Upper Mississippi River Restoration Program Coordinating Committee Quarterly Meeting

May 24, 2023

Highlights and Action Items

Program Management

- UMRR has obligated over $35 million, or 64.4 percent, of its $55 million FY 23 funds, as of May 1, 2023. This marks the largest obligation in program history exceeding the previous authorized level of $33 million, with five months left in the fiscal year.
- The President's FY 24 budget released on March 9, 2023 includes $55 million for UMRR. In addition to UMRR, the President's FY 2024 budget includes funding over $50 million for only two other ecosystem restoration programs through Corps of Engineers: $415 million for South Florida Ecosystem Restoration (Everglades) and $67 million for Columbia River Fish Mitigation.
- The draft FY 24 plan of work for UMRR at $55 million is as follows:
  - Regional Administration and Program Efforts – $1,675,000
    - Regional management – $1,260,000
    - Program database – $100,000
    - Program Support Contract – $140,000
    - Public Outreach – $50,000
    - Regional Project Sequencing – $125,000
  - Regional Science and Monitoring – $15,325,000
    - Long term resource monitoring – $5,500,000
    - Regional science in support of restoration – $8,350,000
    - Regional science staff support – $200,000
    - Habitat evaluation (split across three districts) – $1,275,000
  - Habitat Restoration – $38,000,000
    - Rock Island District – $11,150,000
    - St. Louis District – $13,700,000
    - St. Paul District – $13,050,000
    - Model certification – $100,000

  The FY 24 draft plan of work is largely consistent with the FY 23 plan of work with the addition of regional project sequencing.
- The enactment of WRDA 2022 on December 15, 2022 increased the annual authorized appropriation for UMRR to $90 million. FY 25 will be the first year that the Administration could include an amount up to $90 million for UMRR in its annual budget proposal.

- The UMRR 10-year implementation plan includes 10 projects in feasibility and 12 projects in design or construction. It was updated to reflect small changes to project timelines for McGregor Lake and Lower Pool 4, Big Lake in St. Paul District, Pool 12 Forestry in Rock Island District, and Clarence Cannon, Crains Islands, Harlow, and Gilead Slough in St. Louis Districts.

- **On April 10, 2023 the UMRR project team hosted the ASA(CW) Mr. Michael L. Connor on a tour of the UMRR Beaver Island Habitat Rehabilitation Enhancement Project (HREP).** The UMRR Regional Program Manager facilitated a discussion emphasizing UMRR's unique role in improving the Upper Mississippi River System ecosystem and the UMRR Program's knowledge of it.

- On January 25, 2023, an *ad hoc* committee established under direction of the UMRR Coordinating Committee met to provide perspectives on approaches, best practices, methods, and tools related to environmental justice in their agency's work. Participants included agency personnel specializing in diversity, equity, and inclusion with limited priority experience with UMRR. The *ad hoc* committee also discussed how UMRR currently approaches environmental justice through habitat rehabilitation and enhancement projects. Marshall Plumley introduced the new UMRR environmental justice dashboard that shows completed projects and those in-progress in relation to census tracts identified as disadvantaged communities. The tool builds on the program's long term investment in data management and the database and will be available to river teams during the next UMRR HREP project selection process. It may help highlight areas where work has not been done or where outreach methods may need to be modified. The tool is available at: https://usace-mvr.maps.arcgis.com/apps/instant/portfolio/index.html?appid=5b089a1373b744b697c73014c3ad3c3b.

- On February 21, 2023, a revised draft UMRR 2015-2025 Strategic Plan Review Report was submitted via email to Coordinating Committee members with a request to provide any comments or suggested edits by March 20, 2023. **On March 27, 2023, the UMRR Coordinating Committee met to review comments on the report and unanimously approved the draft report. The final report is anticipated to be distributed in the coming weeks.** The report describes important partner insights. The UMRR Coordinating Committee intends to use the report's findings to inform its priorities for UMRR in the near and long term, particularly as the Committee develops the program's next strategic plan. Plumley reflected on progress the program has made to advance priority actions since the survey was distributed, noting work to advance Goals 1, 2, and 4 of the report including aquatic vegetation planting at Huron Island and the creation of HREP storymaps.

- On November 11, 2022, final implementation issue papers were sent to the UMRR Coordinating Committee. A survey to advance or resolve a suite of options associated with each paper was sent via email on September 21, 2022. **The UMRR Coordinating Committee will meet following the conclusion of the quarterly meeting to prioritize implementation issues and identify agencies to lead on actions.**

- **ASA(CW) Mr. Michael L. Connor is reviewing the UMRR 2022 Report to Congress prior to transmitting it to Congress.** The Corps is drafting a press release and four-page flyer that was sent to the UMRR Communications and Outreach Team (COT) for review. Case studies on construction, science, and monitoring activities were developed for the report and can serve as a basis for future outreach efforts.

- **The Corps intends to post the LTRM Program Manager position at the end of May 2023 and hopes to fill the position before the end of July.** The position is open to current federal employees and the public and can be located in any of the three UMRS Corps Districts.

- **In response to a request from UMRR Coordinating Committee members during its March 1, 2023 meeting, Plumley said a meeting will be convened this summer to discuss outyear funding scenarios. Scenarios may include stable funding at $55 million, up to the authorized amount of**

$90 million, less than current funding levels or variable funding in outyears. Topics to frame the discussion include the existing portfolio of HREP projects and LTRM level of effort, the pace of additional HREPs initiating feasibility, partner capacity, additional WRDA changes, and inflation. Scenarios are anticipated to be drafted in June and a meeting is expected to be scheduled between July and November.

- **A UMRR workshop for both HREP and LTRM personnel is anticipated for winter 2023 or spring 2024. A planning committee kickoff meeting is anticipated to be held in July.** Potential workshop topics include monitoring and adaptive management, HREP/LTRM integration, HREP design handbook update, and HREP lessons learned among others.

- **The UMRR Coordinating Committee has set a recurring schedule for HREP selection process to be implemented every five years. The next project identification will endorse a selection in the third quarter of fiscal year 2025. The NESP Coordinating Committee will begin a project selection planning process for NESP in June of 2023.**

- **Scoping of the next UMRR strategic planning process is anticipated to begin later this year and the strategic planning process is anticipated to occur beginning fall of 2023.**

Communications

- Flyers are complete that describe the condition and trends of the UMRS fisheries, floodplain forests, sedimentation, water quality, and aquatic vegetation developed from the most recent Status and Trends Report. **Two coordinated releases of the flyers are being planned. The first will celebrate 2023 as the 30th year of LTRM monitoring through partnership and include the flyers on fisheries, aquatic vegetation, and water quality. The second release will acknowledge the high water in 2023 and how flooding impacts floodplain forests and sediment.** The UMRR Communications and Outreach Team (COT) will discuss the two coordinated releases at their June 7 meeting.

- **This spring, the UMRR Communications and Outreach Team will focus on developing a team framework to assist with successful communication, coordination, and collaboration.** The team is also reviewing the draft press release and flyer for the 2022 UMRR Report to Congress, supporting the 100th anniversary of the UMR National Wildlife and Fish Refuge in 2024, and supporting the rollout of the status and trends flyers communications toolkit. The Team will also hold future discussions on environmental justice communication. Anne Wurtenberger (Anne.C.Wurtenberger@usace.army.mil), in Rock Island District, has taken on the role of co-coordinator for the COT with Rachel Perrine.

UMRR Showcase Presentations

- Kevin Hanson and John Henderson, both with the Corps, presented on HREP storymaps and challenges and opportunities for HREP construction, respectively.

- Col. Jesse Curry presented Karen Hagerty with a Civilian Service Commendation Medal for outstanding performance and dedicated service to the Rock Island District for over 21 years. Hagerty led the UMRR program's LTRM element during this time.

Habitat Restoration

- MVP's planning priorities include Big Lake – Pool 4, Reno Bottoms, and Robison Lake. Reno Bottoms has entered design phase. As early as this week, MVP anticipates awarding one contract for States 1, 2, and 3 for Lower Pool 10 HREPS. McGregor Lake HREP construction is 95 percent complete. Harper's Slough HREP O&M Manual has been officially turned over to the project sponsor. Trempealeau Lake HREP is being evaluated to improve performance where harmful algal blooms have been problematic.

- MVR's planning priorities include Lower Pool 12 Forestry, Lower Pool 13 Phases I and II, Green Island, and Quincy Bay HREPs. Steamboat Island Stage II remains in design. MVR has four projects in construction: Beaver Island, Steamboat Island Stage I, Keithsburg Division Stages I and II, and Huron Island Stage III. Construction at Huron Island is complete and ERDC is surveying vegetation in June and will conduct additional plantings this summer and assessment in September 2023.

- MVS's planning priorities include West Alton Islands and Yorkinut Slough. MVS's design priorities include Harlow Island, Oakwood Bottoms, Swan Lake, and Crains Island. MVS has three projects in construction: Crains Island Stage I, Piasa and Eagles Nest Stage II, and Clarence Cannons. The contractor is on site at Piasa and Eagles Nest to survey and assemble and place pipe. Other MVS activities include requesting endorsement of the new fact sheets.

Long Term Resource Monitoring and Science

- Accomplishments of the second quarter of FY 23 include publication of the following manuscripts:
  - *22 Years of Aquatic Plant Spatiotemporal Dynamics in the Upper Mississippi River*
  - *Aquatic Vegetation Types Identified During Early and Late Phases of Vegetation Recovery in the Upper Mississippi River*
  - *Diverse Portfolios: Investing in Tributaries for Restoration of Large River Fishes in the Anthropocene*

- A hard copy publication of *Molecular Ecology* includes a cover design created by Andy Bartels highlighting the manuscript *Gene flow influences the genomic architecture of local adaptation in six riverine fish species*.

- An LTRM all-hands meeting was held April 11-13, 2023 in Muscatine.

- The LTRM Fisheries component held a field meeting on May 8-11 at the Kibbe Field Station in Pool 19.

- **The Water Quality Lab anticipates moving back to UMESC by September 30.**

- UMRR's LTRM FY 23 budget allocation is $7 million ($5.5 million for base monitoring and $1.5 million for analysis under base) with an additional $6.85 million available for "science in support of restoration and management."

- High priority funding items for science in support of restoration that were endorsed by the UMRR Coordinating Committee during or prior to the March 1, 2023 quarterly meeting total $2,502,19 and include:
    - LTRM balance: $331,508
    - Ecohydrology: $469,973
    - LCU processing (last year): $335,238
    - Vital Rates consolidated report: $52, 788
    - Macroinvertebrate contaminants: $77,483
    - An herbarium: $21,649
    - Future landscape modeling: $600,136
    - Equipment (Field stations, UMESC): $659,268
    - Proposal adjustments: ($45,894)

    — **The UMRR Coordinating Committee approved advancing the following four priority FY 22 science proposals totaling $1,626,797:**
    - Scoping and vetting new technology and methods for use in future hydrographic and topographic surveys
    - Avian associations with management in the UMRS: filling knowledge gaps for habitat management
    - Filling in the gaps with FLAMe: Spatial patterns in water quality and cyanobacteria across connectivity gradients and flow regimes in the Lower Impounded Reach of the UMR
    - Substrate stability as an indicator of abiotic habitat for the UMR benthic community

    — **Items to utilize the remaining FY 23 science in support funds totaling $2,844,108 will be presented to the Coordinating Committee at its August 9, 2023 quarterly meeting. Potential items include funding the Pool 13 HREP-Associated Research Project (HARP), updating topobathy, and initiating work on selected LTRM information needs.**

- The A-Team met on April 19, 2023. The agenda covered the following items:
    — Chloride levels on the Upper Mississippi River - presentation by Kathi Jo Jankowski
    — Lower Pool 13 HREP associated research project: understanding wind dynamics and contributing factors of water clarity, aquatic vegetation, and native freshwater mussels – presentation by Kristen Bouska
    — UMRR program updates including updating field stations descriptions
    — Rotation of the chairpersonship
    — Two-page flyers communicating the major findings from the 2022 UMRR LTRM status and trends report
    — Preliminary outputs from the LTRM Implementation Planning Team
    — LTRM science highlights and upcoming proposals
    — Acknowledgement of Karen Hagerty's service to the A-Team
    — UMRR funding update

- LTRM update
- Introduction of new staff, including field station leaders and USGS staff
- Bellevue Field Station staff

The next A-Team meeting is scheduled for July 24, 2023. Matt O'Hara, Illinois DNR, is the new chair.

