years, and one with increasing flooding.
- Evidence of Alternative Trophic Pathways for Fish Consumers in a large river system in the face of invasion.

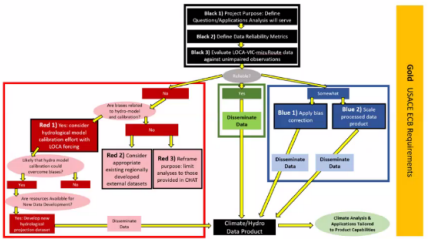
Scott Gritters: Thanks to our next two presenters Kristen and Seth for stepping up and presenting at the A-team meeting. As chair I really appreciate the effort and work in the program and willingness to present. First off, we will start with Kristen and thanks again for all your good work.

***Resisting-Accepting-Directing: Ecosystem management guided by an ecological resilience assessment "*- Kristen Bouska**

Improving our understanding of historic, contemporary, and future UMRS hydrology

Molly Van Appledorn, USGS UMESC and Lucie Sawyer, USACE MVR

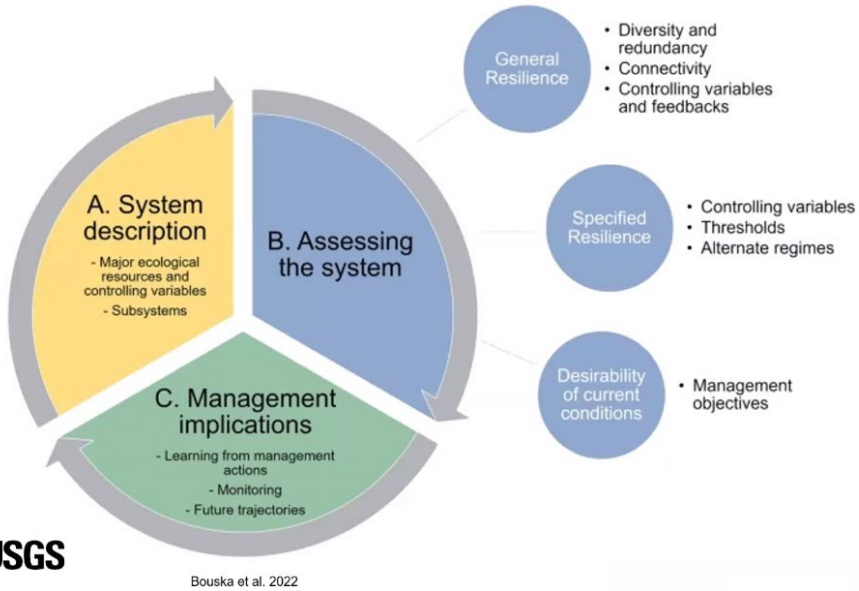
- Database template developed for historic and contemporary daily water service elevations at UMRS USACE gages. ~95% of data
- Draft of the LTRM Report "UMRR Future Hydrology Meeting Series



Molly Van Appledorn on Maternity Leave.

- Systematic analysis of hydrogeomorphic influences on native freshwater mussels.
- John Delaney [Missed]
- Ecological Status and Trends report presentations
    - RRAT
    - AFS
    - USGS_USACE partnership meeting
    - ICWP annual meeting
    - MRCTI
    - Viking Cruises

Assessment approach



USGS

Bouska et al. 2022

Resources

Bouska et al. 2018. *Ecology and Society.*

Bouska. 2018. *Ecosphere.*

De Jager et al. 2018. USGS Report.

McCain et al. 2018. USACE Report.

Bouska et al. 2019. *Ecological Indicators.*

Bouska et al. 2020. *Journal of Env. Mgmt.*

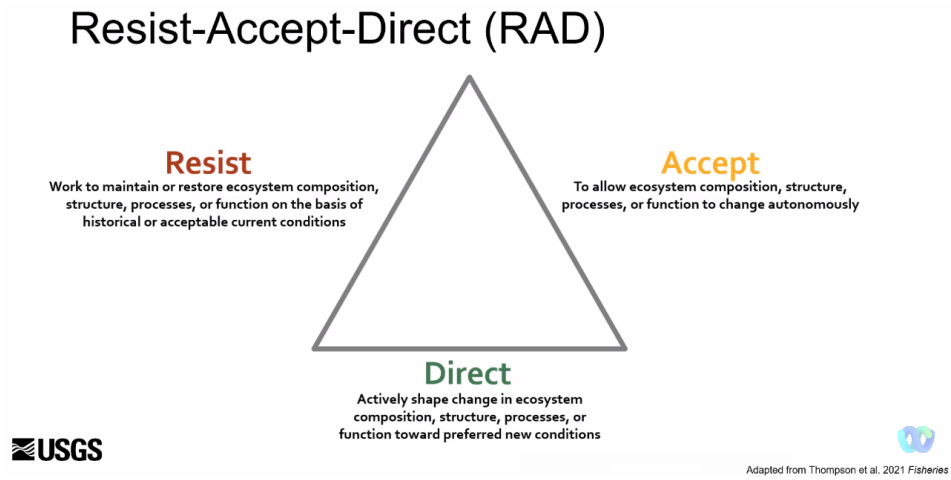
Bouska. 2020. *Biological Invasions.*

Bouska et al. 2022 *Freshwater Science.*

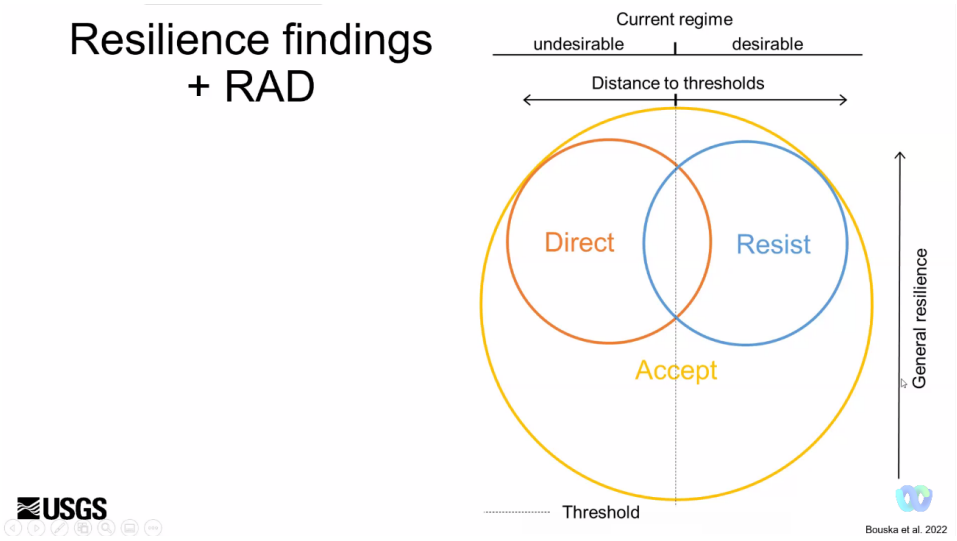
Bouska et al. 2022. *Environmental Management.*

Bouska et al. in prep.

