

**Upper Mississippi River Restoration
Environmental Management Program
Coordinating Committee
Quarterly Meeting**

February 26, 2014

Highlights and Action Items

Program Management

- **UMRR-EMP's final FY 14 appropriation is \$31.968 million.** Prior to the FY 14 Omnibus Act's passage on January 17, 2014, UMRR had been planning at \$30.368 million under a continuing resolution authority. Allocations within the program have been adjusted and are as follows:
 - Regional Management — \$1,000,000
 - LTRMP element — \$5,225,000
 - HREPs element* — \$25,743,000
 - Program model certification and regional support — \$1,065,700
 - MVP — \$6,980,400
 - MVR — \$10,466,500
 - MVS — \$7,230,400
- **The June 2014 UMRR-EMP agency leadership event is postponed. Marv Hubbell will work with the UMRR-EMP CC members to reschedule the event in September.**
- USACE anticipates publishing the edition of *Our Mississippi* specifically devoted to the UMRR-EMP on March 14, 2014. The edition will reflect the breadth of the program, including featuring the diverse array program partners.

FY 2015-19 Strategic Plan

- The UMRR-EMP FY 2015-19 strategic planning team held an in-person meeting on January 6-8, 2014 in Rock Island where it reviewed draft goal write-ups and addressed remaining issues and questions. The team's next in-person meeting is scheduled for April 8-10 in Rock Island. **The team anticipates distributing a draft strategic plan to partners in late spring for review.**
- **A one-page outline of the draft strategic plan was presented to UMRR-EMP CC at today's meeting. The strategic planning team recommends dropping "EMP" from the program's name and to be known as UMRR going forward.** The intent is to match its reference in the appropriations process and move forward as an integrated program. **The plan includes a vision and mission; the vision is for "a healthier and more resilient Upper Mississippi River ecosystem that sustains the river's multiple uses." The plan includes integrated approaches for enhancing synergies between the program's restoration and knowledge necessary to advance that vision.**

Long Term Resource Monitoring Program Element

- A manuscript was published that examines nutrient content and factors limiting free-floating plants to better understand how habitat projects might influence free-floating plant abundance. The results indicate that free-floating plants are associated with connectivity. Thus habitat projects that would alter connectivity should consider the possible effects on free-floating plant abundance.
- A manuscript was published that analyzes the relationships among floodplain connectivity, nutrient cycling, and free-floating plant abundance. The results show that deliberately managing connectivity of off-channel areas can improve fish and waterfowl habitat and reduce nutrient transport to the Gulf of Mexico.
- Marv Hubbell recognized Mike Jawson's substantial contributions to UMRR-EMP, and his assistance in working through tough issues and helping the program realize the success it is now experiencing. Jawson will retire in mid-April.
- A UMRR-EMP science coordination meeting was held on February 11-13, 2014. It was UMRR-EMP's first meeting among the program's scientists and habitat project planners. The meeting included several presentations of recent work and future research goals related to long term monitoring components, as well as the program's science needs for habitat project planning and evaluation and potential interactions between science and habitat projects. This meeting also served as a kick-off to a three-year research plan for the LTRMP element. **In response to a suggestion by Janet Sternburg, Johnson said he will distribute a survey to attendees to obtain feedback on this first science coordination meeting.**
- In FY 14, UMRR-EMP is allocating \$1.065 million to science research that supports the program's restoration efforts. Thus far, \$436,142 has been funded for seamless elevation data, land cover/land use, the February 2014 science coordination meeting, standardized habitat project sampling protocols for non-forested wetland plants and floodplain forest, a predictive model for aquatic vegetation types, and Pool 12 Overwintering fish response monitoring. **The A-Team is currently considering science proposals to fund with the remaining \$629,604. Once the A-Team finalizes its recommendation in early March, Karen Hagerty will consult with the UMRR-EMP CC members regarding which proposals to fund.**
- Levi Solomon presented on the results of a recent survey to estimate the extent that the program's fisheries monitoring protocols are used beyond the program. The results indicate that the protocols are well known outside of the program and have been used many times in other monitoring efforts.

Emerging Trends and Issues

- At UMRR-EMP CC's February 28, 2013 quarterly meeting, the Committee agreed to develop a white paper addressing the implications of Asian carp on the program's habitat projects and monitoring and research. The paper has been expanded to address invasive species in general. The paper will explore how the program's long term data can serve as a baseline for detecting the emergence and effects of various invasive species on the UMRS, including impacts to the ecosystem's health and resilience. **An outline of this paper will be presented at the UMRR-EMP CC's May 14, 2014 quarterly meeting.**

Habitat Rehabilitation and Enhancement Projects Element

- **USACE Headquarters recently issued a waiver for Rip Rap Landing allowing it to proceed to construction even though its land acquisition exceeds USACE’s policy threshold limiting land acquisition to no more than 25 percent of the project’s total cost.** MVS will now reengage MVD staff and the project’s sponsor to finalize project planning. The District’s construction priorities include Ted Shanks, Pools 25 and 26 Islands, and final minor items at Batchtown.
- MVP is scheduled to complete construction of Capoli Slough this summer. The District also anticipates submitting to MVD in FY 14 definite project reports (DPRs) for all of its projects in planning: Harper’s Slough, North and Sturgeon Lakes, Conway Lake, and McGregor Lake. MVP’s UMRR, channel maintenance, and O&M staff are coordinating to minimize states’ resources in permitting and reviewing USACE’s projects in the District’s portion of the UMRS at a time of quickly accelerated funding — e.g., holding partner meetings in conjunction. **Jim Fischer explained that there is a lot of work happening on the river (e.g., restoration, dredging, channel realignment) that is all very important to Wisconsin, but acknowledged that it will also be important to be mindful of the state’s limited time and resources.**
- MVR has five habitat projects currently in construction, including flood repairs on Fox Island, Rice Lake, and Lake Odessa. The District will also initiate planning on Stage II of Pool 12 Overwintering.
- Following the UMRR-EMP FY 15-19 strategic planning process, UMRR-EMP will initiate a “data-driven” process for selecting new starts that will be informed by partners’ expertise and experience, the strategic plan and other program documents, and decision support tools. Tm Novak presented examples of potential opportunities to leverage resources to implement projects with other efforts that have similar goals or with those who could offer mutual benefits — e.g., USACE’s dredging activities. Novak said partners should think creatively about how to best address ecological needs when selecting new project starts.
- Ellen Milliron, Chuck Theiling, and Julie Millhollin presented on Pool 12 Overwintering’s design to restore off-channel aquatic habitat and floodplain forest habitat, monitoring and adaptive management approaches, and construction progress to date.

Other Business

- COL Deschenes remarked that UMRR-EMP is an incredibly successful, well-resourced program that is the result of the tremendous contributions by all partners. He said UMRR-EMP will play a vital role in the nation’s enormous challenge of watershed-based planning.
- **Upcoming quarterly meetings are as follows:**
 - **May 2014 — St. Louis**
 - UMRBA meeting — May 13
 - **UMRR-EMP CC — May 14**
 - **August 2014 — East Peoria**
 - UMRBA meeting — August 5
 - **UMRR-EMP CC — August 6**
 - **November 2014 — St. Paul**
 - UMRBA meeting — November 18
 - **UMRR-EMP CC — November 19**

EMP CC Quarterly Meeting February 26, 2014

Marvin E. Hubbell - MVR
UMRR Regional Program Manager

Mississippi Valley – Rock Island District (MVR)
Mississippi Valley – St. Louis District (MVS)
Mississippi Valley – St. Paul District (MVP)



UMRR-EMP PARTNERS



Signing Our Charter



BUILDING STRONG®

FY 13 Budget Request

| | |
|----------------------|-----------|
| ▪ President's Budget | \$17.880 |
| ▪ House | \$16.986* |
| ▪ Senate | \$17.880 |
| ▪ Sequestration | \$ 0 |
| ▪ Final Work Plan | \$ 24.131 |

42% increase

* Used as planning amount



BUILDING STRONG®

FY 14 Budget Request

| | |
|--------------------------------------|----------------|
| ▪ President's Budget | \$31,967,800 * |
| ▪ House | \$30,370,000 |
| ▪ Senate | \$31,967,800 |
| ▪ Planning Amount | \$30,369,410 |
| ▶ Pres. Budget minus 5% | |
| ▪ Appropriation/Work Plan/Allocation | \$? |