- Over the past several months, the *ad hoc* LTRM implementation planning team has drafted objective statements and identified and prioritized information needs using a structured decision-making process. The team is considering the relevance of information needs to both ecosystem understanding and assessment as well as management and restoration along with the depth of current knowledge, cost, opportunity to learn, urgency, and unique capacity of LTRM to address the information need. **The *ad hoc* LTRM implementation planning team presented its tentative selection of information needs recommended for further development. The group will work to refine cost estimates and create in-depth work plan proposals for these information needs for endorsement at the August 2023 meeting.**

Other Business

Upcoming quarterly meetings are as follows:

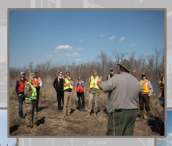
- **August 2023 – La Crosse**
  - UMRBA quarterly meeting – August 8
  - **UMRR Coordinating Committee quarterly meeting – August 9**
- **October 2023 – St. Louis**
  - UMRBA quarterly meeting – October 24
  - **UMRR Coordinating Committee quarterly meeting – October 25**
- **February 2024 – Virtual**
  - UMRBA quarterly meeting – February 27
  - **UMRR Coordinating Committee quarterly meeting – February 28**

UMRR COORDINATING COMMITTEE - REGIONAL MANAGEMENT AND PARTNERSHIP COLLABORATION

Marshall Plumley
Regional Program Manager
St. Paul District
Rock Island District
St. Louis District

24 May 2023

Upper Mississippi River Restoration
Leading·Innovating·Partnering



US Army Corps of Engineers

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REGIONAL MANAGEMENT AND PARTNERSHIP COLLABORATION

- FY 2023 Fiscal Update and FY 24 Outlook
- Environmental Justice
- Strategic and Operation Plan review
- Implementation Issues
- 2022 Report to Congress
- Program Priorities

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FY 2023 FISCAL UPDATE AND FY 2024 OUTLOOK

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FY 23 APPROPRIATIONS

President's Budget	$55,000,000
House	$55,000,000
Senate	$55,000,000
FINAL APPROPRIATION	$55,000,000

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FINANCIAL REPORTING

UMRR Quarterly Budget Report: St. Paul District
FY2023 Q2; Report Date: Fri Apr 14 2023

Habitat Projects

Project Name	Cost Estimates			FY2023 Financials			
	Non-Federal	Federal	Total	Carry In	Allocation	Funds Available	Actual Obligations
Bass Ponds, Marsh, and Wetland	-	$6,300,000	$6,300,000	-	-	-	$116,941
Conway Lake	-	$7,413,000	$7,413,000	-	-	-	$8,123
Harpers Slough	-	$13,675,000	$13,675,000	-	-	-	-$260,615
Lower Pool 10 Island and Backwater Complex	-	$17,000,000	$17,000,000	-	$3,248,000	$3,248,000	$288,380
Lower Pool 4, Big Lake	-	$18,000,000	$18,000,000	-	$550,000	$550,000	$214,104
McGregor Lake	-	$23,550,000	$23,550,000	$183,743	$6,600,000	$6,783,743	$7,418,000
Reno Bottoms	-	$10,000,000	$10,000,000	$59,603	$200,000	$259,603	$163,464
Robinson Lake, MN	-	$12,000,000	$12,000,000	-	$550,000	$550,000	$71,481
Total	-	$107,938,000	$107,938,000	$243,346	$11,148,000	$11,391,346	$8,019,878

Habitat Rehabilitation

Subcategory	FY2023 Financials			
	Carry In	Allocation	Funds Available	Obligations
District Program Management	-	-	-	$181,515
Total	-	-	-	$181,515

Regional Program Administration

Subcategory	FY2023 Financials			
	Carry In	Allocation	Funds Available	Obligations
Habitat Eval/Monitoring	-	-	-	$75,202
Total	-	-	-	$75,202

	Carry In	Allocation	Funds Available	Actual Obligations
St. Paul Total	$243,346	$11,148,000	$11,391,346	$8,276,595

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FINANCIAL REPORTING

UMRR Quarterly Budget Report: Rock Island District
FY2023 Q2; Report Date: Fri Apr 14 2023

Habitat Projects

Project Name	Cost Estimates			FY2023 Financials			
	Non-Federal	Federal	Total	Carry In	Allocation	Funds Available	Actual Obligations
Beaver Island	-	$25,288,000	$25,288,000		$500,000	$500,000	$80,064
Green Island, IA	-	$16,600,000	$16,600,000	$23,581	$400,000	$423,581	$314,247
Huron Island	-	$15,773,000	$15,773,000	$65,698		$65,698	$13,470
Kethotaila Division	-	$29,643,000	$29,643,000		$6,600,000	$6,600,000	$234,570
Lower Pool 13	-	$25,288,000	$25,288,000	$48,000	$400,000	$448,000	$244,990
Lower Pool 13 (Forestry)	-			$21,336	$600,000	$621,336	$115,860
Pool 13 (Forestry)	-			$53,705	$600,000	$653,705	$257,899
Pool 12 Overwintering	-	$20,870,822	$20,870,822	$1,098		$1,098	$1,098
Quincy Bay, IL	-			$12,312	$600,000	$612,312	$306,298
Rice Lake, IL	$7,280,000	$13,489,763	$20,799,763	$115,525		$115,525	
Small Boat Island	-	$41,977,000	$41,977,000	-	$3,952,000	$3,952,000	$5,979,632
Total	$7,280,000	$188,899,585	$196,179,585	$341,755	$13,502,000	$13,843,755	$7,550,108

Habitat Rehabilitation

Subcategory	FY2023 Financials			
	Carry In	Allocation	Funds Available	Obligations
District Program Management	-	-	-	$107,364
Total	-	-	-	$107,364

Regional Program Administration

Subcategory	FY2023 Financials			
	Carry In	Allocation	Funds Available	Obligations
Adaptive Management	-	$200,000	$200,000	$95,615
Habitat Eval/Monitoring	$450	$1,275,000	$1,275,450	$78,262
Model Certification/Regional HREP	-	$100,000	$100,000	-
Public Outreach	-	$150,000	$150,000	$5,316
Regional Program Management	$2,993	$1,500,000	$1,502,993	$651,353
Regional Project Sequencing	-	$125,000	$125,000	$36,685
Total	$3,443	$3,250,000	$3,253,443	$861,231

Regional Science and Monitoring

Subcategory	FY2023 Financials			
	Carry In	Allocation	Funds Available	Obligations
Long Term Resource Monitoring	-	$9,500,000	$9,500,000	$2,492,008
Science in Support of Restoration/Management	-	$4,350,000	$4,350,000	$1,560,895
Total	-	$13,850,000	$13,850,000	$4,052,903

	Carry In	Allocation	Funds Available	Actual Obligations
Rock Island Total	$345,198	$30,602,000	$30,947,198	$12,571,606

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FINANCIAL REPORTING

UMRR Quarterly Budget Report: St. Louis District
FY2023 Q2; Report Date: Fri Apr 14 2023

Habitat Projects

Project Name	Cost Estimates			FY2023 Financials			
	Non-Federal	Federal	Total	Carry In	Allocation	Funds Available	Actual Obligations
Clarence Cannon	-	$29,800,000	$29,800,000	-	$950,000	$950,000	$87,383
Crains Island	-	$36,562,000	$36,562,000	-	$1,900,000	$1,900,000	$59,065
Gilead Slough	-	$11,000,000	$11,000,000	-	$350,000	$350,000	$61,200
Harlow Island	-	$37,971,000	$37,971,000	-	$325,000	$325,000	$70,323
Oakwood Bottoms	-	$29,000,000	$29,000,000	-	$575,000	$575,000	$587,911
Piasa - Eagle's Nest Islands	-	$26,746,000	$26,746,000	$31,151	$8,300,000	$8,331,151	$7,185,229
West Alton Missouri Islands	-	-	-	$21,510	$425,000	$446,510	$175,756
Yorkinut Slough, IL	-	$8,500,000	$8,500,000	$13,681	$375,000	$388,681	$289,274
Total	-	$179,579,000	$179,579,000	$66,342	$13,250,000	$13,316,342	$8,516,141

Habitat Rehabilitation

Subcategory	FY2023 Financials			
	Carry In	Allocation	Funds Available	Obligations
District Program Management	-	-	-	$313,007
Total	-	-	-	$313,007

Regional Program Administration

Subcategory	FY2023 Financials			
	Carry In	Allocation	Funds Available	Obligations
Habitat Eval/Monitoring	-	-	-	$287,187
Total	-	-	-	$287,187

	Carry In	Allocation	Funds Available	Actual Obligations
St. Louis Total	$66,342	$13,250,000	$13,316,342	$9,116,335

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FY23 PLAN OF WORK
54.5%

	Budget	Obligations as of 1 April
TOTAL FY22 Program	**$55,000,000**	$29,964,536
Regional Administration and Program Efforts	**$ 1,550,000**	$656,669
Regional Management	$ 1,280,000	
Program Database	$ 100,000	
Program Support Contract (UMRBA)	$ 120,000	
Public Outreach	$ 50,000	
Regional Science and Monitoring	**$15,450,000**	$ 4,619,854
LTRM (Base Monitoring)	$ 5,500,000	
UMRR Regional Science In Support Rehabilitation/Mgmt. (MIPR's, Contracts, and Labor)	$ 8,350,000	
UMRR Regional (Integration, Adapt. Mgmt.)	$ 200,000	
Habitat Evaluation (split between MVS,MVR,MVP)	$ 1,275,000	
Report to Congress	$ 125,000	
District Habitat Rehabilitation Efforts (Planning and Construction)	**$38,000,000**	$24,688,013
St. Paul District	$11,148,000	$ 8,201,393
Rock Island District	$13,502,000	$ 7,657,472
St. Louis District	$13,250,000	$ 8,829,148
Model Cert.	$ 100,000	

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FY23 PLAN OF WORK
64.4%

	Budget	Obligations as of 1 May
TOTAL FY22 Program	**$55,000,000**	$35,394,890
Regional Administration and Program Efforts	**$ 1,550,000**	$756,122
Regional Management	$ 1,280,000	
Program Database	$ 100,000	
Program Support Contract (UMRBA)	$ 120,000	
Public Outreach	$ 50,000	
Regional Science and Monitoring	**$15,450,000**	$ 8,197,303
LTRM (Base Monitoring)	$ 5,500,000	
UMRR Regional Science In Support Rehabilitation/Mgmt. (MIPR's, Contracts, and Labor)	$ 8,350,000	
UMRR Regional (Integration, Adapt. Mgmt.)	$ 200,000	
Habitat Evaluation (split between MVS,MVR,MVP)	$ 1,275,000	
Report to Congress	$ 125,000	
District Habitat Rehabilitation Efforts (Planning and Construction)	**$38,000,000**	$26,441,465
St. Paul District	$11,148,000	$ 8,476,361
Rock Island District	$13,502,000	$ 8,160,224
St. Louis District	$13,250,000	$ 9,790,504
Model Cert.	$ 100,000	$ 14,376

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FY 24 APPROPRIATIONS

President's Budget	$55,000,000
House	?
Senate	?
FINAL APPROPRIATION	?

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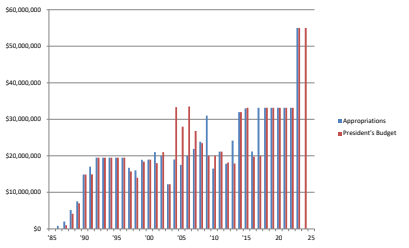
FUNDING

- Since 2018, Congress has funded the program to levels matching UMRR's full authorized annual amount of $33.17 million
- WRDA 2020 Authorization $55M
- FY 23 $55 Appropriation
- WRDA 2022 Authorization $90M



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FY 24 PRESIDENTS BUDGET

South Florida Ecosystem Restoration, FL	$415,000,000
Columbia River Fish Mitigation	$ 66,670,000
Upper Mississippi River Restoration	$ 55,000,000
Missouri River Shish and Wildlife Recovery	$ 17,459,000
Lower Cape May Meadows, NJ	$ 4,000,000
Chesapeake Bay Oyster Recovery, MD	$ 6,450,000
Poplar Island, MD	$ 6,000,000
Louisiana Coastal Area Ecosystem Restoration	$ 4,875,000
Total	$575,454,000

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FY24 DRAFT PLAN OF WORK

	Budget
TOTAL FY24 Program	**$55,000,000**
Regional Administration and Program Efforts	**$ 1,675,000**
Regional Management	$ 1,260,000
Program Database	$ 100,000
Program Support Contract (UMRBA)	$ 140,000
Public Outreach	$ 50,000
Regional Project Sequencing	$ 125,000
Regional Science and Monitoring	**$15,325,000**
LTRM (Base Monitoring)	$ 5,500,000
UMRR Regional Science In Support Rehabilitation/Mgmt. (MIPR's, Contracts, and Labor)	$ 8,350,000
UMRR Regional (Integration, Adapt. Mgmt.)	$ 200,000
Habitat Evaluation (split between MVS,MVR,MVP)	$ 1,275,000
District Habitat Rehabilitation Efforts (Planning and Construction)	**$38,000,000**
St. Paul District	$11,150,000
Rock Island District	$13,700,000
St. Louis District	$13,050,000
Model Cert.	$ 100,000

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FY 24 PRESIDENTS BUDGET

HREP Feasibility

- Lower Pool 4 Big Lake, WI
- Robinson Lake, MN
- Pool 12 Forestry, IL
- Quincy Bay, IL
- Lower Pool 13 Phase II
- TBD 4th Qtr FY 23
- TBD 4th Qtr FY 24
- West Alton Islands, MO
- Gilead Slough, IL
- Reds Landing, IL

HREP Design & Construction

- McGregor Lake, WI
- Lower Pool 10 Islands, IA
- Reno Bottoms, MN
- Keithsburg Division, IL
- Steamboat Island, IA
- Lower Pool 13, IA
- Green Island, IA
- Clarence Cannon, MO
- Crains Island, IL
- Piasa and Eagles Nest Islands, IL
- Harlow Island, MO
- Oakwood Bottoms, IL

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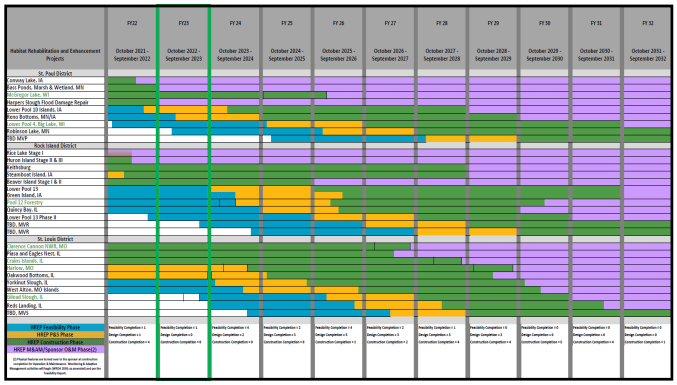

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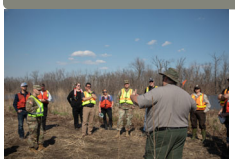
Assistant Secretary of the Army (Civil Works) Site Visit at the Beaver Island HREP

ROCK ISLAND DISTRICT

SUMMARY: On 10 APR, the UMRR project team hosted the ASA(CW) Mr. Michael L. Connor on a tour of the UMRR Beaver Island Habitat Rehabilitation Enhancement Project (HREP). The UMRR Regional Program Manager also facilitated a discussion emphasizing the unique role the UMRR plays in the management of the Upper Mississippi River System and highlighting the importance of the restoration, monitoring and science work the UMRR Program provides.



KEY TAKEAWAYS:

- The UMRR Program is the nations first large river ecosystem restoration and scientific monitoring program in the nation.
- The UMRR Program consistently leads the nation in execution of dollars and makes significant contributions to USACE delivery of acres restored. During the past 37 years this program has restored 119,720 acres and completed 62 projects on the Upper Mississippi River.
- UMRR, informed by the best available science, has pioneered many new and innovative engineering and planning techniques for ecosystem restoration in large river systems.

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ENVIRONMENTAL JUSTICE

19

20

BACKGROUND

- May 2022 - Initial UMRR CC Discussion
- August 2022 UMRR CC Discussion – UMRR will fully integrate environmental justice into its planning, design, construction, and operations and management. Desire for dialog about partners policy & approach regarding Environmental Justice
  - Share tools, Develop options, and identify opportunities to engage communities
- November 2022 – Coordinating Committee establishment of *ad hoc* group
  - Provide partner perspective on approaches/best practices, methods, and tools related to Environmental Justice in their work.
  - Discuss how UMRR currently approaches Environmental Justice through Habitat Rehabilitation and Enhancement Projects.
  - First of several discussions that may result in recommendations regarding Environmental Justice to the UMRR Coordinating Committee.