Now in the 3rd phase – Management Implications.



[Missed notes]



When conditions near thresholds we have to think about if management actions will resist change.

If trying to direct and condition

Examples of management strategies

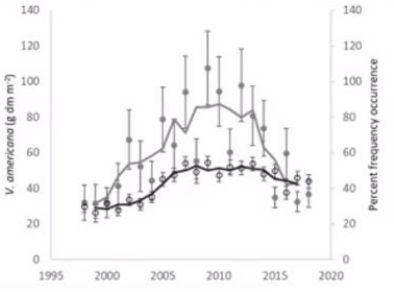
General management approach	When to implement	Example management strategies		
		Aquatic vegetation communities	Floodplain vegetation communities	Fish communities
Resist	Managing to maintain or transition to historical/known conditions is feasible (i.e., management actions can change proximity to threshold)	Minimize watershed inputs and resuspension of sediment; Eliminate excessive short term water level fluctuations; Alter connectivity with main channel	Supplement forest age and size structure and maintain canopy through planting new cohorts; Contain and suppress invasive species; Restore historical inundation dynamics	Contain and suppress invasive species; Enhance diversity of habitat conditions that support robust native fish communities
Accept	Regime shifts are inevitable and anticipated ecosystem changes are acceptable	No management interventions		
Direct	Regime shifts are inevitable and current ecosystem trajectory is undesired	Shift management emphasis to more tolerant community types	Supplement propagule supply of native herbaceous species; Facilitate northward range shifts of species adapted to future conditions	Facilitate shifts in use of dominant fisheries (i.e., fishery of invasive species); Reconnect floodplain areas to river

Bouska et al. 2022

Resisting change to maintain SAV in Lower Pool 13

- Wild celery in Lower Pool 13

- HREP in planning to reduce wave action, improve water clarity, and promote wild celery bed maintenance and expansion

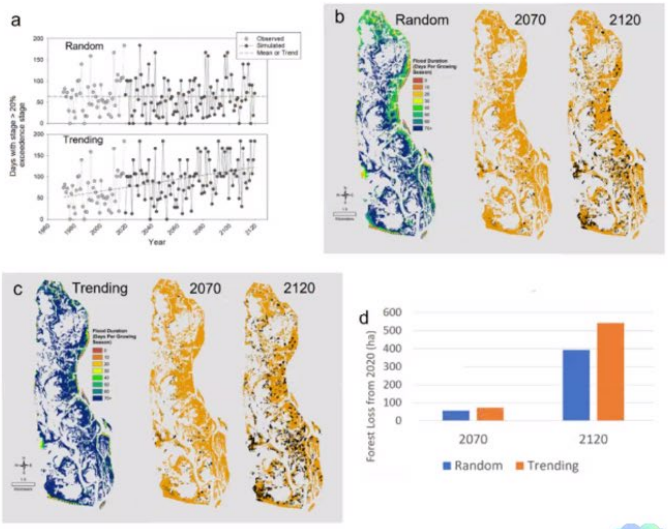


Drake et al. 2022

Examples of resisting change in LP13. Had been seeing decline in SAV in impounded portions of P13 in that HREP is being designed and planned to help SAV and resist change to return to turbid unvegetated state.

Future trajectories of floodplain forests in Reno Bottoms

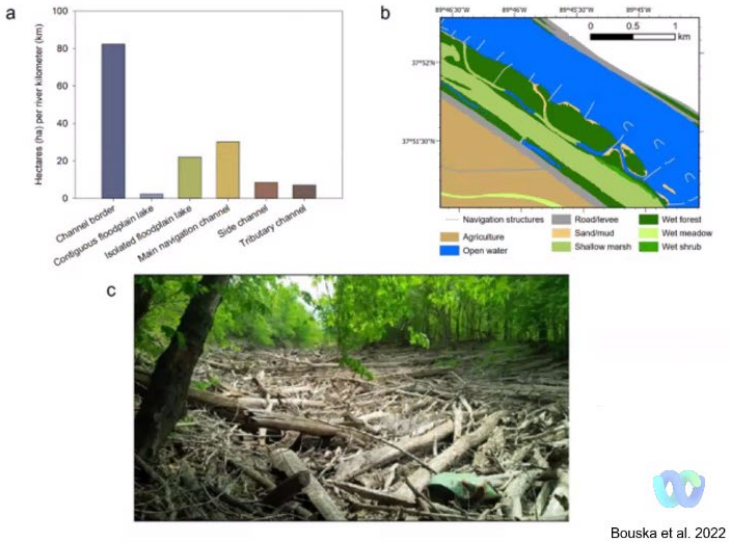
- 5000 ha floodplain site
- HREP in planning to preserve high quality forests
- Future scenarios of inundation