* A 79% increase over the FY13 budget request



BUILDING STRONG®

Draft FY14 Work Plan

| | | |
|---|---------------------|---------------------|
| TOTAL FY 13 Program | \$30,370,000 | \$31,968,000 |
| Regional Administrative Amount | \$ 902,000 | \$ 1,000,000 |
| Regional Management (Regional EMP & LTRM) | \$ 511,000 | \$ 529,000 |
| Program Database | \$ 45,000 | \$ 55,000 |
| Regional Project Sequencing | \$ 50,000 | \$ 75,000 |
| UMRR-EMP Strategic Plan | \$ 65,000 | \$ 85,000 |
| UMRBA | \$ 76,000 | \$ 76,000 |
| HREP/LTRM Integration | \$ 60,000 | \$ 60,000 |
| Public Outreach | \$ 45,000 | \$ 70,000 |
| 2016 Report to Congress | \$ 50,000 | \$ 50,000 |
| LTRM | \$ 5,225,000 | \$ 5,225,000 |
| HREP | \$24,243,000 | \$25,677,300 |
| UMRR Regional Science Support | \$ 1,000,000 | \$ 1,065,700 |
| St. Louis District | \$ 6,516,000 | \$ 6,980,400 |
| Rock Island District | \$ 9,961,000 | \$10,532,200 |
| St. Paul District | \$ 6,766,000 | \$ 7,230,400 |



BUILDING STRONG®

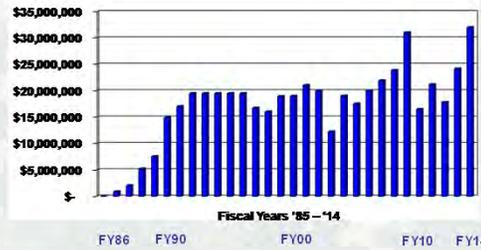
FY 15 Budget Request

- President's Budget ????????
- House
- Senate



BUILDING STRONG®

UMRR Appropriation/Budget History



Fiscal Years 1985 through 2014



BUILDING STRONG®

Meeting with Senior Leaders

- Key Program Issues (dual purpose of river, funding, visibility, state capability, accountability, strategic plan)
- Date – June 18, 2014
 - ▶ Need to reschedule!
 - ▶ Aug. 11 – 28th Possible dates
 - ▶ Sept. ?
- Location –Dubuque



BUILDING STRONG®

Meeting with Senior Leaders

- Format – Meeting in AM, Field trip in PM
- Meeting Organizer – COL Deschenes
- Topics of interest to your Senior Leaders
 - ▶ Funding
 - ▶ Staffing
 - ▶ Emerging Issues
 - ▶ Other



BUILDING STRONG®

Program Bulletin



BUILDING STRONG®

Program Bulletin

- Public Outreach Committee
- Our Mississippi
- Database reports



BUILDING STRONG®

Outreach



DaVinci fest - Dave Potter presenting UMRR Islandsto two different age groups

BUILDING STRONG®

New Issue of ...



BUILDING STRONG®

Remaining Schedule ...

- March 3 - Authors complete articles
- March 5 - Proof publication
- March 6 – Goes to print
- March 10 – Delivery/distribution

BUILDING STRONG®

Huron Island Public Meeting

- March 26 – Public meeting to help in the formulation of the project.
 - ▶ A first for MVR
 - ▶ Considerable public interest

BUILDING STRONG®

Strategic Planning Meetings

- Date: April 9-11, 2013 (La Crosse)
- June 18-20, 2013 (R.I. Arsenal)
- August 22, 2013 (Webinar)
- November 5-7, 2013 (R.I.) *cancelled*
- January 6-8, 2014 (R.I. Arsenal)
- April 8-10, 2014 (R.I. Arsenal)**

BUILDING STRONG®

1st Meeting Highlights

- Key Issue areas identified:
 - ▶ Defining Success
 - ▶ Ecosystem Restoration
 - ▶ Ecosystem Monitoring
 - ▶ Collaboration
 - ▶ Communication
 - ▶ Funding
 - ▶ Integration

BUILDING STRONG®

2nd Meeting Highlights

- Defining Success Rob Maher
- Ecosystem Restoration Kara Mitvalsky
- Ecosystem Monitoring Jeff Houser
- Collaboration Janet Sternburg
- Communication Kevin Stauffer
- Funding Kirsten Mickelson
- Integration Marvin Hubbell

BUILDING STRONG®

2nd Meeting Highlights

- Specific questions on individual issue papers
- Relationships among the issue papers
- Relationship of the issue papers to the IIA
- Strategic implications of the issue papers and the IIA
- Identified four Goal Statements and need for Vision, Mission, Assumptions, & Guiding Principles Statements.

BUILDING STRONG®

3rd Meeting Highlights

- Draft Vision, Mission, Assumptions, and Guiding Principles Statements
- Goal 1 – Enhance Knowledge ...
- Goal 2 – Enhance Habitat ...
- Goal 3 – Collaboration... (external)
- Goal 4 – Enhance Partnership ... (internal)

BUILDING STRONG®

4th Meeting Highlights

- Revised
 - ▶ Vision, Mission, Goals and Objectives, and Guiding Principles – Page C-5
- **Key Outcomes and recommendations!**
 - ▶ Cohesive Vision Statement that unifies the actions of the Program!
“A **healthier** and **more resilient** UMR ecosystem that sustains the river's multiple uses.”
 - ▶ Embrace the name of UMRR
 - ▶ Embrace enhanced Program integration

BUILDING STRONG®

4th Meeting Highlights

- Significance of these recommendations
 - ▶ Require us to characterize/define the existing health and resiliency of the system.
 - ▶ Use existing and potentially new data sets to establish a baseline and to monitor change.
 - ▶ Utilize existing and develop new indicators to monitor progress.

BUILDING STRONG®

4th Meeting Highlights

- ▶ Link the identification, selection, formulation of new projects based upon their contribution to increasing health and resiliency.
- ▶ Provide feedback to ourselves and others regarding progress.

BUILDING STRONG®

Next Steps

- Remaining schedule
 - 5th Meeting in April
 - Partner Review
 - EMP-CC concurrence in August
 - Operational Plan
- Broad Partner briefings/input is needed
 - ▶ Best mechanisms?
 - Webinar(s)
 - Face to Face
 - Hard copy distribution(s)
 - Regional meetings
 - Other



BUILDING STRONG®

Program Integration

- **Personal Reflections (G-12)**
 - ▶ Three pivotal meetings in the past two months
 - Jan. 6-8 Strategic Planning meeting
 - Jan. 28-29 Corps/USGS meeting to enhance integration of Program elements
 - Feb. 11-13 Science Coordination meeting
 - ▶ Key outcome – Participants started to fully explore and embrace the possibilities of an integrated Program.



BUILDING STRONG®

Emerging trends and Issues

- Emerging Trends (P-1)
- Invasive Species
 - ▶ The base monitoring portion of the UMRR Program was designed to detect substantial changes in the fundamental ecosystem condition of the UMRS by continuing to develop and maintain information on long-term status and trends for aquatic vegetation, water quality, fish, land use/land cover, and bathymetry, which are the river's key ecological drivers.
 - These data provide a basis for an evaluation of changes from a range of stressors, such as invasive species, on one or more of these ecological drivers.
 - ▷ Structure paper around this basic tenant.



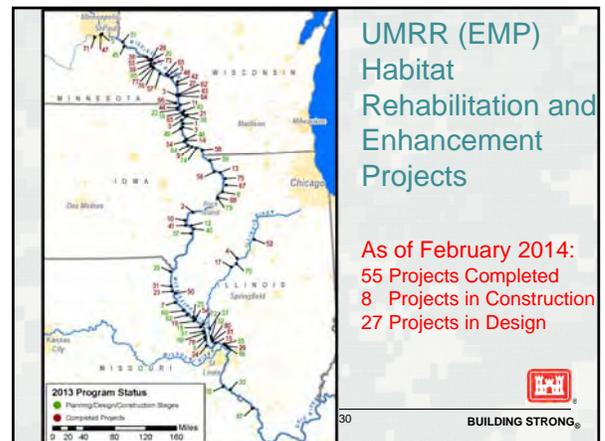
BUILDING STRONG®

Emerging trends and Issues

- Measuring ecosystem resilience
 - ▶ Indicators
- Measuring ecosystem health
 - ▶ Status and Trends
 - ▶ Indicators



BUILDING STRONG®



BUILDING STRONG®

ST. LOUIS DISTRICT (MVS) FY14 HREP Work Plan (26 Feb 2014)

| | | |
|---|---|---|
| <p>PLANNING</p> <p>Rip Rap Landing, IL</p> <ul style="list-style-type: none"> ➢ Complete DPR 3rd QTR FY14 <p>Clarence Cannon Refuge, MO</p> <ul style="list-style-type: none"> ➢ Complete DPR 3rd QTR FY14 <p>Piasa and Eagles Nest Islands, Pool 26, IL</p> <ul style="list-style-type: none"> ➢ Draft DPR 2nd QTR FY15 <p>Other studies in the Queue</p> <ul style="list-style-type: none"> ➢ Middle River Opportunities MO/IL ➢ Glades & Godar, IL River ➢ West Alton, MO ➢ Pool 24, MO | <p>DESIGN</p> <p>Ted Shanks, MO</p> <ul style="list-style-type: none"> ➢ CN1/CS3 Water Control ➢ Nose Slough/Deadman WC ➢ Pump Station <p>CONSTRUCTION</p> <p>Ted Shanks, MO</p> <ul style="list-style-type: none"> ➢ SR1 Water Control ➢ North Berm and Setback ➢ HL1 Water Control <p>Pools 25 & 26 Islands, MO</p> <ul style="list-style-type: none"> ➢ Bolters Island / Reforestation <p>Batchtown, IL - Punchlist</p> | <p>EVALUATION</p> <ul style="list-style-type: none"> ➢ Baseline Monitoring ➢ Post Project Monitoring ➢ Performance Evaluation |
|---|---|---|