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BACKGROUND

- January 2023 ad hoc group Discussion
  - NRCS, Missouri, Wisconsin, Illinois, UMRBA, USGS, USF&WS, Iowa, Minnesota, and USACE
  - UMRR Environmental Justice Background
  - Environmental Justice Defined
  - Partner Perspectives

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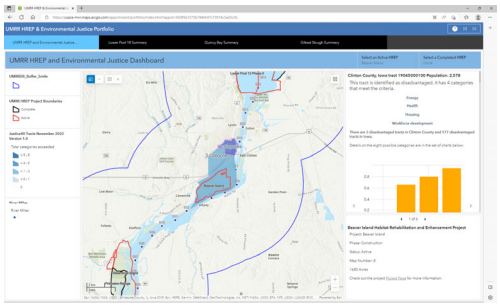
UMRR ENVIRONMENTAL JUSTICE DASHBOARD



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UMRR ENVIRONMENTAL JUSTICE DASHBOARD

UMRR HREP & Environmental Justice Portfolio (arcgis.com)

23

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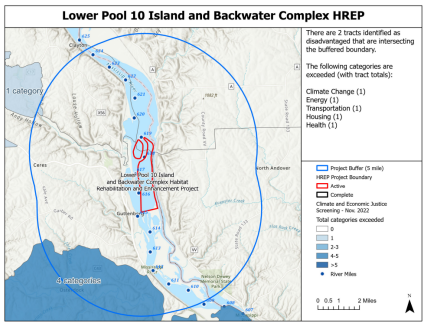
UMRR ENVIRONMENTAL JUSTICE DASHBOARD



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UMRR ENVIRONMENTAL JUSTICE DASHBOARD

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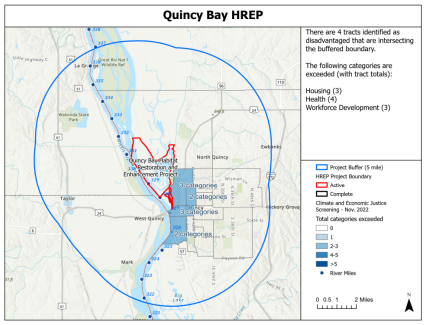

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UMRR ENVIRONMENTAL JUSTICE DASHBOARD

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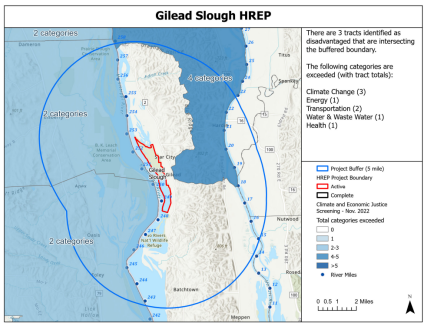

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2015 -2025 STRATEGIC AND OPERATIONAL PLAN REVIEW

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2015 - 2025 STRATEGIC AND OPERATIONAL PLAN REVIEW

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- Review Report provided 21 February with request for comments by 20 March. Comments were incorporated along with additional feedback from 27 March discussion.
- Final Report will be distributed next week.

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2015 - 2025 STRATEGIC AND OPERATIONAL PLAN REVIEW

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- Priority Actions

Goal 1 Enhance Habitat
- *Centralize HREP data and collect and digitize historic data currently stored in computers and file cabinets*
- *Establish consistent and standardized HREP monitoring*
- *Complete HREP project evaluation reports (PERs) across districts*
- *Define appropriate temporal and spatial scales for determining physical and biotic response of habitat project objectives*

Goal 2 Advance Knowledge
- *Connect resilience concepts with ongoing and future restoration work*

Goal 3 Communications
- *Link together habitat restoration projects with existing watershed projects and upstream contributors*

Goal 4 Partnership
- *Create a narrative around missed-restoration opportunities because of existing policies*

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2015 - 2025 STRATEGIC AND OPERATIONAL PLAN REVIEW

30

- Priority Actions

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- *Centralize HREP data and collect and digitize historic data currently stored in computers and file cabinets*
- *Establish consistent and standardized HREP monitoring*
- *Complete HREP project evaluation reports (PERs) across districts*

➢ Continued HREP Storymaps
➢ UMRR Database
  ✓ Restoration features
  ✓ Pre- and post construction monitoring data
➢ Development of standardized and consistent monitoring

30

2015 - 2025 STRATEGIC AND OPERATIONAL PLAN REVIEW

31

- Priority Actions

Goal 1 Enhance Habitat

- *Centralize HREP data and collect and digitize historic data currently stored in computers and file cabinets*
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- *Complete HREP project evaluation reports (PERs) across districts*

➢ 2022 UMRR Report to Congress Summary

Upper Mississippi River Restoration

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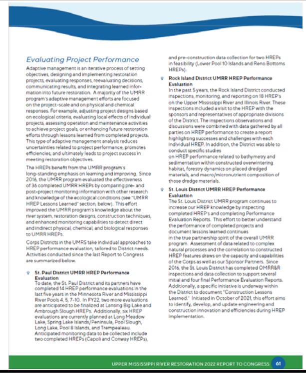

Evaluating Project Performance

Adaptive management is an iterative process of setting objectives, designing and implementing restoration projects, evaluating responses, reevaluating decisions, communicating results, and integrating learned information into future restoration. A majority of the UMRR program's adaptive management efforts are focused on the project-scale and on physical and chemical responses. For example, adjusting project designs based on ecological criteria, evaluating local effects of individual projects, assessing operation and maintenance activities to achieve project goals, or enhancing future restoration efforts through lessons learned from completed projects. This type of adaptive management analysis reduces uncertainties related to project performance, promotes efficiencies, and ultimately leads to project success in meeting restoration objectives.

The HREPs benefit from the UMRR program's long-standing emphasis on learning and improving. Since 2016, the UMRR program evaluated the effectiveness of 36 completed UMRR HREPs by comparing pre- and post-project monitoring information with other research and knowledge of the ecological conditions (see "UMRR HREP Lessons Learned" section, below). This effort improved the UMRR program's knowledge about the river system, restoration designs, construction techniques, and enhanced monitoring capabilities to detect direct and indirect physical, chemical, and biological responses to UMRR HREPs.

Corps Districts in the UMRS take individual approaches to HREP performance evaluation, tailored to District needs. Activities conducted since the last Report to Congress are summarized below.

- **St. Paul District UMRR HREP Performance Evaluation**
  To date, the St. Paul District and its partners have completed 14 HREP performance evaluations in the last five years in the Minnesota River and Mississippi River Pools 4, 5, 7-10. In FY22, two more evaluations are anticipated to be finalized at Lansing Big Lake and Ambrough Slough HREPs. Additionally, six HREP evaluations are currently planned at Long Meadow Lake, Spring Lake Islands/Peninsula, Pool Slough, Long Lake, Pool 8 Islands, and Trempealeau. Anticipated monitoring data to be collected include two completed HREPs (Capoli and Conway HREPs), and pre-construction data collection for two HREPs in feasibility (Lower Pool 10 Islands and Reno Bottoms HREPs).

- **Rock Island District UMRR HREP Performance Evaluation**
  In the past 5 years, the Rock Island District conducted inspections, monitoring, and reporting on 18 HREP's on the Upper Mississippi River and Illinois River. These inspections included a visit to the HREP with the sponsors and representatives of appropriate divisions of the District. The inspections observations and discussions were combined with data gathered by all parties on HREP performance to create a report highlighting successes and challenges with each individual HREP. In addition, the District was able to conduct specific studies
  on HREP performance related to bathymetry and sedimentation within constructed overwintering habitat, forestry dynamics on placed dredged materials, and macro/micronutrient composition of those dredge materials.

- **St. Louis District UMRR HREP Performance Evaluation**
  The St. Louis District UMRR program continues to increase our HREP knowledge by inspecting completed HREP's and completing Performance Evaluation Reports. This effort to better understand the performance of completed projects and document lessons learned continues
  in the true partnership spirit of the overall UMRR program. Assessment of data related to complex natural processes and the correlation to constructed HREP features draws on the capacity and capabilities of the Corps as well as our Sponsor Partners. Since 2016, the St. Louis District has completed OMRR&R inspections and data collection to support several initial and four final Performance Evaluation Reports. Additionally, a specific initiative is underway within the District to document "Construction Lessons Learned." Initiated in October of 2021, this effort aims to identify, develop, and update engineering and construction innovation and efficiencies during HREP implementation.

UPPER MISSISSIPPI RIVER RESTORATION 2022 REPORT TO CONGRESS 61

Upper Mississippi River Restoration

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2015 - 2025 STRATEGIC AND OPERATIONAL PLAN REVIEW

33

➢ Huron Island Aquatic Vegetation Plantings & (Ex)closures
➢ Clarence Cannon Berm Setback
➢ Lower Pool 13 HREP Associated Research Project (HARP)
   ✓ Specific Hypothesis testing and monitoring

Goal 2 Advance Knowledge

- *Connect resilience concepts with ongoing and future restoration work*

Goal 3 Communications

- *Link together habitat restoration projects with existing watershed projects and upstream contributors*

Goal 4 Partnership

- *Create a narrative around missed-restoration opportunities because of existing policies*

Upper Mississippi River Restoration

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2015 - 2025 STRATEGIC AND OPERATIONAL PLAN REVIEW

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➢ 2022 UMRR Report to Congress – "UMRR has seen the following impacts: 1) some habitat restoration projects have not been advanced where the NFS was a state or non-profit entity; 2) some member agencies have not chosen potential restoration opportunities when selecting projects if the projects require a NFS and, 3) in some cases, non-federal funds have not been leveraged to achieve ecosystem restoration."

- *Link together habitat restoration projects with existing watershed projects and upstream contributors*

Goal 4 Partnership

- *Create a narrative around missed-restoration opportunities because of existing policies*

Upper Mississippi River Restoration

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IMPLEMENTATION ISSUES

Upper Mississippi River Restoration

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IMPLEMENTATION ISSUES

Purpose: To identify and describe the variety of issues that have the potential to affect the most efficient implementation of UMRR in the future.

Process: With each Report to Congress (RTC), there has been an attempt to ID and discuss the status of issues that may hinder implementation of UMRR. Last completed an IIA in 2013, updated for 2016 RTC, and held some discussions in 2017. In 2021, the UMRR Coordinating Committee identified the following issues for paper development, including updating three existing issues papers and drafting some new ones:

Issues:

- Project Partnership Agreements (PPAs)*
- Engaging non-traditional sponsors
- Land Acquisition
- Floodplain Regulations
- External Communications
- Federal Easement Lands
- Watershed Inputs and Climate Change
- Water Level Management

*Requires action by Congress to address.

Upper Mississippi River Restoration

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IMPLEMENTATION ISSUES

Timeline:

- November 2021, the UMRR Coordinating Committee reviewed draft problem statements.
- March 2022, the UMRR Coordinating Committee reviewed draft papers and provided comments.
- August 2022, the UMRR Coordinating Committee met to:
  - Review comments and draft responses and resolve unanswered questions
- November 2022 Final Issue Papers distributed minus recommendations

Next Steps:

- Prioritize implementation issues to be addressed.
- Identify lead agencies and timeframes for actions with complete consensus to address highest priority implementation issues.
- Discuss actions with broad but not complete consensus that would address highest priority implementation issues and clarify concerns

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2022 REPORT TO CONGRESS

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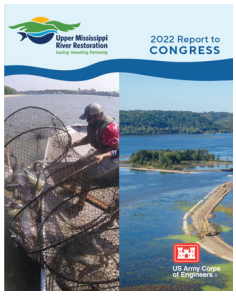
REPORT TO CONGRESS



Letters of Support

- U.S. Fish and Wildlife Service
- U.S. Geological Survey
- U.S. Environmental Protection Agency
- Upper Mississippi River Basin Association
- Missouri Department of Conservation
- Iowa Department of Natural Resources
- Minnesota Department of Natural Resources
- Wisconsin Department of Natural Resources
- Illinois Department of Natural Resources
- The Nature Conservancy
- Audubon of Minnesota, Iowa & Missouri
- American Rivers
- Mississippi Interstate Cooperative Resource Association

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PROGRAM PRIORITIES

- LTRM Project Manager Position
- Funding Scenarios
- UMRR Workshop
- Future HREP Selection
- UMRR Strategic Plan

40

PROGRAM PRIORITIES

- **LTRM Project Manager Position**
  - Interdisciplinary
  - GS 12
  - Open both within the Federal Government and the Public
  - Location is negotiable within the three USACE District Offices
  - Advertisement before the end of May

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PROGRAM PRIORITIES

- **Funding Scenarios Discussion**
  - Stable funding at $55M, $90M, Somewhere in between, Something less. Variable funding.
  - Existing portfolio of HREP projects and LTRM level of effort
  - Pace of additional HREPs initiating feasibility
  - Partner capacity
  - Additional WRDA changes, inflation
  - Example: Stable funding at $55M, existing level of effort, existing level of partner support (people), no authorization changes, low inflation impact
- Next Steps: Draft Scenarios (June) Discussion (July-Novermber)

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PROGRAM PRIORITIES

- UMRR Workshop
  - Last HREP Workshop in 2019
  - July planning committee kickoff. Request for availability.
  - Potential topics
    - ✓ Monitoring and Adaptive Management
    - ✓ HREP/LTRM Integration
    - ✓ HREP Design Handbook Update
    - ✓ HREP Lessons Learned
    - ✓ ?

43

PROGRAM PRIORITIES

- Future HREP Selection
  - Last completed 2020. UMRR Charter 2021
  - Need: Approved Fact Sheets available for 3rd quarter FY 25 Program (Apr - Jun 2025)
  - Next Steps: Coordinate need and timeframe (June) with Program Planning Team (UMRR Regional Program Manager, Coordinating Committee, HREP Program Managers and River Team Chairs. Focus on aligning River Team schedules with similar requests to maximize efficient use of time.