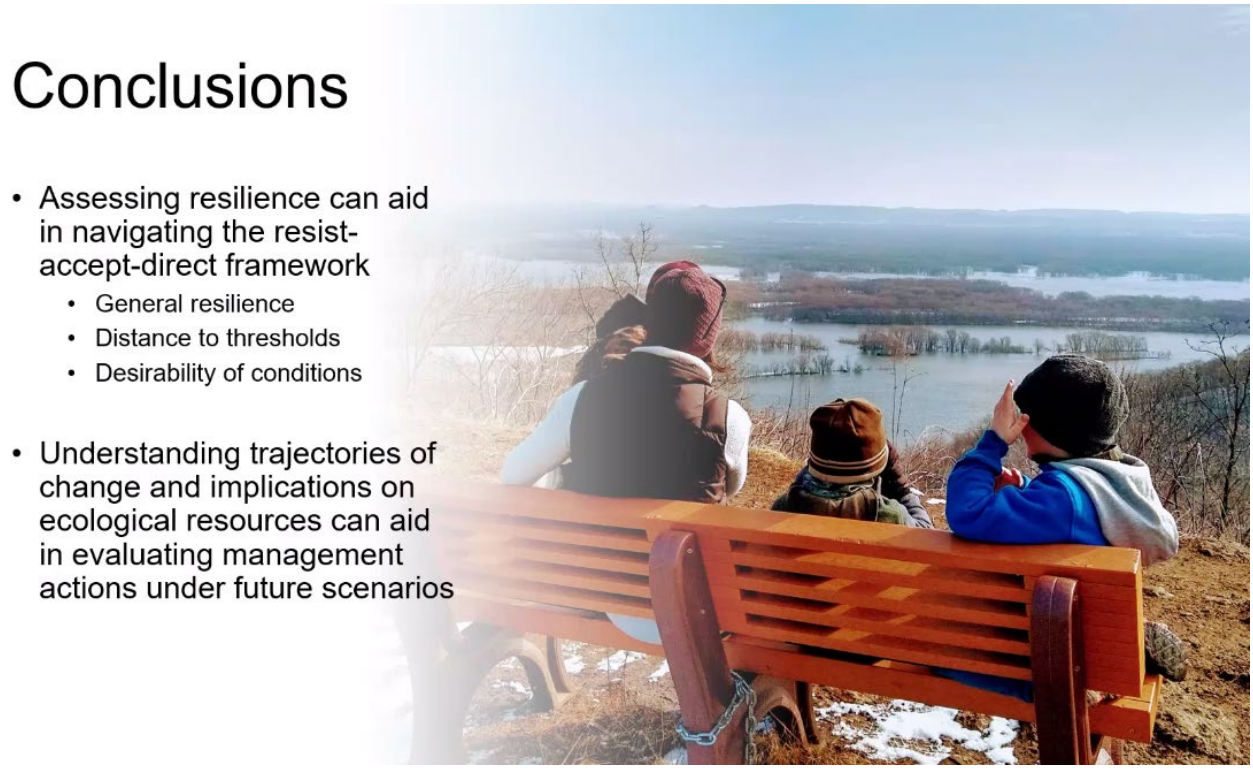
Bouska et al. 2022

Can rehabilitation efforts direct change in the Unimpounded Reach?

- Crains Island and Harlow Island HREPs
  - Re-establish shallow side channels while discouraging sand deposition
- Enhancing habitat diversity may strengthen biotic feedbacks that sustain fluvial-dependent fish populations



Bouska et al. 2022



RAD is common sense as managers indicated they do think about these things as they develop HREPs – but not doing in a formal manner. As we think about future trajectories and implications for ecological resources – may be opportunity for RAD to be used as tool to develop long term decisions.

Next Steps –

- In management implications stage. Want to develop learning from management actions – how to apply resilience assessment and operationalize. Give lessons learned and future directions. See this perspective being applied in other river science projects.
- Asking questions about inferred relations between general resilience, habitat diversity metrics and fish data. Have been working with folks that work to collect data for LTEF data, INHS led. As of 2009 we have expanded to cover several pools of Mississippi River.
- Learning from management actions and have sat on LP 13 to understand how HREP process works. How decisions are made on the process itself. Held a brainstorming session about learning opportunities during Science meeting in February 2022. As project has gone through phases and we have TSP and some mussel surveys and confident it will move forward. Will be working with small group to write collaborative research plan to test hypotheses there. Have had input from HREP folks on working at the HREP scale.

Jennie Sauer: Really appreciate the first slide of the summary that showed where this all started and where you are now.

AS: RAD framework overlay on HNA-II condition assessments?

Kristen Bouska: Have laid some out in paper as well but is difficult sometimes. Floodplain forest are difficult due to elevation considerations. Not sure how that would move forward, but has crossed my

mind. Nate De Jager has had some ideas for how to get toward that. Hard to know if that's a priority but certainly not opposed to it though.
AS: Th need for desired future condition may play a role in that process.

KB: agree but also broader project as well. I think that discussion is continuing though. Believe MP said that need exists, but not sure what level decides how to move that forward.

Scott G: here are some processes there, we wish we could do something about it but maybe can't so we "accept it". Accept seems to positive.

KB: Right, accept can mean its' changing and you are fine with that change or it's changing and you can't' do anything or don't' have the ability to address for technical or political reasons. Difficult to say that for which is which.

Scott G: For managing some areas, there are limitations to addressing management needs and sometimes need to "accept" it due to resource constraints.

from Matt Vitello to everyone: 3:35 PM - To know what the "direct" is we need DFCs, HNA2 is a starting point

KB: Agree with Matt V, if we want to think about using this approach and being strategic then DFCs is needed. There needs to be a concerted effort on DFCs. Probably pulling in someone who has more social science expertise could be very beneficial and might be useful to look at other systems where this has been applied. Not easy. Wouldn't want to go down that with this effort unless there was clear utility and it was a stated need.

Scott G: Kristen I appreciate the depth of knowledge you have and your quality presentation. Next, we have Seth Fopma a fairly new face with the Bellevue LTRM station. Seth is going to share with us results of vegetation analysis he has been conducting

Seth Fopma on the Pool 13 Aquatic Vegetation Summary

We are in the 2nd year of fairly low water but not drastically off normal. Were able to sample all 450 points. With higher water we sampled 33 sites on foot which is down from 60 some in 2021.