BUILDING STRONG®

Ted Shanks, MO HREP









BUILDING STRONG®

ST. PAUL DISTRICT (MVP) FY14 HREP Work Plan (26 Feb 2014)

| | | |
|--|---|---|
| <p>PLANNING</p> <p>Harpers Slough, Pool 9, IA/WI</p> <ul style="list-style-type: none"> ➢ DPR approval Apr 2014 <p>North & Sturgeon Lakes, Pool 3, MN</p> <ul style="list-style-type: none"> ➢ Complete Draft DPR FY14 <p>Conway Lake, Pool 9, IA</p> <ul style="list-style-type: none"> ➢ DPR in FY14 <p>McGregor Lake, Pool 10, WI</p> <ul style="list-style-type: none"> ➢ Complete Draft DPR FY14 <p>Other studies in the Queue</p> <ul style="list-style-type: none"> Weaver Bottoms, Clear Lake, Bass Lake Ponds, Pool 10 islands | <p>DESIGN</p> <ul style="list-style-type: none"> ➢ Harpers Slough Stage's 1, 2 & 3 <p>CONSTRUCTION</p> <p>Capoli Slough Islands, WI</p> <ul style="list-style-type: none"> ➢ Stage 1 (Newt Marine) ➢ Stage 2 (McHugh/JF Brennan) <p>Harpers Slough, IA</p> <ul style="list-style-type: none"> ➢ Award stage 1 in August | <p>EVALUATION</p> <ul style="list-style-type: none"> ➢ Baseline Monitoring ➢ Post Project Monitoring ➢ Performance Evaluation |
|--|---|---|



BUILDING STRONG®

Capoli Slough





BUILDING STRONG®

ROCK ISLAND DISTRICT (MVR) FY14 HREP Work Plan (Feb. 2014)

| | | |
|---|---|---|
| <p>PLANNING</p> <ul style="list-style-type: none"> ➢ Pool 12 Overwintering Stage II, IL <p>DESIGN</p> <ul style="list-style-type: none"> ➢ Pool 12 Overwintering Stage II, Pool 12 IL ➢ Rice Lake Stage I, IL LaGrange Pool <p>CONSTRUCTION</p> <ul style="list-style-type: none"> ➢ Lake Odessa Flood Recovery, IA Pools 17 and 18, IA ➢ Pool 12 Overwintering Stage I, Pool 12 IL <p>EVALUATION</p> <ul style="list-style-type: none"> ➢ FWS ➢ Baseline Monitoring ➢ Adaptive Mgmt. Pool 12 | <ul style="list-style-type: none"> ➢ Huron Island, Pool 18, IA ➢ Beaver Island, Pool 14, IA <p>CONSTRUCTION</p> <ul style="list-style-type: none"> ➢ Huron Island, Pool 18, IA ➢ Lake Odessa Flood Recovery, IA <p>EVALUATION</p> <ul style="list-style-type: none"> ➢ Fox Island, Pool 20, MO ➢ Rice Lake Stage I, IL LaGrange Pool ➢ Huron Island, Pool 18, IA | <ul style="list-style-type: none"> ➢ Post Project Monitoring ➢ Performance Evaluations (3) <ul style="list-style-type: none"> ➢ Berton and McCartney ➢ Big Timber ➢ Pool 11 Overwintering |
|---|---|---|



BUILDING STRONG®

HREP: Rice Lake

RM 132.0 through 138.0 of the Illinois Waterway (LaGrange Pool)
Fulton County, Illinois

- Stage I Contract awarded Sept 19, 2011 for \$8.64 million to S&F, Inc. from Akron, OH. Stage I Contract includes a reinforced concrete pump station (3-48" pumps) on steel H-piles, masonry pump station control building, discharge channel excavation, water control structures (stoplog and sluice gate), overflow and natural spillway embankment using wet and dry material, reinforced concrete outlet structure & mechanical dredging.

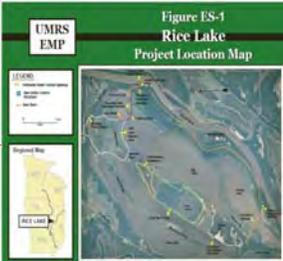
Construction delayed due to high water.

Little or no damage to pump station or outlet structure.

Most damage is to earth work

Negotiating Mods.

Pumps installation occurring now





BUILDING STRONG®

HREP: Rice Lake

2013 Flood Damages



Overflow Spillway Dry
Sta 11+00 to 15+00 Scour

Washout around outfall upstream



HREP: Fox Island

RM 353.6-358.5 of the Mississippi River (Pool 20)
Clark County, Missouri

- **Started Construction in September 2011.** Work includes: installation of 2 wells, 6 stoplogs, channel excavation, and plantings. It is expected to cost \$3.5 million.
 - ▶ Completed planting cover crop and trees in Dec.)
 - ▶ Spring flooding damaged newly planted trees. Mod.s to replant trees and ground cover.
 - ▶ Mod. executed to mechanically remove log jam (\$225,000)



Logjam on the Fox River



HREP: Lake Odessa

Mississippi River Miles 434.5-441.5 (Pool 17 and Pool 18)
Louisa County, Iowa

- All work was substantially complete on June 5, 2012. Contractor submitted survey to verify conformance to final grades.
- Final Payment Made on Stage IB and II B
- Initiated development of O & M Manual
- Flood damage inspection conducted on 16 May.
- Preliminary repair estimates range \$1.2 – \$6.2 million.
- Need – 1,100 ft. of additional spillway.
- Design on going. 35% Meeting in Oct.
- Const. contract award in FY 14



HREP: Lake Odessa Flood damages



- ▲ New spots where stoplogs were stopped by sandbagging
- Minor scour damage
- Bank slippage
- Stop submerged, water flowing out toward river
- Area overtopped briefly; clay cap now exposed and appears ok
- Did not overflow



HREP: Lake Odessa Flood Damages



New Project Starts FY17-FY18

- **Process**
 - ▶ Early Discussion of effort – Aug. 2013
 - ▶ **Progressive Discussion**
 - Building on the past – looking towards the future
 - ▶ Linkage to all other efforts
 - Reports to Congress
 - IIA
 - Strategic Planning
 - Charters
 - Goals and Objectives
 - Etc.



New Project Starts FY17-FY18

Goals for Process

▶ Building on the past

- 1998 & 2008 - Status and Trends Reports
- 2000 - HNA
- 2003 - HREP Planning and Sequencing Document
- 2005 - Structured Decision Making principles
- 2006 & 2012 – HREP Environmental Design Handbooks
- 2008 - Jointly Adopted System Goals
- 2011 - Reach Objectives
- 26 years of research, monitoring, PER data, etc.
- Systemic Data layers (LIDAR, LULC, Bathymetry)



BUILDING STRONG®

New Project Starts FY17-FY18

Goals for Process

▶ Looking towards the future

- Application of systemic data layers and research and monitoring efforts
- Development and application of appropriate models
- Application of decision support tools
- Refinement of UMRS Reach Objectives to help inform the application of decision support tools, data, and models.



BUILDING STRONG®

New Project Starts FY17-FY18

General Thoughts

▶ This process should be:

- More data driven than earlier efforts
- Greater utilization of GIS tools
- Greater utilization of models
- Refine and Utilize UMRS Goals and Reach Objectives as needed
- Serve as a building block towards addressing the question of "What is our vision of success?"



BUILDING STRONG®

New Project Starts FY17-FY18

Next Steps

▶ EMP-CC Feedback on approach

▶ Proposed schedule (FY15 -

- Formal start – 1st Quarter FY15
 - ▷ Develop Outline
 - ▷ assemble key data sources
 - ▷ Identify perspective members of SET
 - ▷ Link rehabilitation efforts to refined goals, objectives, indicators, and data from base monitoring
- Completion – 2nd Quarter FY17

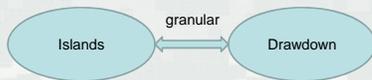


BUILDING STRONG®

Recent Approaches to HREP combine features

North/Sturgeon Lakes HREP

Multiple EMP projects with islands



Drawdown's Pools 5,6 and 8



BUILDING STRONG®

Recent Approaches to HREP Leverage funds



Leveraging O&M funds with EMP projects



BUILDING STRONG®

Recent Approaches to HREP Leverage




BUILDING STRONG®

Let's Reverse North-Sturgeon Lake

- ▶ What if the HREP is another Pool 8 DD...and we build islands in lower pools with granular
- ▶ And what if we repeated this every 5 yrs

yr1/2

HREP \$

↑

yr5/6

HREP \$

↑

yr10/11

HREP \$

↑
- ▶ What if O&M could construct some of those islands directly from dredge cuts.