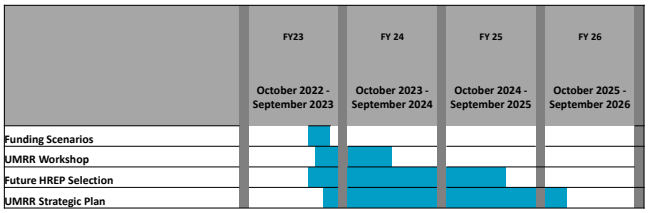
44

PROGRAM PRIORITIES

- UMRR Strategic Plan
  - Long term need: Develop the next UMRR Strategic and Operational Plan for the 2026-2036 planning horizon.
  - Short term need: Begin scoping of programmatic effort to develop the next UMRR Strategic Plan.
  - The current Plan took nearly two years to develop.
  - Next steps: Engage with the UMRR CC on scoping. Most likely a series of meetings beginning Fall of 2023.

45

PROGRAM PRIORITIES



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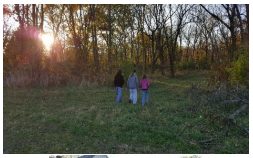
DISCUSSION



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UMRR
Status and Trends Report Flyers

Andrew Stephenson

May 24, 2023

1

Status and Trends flyers Toolkit

Strategies:

- Leverage the narrative and talking points to create more consistent communications. Utilize partners and agencies to broaden that reach.
- Create a templated approach to the rollout that will ensure alignment of messaging and ease of sharing
- Use storytelling to relay key messages, making findings relatable (read: not technical) to all targeted audiences

2

Status and Trends Flyers Toolkit

Audiences:

- Policymakers – Legislators (state and federal)
- Agency Leadership (state and federal)
- General public (recreation, anglers, students, farmers, landowners)
- Conservation / Environmental groups
- Media, particularly key publications (developing media list)
- Resource managers and scientists

3

Status and Trends Flyers Toolkit

Purpose of the toolkit:

- To promote the findings of the Ecological Status and Trends of the Upper Mississippi & Illinois Rivers report.
- Provide communication tools which can be used by UMRR partners to:
  - Offer consistent messages about the health and future of the river system;
  - Educate stakeholders about the health and future of the river system; and
  - Inform and inspire actors to take appropriate action.

4

Status and Trends Flyers Toolkit

Using the toolkit:

The toolkit was developed to assist UMRR partners in disseminating these fact sheets and information to their respective stakeholders.

Five subject areas:

Fisheries	Sedimentation
Aquatic Vegetation	Floodplain Forests
Water Quality	

Below each fact sheet subject, sample messages are listed for communication with various audiences. Corresponding photos are available on request.

5

Status and Trends Flyers Toolkit

Overall Narrative:

- Long-term resource monitoring illustrates the fundamental role of science in management of large floodplain river systems.
- The UMRS is large and diverse with many regional differences
- The river is changing and long-term monitoring across the system has allowed us to observe those changes
- There is more water more of the time.

6

Status and Trends Flyers Toolkit

Two Releases:

Celebrating 30 years of monitoring through partnership in the UMRS:

- Fisheries
- Aquatic Vegetation
- Water Quality

Acknowledging high water in 2023 and its impacts on the UMRS:

- Floodplain forests
- Sediment

7

Fisheries

Key findings

Native fish pop.

Recreational fish pop.

Invasive bigheaded carps

Forage fish

Sample talking point:

The UMRR partnership celebrates its 30th year of monitoring this summer. Long-term monitoring has captured changes to the fisheries community in the river, including data on the spread of invasive bigheaded carps (Use Photo F4)

F4

8

Aquatic Plants

Key findings

Native aquatic plant diversity and abundance

Aquatic plants and water clarity

Floating plants

Impacts of WLM on native emergent plants

Sample talking point:

This summer, the UMRR partnership celebrates its 30th year of monitoring the health of the UMRS ecosystem. During this time, monitoring has tracked how aquatic plants have rebounded in some areas of the river and where populations still struggle to re-establish. Changes to water clarity may have impacted aquatic plant success. (Use Photos AP1-4)

AP4

9

Water Quality

Key findings

Water quality

Phosphorus and nitrogen levels

TSS

Improved watershed practices

Sample talking point:

Long term monitoring of the UMRS shows that nitrogen concentrations have increased in three of six studied pools. Restoration projects and improvements to agricultural best managements practices can help to reduce these levels.

10

Floodplain Forests

Key findings

Floodplain forests decline.

More water more stress on floodplain forests.

Management practices and restoration efforts

Sample talking point:

What will all this flooding mean for the UMRS? Floodplain forests are damaged when floods occur too often or when trees are under water for too long. (Use Photo FL3)

FL3

11

Sediment

Key findings

More sediment in the system.

Sediment impacts to backwater depths

Sediment impacts to bank conditions for birds and vegetation.

TSS, water clarity, and aquatic plant communities.

Sample talking point:

The UMRS is experiencing more water, more of the time. In some locations, sediment is moving to backwater lakes and reducing vital habitat for overwintering fish. In other locations, this sediment is being deposited on riverbanks, which increases habitat for willow, cottonwood, and some shorebirds. (Use Photo S4)

S4

12

UMRR COT Feedback – Providing Information

Two Releases:

Celebrating 30 years of monitoring through partnership in the UMRS:
- Fisheries
- Aquatic Vegetation
- Water Quality

Acknowledging high water in 2023 and its impacts on the UMRS:
- Floodplain forests
- Sediment

Anticipated COT discussion in June:

Are you able to participate in a coordinated message about the release of the flyers?

Which talking points resonate the most with you?

How would you modify them?

13

UMRR COMMUNICATION AND OUTREACH TEAM

Update

1

Spring 2023 COT Focus Areas

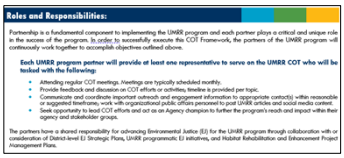
- Be responsive to the achievement of UMRR Strategic Plan - Goal 3 & development of the COT Framework

  Engage and collaborate with other organizations and individuals to help accomplish the Upper Mississippi River Restoration vision.

2

UMRR COT Framework

Purpose (*draft language*): "This Communication and Outreach Team Framework was developed to assist the COT with successful communication, coordination and collaboration. The following objectives, strategies, and actions will focus on various methods and actions partners will be expected to follow and to communicate key information with UMRR and target audiences. Through UMRR Coordinating Committee oversight, the COT works to coordinate and implement communication-related objectives."



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Spring 2023 Focus Areas

- Communications support for 2022 UMRR Report to Congress
- Cooperation with and communications support for UMR NWFR 100th Anniversary
- Communications support for the rollout of LTRM Status & Trends Report – review of Fact Sheet Toolkit

4

Upcoming Actions and Topics

- Finalization of COT Framework
  - *COT Review*
  - *UMRR CC Review*
  - *Finalization*
- Continued support for 2022 UMRR Report to Congress
- Continued support for LTRM Status & Trends Report rollout
- UMRR Environmental Justice Communication

5

UMRR Communication and Outreach Team

Points of Contact:

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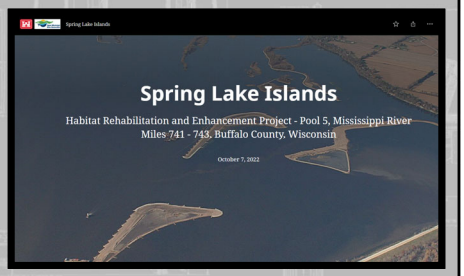
Anne Wurtenberger
USACE-RPEDN-PD-F @ MVR
Anne.C.Wurtenberger@usace.army.mil

6

UMRR-HREP STORYMAPS OVERVIEW AND DISTRICT STATUS UPDATES



Kevin Hanson
Geographer
USACE | St. Paul District

US Army Corps of Engineers

BUILDING STRONG® and Taking Care of People!

1

WHERE ARE WE GOING?

- What is an ArcGIS StoryMap?
- UMRR-HREP StoryMap
- UMRR-HREP StoryMap Template
- Live Demo
- USACE District Updates
- Questions

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2

WHAT IS AN ARCGIS STORYMAP?

- ❑ ArcGIS StoryMaps is a professional story authoring web-based application provided by Esri.
- ❑ Tell a story with interactive maps, videos, photos, and text in a modern web interface.
- ❑ Display on desktops & mobile devices.
- ❑ Stored in the cloud.
- ❑ In 2022 there were 2.2 million stories.
- ❑ Used by most Federal Organizations.

Esri StoryMaps have grown rapidly since 2012.
Chart showing Published StoryMaps hosted in ArcGIS Online.

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3

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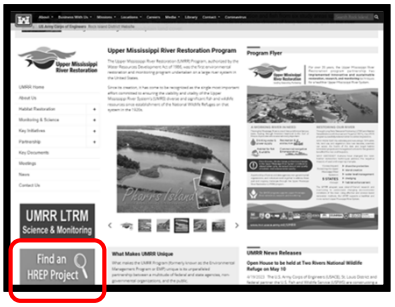
4

UMRR HREP STORYMAPS

- ❑ Develop StoryMap for each UMRR HREP Project
- ❑ 3 Districts – St. Paul, Rock Island, and St. Louis
- ❑ Standard Template
- ❑ Standard Reviews
- ❑ How to Access StoryMaps?
  - ❑ UMRR Program Website
  - ❑ Find an HREP Project
  - ❑ Or Project Webpage
  - ❑ Or Google Search



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5

UMRR-HREP STORYMAP TEMPLATE

5 Sections
- ❑ Title
- ❑ About
- ❑ Objectives
- ❑ Restoration Features
- ❑ References

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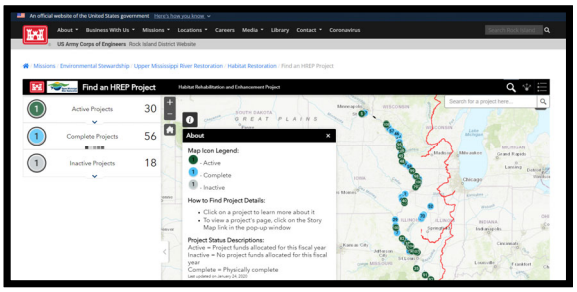
6

LIVE DEMO: INDIAN SLOUGH



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DISTRICT STATUS UPDATES | MAY 2023

District	Published Completed Projects	Published Active Projects	Publish Completed Projects by 9/30/23	Publish Active Projects by 9/30/23	Publish in FY24 (10/1/23 to 9/30/24)	Total Completed Projects	Total Active Projects
St. Paul District	7 (26%)	4 (50%)	+5 (44%)	+4 (100%)	+15 (100%)	27	8
Rock Island District	8 (42%)	6 (60%)	*Additional 12 are written, pending review.*			19	10
St. Louis District	10 (100%)	8 (67%)	*Plan to convert 18 to new StoryMap format and complete 4 active projects.*			10	12
TOTAL	25	18				56	30

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8

QUESTIONS?

US Army Corps of Engineers®

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9

HABITAT RESTORATION – DISTRICT REPORTS

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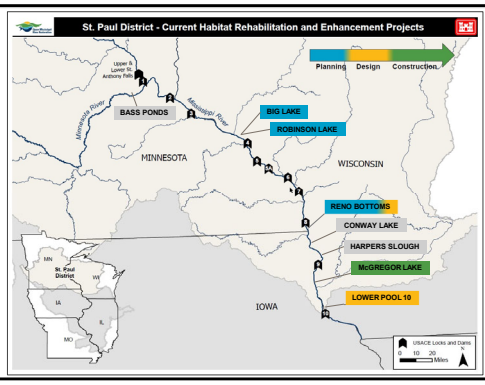

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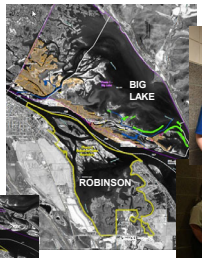
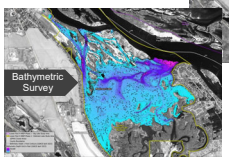
PLANNING

- **Robinson Lake – Pool 4, MN**
  - Initial feature development
  - Public Meeting (17 May)
  - Site Visit (25 May)
- **Big Lake – Pool 4, WI**
  - Completed Cost/Benefit Analysis
  - Tentatively Selected Plan
  - Milestone Meeting

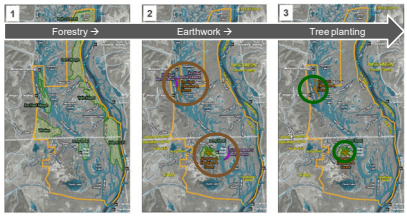




50

DESIGN

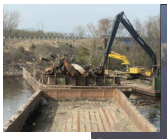
- **Reno Bottoms HREP – Pool 9, MN/IA**
  - A/E Design
  - SOW Completed
  - Value Engineering Study (June-July)
  - P&S: Stage 2
- **Lower Pool 10 HREP – Pool 10, IA**
  - A/E Design: Stages 1, 2, 3
  - Price Negotiations
  - Award



51

CONSTRUCTION

- **McGregor Lake HREP – Pool 9, WI**
  - Stage I: 95% Complete
  - Stage II: Awarded base bid (Sept)
    - Awarded Option 1 (Nov)
    - Awarded remaining options (Feb)



CLOSE-OUT

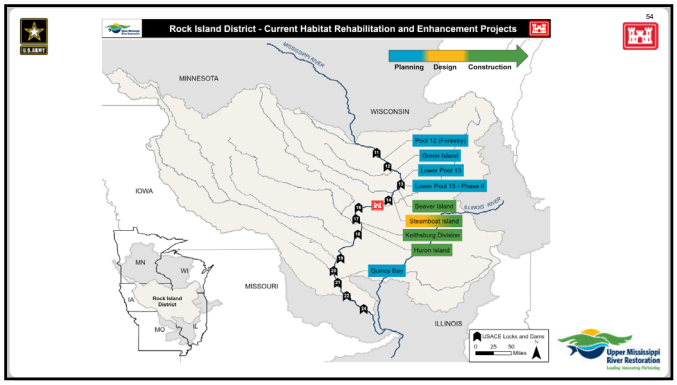
- ✓ **Bass Ponds, Marsh & Wetland HREP – MN River**
  - Turned over to MN Valley Refuge for O&M
- ✓ **Conway Lake HREP – Pool 9, IA**
  - Project turnover in progress
- ❑ **Harpers Slough HREP – Pool 9, IA**
  - O&M Manual Completed
  - As-Builts in progress
  - Project turnover