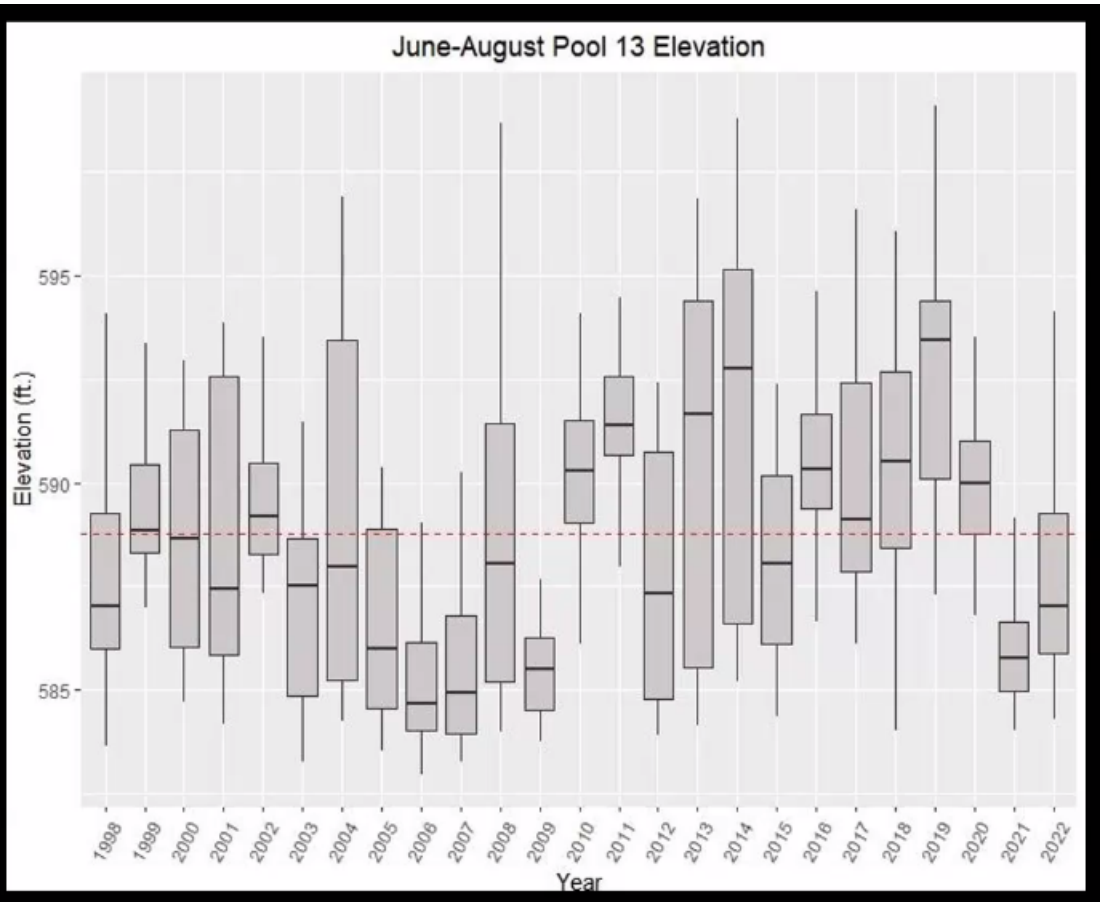


Figure 2. Summary of daily water surface elevation at the Bellevue gauge (river mile 556.7) during June-August. Box plots represent the minimum-maximum recorded values (dashed whiskers), 25th-75th percentiles (grey box), and median gauge value (black line). The dashed red line represents the mean water surface elevation (588.76 ft.) for the selected months and time period (1998-2022).

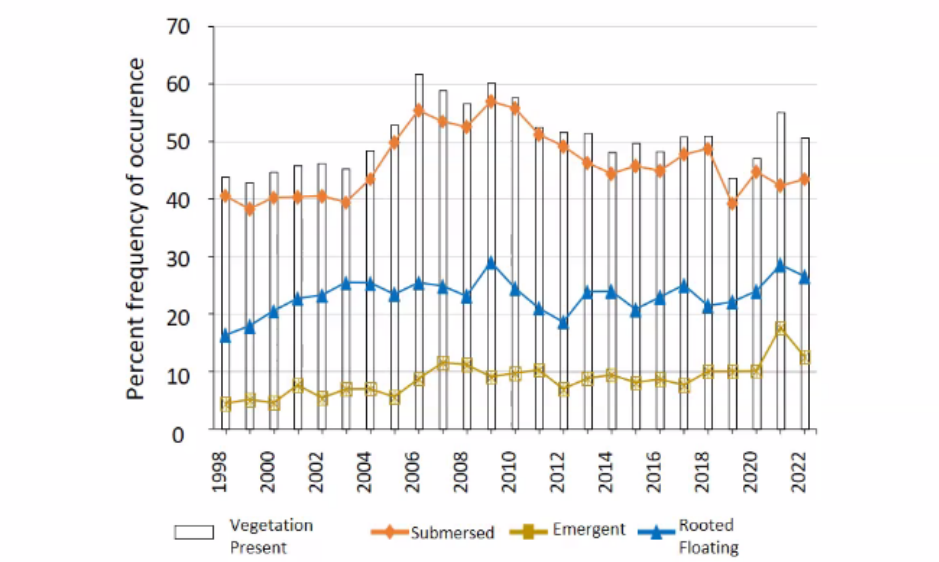


Figure 3. Annual percent frequency of aquatic vegetation in LTRM SRS sampled sites. Percent frequency of occurrence is calculated as the number of sites where vegetation or a vegetative lifeform was identified divided by the total number of sites sampled in a given year. Hollow bars represent all lifeforms, the orange line represents all submersed species with the yellow and blue lines representing all emergent and rooted floating-leaf species respectively.

Vegetation at >50% of sites. SAV is up andEAV is down. RFV decreased a little as well.

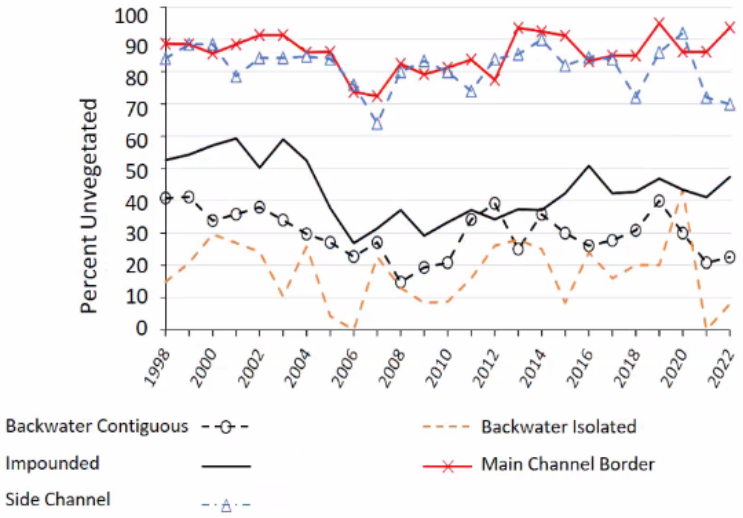
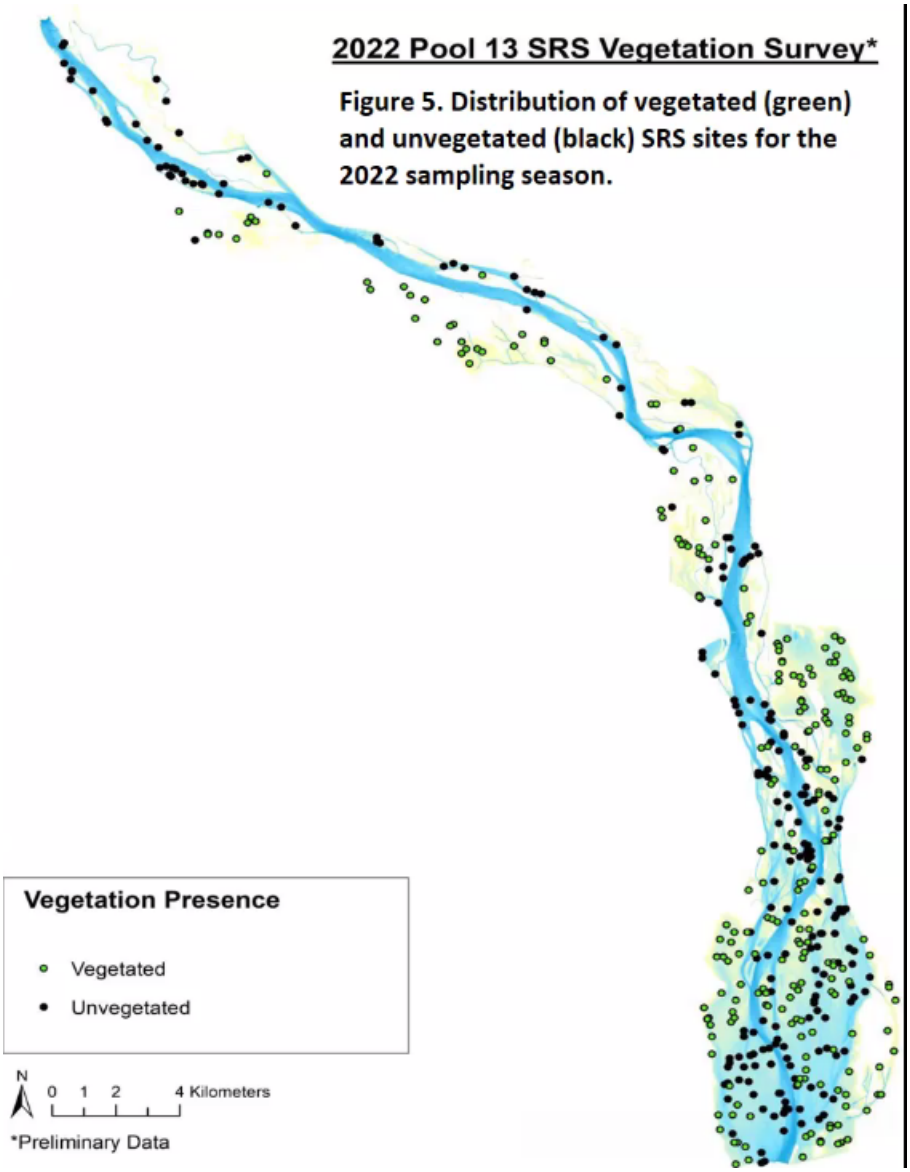