BUILDING STRONG®

2012 Environmental Design Manual

Kara Mitvalsky



51

BUILDING STRONG®

- Pool 12 Overwintering
 - ▶ Ellen Milliron
 - ▶ Julie Millhollin

BUILDING STRONG®

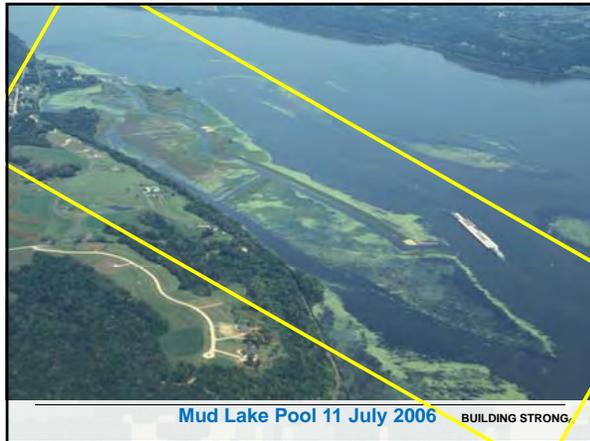
Question of the Quarter

- What is the total amount of funding that the UMRP Program has received from FY85 thru FY14?
- A. \$250,000,000 to \$350,000,000
- B. \$351,000,000 to \$450,000,000
- C. \$451,000,000 to \$550,000,000
- D. \$551,000,000 to \$650,000,000

BUILDING STRONG®

C. \$476,698,000

BUILDING STRONG®



Completed Projects **Illinois**

| Project Name | Acres Restored | Federal Cost | Non-Federal Cost | Total Cost |
|---|----------------|---------------------|--------------------|---------------------|
| Andalusia Refuge | 353 | \$2,741,000 | \$0 | \$2,741,000 |
| Banner Marsh | 4,290 | \$5,339,000 | \$1,760,000 | \$7,119,000 |
| Calhoun Point | 2,135 | \$10,764,000 | \$0 | \$10,764,000 |
| Chautauque Refuge | 3,940 | \$14,151,000 | \$0 | \$14,151,000 |
| Gardner Division (Long Island Division) | 6,300 | \$7,760,000 | \$0 | \$7,760,000 |
| Peoria Lake | 2,500 | \$3,235,000 | \$42,000 | \$3,277,000 |
| Potters Marsh | 2,305 | \$3,007,000 | \$0 | \$3,007,000 |
| Spring Lake | 3,300 | \$6,530,000 | \$0 | \$6,530,000 |
| Stump Lake | 2,960 | \$6,057,000 | \$0 | \$6,057,000 |
| Total: | 37,218 | \$71,165,000 | \$3,644,000 | \$74,809,000 |

| Field Station | Total Cost |
|--|---------------------|
| National Great Rivers Research & Education Center Biological Field Station | \$ 8,783,000 |
| Illinois River Biological Field Station | \$ 8,783,000 |
| Total Science & Monitoring | \$17,566,000 |

BUILDING STRONG

Future Projects **Illinois**

| Project Name | Acres Restored | Federal Cost | Non-Federal Cost | Total Cost |
|------------------------------------|----------------|----------------------|------------------|----------------------|
| Batchtown | 3,280 | \$17,091,000 | \$146,000 | \$17,237,000 |
| Boston Bay | 900 | \$6,337,000 | \$0 | \$6,337,000 |
| Delair Division | 1,685 | \$9,500,000 | \$0 | \$9,500,000 |
| Glades Wetlands | 2,650 | \$17,218,000 | \$0 | \$17,218,000 |
| Godar Refuge | 2,400 | \$8,202,000 | \$0 | \$8,202,000 |
| Keithsburg Division | 1,390 | \$6,350,000 | \$0 | \$6,350,000 |
| Pool 12 Overwintering | 7,990 | \$20,656,000 | \$0 | \$20,656,000 |
| Red's Landing Wetlands | 1,620 | \$4,484,000 | \$0 | \$4,484,000 |
| Rip Rap Landing | 2,300 | \$8,169,000 | \$231,000 | \$8,400,000 |
| Salt Lake#1 Chatteris Side Channel | 60 | \$2,000,000 | \$0 | \$2,000,000 |
| Swan Lake | 2,900 | \$15,623,000 | \$262,000 | \$15,885,000 |
| Total: | 32,225 | \$132,881,000 | \$408,000 | \$133,289,000 |

| Field Station | Total Cost |
|--|-------------|
| Texas DNR Mississippi River Biological Field Station | \$9,786,000 |

BUILDING STRONG

Completed Projects **Iowa**

| Project Name | Acres Restored | Federal Cost | Non-Federal Cost | Total Cost |
|----------------------------|----------------|---------------------|------------------|---------------------|
| Big Timber | 1,039 | \$851,000 | \$0 | \$851,000 |
| Brown's Lake | 453 | \$2,093,000 | \$0 | \$2,093,000 |
| Bussey Lake | 494 | \$3,432,000 | \$162,000 | \$3,594,000 |
| Guttenberg Waterfowl Ponds | 198 | \$327,000 | \$0 | \$327,000 |
| Lake Odessa | 6,788 | \$22,600,000 | \$0 | \$22,600,000 |
| Lansing Big Lake | 6,420 | \$2,090,000 | \$0 | \$2,090,000 |
| Pleasant Creek | 2,350 | \$1,312,000 | \$0 | \$1,312,000 |
| Pool 11 Islands-Mud Lake | 4,550 | \$4,597,920 | \$0 | \$4,597,920 |
| Pool Slough | 620 | \$518,000 | \$175,000 | \$693,000 |
| Princeton Refuge | 1,129 | \$4,006,000 | \$54,000 | \$4,060,000 |
| Total: | 24,041 | \$41,826,920 | \$391,000 | \$42,217,920 |

| Field Station | Total Cost |
|--|-------------|
| Texas DNR Mississippi River Biological Field Station | \$9,786,000 |

BUILDING STRONG

Future Projects **Iowa**

| Project Name | Acres Restored | Federal Cost | Non-Federal Cost | Total Cost |
|--|----------------|---------------------|------------------|---------------------|
| Beaver Island | 1,790 | \$13,375,000 | \$0 | \$13,375,000 |
| Conway Lake | 1,043 | \$2,512,000 | \$0 | \$2,512,000 |
| Harpers Slough | 2,200 | \$12,150,000 | \$0 | \$12,150,000 |
| Huron Island | 2,000 | \$13,773,000 | \$0 | \$13,773,000 |
| Lower Pool 10 Island and Backwater Complex | 2,340 | \$6,000,000 | \$0 | \$6,000,000 |
| Steamboat Island | 1,280 | \$7,780,000 | \$0 | \$7,780,000 |
| Turkey River Bottoms Delta and Backwater Complex | 3,638 | \$18,700,000 | \$0 | \$18,700,000 |
| Total: | 14,251 | \$74,290,000 | \$0 | \$74,290,000 |

| Field Station | Total Cost |
|--|---------------|
| State of Minnesota, Lake City Biological Field Station | \$ 10,170,000 |

BUILDING STRONG

Completed Projects **Minnesota**

| Project Name | Acres Restored | Federal Cost | Non-Federal Cost | Total Cost |
|--------------------------|----------------|---------------------|------------------|---------------------|
| East Channel | 320 | \$559,000 | \$0 | \$559,000 |
| Finger Lakes | 530 | \$1,445,000 | \$0 | \$1,445,000 |
| Island #2 | 420 | \$262,000 | \$0 | \$262,000 |
| Long Meadow Lake | 2,340 | \$750,000 | \$0 | \$750,000 |
| Peterson Lake | 614 | \$1,179,000 | \$0 | \$1,179,000 |
| Polander Lake | 790 | \$3,000,000 | \$0 | \$3,000,000 |
| Pool 8 Islands Phase III | 3,288 | \$19,650,000 | \$0 | \$19,650,000 |
| Pool Slough | 620 | \$518,000 | \$175,000 | \$693,000 |
| Rice Lake-MN | 907 | \$682,000 | \$0 | \$682,000 |
| Total: | 9,729 | \$28,045,000 | \$175,000 | \$28,220,000 |

| Field Station | Total Cost |
|--|---------------|
| State of Minnesota, Lake City Biological Field Station | \$ 10,170,000 |