52

OTHER ACTIVITIES

Trempealeau HREP: Re-evaluation

53



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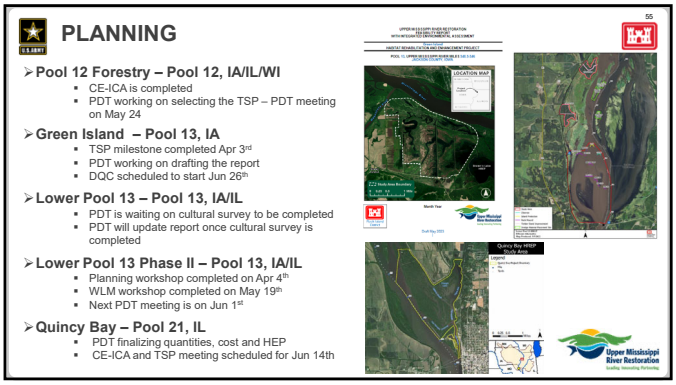

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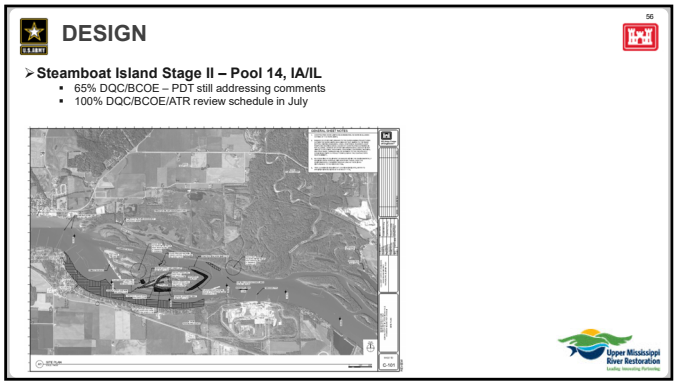

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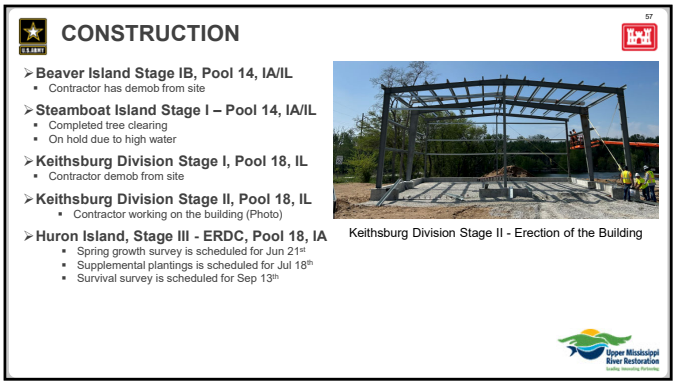

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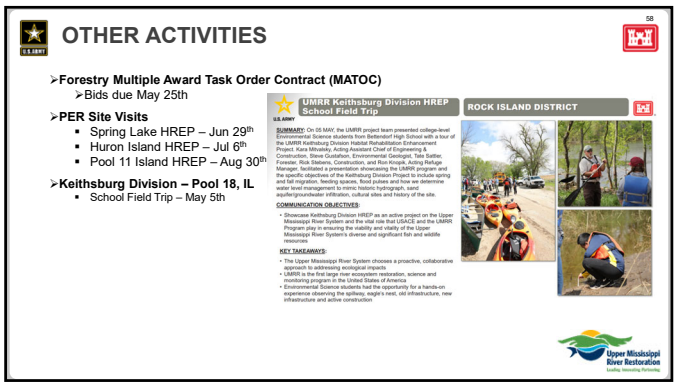

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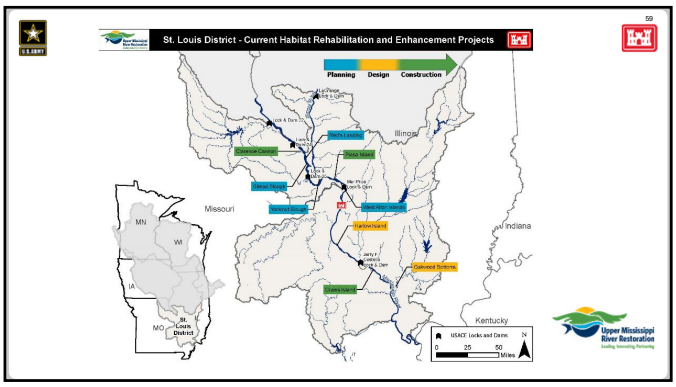


59

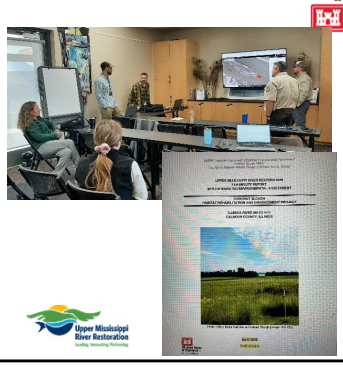
PLANNING

West Alton Islands, MO, HREP (Pool 26)
- Continue Feasibility Planning
- H&H addressing no rise model
- Report Development
- TSP Late 4th Qtr. / early 1st Qtr. FY24

Yorkinut Slough, IL HREP (IL River)
- Continue Feasibility Planning
- Completed open house, reviews completed
- Addressing comments
- Cultural survey underway
- Complete Draft Report 1st Qtr. FY24

Other Activities
- New Fact Sheets

New Feasibility Studies (Pool 25)
- 1st Qtr FY 24 Partner Kick-off scheduled
- Gilead Slough, IL FWS
- Reds Landing, IL IDNR



60

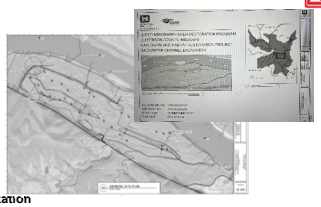
DESIGN

Crains Island, IL HREP (Open River)
- Stage 2 Earthwork and Excavation, Complete
- BCOES Review on P&S
- Stage 3 FY24

Harlow Island, IL HREP (Open River)
- Stage I, BCOES Late FY24
- Stage 2, P&S underway
- 65% Review wrapping up
- 95% moving forward

Swan Lake, IL HREP Flood Damage Rehabilitation
- PED Scoping / Scheduling effort underway
- P&S Package FY24

Oakwood Bottoms, IL, HREP (Open River)
- Complete P&S packages 3rd / 4th Quarters FY23
  - 1) Pump Station, 2) Well Pumps, & 3) North & South Units Earthwork / Water Control Structures



61

CONSTRUCTION

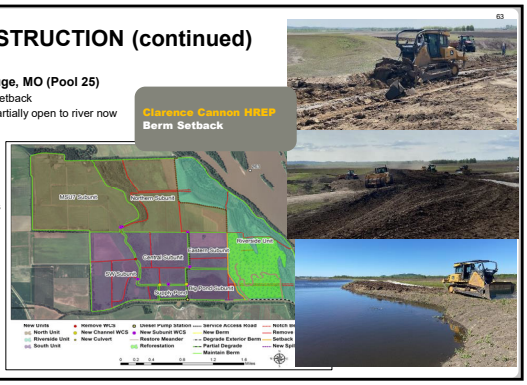
Crains Island, IL HREP (Open River) FWS
- Channel Cleanout summer FY23
- Stage 2 Construction Award FY24 (Pending Funding Availability)

Piasa & Eagles Nest, IL HREP (Pool 26) IDNR
- Island Naming Contest with local grade schools
- Recommended names submitted to USGS (Agency Responsible for Island Names)
- Stage II – Side Channel Excavation and Island Construction
- Contract Awarded 2 Feb 2023 $11.0M
- Contractor onsite, pipe assembled, survey underway, pipe placement underway

62

CONSTRUCTION (continued)

Clarence Cannon Refuge, MO (Pool 25)
- Exterior Berm (Levee) Setback
  - Levee Degraded partially open to river now
  - Placing roadway
- Reforestation Fall 2023
  - Initial tree planting
  - Task order for work
  - BPA to supply trees



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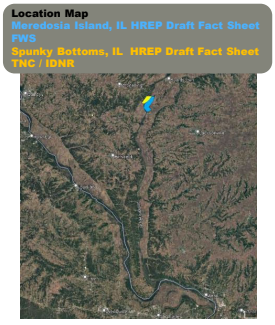
OTHER ACTIVITIES

UMRR-CC Endorsement Request
New MVS Fact Sheet

Meredosia Island, IL HREP (Illinois River)
- New Fact Sheet FWS Refuges
- Sponsor Support Correspondence
  - Nov 2022 (Actual)
- MVS River Team Endorsement (RRAT Exec)
  - Mar 2023 (Actual)
- UMRR-CC Endorsement
  - May 2023 (Scheduled)
- USACE – Mississippi Valley Division Approval
  - June 2023 (Scheduled)
- River Team Prioritization Process
  - Next Exercise Schedule - TBD



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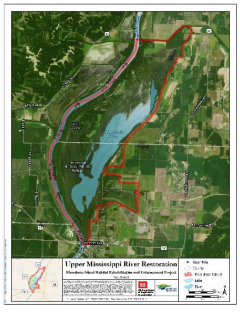
UMRR-CC Endorsement Request

Meredosia Island, IL HREP (Illinois River)
- Sponsor – Fish and Wildlife Service
- IL River Mile 71.3-79.0
- 3,645 Acres owned by FWS / Refuge established in 1973
- Historically rich /diverse habitat mosaics including some levee protected portions (wet prairies, sloughs, forests)
- FS Level Opportunities (abbreviated)
  - Degraded aquatic habitats
  - Altered hydrology and topography (prior ag and waterfowl clubs)
  - Sedimentation, fragmentation, connectivity
- FS Level Goals (abbreviated)
  - Increase depth diversity of backwaters
  - Improve aquatic vegetation diversity
  - Improve hydrological functions
- FS Level Potential Measures may include:
  - Berm modifications and water control structures
  - Excavation of open water and channels
  - Reforestation and other vegetative plantings
- Fact Sheet Level Estimated Cost $ 29M



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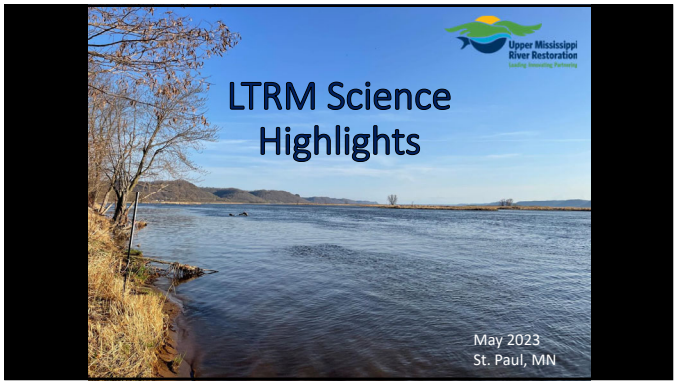


1

2023 LTRM All Hands Meeting
11 – 13 April, Muscatine, IA

2

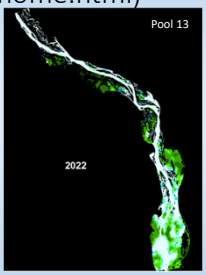
LTRM Fisheries Field Meeting
8 – 11 May 2023
Pool 19 / Kibbe Field Station



3

All 2022 LTRM data are available online (https://umesc.usgs.gov/ltrm-home.html)

- Water quality
  - All 2022 data uploaded
  - Graphical browser updated
- Vegetation
  - All 2022 data uploaded
  - Graphical browser and surface maps updated through 2022
- Fisheries
  - All 2022 data uploaded
  - Graphic browsers updated through 2022



4

2023 Mississippi River Research Consortium
19 - 21 April in La Crosse, Wisconsin

SPATIAL AND TEMPORAL SHIFTS IN THE INUNDATION REGIME OF THE UPPER MISSISSIPPI RIVER FLOODPLAIN OVER 83 YEARS

MAPPING POTENTIAL SENSITIVITY TO HYDROGEOMORPHIC CHANGE IN THE UMRS RIVERSCAPE

INTEGRATING MACHINE LEARNING AND ECOSYSTEM STATE TRANSITION CONCEPTS TO MODELING SUBMERSED PLANT VULNERABILITY AND RESTORATION POTENTIAL

MACROINVERTEBRATE ABUNDANCE AND COMPOSITION ACROSS TWENTY-SIX SIDE CHANNELS OF THE UPPER MISSISSIPPI RIVER

PREDICTING PHALARIS ARUNDINACEA (REED CANARYGRASS) INVASION IN FOREST UNDERSTORIES OF NAVIGATION POOLS 3-13

22 YEARS OF AQUATIC PLANT SPATIOTEMPORAL DYNAMICS IN THE UPPER MISSISSIPPI RIVER

ATTRIBUTES OF UPPER MISSISSIPPI RIVER SYSTEM CONTIGUOUS FOREST AREAS

CENTRARCHID RESPONSE TO HABITAT ENHANCEMENT IN POOL 12 BACKWATERS (MISSISSIPPI RIVER)

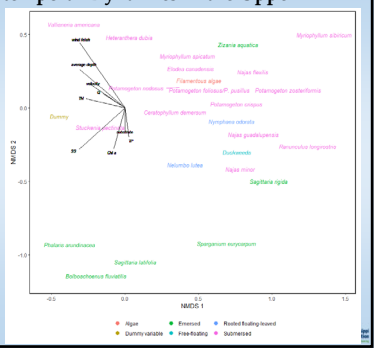
THE 50TH ANNIVERSARY: RIVER RESEARCH LAB - ILLINOIS RIVER BIOLOGICAL STATION & MRRC 1972-2022. 129 YEARS OF GUIDING RIVER RESEARCH.

5

22 Years of Aquatic Plant Spatiotemporal Dynamics in the Upper Mississippi River

Diversity April 2023
https://doi.org/10.3390/d15040523
Alicia Carhart, Jason Rohweder, and Danelle Larson

- Results showed a gradient of macrophyte abundance and diversity for 25 species, which were associated with water velocity, depth, wind fetch, and water clarity.
  - Three macrophyte genera of ecological and restoration interest (*wild rice, wild celery, and arrowheads*) occupied different ecological niches.