Figure 4. Annual percentage of unvegetated Pool 13, LTRM, SRS sites in each sampling strata (black with open circles represents the backwater contiguous strata, orange, long dash represents backwater isolated, the solid black line represents the impounded strata and the solid red line with x marking and the blue dashed line with open triangles represent the main channel border and side channel strata respectively).

Comparing unvegetated sites red is main channel and we are very consistent at having very little vegetation in main channel border and side channels. We spend lots of effort to get there to say we're still at 90% unvegetated.

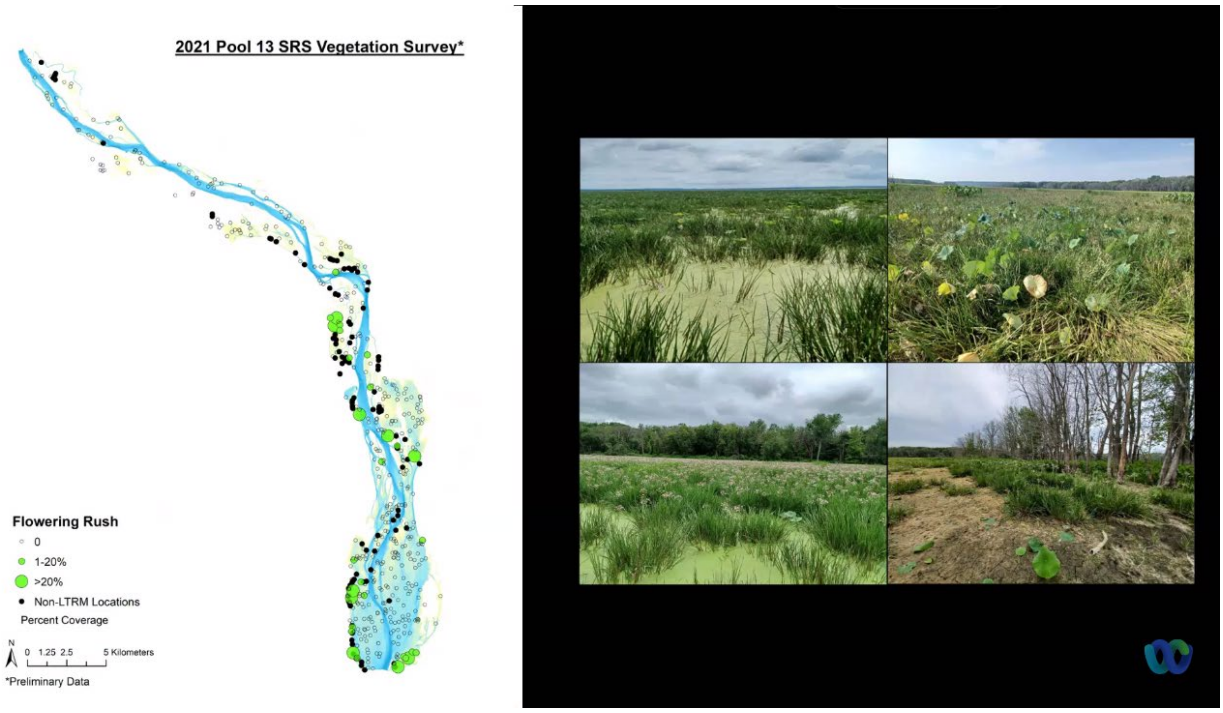
Saw few unvegetated sites in backwater isolated areas. Variability, but consistent with historic trend.

Here are some examples of how aquatic vegetation dispersed throughout the pool.



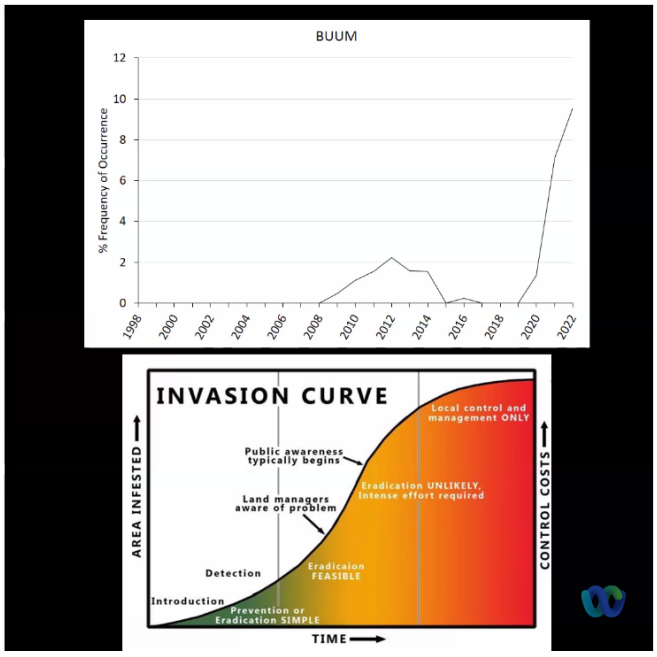
SW corner of pool 13, in proposed project areas has quite a few unvegetated sites there. Has been talked about in PDT process and what LRM data would suggest we'd expect to see there. High prevalence of unvegetated sites there.