BUILDING STRONG

Future Projects **Minnesota**

| Project Name | Acres Restored | Federal Cost | Non-Federal Cost | Total Cost |
|-----------------------------------|----------------|---------------------|------------------|---------------------|
| Bass Ponds, Marsh, and Wetland | 390 | \$3,000,000 | \$0 | \$3,000,000 |
| Clear Lake (Finger Lake) Dredging | 321 | \$2,500,000 | \$0 | \$2,500,000 |
| North and Sturgeon Lakes | 5,150 | \$8,000,000 | \$0 | \$8,000,000 |
| Weaver Bottoms | 4,883 | \$10,000,000 | \$0 | \$10,000,000 |
| Total: | 11,134 | \$26,500,000 | \$0 | \$26,500,000 |



BUILDING STRONG®

Completed Projects **Missouri**

| Project Name | Acres Restored | Federal Cost | Non-Federal Cost | Total Cost |
|-------------------------|----------------|---------------------|------------------|---------------------|
| Bay Island | 650 | \$3,112,000 | \$0 | \$3,112,000 |
| Clarksville Refuge | 312 | \$454,000 | \$0 | \$454,000 |
| Culvre Island | 2,180 | \$1,444,000 | \$479,000 | \$1,923,000 |
| Dresser Island | 940 | \$2,904,000 | \$0 | \$2,904,000 |
| Monkey Chute | 88 | \$56,000 | \$0 | \$56,000 |
| Pharris Island | 625 | \$2,783,000 | \$0 | \$2,783,000 |
| Stag and Keaton Islands | 470 | \$471,000 | \$0 | \$471,000 |
| Total: | 5,165 | \$11,224,000 | \$479,000 | \$11,703,000 |

| Field Station | Total Cost |
|--|-------------|
| Big Rivers & Wetlands Biological Field Station | \$7,387,000 |



BUILDING STRONG®

Future Projects **Missouri**

| Project Name | Acres Restored | Federal Cost | Non-Federal Cost | Total Cost |
|------------------------------|----------------|----------------------|------------------|----------------------|
| Clarence Cannon | 3,750 | \$25,800,000 | \$0 | \$25,800,000 |
| Fox Island | 2,033 | \$4,800,000 | \$0 | \$4,800,000 |
| Harlow Island | 1,300 | \$6,500,000 | \$0 | \$6,500,000 |
| Piasa - Eagle's Nest Islands | 1,600 | \$5,500,000 | \$0 | \$5,500,000 |
| Pool 24 Islands | 3,150 | \$9,492,000 | \$0 | \$9,492,000 |
| Pool 25 and 26 Islands | 2,026 | \$2,660,000 | \$0 | \$2,660,000 |
| Ted Shanks | 2,900 | \$29,506,000 | \$0 | \$29,506,000 |
| West Allon Tract | 610 | \$6,532,000 | \$0 | \$6,532,000 |
| Wilkinson Island | 2,700 | \$5,980,000 | \$0 | \$5,980,000 |
| Total: | 27,271 | \$111,582,000 | \$0 | \$111,582,000 |



BUILDING STRONG®

Completed Projects **Wisconsin**

| Project Name | Acres Restored | Federal Cost | Non-Federal Cost | Total Cost |
|------------------------------|----------------|---------------------|------------------|---------------------|
| Ambrough Slough | 2,746 | \$2,461,000 | \$166,000 | \$2,627,000 |
| Bertram McCartney Lakes | 2,000 | \$2,440,000 | \$0 | \$2,440,000 |
| Blackhawk Park | 82 | \$232,000 | \$77,000 | \$309,000 |
| Coat Springs | 30 | \$463,000 | \$0 | \$463,000 |
| East Channel | 320 | \$559,000 | \$0 | \$559,000 |
| Indian Slough | 625 | \$988,000 | \$0 | \$988,000 |
| Lake Onataska | 2,750 | \$2,064,000 | \$0 | \$2,064,000 |
| Lung Lake | 40 | \$646,000 | \$0 | \$646,000 |
| Pool 11 Islands-Sunfish Lake | 4,000 | \$5,247,226 | \$0 | \$5,247,226 |
| Pool 8 Islands Phase I | 643 | \$2,314,000 | \$0 | \$2,314,000 |
| Pool 8 Islands Phase II | 1,268 | \$3,482,000 | \$0 | \$3,482,000 |
| Pool 8 Islands Phase III | 3,288 | \$19,650,000 | \$0 | \$19,650,000 |
| Pool 9 Islands | 410 | \$1,266,000 | \$0 | \$1,266,000 |
| Small Scale Drawdown | 80 | \$97,000 | \$0 | \$97,000 |
| Spring Lake Islands | 530 | \$3,895,000 | \$0 | \$3,895,000 |
| Spring Lake Peninsula | 30 | \$448,000 | \$0 | \$448,000 |
| Trempeleau | 6,487 | \$5,835,000 | \$0 | \$5,835,000 |
| Total: | 30,696 | \$58,574,226 | \$243,000 | \$58,817,226 |

| Field Station | Total Cost |
|---|--------------|
| USGS - Upper Mississippi River Environmental Science Center | \$35,154,000 |
| State of Wisconsin, La Crosse Biological Field Station | \$10,293,000 |



BUILDING STRONG®

Future Projects **Wisconsin**

| Project Name | Acres Restored | Federal Cost | Non-Federal Cost | Total Cost |
|--|----------------|---------------------|------------------|---------------------|
| Capoli Slough | 820 | \$9,450,000 | \$0 | \$9,450,000 |
| Lake Winnebago | 5,170 | \$5,000,000 | \$0 | \$5,000,000 |
| Lock & Dam 3 | 660 | \$9,100,000 | \$0 | \$9,100,000 |
| Lower Pool 10 Island and Backwater Complex | 2,340 | \$6,000,000 | \$0 | \$6,000,000 |
| McGregor Lake | 1,000 | \$6,500,000 | \$0 | \$6,500,000 |
| Snyder Slough Backwater Complex | 2,064 | \$16,800,000 | \$0 | \$16,800,000 |
| Turkey River Bottoms Delta and Backwater Complex | 3,638 | \$18,700,000 | \$0 | \$18,700,000 |
| Total: | 15,692 | \$71,550,000 | \$0 | \$71,550,000 |



BUILDING STRONG®

Other


BUILDING STRONG®



Thresholds in the Response of Free-Floating Plant Abundance to Variation in Hydraulic Connectivity, Nutrients, and Macrophyte Abundance in a Large Floodplain River

AUTHORS: Shawn Giblin, Jeff Houser, John Sullivan, Heidi Langrehr, Jim Rogala & Ben Campbell

Duckweed and other free-floating plants (FFP) can form dense surface mats that affect ecosystem condition and processes, and can impair public use of aquatic resources

Wetlands
DOI 10.1007/s13157-013-0508-8

Thresholds in the Response of Free-Floating Plant Abundance

Questions addressed:

1. What are the relations between FFP biomass, water velocity, aquatic macrophyte cover and water column N and P concentrations?
2. Do changes in nutrient concentrations across gradients of hydraulic connectivity and season result in temporal and spatial patterns in FFP tissue nutrient content and nutrient limitation of free-floating plants?
3. If so, can thresholds be detected for these parameters?

Thresholds in the Response of Free-Floating Plant Abundance

Results:

- ✦ Relatively small changes in water velocity, aquatic macrophyte cover, water depth, and nutrient concentrations can produce relatively large changes in FFP biomass indicating that there are indeed thresholds for these parameters.
- ✦ Favorable environmental conditions for FFP include warm water temperature, shallow water depth, and low water velocity. The presence of rooted aquatic macrophytes (submersed, rooted floating-leaved, and emergent), which act as a substrate to hold FFP in place, is also associated with high FFP biomass.
- ✦ Once physical thresholds for water velocity, rooted macrophyte cover, and water depth were met, nitrogen and phosphorus concentration then became important factors.

Thresholds in the Response of Free-Floating Plant Abundance

Conclusions

- ✦ The limiting variable for FFP production appears to vary spatially and temporally, and such variability is likely associated with connectivity.
- ✦ These threshold estimates, along with observed patterns in nutrient limitation (Houser et al. 2013), will help managers and project planners understand likely effects of project design on FFP abundance.
- ✦ Any restoration or management project that alters connectivity should consider the possible effects on nutrient concentrations and FFP abundance that may result from the project or action.

Nutrient cycling, connectivity and free-floating plant abundance in backwater lakes of the Upper Mississippi River

AUTHORS: Jeff Houser, Shawn Giblin, Bill James, Heidi Langrehr, Jim Rogala, John Sullivan & Brian Gray

High concentrations of nutrients (nitrogen and phosphorus) may adversely affect the Upper Mississippi River by promoting excessive growth of free floating plants such as duckweeds and filamentous algae (metaphyton).

The objective of this study was to better understand the factors that are associated with the appearance of dense surface mats of free-floating plants (FFP) and the consequent effects on the river ecosystem.

River Systems Vol. 21/1, p. 71–89

Nutrient cycling, connectivity and free-floating plant abundance....