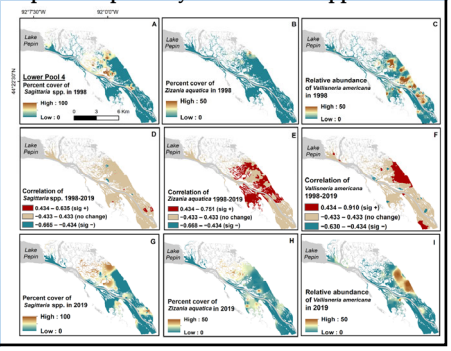


6

22 Years of Aquatic Plant Spatiotemporal Dynamics in the Upper Mississippi River

Diversity April 2023
Alicia Carhart, Jason Rohweder, and Danelle Larson

- Curve Fit regression analysis identified large areas of significant increases in percent cover of ***wild rice*** from 1998-2019 in Pools 4 and 8
- Relative abundance of ***wild celery*** increased substantially in all study pools over the 22-year study; however, large areas within Pool 13 experienced a reduction since 2014.
- ***Arrowheads*** were more spatiotemporally dynamic with very little long-term changes in percent cover.



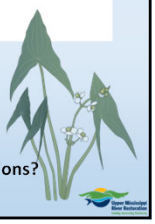
7

ECOSPHERE
ARTICLE
Freshwater Ecology

Aquatic vegetation types identified during early and late phases of vegetation recovery in the Upper Mississippi River

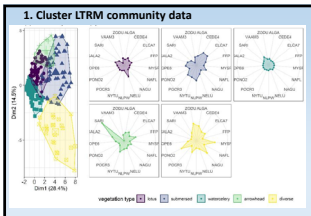
Danelle M. Larson[1] | Alicia M. Carhart[2] | Eric M. Lund[3]

- Which 'aquatic vegetation types' are common within the Mississippi River?
- Are the vegetation types associated with certain river conditions?



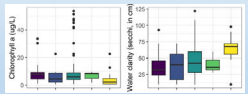
8

1. Cluster LTRM community data

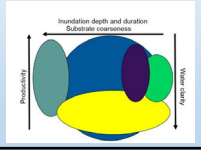


2. Name vegetation types

3. Explore environmental condition associations



4. Ecological niches of vegetation types



9

Diverse portfolios: investing in tributaries for restoration of large river fishes in the Anthropocene

Reviews the roles of tributaries to enhancing mainstem large river fish populations, specifically:
1) Habitat diversity
2) Connectivity
3) Ecological asynchrony
4) Density-dependent processes

Two case studies:
Lake Sturgeon in the Missouri R.
Humpback Chub in the Colorado R.


Photo by Michael Moore

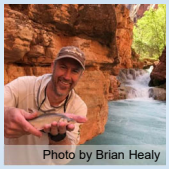


Photo by Brian Healy

Identifies future research directions to advance understanding of tributary roles and inform conservation actions

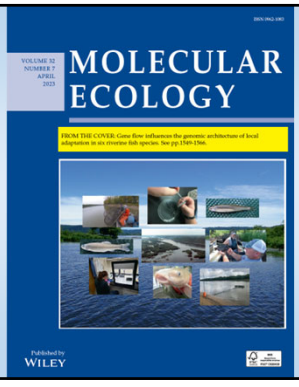
Bouska, K.L., B. Healy, M. Moore, C. Dunn, J. Spurgeon, and C. Paukert. 2023. Diverse portfolios: investing in tributaries for restoration of large river fishes in the Anthropocene. Frontiers in Environmental Science 11: 1151315. http://dx.doi.org/10.3389/fenvs.2023.1151315

10

Publication: Gene flow influences the genomic architecture of local adaptation in six riverine fish species. *In:* Molecular Ecology.

Shi, Y., K. L. Bouska, G. J. McKinney, W. Dokai, A. Bartels, M. V. McPhee, and W. A. Larson.

- Previously reported publication now out as a "hard copy"
- Cover design created by Andy Bartels (WDNR).



11

WQ Lab Remodel Update

Current Plan: Move WQ lab back to UMESC by 30 September

12

Questions?

13

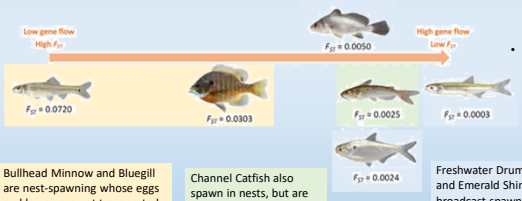
14

Publication: Gene flow influences the genomic architecture of local adaptation in six riverine fish species. *In:* Molecular Ecology.

Shi, Y., K. L. Bouska, G. J. McKinney, W. Dokai, A. Bartels, M. V. McPhee, and W. A. Larson.

v

Population differentiation



- Examined population structure of six systemic fish species across LTRM study reaches
- Findings generally concur with hypotheses that population structure reflects differences in life history strategies among species

Bullhead Minnow and Bluegill are nest-spawning whose eggs and larvae are not transported by current

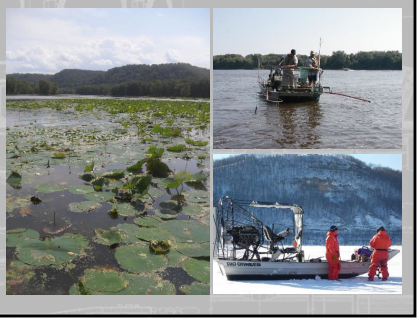
Channel Catfish also spawn in nests, but are highly migratory

Freshwater Drum, Gizzard Shad, and Emerald Shiner are broadcast spawners, relying on current to disperse eggs.

15

UMRR MONITORING AND SCIENCE UPDATE

Karen Hagerty
Rock Island District
24 May 2023



US Army Corps of Engineers

1

UMRR MONITORING & SCIENCE FY23

$55 Million UMRR Program

2 SOWs in FY23

SOW for LTRM base monitoring
$5.5M

SOW for science in support (analysis under base)
$1.5M

Both SOWs together are equivalent to a fully funded UMRR LTRM element $7.0M

Science in Support of Restoration & Management
(combined with analysis under base into 1 SOW)
$6.85M

TOTAL: $13.85M

2

UMRR MONITORING & SCIENCE FY23

Endorsed and funded in March

Science in Support of Restoration and Management

A. LTRM balance	$ 331,508
B. Ecohydrology	$ 469,973
C. LCU processing (last year)	$ 335,238
D. Vital Rates consolidated report	$ 52,788
E. Macroinvertebrate contaminants	$ 77,483
F. Herbarium	$ 21,649
G. Future landscape modeling	$ 600,136
H. Equipment (field stations, UMESC)	$ 659,268
I. adjustments	($ 45,894)
J.	
Subtotal	**$2,502,149**

3

FY2022 SCIENCE PROPOSALS (PENDING)

Scoping and vetting new technology and methods for use in future hydrographic and topographic surveys	Strange (UMESC), Kalas (WI DNR)	$ 403,952
Avian associations with management in the UMRS: filling knowledge gaps for habitat management	Hohman (Audubon), Kirsch (UMESC)	$ 388,776
Filling in the gaps with FLAMe: Spatial patterns in water quality and cyanobacteria across connectivity gradients and flow regimes in the Lower Impounded Reach of the UMR	Loken, Kreiling, Jankowski (UMESC), Stanley (UW-Madison)	$ 482,217
Substrate stability as an indicator of abiotic habitat for the UMR benthic community	Newton (UMESC)	$ 351,852
SUB-TOTAL		$1,626,797

4

UMRR MONITORING & SCIENCE FY23

Science in Support of Restoration and Management

High Priority Items (March)	$ 2,502,149
Priority FY22 proposals (today)	$ 1,626,797
Remaining LTRM funding	$ 2,844,108

5

UMRR MONITORING & SCIENCE FY23

Science in Support of Restoration and Management

Remaining LTRM items for FY23 & funding $ 2,844,108

A. Pool 13 HARP	$ 849,531*
B. Updating topobathy	TBD
C. Initiating work on selected LTRM Information Need	TBD

6

UMRR LTRM Implementation Planning Update

UMRR Coordinating Committee Quarterly Meeting
24 May 2023
St. Paul, Minnesota

1

Implementation Planning

Why? To prepare for potential increased funding resulting from increased UMRR authorization under WRDA 2020

Goal: Develop a set of portfolios of actions that best address UMRR management and restoration information needs

2

Implementation Planning Group

- Kirk Hansen IADNR
- Jim Lamer IRBS
- Molly Sobotka MDC
- Matt Vitello MDC
- Rob Burdis MDNR
- Nick Schlesser MDNR
- Neil Rude MDNR
- Andrew Stephenson UMRBA
- Davi Michl USACE
- Rob Cosgriff USACE
- Karen Hagerty USACE
- Matt Mangan USFWS
- Steve Winter USFWS
- Kristen Bouska USGS
- Nate De Jager USGS
- Jeff Houser USGS
- Jennie Sauer USGS (retired)
- Robb Jacobson USGS
- Jim Fischer WDNR
- Madeline Magee WDNR

Facilitators:
David Smith (USGS, retired)
Max Post van der Burg (USGS)

3

Progress

- Identified **information needs** not being addressed by ongoing monitoring and science
- Developed **criteria** for assessing the expected benefit of addressing each information need
- Estimated **cost** of addressing each information needs
- Applied an **optimization** approach for identifying the collection of information needs that would produce the most benefit for a given cost if successfully addressed
- Tentatively **selected subset of information needs** for additional development

4

Criteria for assessing Information Needs

- Relevance/Importance to Ecosystem Understanding and Assessment
- Relevance/Importance to Management and Restoration
- Depth of Current Knowledge (less current knowledge=higher score)
- Opportunity to Learn
- Urgency
- Unique capacity

5

Qualitative Value-of-information (QVoI)

- Relevance & Importance
  - Ecosystem Understanding/Assessment
  - Management and Restoration
- Depth of Current Knowledge
- Opportunity to Learn
- Cost
- Urgency
- Unique capacity

6

Qualitative Value-of-information (QVoI)

- Relevance & Importance
  - Ecosystem Understanding/Assessment
  - Management and Restoration
- Depth of Current Knowledge

Qualitative Value of Info

- Opportunity to Learn — *Feasibility*
- Cost — *Expense*
- Urgency
- Unique capacity

Context or Tie-breakers

7

Qualitative Value-of-information (QVoI)

- Relevance & Importance
  - Ecosystem Understanding/Assessment
  - Management and Restoration
- Depth of Current Knowledge

Qualitative Value of Info

Expected Benefit

- Opportunity to Learn — *Feasibility*
- Cost — *Expense*
- Urgency
- Unique capacity

Context or Tie-breakers

8

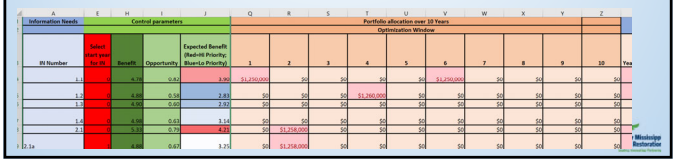
Optimization

- Included:
  - Expected Benefit
  - Estimated Cost
  - Minimum number of years needed to obtain expected benefit
  - Annual funds available
- Allocates funds across years to maximize total expected benefit over 10 year period.

9

Worksheet

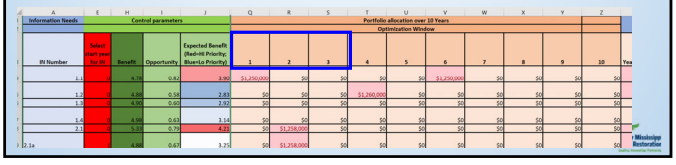
- Choose when to start on resolving information need
- Track costs and remain under budget cap
- Maximize total benefit



10

Worksheet

- Choose when to start on resolving information need
- Track costs and remain under budget cap
- Maximize total benefit



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Optimization

- User can “optimize” by hand
  - But dimensionality can make this difficult
- Or use an algorithm to automatically search
- Useful to compare results of scenarios and approaches

12

Scenarios considered

1. Use algorithm to optimize total expected benefits over 10 years
   - Results in **highest total benefits** over 10 years
   - Selects greatest number of information needs, but…
   - Selects more smaller effort/cost information needs rather than fewer larger effort/cost information needs.

2. Use algorithm optimize total expected benefits but constrain number of new starts each year (3, 4 or 5)
   - Selects large information needs with highest expected benefits
   - Selects fewer information needs with larger individual expected benefits

3. Select information needs with high individual expected benefits
   - Fewer Large information needs with larger expected benefits

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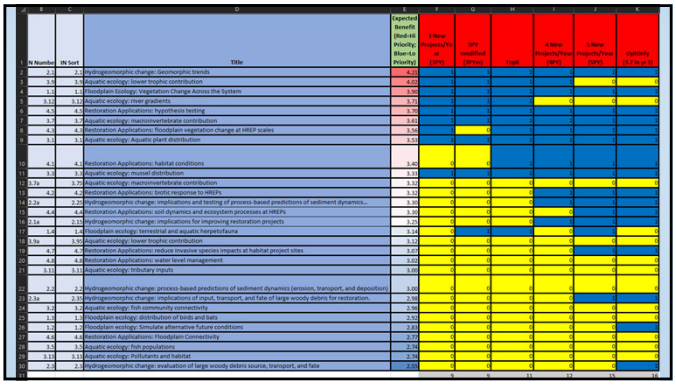