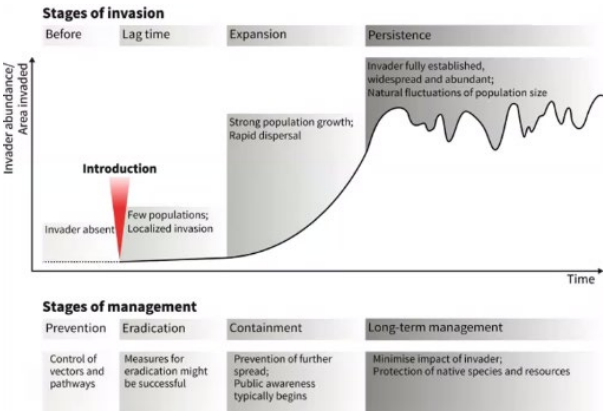
The non-native Curly Leafed Pondweed which as been a spreading problem in some systems in and out of the Mississippi River.



SRS sites where flowering rush observed as well as other sites observed opportunistically.

Find flowering rush throughout system inside channels and main channel borders, backwater areas. Pretty well everywhere. Has been efficient invader in P13. When it dies it creates large mats of dead vegetation and make it difficult for EAV to breakthrough.





Wild Rice in P13: For the 2nd year wild rice was observed. Last year was a couple plans in one location, this year was 3x as much in that location. This is an opportunistic observation and not in our sampled sites. Observed in another location across the channel with two patches we're aware of. Just seeing it and becoming aware of existence in P13. Without doubt we are in first stages of wild rice expansion in P13. It will create learning opportunities as wild rice is continued to expand. Especially if low water continues and water clarity improves.

Sustained high water during in years 18-19 has resulted in high mortality of riparian tress and will continue to affect floodplain composition and structure of side channels. It will also affect areas that are accessible with dead trees falling in and potentially plugging up secondary channels. Some examples of Crooked Slough where trees fell into side channel and cause flow changes and certainly navigation challenges.

Mismatch of Aquatic Veg strata from points generated and that that is reality when we get out there. Side channel habitat according to strata is now operating as backwater with lotus. Other side channel I would categorize as land with now decaying wood on forest floor. These may have changed due to transitions of river naturally but we will likely need to address what historic strata were and how and if they need to be adjusted to reflect current bathymetry on the river.

Scott Gritters: I saw main channel not having much vegetation, but when I fish I see beads of vegetation usually valisnaria there. May be because we don't have a sampling point there close enough to the bank?

Seth Fopma: yes, exactly a resolution issue, main channel areas falling into areas too deep to sample and we are missing extreme peripheries of main channel. Likely we have some vegetation within wingdam borders as well but small bands.

Scott G: would like to continue having monitoring data at future presentations. Think this was very useful and could not be imagined even by the early pioneers for the LTRM.

Andrew Stephenson presentation on UMRR 2-page flyers from Status and Trends Report

AS presented the Sedimentation and draft UMRR forestry flyers being developed. Final versions will be edited soon and sent out through the A-team reps. Would like to get them returned ASAP to insure we get them done in a timely manner.

KH: please include Jeff, Jennie, and myself in that review request to report authors.

AS: will do.

from Karen H Hagerty to everyone: 4:16 PM

the sedimentation fact sheet should state that it does not cover the entire UMRS but just some pools in the upper impounded reach

SG: good job on flyers it is so difficult to distill all that information down to a small manageable amount.

Scott Gritters: As you know, I have been doing a "Field Station in Focus, at each of the meeting that I have chaired. Frankly it is one of my favorite parts of the A-team meetings as we know that people are

what make the UMRR programs so fantastic. I am proud to introduce Jim Fischer to do the Wisconsin Field Station staff.

WI field station

3.5 positions,

Andy Bartels who started 1989 as one of the longest tenured field station employees and mans the fish component specialist

Jim Fischer himself started as WQ specialist in past

Shawn G started as WQ specialist in past

Kraig Hoff started as WQ technician.

[People – see great slides]

Alicia Carhart, Andy Bartels, John Kalas, Kraig Hoff, Steph Szura, Bonnie Richards, Ben Patschull, Jeremy King, Dr. Patrick Kelly (new field station team leader).

Kraig Hoff has been on medical leave since March with a caring bridge site to offer support

JF: I can not do my normal job and keep up with all things at the field station so I am excited to announce that Dr. Patrick Kelly will start soon as the New Field Station team leader starting in January.

Welcome to Dr. Patrick Kelly!
New Field Station Team Leader
(Starting January 2023)

Employment

- *Rhodes College, Memphis, TN, Assistant Professor of Biology*
- *Miami University, Oxford, OH, Postdoctoral Fellow*
- *Upper Midwest Environmental Science Center*

Education

University of Notre Dame
University of Wisconsin – La Crosse, MS and BS

Select Publications (contact Dr. Kelly for full list)

Kelly, P.T., J.M. Taylor, I.M. Andersen, and J.T. Scott. 2021. Highest primary production achieved at high nitrogen levels despite strong stoichiometric imbalances with phosphorus in hypereutrophic experimental systems. *Limnology & Oceanography*. 66: 4375-4390.

Holgerson, M.A., R.A. Hovel, **P.T. Kelly**, L.E. Bortolotti, J.A. Brentrup, A.R. Bellamy, S.K. Oliver, and A.J. Reisinger. 2021. Integrating ecosystem metabolism and consumer allochthony reveals nonlinear drivers in lake organic matter processing. *Limnology & Oceanography*.

Nobre R.L., C.R. Cabral, F.C. Araújo, J. Guérin, F.C. Dantas, L.B. Quesado, E.M. Venticinque, R.D. Guariento, A.M. Amado, **P.T. Kelly**, M.J. Vanni, L.S. Caneiro. 2020. Precipitation, landscape properties and land use interactive affect water quality of tropical freshwaters. *Science of the Total Environment*. 716:137044

Kelly, P.T., W.H. Renwick, L. Knoll, and M.J. Vanni. 2019. Stream nitrogen and phosphorus loads are differentially affected by storm events and the difference may be exacerbated by conservation tillage. *Environmental Science & Technology*. 53:5613-5621.

Kelly, P.T., C.T. Solomon, J.A. Zwart, and S.E. Jones. 2018. A framework for understanding variation in pelagic gross primary production of lake ecosystems. *Ecosystems*. 21:1364-1376.

Kelly, P.T., M.J. Vanni, and W.H. Renwick. 2018. Assessing uncertainty in annual nitrogen, phosphorus, and suspended sediment load estimates in three agricultural streams using a 21-year dataset. *Environmental Monitoring & Assessment*. 190:91.

Jones, S.E., J.A. Zwart, **P.T. Kelly**, C.T. Solomon. 2018. Hydrologic setting constrains lake heterotrophy and terrestrial carbon fate. *Limnology & Oceanography Letters*. 3:256-264.

Starting January 2023 as field station leader.

from Nicole Ward - MN DNR she/her to everyone: 4:38 PM - Woo! I'm a fan of Dr. Kelly's work through GLEON. Excited he is joining us!! Nice recruit, Wisconsin!!

Field Station updates:

Sara Sawicki joined IRBS.

John Chick: David Wires is now a permanent fishery and WQ assistant specialist.

KH: Jennie Sauer is retiring at end of Calendar year.