Questions addressed:

1. How do water column nutrient concentrations and sediment nutrient concentrations and flux vary in backwater lakes that differ in their connectivity with the main channel?
2. Is free-floating plant abundance associated with water column nutrient concentrations?
3. What do free-floating plant tissue nutrient concentrations indicate regarding nutrient limitation of free-floating plants?
4. Is abundant free-floating plants associated with low dissolved oxygen and declines in SAV abundance?



Nutrient cycling, connectivity and free-floating plant abundance....

Result Highlights:

- Greater connectivity with the main channel was associated with higher water column nitrate concentration and higher rates of sediment phosphorus release
- Changing the connectivity of off-channel aquatic areas will likely affect sediment and water column nutrient concentrations and therefore the nutrients available for FFP growth
- Greater FFP abundance was associated with less dissolved oxygen.



Nutrient cycling, connectivity and free-floating plant abundance....

Conclusions

- Connectivity of off-channel areas are deliberately managed to improve habitat for centrarchid fishes and waterfowl, and managing this connectivity has been discussed as a way to reduce nutrient transport to the Gulf of Mexico.
- Our results add to studies that call for the effects of changes in connectivity on local nutrient cycles and therefore FFP abundance and summer oxygen conditions to be considered when planning HREPs and other river management actions.



Additional UMRR-EMP LTRMP Staff Activities



Photo by Sam Dousson



See a complete list on the A-Team Corner
http://www.umesc.usgs.gov/ltrmp/documents/fy14_1st_qrt.pdf

UMRR-EMP

FY14 First Quarter Additional UMRR-EMP LTRMP Staff Activities

Megan Moore provided a U.S. Army Corps of Engineers St. Louis District biologist with information on how to record vegetation data collected from HREP monitoring so that it is comparable to LTRMP data.

Shawn Giblin provided water quality data to WDNR Fisheries Biologist, Dave Heath in response to questions regarding poor fish community statistics in the Reno Bottoms Area in Pool 9.

LTRMP data and technical reports were used extensively by MPCA to develop proposed TSS and TP criteria for MN Rivers and Lake Pepin.

Blake Bushman, Andy Casper, Rich Pendleton, and Levi Solomon assisted with collection of fish and water quality parameters for Dr. Wen-Tso Lui, Professor of Civil and Environmental Engineering, University of Illinois. Dr. Lui is investigating gut microbiota in relation to the detection of Asian carp.

FY14 First Quarter Additional UMRR-EMP LTRMP Staff Activities

Dave Bierman attended a Pool 11 HREP (Mud and Sunfish Lakes) Performance Evaluation Report Planning meeting with Iowa and Wisconsin DNR fisheries management staff and USACE staff.

Lake City field station staff presented: "Temporal trends in water quality and biota in segments of Pool 4 above and below Lake Pepin: indications of a recent ecological shift". at the St. Croix Research Rendezvous.

Brian Ickes served as an invited expert to the USFWS Eastern Tallgrass/Big River LCC. Contributions included advising on fish species that should be considered as surrogate species for conservation planning activities and actions.

Mel Bowler discussed a research project with a Loras College student on fisheries, invertebrate, and water quality sampling in the Catfish Creek Watershed of Dubuque County, Iowa.

**FY14 First Quarter
Additional UMRR-EMP LTRMP Staff Activities**

Andy Casper and Levi Solomon hosted a delegation of Chinese engineers from the Three Gorges Corporation. Included tour of the field station, discussion of mission and sampling techniques of LTRMP and other IRBS programs along with dissemination of past publications, telemetry equipment, and general information.

Eric Ratcliff and Ben Lubinski presented information about the LTRMP and INHS to approximately 160 high school seniors attending a "Who Works on the River" career fair event at the National Great Rivers Research and Education Center.

Senator Tammy Baldwin and staffers visited UMESC on Dec 6 to learn about the Center programs including the UMRR.



The Inaugural UMRR Science Meeting

11-13 Feb 2014 at UMESC, Summary for EMP-CC by B. Johnson

- First UMRR Science Meeting - part of the Science Coordination Process. (Plan to alternate every other year with a meeting for monitoring aspects of UMRR)
- ~70 people max = LTRMP staff + HREP staff + outside collaborators engaged in science on the UMRS.
- Read-ahead packet of summaries of work on research frameworks and other current projects, as submitted by Principle Investigators.
- Primary focus on recent work (last 1-2 years) and future work in the next 3 or so years.
- Primary goals of communication and interaction were well met. Agenda was designed to allow time for unstructured interaction.



The Agenda – major sessions

1. Updates on the 3 primary research frameworks
 - a) Landscape: Nate De Jager, +GIS staff at UMESC
 - b) Mussels: Teresa Newton, Steve Zigler, Patty Ries (highly leveraged with USGS base funding)
 - c) Aquatic Veg: Yao Yin, Megan Moore (MN), Heidi Langrehr (WI), Jim Rogala.All 3 frameworks are at a stage where interaction with HREPs to test hypotheses and predictions would be very useful.
2. HREP science needs and Program processes that affect science
 - a) Hubbell, Theiling, Hendrickson, Ingvalson, Hagerty, McCain, Potter



The Agenda – major sessions

- 3) Water Quality: Houser, Giblin (WI), Popp & Burdis (MN), Sobotka (MO), Gittinger (IL), Kreiling & Rogala.
- 4) Fisheries: Ickes, Phelps (MO).
- 5) Cooperator presentations:
 - a) J. Remo, SIU: Habitat modeling and reference conditions (Chevrans at St. Louis)
 - b) A. Casper (LTRMP Havana): Conceptual modeling for side channel restoration.
 - c) K. Lubinski (UMESC): Large Rivers Initiative for USGS Midwest Region. Promoting floodplain restoration of the Maquoketa River as a primary project within this initiative.



The Agenda – overall

- Lots of good discussion during all sessions, especially related to the possible interaction with HREPs to address questions and issues.
- Need ways to get more/better communication regarding HREP progress to LTRMP staff and other scientists:
 - What projects are in the pipeline & their characteristics.
 - New HREPs being identified.
 - New PDT's being formed.
 - Where a project is within the process, etc.
- HREP database being developed by Corps should be very useful.
- May need an annual progress update on HREPs.
- Scientists need more info about the Huron Island project (Pool 18). Has science potential re: forests, aquatic veg, mussels, overwintering.
- 3 prospects for HREPs to address science related to mussel habitat:
 - Huron, Harpers, Pool 26



The Agenda – final session

- Last day: Open for meeting of small groups to pursue specific ideas.
 - Self-organized and self-actuated
 - Potential for research proposals to come from these groups.

Next steps

- Next step is developing the 3-year research plan (staff at UMESC).
 - Purpose: consider Program priorities, where we are now, where we want to go in the next 3 years (continuing work, new work, HREPs)
 - Not strategic planning, but a near term outlook.
 - Not developing the next 3 Scopes of Work. But, priorities & projects in the plan will be used to help determine what to include in annual SOW's.
 - Should update the plan at least every 2 years



EMP CC Quarterly Meeting February 26, 2014

Karen H. Hagerty
UMRR-EMP LTRM Program Manager
MVR



US Army Corps of Engineers
BUILDING STRONG®



FY14 UMRR-EMP Science Support for Restoration

Science Support Proposals

- Initial review by A-Team (August)
 - ▶ Objectives: transparency and coordination
 - ▶ Highest priority proposals with detailed SOWs
 - Funded mid-Feb



BUILDING STRONG®

FY14 Funded Science Support

| Funded? | Cost | TITLE | Proponent |
|---------------------------------------|------------------|---|--------------|
| Y (MIPR Feb 2014) | \$113,276 | Seamless elevation data | UMESC, Corps |
| Y (MIPR Feb 2014) | \$209,319 | Land Cover / Land Use data and Accuracy Assessment/Validation for UMRS* | UMESC, Corps |
| Y (LTRMP SOW, FS travel) | \$8,000 | Science planning meeting in winter of FY14 | UMESC, Corps |
| Y (USACE labor S) | \$5,000 | Development of Standardized HREP Non-Forested Wetland Plant Sampling Protocol | Corps |
| Y (USACE labor S) | \$5,000 | Development of Standardized HREP Floodplain Forest Sampling Protocol | Corps |
| Y (MIPR Feb 2014, USACE labor+travel) | \$95,547 | Predictive Model for Aquatic Cover Types | Corps |
| NA, work under base LTRMP SOW | \$0 | Pool 12 Overwintering HREP adaptive management fisheries response monitoring | IA |
| TOTAL | \$436,142 | | |



BUILDING STRONG®

FY14 UMRR-EMP Science Support for Restoration

- Remaining priority proposals for revisions
- Final proposal review by A-Team (21 Feb)