N Number	IN Sort	Title	Expected Benefit (Red=Hi Priority; Blue=Lo Priority)	3 New Projects/Year (EPY)	EPY modified (EPYm)	Total	4 New Projects/Year (EPY)	5 New Projects/Year (EPY)	Optimiz (1,7 in yr 3)
2.3	2.3	Hydrogeomorphic change: Geomorphic trends	4.27	1	1	1	1	1	1
3.9	3.9	Aquatic ecology: lower trophic contribution	4.03	1	1	1	1	1	1
1.3	1.3	Floodplain Ecology: Vegetation Change Across the System	3.90	1	1	1	1	1	1
3.12	3.12	Aquatic ecology: river gradients	3.77	1	1	1	0	0	0
4.3	4.3	Restoration Applications: hypothesis testing	3.72	1	1	1	1	1	1
3.7	3.7	Aquatic ecology: macroinvertebrate contribution	3.61	1	1	1	1	1	1
4.3	4.3	Restoration Applications: floodplain vegetation change at HREP scales	3.56	1	0	1	1	1	1
3.1	3.1	Aquatic ecology: Aquatic plant distribution	3.52	1	1	1	1	1	1
4.1	4.1	Restoration Applications: habitat conditions	3.40	0	0	1	1	1	1
3.3	3.3	Aquatic ecology: mussel distribution	3.33	1	1	1	1	1	1
3.7a	3.7a	Aquatic ecology: macroinvertebrate contribution	3.32	0	0	0	0	0	0
4.2	4.2	Restoration Applications: biotic response to HREPs	3.32	0	0	0	1	1	1
2.2a	2.2	Hydrogeomorphic change: implications and testing of process-based predictions of sediment dynamics…	3.30	0	0	0	1	1	1
4.4	4.4	Restoration Applications: soil dynamics and ecosystem processes at HREPs	3.30	0	0	0	1	1	1
2.1a	2.1	Hydrogeomorphic change: implications for improving restoration projects	3.23	0	0	0	1	1	1
1.4	1.4	Floodplain ecology: terrestrial and aquatic herpetofauna	3.14	0	1	1	0	0	0
3.9a	3.9	Aquatic ecology: lower trophic contribution	3.12	0	0	0	0	0	0
4.5	4.5	Restoration Applications: reduce invasive species impacts at habitat project sites	3.07	0	0	0	1	1	1
4.6	4.6	Restoration Applications: water level management	3.03	0	0	0	0	0	0
3.11	3.11	Aquatic ecology: tributary inputs	3.04	0	0	0	0	0	0
2.2	2.2	Hydrogeomorphic change: process-based predictions of sediment dynamics (erosion, transport, and deposition)	3.00	0	0	0	0	0	0
2.3a	2.3	Hydrogeomorphic change: implications of input, transport, and fate of large woody debris for restoration.	2.96	0	0	0	0	0	1
3.5	3.5	Aquatic ecology: fish community connectivity	2.94	0	0	0	0	0	0
1.5	1.5	Floodplain ecology: distribution of birds and bats	2.92	0	0	0	0	0	0
1.2	1.2	Floodplain ecology: Simulate alternative future conditions	2.88	0	0	0	0	0	1
4.4	4.4	Restoration Applications: Floodplain Connectivity	2.77	0	0	0	0	0	0
3.5	3.5	Aquatic ecology: fish populations	2.76	0	0	0	0	0	0
3.13	3.13	Aquatic ecology: Pollutants and habitat	2.76	0	0	0	0	0	0
2.1	2.1	Hydrogeomorphic change: evaluation of large woody debris source, transport, and fate	2.58	0	0	0	0	0	1

14

Information Needs tentatively selected for further development (1 of 2)

- System-scale assessments of changes in floodplain vegetation
- Spatial and temporal distribution of higher trophic levels on the UMRS floodplain (reptiles, amphibians, birds, bats)
- Where and how the geomorphology of the river and floodplain changing and can be expected to change over planning horizons of decades to centuries
- Learning from restoration and management actions
  - Floodplain vegetation change at restoration project scales
  - Effects of restoration on habitat conditions
- Ecological condition of the transitional portion of the UMRS between Navigation Pools 13 and 26.

15

Information Needs tentatively selected for further development (2 of 2)

- Abundance, distribution, and status of zooplankton and phytoplankton
- Status and trends of mussel species within the Upper Mississippi River and Illinois Rivers
- Aquatic plant distribution
- Community composition, abundance, and distribution of native and non-native macroinvertebrates in the UMRS*

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Next

- Currently revising and refining tentatively selected information needs:
  - More detailed description of the work that would be done
  - Refined cost estimate
- Develop specific recommended portfolio of information needs to begin work on during FY 24 – 26.
- Present that portfolio to the UMRR CC for consideration and endorsement at the August Quarterly meeting.

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Information Need	Small group participants
System-scale assessments of changes in floodplain vegetation	Nate DeJager, Rob Cosgriff, Davi Michl
Terrestrial and aquatic herpetofauna, birds, and bats	Andrew Stephenson, Nate DeJager, Rob Cosgriff, Davi Michl, Ryan Burner (USGS), Eileen Kirsch (USGS), Mark Roth (USGS), Tara Hohman (Audubon), Dale Gentry (Audubon)
Hydrogeomorphic change: Geomorphic trends	Robb Jacobson (USGS), Jeff Houser
Learning from restoration and management actions	Steve Winter, Matt Mangan, Kristen Bouska, Rob Cosgriff, Kirk Hansen
Aquatic ecology: river gradients	Molly Sobotka, Jim Lamer, Karen Hagerty, Jeff Houser

18

Information Need	Small group participants
Abundance, distribution, and status of zooplankton and phytoplankton	Molly Sobotka, Rob Burdis, Kris Maxson, Jim Lamer, Kathi Jo Jankowski, Kristen Bouska
Status and trends of mussel species within the Upper Mississippi River and Illinois Rivers	Stephen Winter, Matt Mangan, Sara Schmuecker, Megan Bradley, Davi Warden-Michl, Dan Kelner, Teresa Newton, Rob Burdis, Zeb Secrist, Nick Schlesser, Jim Lamer, Molly Sobotka,
Aquatic Plant Distribution	Danelle Larson, Alicia Carhart, Eric Lund, Seth Fopma, Kirk Hansen, Levi Solomon, Jim Lamer, Karen Hagerty

19

Implementation Planning Group

- Kirk Hansen IADNR
- Jim Lamer IRBS
- Molly Sobotka MDC
- Matt Vitello MDC
- Rob Burdis MDNR
- Nick Schlesser MDNR
- Neil Rude MDNR
- Andrew Stephenson UMRBA
- Davi Michl USACE
- Rob Cosgriff USACE
- Karen Hagerty USACE
- Matt Mangan USFWS
- Steve Winter USFWS
- Kristen Bouska USGS
- Nate De Jager USGS
- Jeff Houser USGS
- Jennie Sauer USGS (retired)
- Robb Jacobson USGS
- Jim Fischer WDNR
- Madeline Magee WDNR

Facilitators:
David Smith (USGS, retired)
Max Post van der Burg (USGS)

20

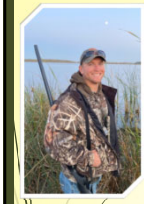
Questions?

21

Upper Mississippi River Restoration

Building HREPs in a time of
High Water
High Prices &
Innovative Ideas

1



John Henderson

B.S. Agricultural Engineering
University of Illinois, Urbana-Champaign

M.S Civil Engineering
University of Illinois, Urbana-Champaign

USACE – St. Paul District (2017-2023)

Habitat Project Experience

- Harper's Slough
- Conway Lake
- Harper's Slough Repair
- McGregor Lake Stage I & II
- Upper Pool 4 1122
- Upper Pool 4 Island 4
- Pigs Eye Islands
- Lower Pool 10 Stages I, II, & III
- Reno Bottoms
- Lower Pool 4 Big Lake
- Lower Pool 4 Robinson Lake
- Wacouta Bay

2

Special Thanks

Scott Baker, USACE
Tom Johnson, USACE
Kacie Opat, USACE
Tom Novak, USACE
Angela Deen, USACE
Sharonne Baylor, USFWS
Wendy Woyczik, USFWS
Kendra Pednault, USFWS
Kirk Hansen, IDNR
Pat Short, WIDNR
Jeff Janvrin, WIDNR

3

2023-2030 MVP Workload

In Construction
Design
Feasibility

UMRR

McGregor Lake Stage I	$11.5M
McGregor Lake Stage II	$12.8M
Lower Pool 10	$39.0M
Reno Bottoms	$38.9M
Lower Pool 4 Big Lake	~$35M
Lower Pool 4 Robinson Lake	Up to $40M
Total	**$177.2M**

Other Authorities

Pigs Eye (CAP 204)	$15.0M
Upper Pool 4 (1122)	$20.0M
Pool 2 Wing Dam Notching (NESP)	$0.3M
Upper Pool 4 Island 4 (NESP Navigation)	$10M
Upper Pool 4 Marsh Dredging (NESP)	$1.9M
Wacouta Bay (NESP)	$10M
Johnson Island (NESP)	Up to $12M
Effigy Mounds (NESP)	Up to $12M
Lock and Dam 2 Protective Island (C&H)	~$10M
Total	**$91.2M**

$250 Million + in Mississippi River Habitat Restoration in St. Paul District from 2023 to 2030

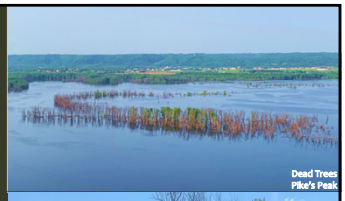
~$550M in total "Other" predicted St. Paul District construction workload from 2023 to 2030

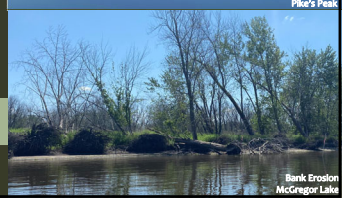
Nearly 1/3 of MVP's total workload from 2023 to 2030

4

Environmental Challenges

Can we keep up?





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Environmental Challenges

- Weather Dependency

6

Environmental Challenges

- Weather Dependency

7

Environmental Challenges

- Pests
  - Wildlife Grazing
  - Beetles/Mites

8

Environmental Challenges

- Vegetation
  - Conserving and Using Available Resources

9

Environmental Challenges

- Vegetation
  - Conserving and Using Available Resources
  - Species Selection
    - Invasive Threats
      - Emerald Ash Borer
      - Dutch Elm Disease
      - Reed Canary Grass
      - Asain Longhorned Beetle
      - Spotted Lantern Flies
        - Tree of Heaven, Walnut, Maple
    - Alternative Species
      - Andy's Success with Sycamore, Kentucky Coffee Tree, etc
      - On my Personal Property (Central IL):
        - Bald Cypress, Dawn Redwood, Swamp Chestnut Oak

10

Environmental Challenges

- Vegetation
  - Conserving and Using Available Resources
  - Species Selection
    - Invasive Threats
      - Emerald Ash Borer
      - Dutch Elm Disease
      - Reed Canary Grass
      - Maple Longhorned Beetle
      - Spotted Lantern Flies
        - Tree of Heaven, Walnut, Maple
    - Alternative Species
      - Andy's Success with Sycamore, Kentucky Coffee Tree, etc
      - On my Personal Property (Central IL):
        - Bald Cypress, Dawn Redwood, Swamp Chestnut Oak
  - Environmental Dependency
  - Natural Regeneration

11

Where's Wendy?

12

Price Challenges

"THAT COSTS HOW MUCH?!" - Everyone

13

Channel Maintenance Partnering

Average Amount of Granular Material Removed from Mississippi River Main Channel for channel maintenance every year

900,000 CY

Total amount beneficially used in Mississippi River Habitat Projects the last 3 years

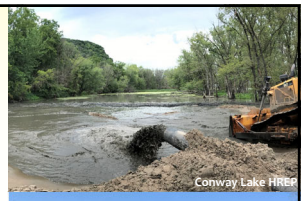
1,100,000 CY

Total amount to be beneficially used in Mississippi River Habitat Projects between 2020 and 2030

3,000,000 CY

Estimated total amount to be dredged between 2020 and 2030

9,000,000 CY



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3 Million Yards of Clean Channel Sand

Is roughly equivalent to

220,000 Tandem Dump Trucks

End to end for

1,000 Miles

Or

St. Paul, MN to New Orleans, LA

15

Why Beneficial Use?

The beneficial use of clean river sand creates opportunities to expand the scope of restoration projects

Opportunities result from the following:

- Ideal for constructing island bases → reduced costs
- Granular Material, is cheaper to UMRR due to quantity-based reimbursement from C&H funding
- Decreases to island costs maximize opportunities for other targeted project features, such as bank protection, flow control structures, TLP, and TSI.

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Conway Lake HREP

As Built

- Total Granular Used: 121,181 CY
- Total Fines Used: 70,034 CY
- Total Granular Value: $1,448,270
- Total Fines Value: $2,748,102
- Misc Other Expenses: $638,783

Total Project Amount and cost to UMRR: **$4,835,155**

If Cost-Shared ($7.25/CY in 2018)

- Total Granular Used: 121,181 CY
- Total Fines Used: 70,034 CY
- Total Granular Value: $1,448,270
- Total Fines Value: $2,748,102
- Misc Other Expenses: $638,783

Total Project Amount: $4,835,155
C&H Contribution = *(121,181 * $7.25)*
(-) $878,562
Total Cost to UMRR = **$3,956,592**

If Built Entirely of Fines

- Total Fines Used: 70,034
  + 121,181
  191,215 CY
- Total Fines Value: $6,589,481
- Misc Other Expenses: $638,783

Total Project Amount and cost to UMRR: **$7,228,264**

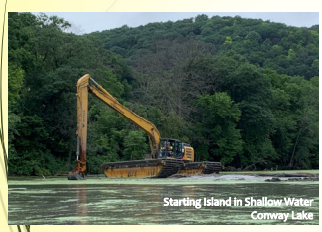
17

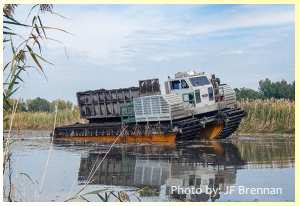
Cost Effective Decision Making

- We Don't Pay for Material
  - Excluding rock (which typically costs $15-20/ton delivered)
  - Man Hours
  - Equipment Type + Hours
  - Risk
    - Uncertainty, Complexity, Discontinuity, Multiple Mobilizations, Difficult building conditions such as access routes and resource availability
    - Eagles, Mussels, Northern Long-Eared Bats, Exclusion Zones, Spawning Periods

18

Unique Equipment Types





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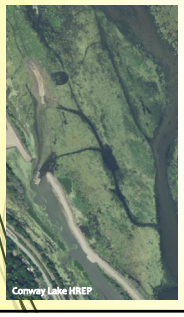
Ex. Exclusion Zones

- Anticipate Cost Impacts
- Be Flexible (where we are able)

20

Exclusion Zones



21

Cost Effective Decision Making

We don't pay for material

- Excluding rock (which typically costs $15-20/ton delivered)
- Man Hours
- Equipment Type + Hours
- Risk
  - Uncertainty, Complexity, Discontinuity, Multiple Mobilizations, Difficult building conditions such as access routes and resource availability
  - Eagles, Mussels, Northern Long-Eared Bats, Exclusion Zones, Spawning Periods

Location, Location, Location

Granular
Harper's (Adjacent - $10/CY) vs Upper Pool 4 (23 River Miles - $35/CY)

Fines
Conway (Adjacent - $34/CY) vs
McGregor Stage 2 (5 River Miles & Tough Dredging Conditions - $70/CY)

The best way to limit the above issues is for all parties to understand the factors that can dramatically raise project costs