SG: Wow news to me, congrats that will create a hole.

from Dave Herzog to everyone: 4:43 PM

CONTRACT in perpetuity!!!

from Matt O'Hara to everyone: 4:43 PM

Congrats Jennie!!

from Dave Herzog to everyone: 4:44 PM

Sauer CONTRACT in perpetuity!!!

from John Chick to everyone: 4:44 PM

I think I might retier early if Jennie is leaving!

<u>Agency Updates</u>

MN, WI, IA, IL, MO, USFWS, COE, USGS, UMRBA, Others

Nick Schlesser: Office leader open but no progress made and waiting on HR. It is now closed for applicants and have serval who have applied but don't know who or when yet. Finished Pepin survey 1-2 weeks ago. CUE was down for most species, but near records for most still. Getting ready to start P4 Creel survey for the next two years

Shawn G: Dave Heath retired. Cyanotoxin monitoring and Nutrient work is continuing. Especially in the PFAS contamination from La Crosse airport. Emerging contaminants we are looking at newer chemical formulations in river. Datasets in WI back to 70s. Also, the zebra mussel biomass is the highest since 2014.

Jim Fischer – Steve Galarneau will be retiring in December. Will leave vacation in central office for some time. I have been appointed by governor as primary representative to UMRBA.

Scott G – Iowa fishing tournaments have averaged near ~200 in waters every year. Looking at types see bass as dominant type of tournament. Catfish then Walleye as 2 and 3. P9, P14, P19 were the pools most tournaments were held in in 2021.

Kevin Hanson working on mud puppies and has caught 300 and pit tagged. Had two inland train derailments with coal with fine coal than landed on mussel beds. Had one inland train derailment with tar/asphalt that lined banks of creek in inland Iowa. Our research staff devote a lot of time to Shovelnose sturgeon work and making some interesting advancements in aging and when spawning is triggered. Fairport is adding new tankage and rearing facility. They too have dealt with a train derailment with fine powder coal covering a mussel bed and how to handle the mitigation of that.

Matt O'Hara: fisherman picking up more sturgeon both shovelnose and lake. Low water has made it difficult for DNR electrofishing at the long-term electrofishing sites but still saw good numbers of sportfish.

Jim Lamer: YOY Asian can be detected in LTEF and multi-agency monitoring in Illinois covering all river reaches but have not detected any YOY carp this year with the exception we did pick up a few in P19 this year.

John Chick: David Wires is now LTRM fisheries person who also helps WQ sampling. Courtney Weldon supervised by myself and Jim Lamer has completed his MS thesis at University of Illinois and she got job in Indiana.

Matt V: Tower Rock which is natural area department owns has been on national news, lots of use well beyond its typical use and capacity. Deer season starts in November so all hands-on deck for CWD mandatory sampling by sampling lymph nodes.

Dave Herzog: Did not have additional recruitment with age 0 silver carp. Reproductive failure can happen. Drought did affect sampling and folks used jet boats and boats inside of boats to get into areas. Had vegetative response as sandbars are green this year. Interesting to think about how to monitor inundation of those areas.

USACE: KH retiring July 2023.

Thanks to Jennie, we appreciate you more than you can imagine.

Jennie Sauer: every team leader and field station should have gotten copies of S&T report, if not, I can send your way.

UMRBA: ongoing work to advance development of WLM adaptive management framework.

SG: reviewing flyers will be sent out to A-team members as they become available.

Chat –

from Nathan De Jager to everyone: 1:04 PM

Nathan De Jager, USGS. I'm home sick today and with a sick kid so I'm just listening in and might have to leave at times.

from Eric R Hanson to everyone: 1:04 PM

Eric Hanson, USACE-MVP LTRM Liaison

from Dave Bierman - Iowa DNR to everyone: 1:04 PM

Dave Bierman - Iowa DNR/LTRM

from Nicole Ward - MN DNR she/her to everyone: 1:04 PM

nick is having trouble joining -- he just messaged me

from umrba to everyone: 1:04 PM

Andrew Stephenson, UMRBA

from Jim Lamer to everyone: 1:04 PM

Jim Lamer - Illinois River Biological Station, INHS

from Jennie Sauer USGS to everyone: 1:05 PM

Jennie Sauer, USGS UMESC

from Matt O'Hara to everyone: 1:05 PM

Matt O'Hara ILDNR

from John Chick to everyone: 1:05 PM

John Chick, Great Rivers Field Station, INHS

from Matt O'Hara to everyone: 1:07 PM

IL is good with the notes. Thanks

from Karen H Hagerty to everyone: 1:07 PM

if you have not already done so, please add your name and organization into the chat :-)

from Lane Richter to everyone: 1:08 PM

Lane Richter - USACE MVS

from Jayme Strange - USGS to everyone: 1:08 PM

Jayme Strange - USGS UMESC

from Jennie Sauer USGS to everyone: 1:09 PM

All minutes are up to date on ATeam corner

from Nicole Ward - MN DNR she/her to everyone: 1:09 PM

Nicole Ward - MN DNR, Lake City LTRM

from Dave Bierman - Iowa DNR to everyone: 1:11 PM

I will get our updated Field Station description up to Jennie/Mike C.

from Jennie Sauer USGS to everyone: 1:11 PM

mcaucutt@usgs.gov

from Jim Lamer to everyone: 1:12 PM

yes, no problem

from Nick Schlesser to everyone: 1:12 PM

NIck Schlesser - MN DNR

from umrba to everyone: 1:18 PM

Jennie, I would suggest adding that semicolon instruction into the quesiton field itself.

from Nicole Ward - MN DNR she/her to everyone: 1:18 PM

yes, I second umrba suggestion above

from Jennifer Dieck to everyone: 1:19 PM

Jennifer Dieck - USGS UMESC

from Jim Lamer to everyone: 1:21 PM

I agree, form seems like a good option and will allow things to be organized a little more efficiently than a working word document

from Dave Bierman - Iowa DNR to everyone: 1:21 PM

I like the Form approach as well. Microsoft Teams is rather clunky IMHO, but I will do whatever is decided.

from Matt O'Hara to everyone: 1:21 PM

agree I like the form

from umrba to everyone: 1:21 PM

Would you want to include a date field as well?

to Jennie Sauer USGS (privately): 1:26 PM

Sorry for all the questions, Jennie! past experience looking at lots of surveys/forms that makes me wonder about these things!

from Jennie Sauer USGS (privately): 1:27 PM

No worries, always open to suggestions

from Davi Michl to everyone: 1:27 PM

Cutting out

from Nick Schlesser to everyone: 1:28 PM

If you want to use the form as a long term input method invest the time up front to either automate the intake with semicolons or prevent the need to use them.

to Jennie Sauer USGS (privately): 1:28 PM

It's probably a bit like Nick and seeing excel spreadsheets!