BUILDING STRONG®

| COST | Proposal Title | Proponent |
|------------------|---|-----------|
| \$48,648 | UMRS Vegetation Handbook | UMESC |
| \$17,749 | Phase 2 Geospatial Data Upgrades | UMESC |
| \$62,246 | Spatial Data Query Tool | UMESC |
| \$61,689 | UMRS Data Map | UMESC |
| \$37,064 | Assessing system-wide hydrodynamic model availability to support ecosystem restoration | Corps |
| \$37,604 | Development of vital rates to assess the relative health of UMRS mussel resources | UMESC |
| \$95,549 | Validation of a Mussel Community Assessment Tool for the Upper Mississippi River System | UMESC |
| \$23,516 | Effects of nutrient concentrations and zooplankton on phytoplankton abundance and community composition | WI, UMESC |
| \$20,221 | Ecological Shifts in a Large Floodplain River during a Transition from a Turbid to Clear Stable State | WI |
| | 1. Asian Carps Activities (#4) Invasive carp population demographics in the UMRS: an evaluation of the dynamic rate functions | MO |
| | 2. Asian Carps Activities (#5) Identifying recruitment sources of Asian carp | MO |
| \$70,319 | 3. Asian Carps Activities (#6) Effects of Asian Carp on the diets of native piscivores in the UMRS | MO |
| | 4. Asian Carps Activities (#7) Early life history of invasive carp in the UMR Basin | MO |
| \$65,000 | LTRMP FY14 equipment (WI airboat only, estimated cost) | WI, Corps |
| \$629,604 | SUBTOTAL PROPOSALS | |

FY14 UMRR-EMP Science Support for Restoration

- FUNDED \$ 436,142
- PENDING \$ 629,604
- TOTAL \$1,065,746



BUILDING STRONG®

Documenting the use of the Long Term Resource Monitoring Programs Fish Monitoring methodologies throughout the Midwest

Levi E Solomon and Andrew F Casper
 Illinois River Biological Station
 Illinois Natural History Survey
 University of Illinois

UMRR-EMP Mission is more than the Upper Mississippi

- UMRR-EMP Mission: Restore, Protect, and Monitor Upper Mississippi River System
- LTRMP Mission: Provide information to decision makers, monitor resource change, better understanding of UMRS
- Implicit: USACE/USGS are also leaders in monitoring and science around the country/world
- Expanding influence outside the UMRR-EMP:
 - China, Pennsylvania, Iowa, Illinois...
- Standardized methods are a pathway...

Standardized methods are a pathway....

- National AFS: 2012
- Gutreuter et al.
- Quantify spread of use?
- Possible?
- Useful?



- "We cite Gutreuter on almost everything we do on rivers and streams"
 -Graduate student, Eastern IL University

Development & Implementation

- UMRR-EMP/LTRMP personnel, background research
- Short, to the point
- Online: SurveyMonkey.com
- 9 multiple choice questions
- Distribution: State AFS
 - Upper Mississippi River Conservation Committee (UMRCC)
- Two notices

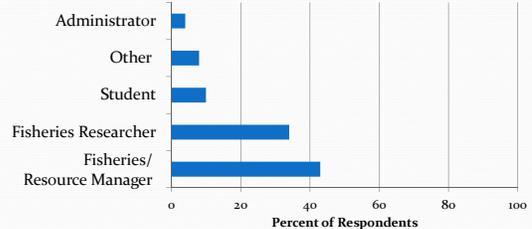


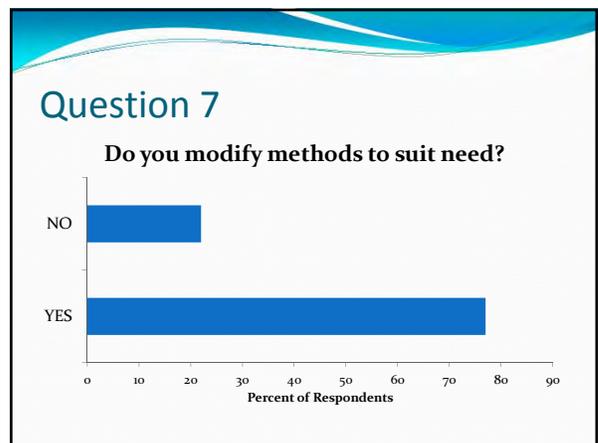
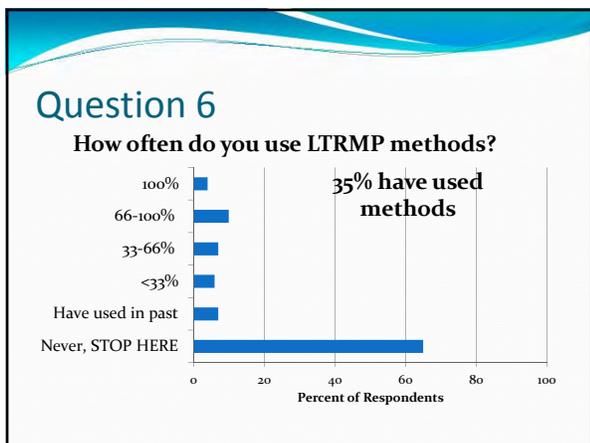
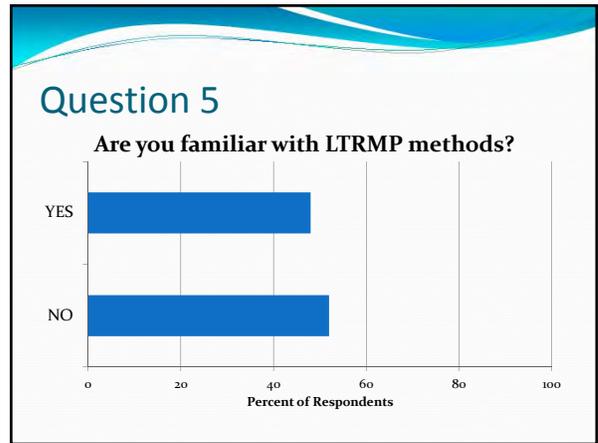
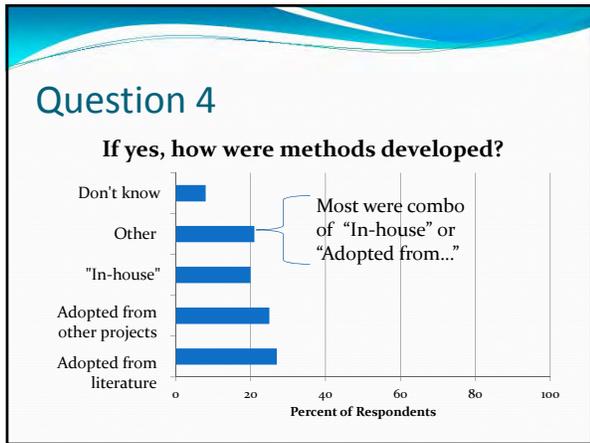
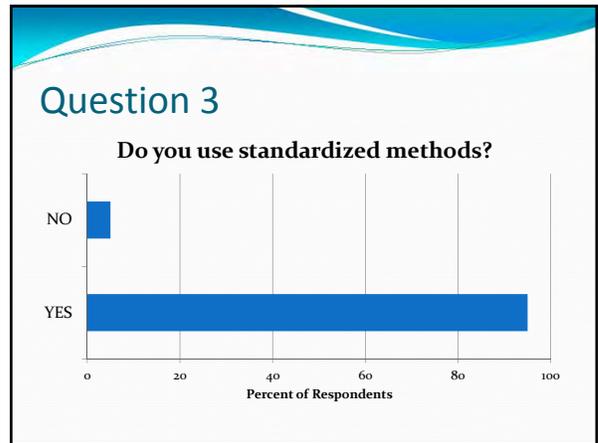
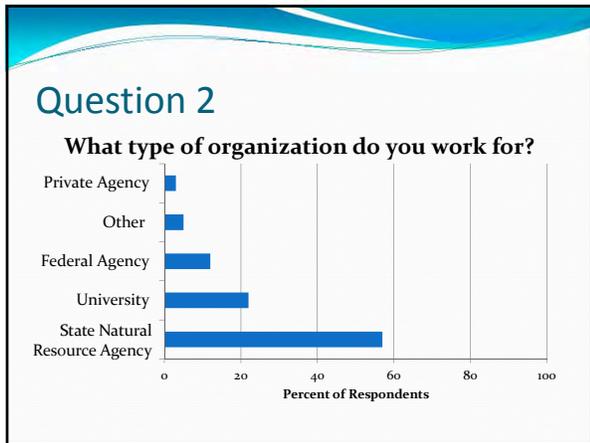
Participation

- ~2000 reached via state AFS list-serves
- ~525 reached via UMRCC
 - OVERLAP
 - ~2000 reached by survey
- 227 respondents
 - Feb 25- May 2
 - ~11%
 - Fair-Good participation
- Most (97%) completed survey in <3 min

Question 1

How would you describe yourself?