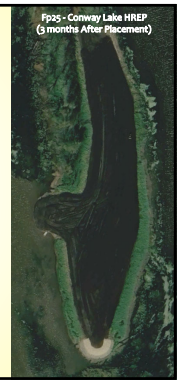
22

Driving Innovation

23

Adaptive and Innovative Methods

- Mudwaves
  - They aren't "Bad" – just another consideration
  - Added 30 feet to islands at Conway Lake HREP



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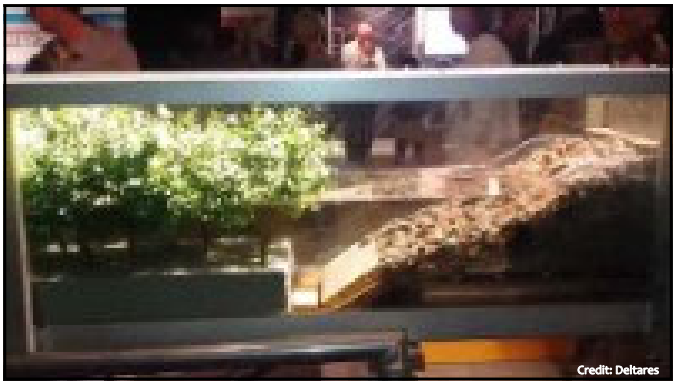

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Adaptive and Innovative Methods

- Mudwaves
  - They aren't "Bad" just another consideration
  - Added 30 feet to islands at Conway Lake HREP
- Thin Layer Placement (TLP)
  - Unconfined Placement is unproven on large scale
    - Upper Pool 4 Mudflats (Near Water Placement)
    - McGregor Lake HREP (Above Water Placement)
    - Reno
  - WEDA Fall 2022 Unconfined Placement for Marsh Accretion
    - "Thus, in calm, back bay systems open water placement practices are a promising method for increasing marsh and near marsh accretion rates, while having minimal far-field turbidity impacts." (Fall et al. 2022)

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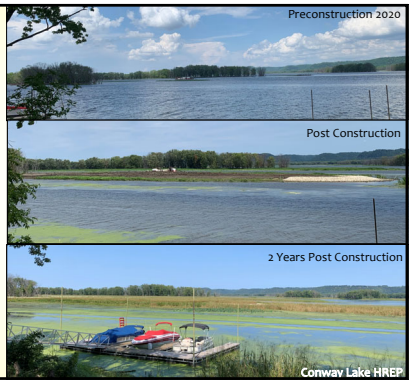
Adaptive and Innovative Methods (cont.)

- Dig and Drop (Crane) / Side-casting (Excavator)
  - Place on immediately adjacent features
- Constructability is key
  - Soil types, borrow/placement locations dictate placement methods
- Less "refined" features could help decrease costs

28

Adaptive and Innovative Methods (cont.)

- Dig and Drop (Beaver Island)
  - Less "refined" features could help decrease costs.
  - Constructability is key.
- Iterative feature design using past projects
  - Photo documentation
  - Satellite Imagery/Drones
    - Lidar
    - Drone SUP approved! (Thanks Sabrina)
    - Leaf-on/Leaf-off
  - Monitoring/Adapting Methods



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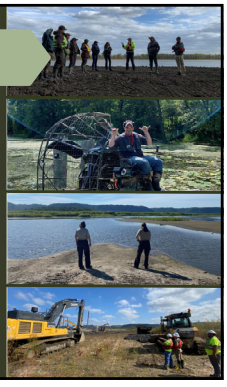
Teamwork

- Transfer of Knowledge
  - Retirements (Hendrickson, Baker, Stefanski, Afdahl, Novak*)
  - Update UMRR Handbook to capture Lessons Learned
- Transparency between partners
  - Share Knowledge
  - History of Working Together
  - Trust One Another
  - Coordination/Planning
  - Compromise
- Risk-Informed Decision Making
  - Other non-Mississippi River Basin Districts reach out to us
  - Other Programs pull knowledge from UMRR



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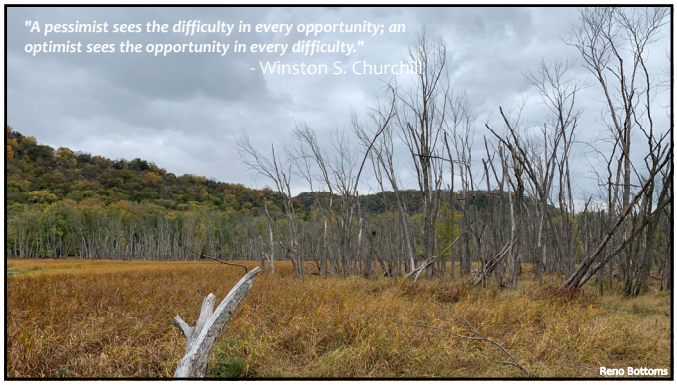

"A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty."
- Winston S. Churchill
Reno Bottoms

31


Pool 8 Islands

32


Questions?
Conway Lake HREP

33

Analysis Team chair update

May 24, 2023

Matt O'Hara
Mississippi River Fisheries Biologist
Illinois Department of Natural Resources
Havana, Illinois

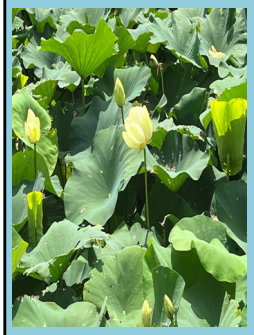
Notes from April 19, 2023 meeting

Illinois Department of Natural Resources

1

Update Outline

- Change of chairperson Matt's bio
- Acknowledgements
- April 19th meeting summary
- Reinstatement of Macroinverts
- Future meeting
- Questions and Contact



2

Matt's Bio

- Timothy Matthew (Matt) O'Hara
- Culver-Stockton College Canton, Mo
- Hired with INHS Illinois River Biological Station September 1991 started as a technician ended as large river ecologist in 2010
- Fisheries Crew leader, assistant team leader, Largemouth Bass research, HREP monitoring and evaluations, Asian Carp research, updated LTRM fisheries methods manual, developed Life history database
- Hired with ILDNR in 2010 to Present
- Aquaculture program project leader, Asian Carp project leader, Interim commercial fishing program manager, Mississippi River Fisheries Biologist Pools 18-22
- 32 years of large River experience, I have been involved with the LTRM and A team in some capacity for over 20 years, Illinois Ateam rep for last 3 years
- I live in Beardstown Illinois, I have 3 great sons, 2 beautiful grandchildren, and 1 smart dog.

3

Evolution of a river fisheries biologist!

Circa 1990's | Circa 2000's | Circa present day

4

Special Acknowledgements!

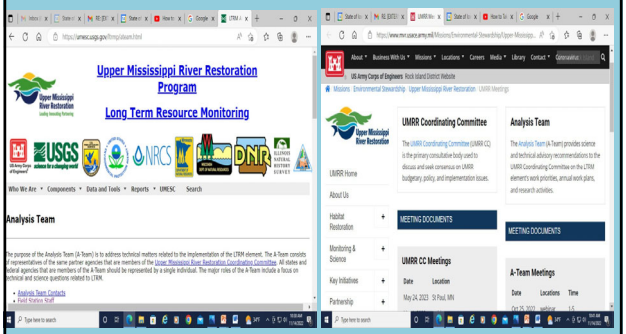
Karen Hagerty
Upcoming retiree
Congratulations!

Scott "Scotty" Gritters
2 Term Chair for the Ateam
Thanks Scotty!

- Dedicated river folk
- Professional
- Tons of institutional knowledge
- Thank You on behalf of the A team!

5

UMESC LTRM and USACE Websites



- Currently updated with field station information and contacts
- Next goal is to standardize information and format, agenda item for upcoming meeting
- Continue to post Ateam notes in a timely manner

6

Agenda items presented and discussed:

- UMRR funding updates- Marshall Plumley
- LTRM updates- Karen Hagerty
- LTRM science highlights- Jeff Houser
- LTRM Implementation planning- Jeff Houser
- Field Station in Focus- The people that make up the Great Bellevue Field Station – Dave Bierman and Scott Gritters
- Introduction of new staff in the UMRR LTRM –Field Station Leaders and USGS
- State Updates

7

UMRR Status and Trends flyers - Andrew Stephenson

- All flyers completed, digital and print versions
- Submitted for publishing
- A social media push anticipated this summer

8

April meeting Scientific presentations and discussions

USGS Upper Midwest Environmental Sciences Center

Upper Mississippi River Restoration

Chloride in the Upper Mississippi River System Update to the A-Team

Kathi Jo Jankowski
U.S. Geological Survey, Upper Midwest Environmental Sciences Center
La Crosse, WI
April 19, 2023

U.S. Department of Interior
U.S. Geological Survey

9

What are the consequences of saltier water?

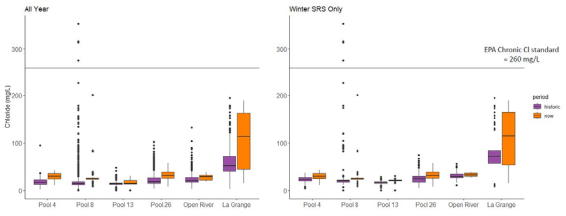
- Mobilizes contaminants
- Corrosive of city infrastructure (lead pipes in Flint, underground electric wires)
- Biological effects – behavioral change, affects reproduction, alters moisture balance for reptiles/amphibians
- Other effects on habitat conditions: the facilitation of invasion of saltwater species, the interference with the natural mixing of lakes, deposition of salts on the floodplain

USGS

10

Preliminary Information-Subject to Revision. Not for Citation or Distribution.

How do concentrations differ across reaches? Past (1993 vs Current)?



USGS

11

CHLORIDE PRESENTATION DISCUSSION

- After pilot project, added chloride monitoring back into regular WQ monitoring. Last done in 90s – then dropped in 2003 – but increasing concern about Chloride in the basin – were able to add that back in short term. Will share those results and potential recommendations.
- Rising trends in conductivity and chloride across US – many studies show this.
- "Freshwater Salinization syndrome" and chloride – salt pollution and human-accelerated weathering – FSS includes multiple ions from both anthropogenic and geological sources into chemical cocktails.
- Consequences include mobilizes contaminants, corrosive of city infrastructure, biological effects – behavioral change, reproduction, moisture balance for reptiles/amphibians -and other effects.
- Major sources of salts include deicing salts, fertilizer, household water softening among others.
- Item to EMPCC UMRCC keep chloride monitoring annual cost is about 45K, Possible couple with macroinverts and additional fauna to bolster data for possible chloride impact
- Formal recommendation to vote and recommend to keep the existing level of Chloride monitoring in LTRM A-team voted all AYES no Nays, more detailed budget will provided

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Lower Pool 13 HARP*: Understanding wind dynamics and contributing factors of water clarity, aquatic vegetation, and native freshwater mussels

*HREP associated research project

Kristen Bouska

Upper Mississippi River Restoration

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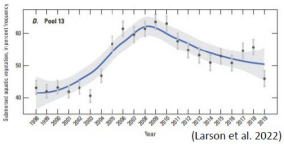
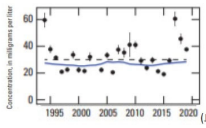
Background

- Prevalence of submersed aquatic vegetation, especially wild celery (*Vallisneria americana*), increased from 1998 to 2008 but has since declined in Pool 13
- Water clarity in Pool 13 has exceeded criteria established for sustaining submersed aquatic vegetation in 54% of years since 1994



(Larson et al. 2022)



(Jankowski 2022)

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Objectives

(1) Pilot a radar wave monitoring system to measure existing (pre-project) wave conditions in Lower Pool 13;

(2) Evaluate relationships between wind, waves, and turbidity, and assess the relative contributions of upstream sources and local resuspension on turbidity in the project area;

(3) Assess spatial patterns and quantify relationships among wild celery, turbidity, and wave dynamics through additional pre-project water clarity and aquatic vegetation field collections;

(4) Estimate substrate stability and population size, density, and species richness of mussels pre-project and determine if areas with stable substrates (RSS<1) have more robust mussel assemblages relative to areas with unstable (RSS>1) substrates.

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Products

- A minimum of four manuscripts on the topics of:
  1. Wind, wave, turbidity interactions
  2. Contributions of resuspension and upstream delivery to local turbidity
  3. Spatial patterns and correspondence among wave dynamics, turbidity, and aquatic vegetation
  4. Linkages between native freshwater mussel assemblages and substrate stability
- Data products - Baseline, pre-project information for post-construction assessments on the effects of specific project features on wave dynamics, velocity, substrate, water clarity, aquatic vegetation, and mussels

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LOWER POOL 13 HARP PRESENTATION DISCUSSION

- ATEAM review of proposal
- 3 fiscal year budget
- OBJ1 134K
- OBJ2 354K
- OBJ 3 173K
- OBJ4 395K
- Total $1.1 M budget
- USACE coordination: $25K
- Initial support for the project
- Agenda item for next Ateam to further discuss proposal and budget

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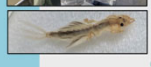
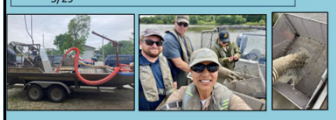
2023 Macroinvertebrate Sampling Highlights

Macroinvertebrate Project

- La Grange Reach, Illinois River
  - PONAR sampling completed.
    - 111 Primary Sites, 8 Alternate Sites
    - Mayflies detected at 26 of 119 PONAR sites
  - Suction Dredging completed.
    - Quiver Lake
    - North Treadway Lake
    - South Treadway Lake
- Pool 26, Mississippi River
  - PONAR sampling underway, planned to be completed week of 5/29
  - Suction Dredging tentatively planned for week of 5/29





La Grange Reach, Illinois River PONAR sites. Mayfly presence and abundance is indicated by red circles.

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2023 Macroinvertebrate Sampling Highlights





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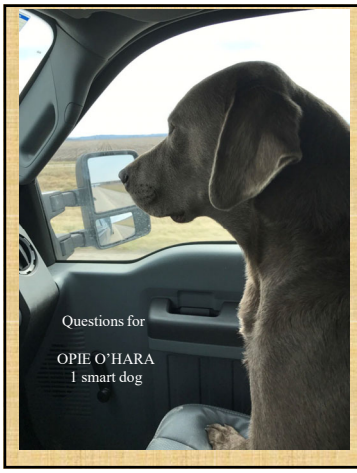

Anticipated Next Ateam meeting date
July 24, 2023, 12:30-4:30

Thank You!

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