from Jennie Sauer USGS to everyone: 1:29 PM

That is probably beyond my capabilities Nick! :-)

from Davi Michl to everyone: 1:33 PM

Did management gain any more insights into inflation costs increasing in contracts after Steamboat was awarded 31 Aug. ? (discussed at our last A-team mtg)

from Davi Michl to everyone: 1:39 PM

Thank you!

from Jennie Sauer USGS to everyone: 1:41 PM

And thanks to Davi, Matt Mangan, and Jim Lamer for pointing me to WIU!

from Davi Michl to everyone: 1:43 PM

:-)

to Matt Vitello (privately): 1:45 PM

Matt, you might need to suggest brining those mussel feature efforts over to NESP bankline stabilization projects!

from Steve Winter to everyone: 1:46 PM

FYI - I'm here now, sorry I'm late.

from Karen H Hagerty to everyone: 1:48 PM

glad you made it, Steve!

from Matt Vitello (privately): 1:49 PM

I've already chatted with Travis about that. We've done "gradual slope revetment" in MVS on O&M projects to benefit mussels, theoretically, and want to bring that to NESP mitigation

to Matt Vitello (privately): 1:50 PM

Great!

to Jennie Sauer USGS (privately): 1:54 PM

Just to clarify - I didn't think scores of INs would be presented to the UMRR CC in November, just that we had that as a date on the schedule to be aware of.

from Davi Michl to everyone: 1:54 PM

Summarized well, thanks Jennie!

from Steve Winter to everyone: 1:55 PM

I've got the meeting on my computer in my (home) office but I'll probably be listening mostly on the phone as I pack things for my trip to Pool 12 later today. I'll have to leave this meeting early because of that trip.

from Matt O'Hara to everyone: 2:05 PM

maybe the ATEAM should encourage the development update models using the LTRM data, such as the overwinter models maybe usings a guild approach instead of specie specific models. such as Jeff J. has been doing

to Matt Vitello (privately): 2:07 PM

That does not bode well for NESP projects then...

from Nick Schlesser to everyone: 2:07 PM

As a caveat if we as individuals have important expertise or knowledge like Shawn certainly does for some I am not saying we can't be involved. Just not sure how we would contribute as an A-Team rep without a set goal or role laid out in advance.

from Nicole Ward - MN DNR she/her to everyone: 2:13 PM

and I think more foundational than identifying data needs -- dealing with process barriers and how/what integration looks like, maybe the a-team can help there

from Karen H Hagerty to everyone: 2:13 PM

if you're talking about LTRM data, either the field station specialist or the UMESC PI could help with data needs.

from Nicole Ward - MN DNR she/her to everyone: 2:14 PM

so clarity on when I said "what PDTs need" -- meant more foundational than specific information/data

from Nick Schlesser to everyone: 2:18 PM

I still think that indicates a broken system

from Nick Schlesser to everyone: 2:29 PM

Developing that concensus is the point

from Karen H Hagerty to everyone: 2:29 PM

another consideration is whether the proposed change accure habitat benefits that can be captured on the models

from Nicole Ward - MN DNR she/her to everyone: 2:32 PM

Maybe a-team can help define what integration looks like. One of my struggles being new to the program, is I've heard there are aspirations for "integration" but it is ambiguous as to what that means or looks like.

from Nick Schlesser to everyone: 2:34 PM

THis comes back to time. If you want longer fact sheets there needs to be more time. More time should also be put into the process

from Nick Schlesser to everyone: 2:36 PM

IF that means starting a PDT then putting meetings on hold for awhile while data is collated and prepared so be it

from Davi Michl to everyone: 2:39 PM

@Nicole: I've struggled with the same Re:integration...it sounds like a win, but how to define, envision, and begin to operationalize that integration?

from Scott Gritters to everyone: 2:59 PM

Order of Agency Updates:

from Scott Gritters to everyone: 3:00 PM

MN, WI, IA, IL, MO, USFWS, COE, USGS, UMRBA, Others

from Steve Winter to everyone: 3:10 PM

I'm expecting my ride to show up at any minute to take me to Bellevue for our Pool 12 situff tomorrow. I'll likely log off soon and certatinly won't be here to provide an agency update.

from Jennie Sauer USGS to everyone: 3:12 PM

Nice summary graphic!

from Dave Herzog to everyone: 3:17 PM

sounds awesomely familiar.....

from John Chick to everyone: 3:18 PM

Sorry Kristen, you're kids are going to be my favorite part of your presentation!

from Jim Lamer to everyone: 3:26 PM

I need to step away for 15-20 minutes

from Matt Vitello to everyone: 3:35 PM

To know what the "direct" is we need DFCs, HNA2 is a starting point

from Nicole Ward - MN DNR she/her to everyone: 3:39 PM

Thanks Kristen! Very nice presentation!

from Kristen Bouska, USGS UMESC to everyone: 3:41 PM

Thanks for the opportunity, and feel free to reach out (Sorry again about the kids...)

to Nicole Ward - MN DNR she/her (privately): 3:42 PM

We just need to keep suggestion RAD as an opportunity to advance DFCs!

from Jennie Sauer USGS to everyone: 3:42 PM

You showed resiliency bouncy back from that distraction! :-)

from Nicole Ward - MN DNR she/her to everyone: 4:05 PM

Thanks Seth! I loved the photos :)

from Karen H Hagerty to everyone: 4:16 PM

the sedimentation fact sheet should state that it does not cover the entire UMRS but just some pools in the upper impounded reach

from Dave Bierman - Iowa DNR to everyone: 4:34 PM

mute

from Nicole Ward - MN DNR she/her to everyone: 4:38 PM

Woo! I'm a fan of Dr. Kelly's work through GLEON. Excited he is joining us!! Nice recruit, Wisconsin!!

from Jim Lamer to everyone: 4:39 PM

IRBS hasn't gone yet either

from Jim Lamer to everyone: 4:40 PM

Been here 4 year

from Jim Lamer to everyone: 4:40 PM

s

from Jennie Sauer USGS to everyone: 4:41 PM

Some know

from John Chick to everyone: 4:42 PM

David Weyers - new permaenent staff - fisheries and WQ

from Jim Lamer to everyone: 4:43 PM

Sara Sawicki - new LTRM WQ specialist for IRBS

from Jennie Sauer USGS to everyone: 4:43 PM

https://umesc.usgs.gov/field_stations/fs_directory.html

from Dave Herzog to everyone: 4:43 PM

CONTRACT in perpetuity!!!

from Matt O'Hara to everyone: 4:43 PM

Congrats Jennie!!

from Dave Herzog to everyone: 4:44 PM

Sauer CONTRACT in perpetuity!!!

from John Chick to everyone: 4:44 PM

I think I might retier early if Jennie is leaving!

from Jennie Sauer USGS to everyone: 4:54 PM

Send link John!

from Nick Schlesser to everyone: 4:55 PM

Sorry to leave early, but I have to run and pick up kids.