Results: Fish/Resource Managers

- 43 % of respondents (98 of 227)
 - 98% use standard methods
 - 48% familiar with LTRMP methods
 - 31% have used LTRMP methods in past

Results: Researchers

- 34% of respondents (78 of 227)
 - 95% use fish standard methods of some kind
 - 53% familiar with LTRMP fish methods
 - 42% have used LTRMP fish methods

Discussion

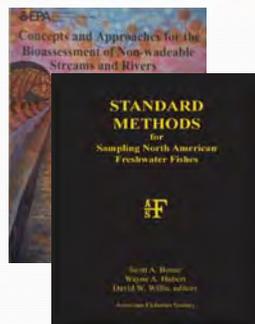
- Good participation: ~11%
 - Timing: Spring
 - No familiarity, no participation?
- Low sample size makes it hard (impossible) to extrapolate results
 - Have 42% of ALL researchers used LTRMP methods in past?

Discussion

- Results influenced by current/former LTRMP staff members?
 - More likely to participate: inflate results
 - Minimal, low turnover rates throughout LTRMP
 - Pride for UMRR-EMP: technicians get start with LTRMP, move on to salary level positions
 - Upper levels biologists

Discussion

- This survey is only one tool
 - Polling UMRR-EMP Staff
 - Survey existing literature
- Future research
 - Other components (Vegetation, Water quality, Macroinverts)
 - Formal effort
 - Time, \$



Cite Gutreuter et al (1995) multiple times in multiple chapters

Conclusion

- Nearly all fisheries professionals use standard methods
- Many professionals in Midwest are familiar with LTRMP's methods
- Safe to say LTRMP's influence has grown beyond expectations
- Only 1 tool to document growth of LTRMP/UMRR-EMP

Acknowledgements



- UMRR-EMP personnel
- Brian Ickes, Jennie Sauer
- All State AFS Chapter representatives
- Scott Yess: UMRCC
- ALL participants from ALL states

Pool 12 Overwintering HREP Project

Upper Mississippi River Restoration – Environmental
Management Program
(UMRR-EMP)

February 26th, 2014

Project Overview

- Jo Daviess County, IL
- Pool 12 between river miles 563 and 573
- Part of the U.S. Fish and Wildlife Service's Upper Mississippi River National Wildlife and Fish Refuge, Savanna District
- Sponsor – U.S. Fish and Wildlife
- Proponents – IA DNR and IL DNR

Project Goals and Objectives

| Goal | Objectives | Potential Project Features |
|---|---|--|
| Restore and Protect Off-Channel Aquatic Habitat | <p>Increase the amount of deep water habitat in the backwater lakes complex of Pool 12 as measured by acres to provide pool-wide overwintering habitat for fish. Target depth is 6 to 8 feet.</p> <p>Increase depth diversity in backwater lakes complex of Pool 12 as measured by acres to provide year round habitat for fish.</p> <p>Increase sustainability of aquatic habitat in the backwater lakes complex of Pool 12 as measured by acres by decreasing the sedimentation in the complex.</p> | <p>Excavate channels in backwater areas.</p> <p>Construct deflection berms, higher-level terraces, and/or islands from dredged material.</p> |
| Restore Floodplain Forest Habitat | <p>Increase areal coverage in acres of forest stands with hard mast-producing trees as a dominant or component species in floodplain forest areas surrounding the backwater lakes of Pool 12.</p> | <p>Establish native mast-producing trees on high elevation areas.</p> <p>Construct areas with elevations above the 2-year flood recurrence</p> |

Existing Conditions

- More than 50 percent of Pool 12's floodplain is covered by permanent water.
- Off-channel, backwater areas have become shallower and are likely to transform from deep aquatic habitat to shallow aquatic habitat.
- Homogenous floodplain forest.

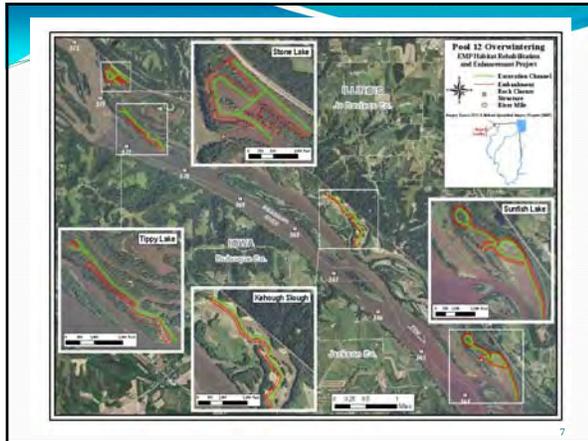
Evaluated Measures

Potential measures were developed from the Environmental Design Handbook

- Channel Dredging
 - Hydraulic dredging
 - Mechanical dredging
- Containment Areas
 - Upland Placement
 - Hydraulic Containment within floodplain
 - Low-level containment areas
- Berms
 - Land berms
 - Aquatic berms
- Mast Tree Establishment
 - Container Stock (Root Production Method)
 - Container Stock with Advanced Natural Regeneration
 - Container Stock with Button Bush Cover Crop
 - Direct Seeding
- Rock Closure Structures

Evaluated Sites

- Sunfish Lake
- Fishtrap Lake
- No Name Lake
- Kehough Slough
- Hires Lake
- Tippy Lake
- Stone Lake
- Molo Slough



TSP – Alternative 15

- PDT recommends Alternative 15 as the TSP.
- Alt 15 includes restoration at four backwater sites.
- Fully meets all Project goals and objectives
- The only alternative that meets Program goals and objectives
- Analysis of radio tracking and pool-wide population systemic benefits monitoring data will answer the ultimate questions of how much backwater overwintering habitat is required within a given area, as well as the spatial distribution of the backwater restoration sites to achieve reach-level fishery response.

Habitat Benefits

- **Year-round aquatic habitat benefits** – while important, were not considered to be the limiting factor in sustaining fish populations, and therefore were not quantified.
- **Site specific overwintering benefits** – quantified using the Bluegill Wintering Habitat Suitability Index (Blue Book) model.
- **Systemic benefits** – qualitatively discussed, but lacking a certified model to adequately quantify these benefits.
 - Monitoring data developed as part of this project will be used in the future to quantify systemic benefits.
- **Mast tree planting benefits** – not quantified due to lack of certified model. However, cost of implementing the tree planting plan is less than 1% of the project construction costs, while the ecosystem benefits of mast trees are well established.

Monitoring and Adaptive Management

Tool to address areas of risk and uncertainty

- **Site Specific Monitoring** – High likelihood of success for achieving overwintering habitat benefits at individual backwater sites.
- Low risk/low uncertainty.
- Monitoring will include: water quality monitoring for desired velocity and dissolved oxygen; sedimentation transects/bathymetry; and tree survival rates (Regen survey).

Monitoring and Adaptive Management

- **Systemic Benefits Monitoring (Programmatic Adaptive Management)** – Low risk, moderate degree of uncertainty for pool-wide fish population impacts.
- Prior HREP monitoring considered fish condition and behavior within backwaters, this study considers movement out of overwintering sites.
- Robust pre-project monitoring plan that has been ongoing since 2006.

Systemic Benefits Monitoring

- Multiple lake design allows hypothesis testing for pool-wide fish population effects, within backwater lake effects, and spring dispersal effects.
- Data gathered will help answer fundamental questions regarding the amount, size, and spacing of deep backwater habitat.

Systemic Benefits Monitoring

- This approach to Monitoring and Adaptive Management will help achieve programmatic learning objectives.
- The knowledge gained from project monitoring will be applied to future HREPs.

13

Systemic Benefits Monitoring

- Hypotheses regarding pool-wide fish community response:
 - Management intervention in Pool 12 backwaters (dredging) will increase the pool-wide relative abundance of Centrarchids compared to the Pool 13 control.
 - Management intervention in Pool 12 backwaters (dredging) will increase the pool-wide biomass of Centrarchids compared to the Pool 13 control.
 - Management intervention in Pool 12 backwaters (dredging) will increase the pool-wide condition (relative weight) of Centrarchids compared to the Pool 13 control.
- Hypotheses regarding backwater lake effects:
 - Relative abundance of overwintering Centrarchids will be greater in restored lakes compared to control lakes.
 - Biomass of overwintering Centrarchids will be greater in restored lakes compared to control lakes.
 - Condition (relative weight) of overwintering Centrarchids will be greater in restored lakes compared to control lakes.
 - Fish community age structure will increase in restored lakes compared to control lakes.
 - Fish habitat area, measured as Utilization Distance, will increase in restored lakes compared to control lakes.
- Hypotheses regarding fish dispersal from backwater lakes:
 - Fish will disperse farther from restored lakes compared to control lakes.
 - More fish will disperse from restored lakes compared to control lakes.

14



Construction Costs for 4 Lakes

- Estimated Construction Costs: \$17.5m
- Fully Funded Estimate: \$23.1m

| Name of Lake | Construction Cost per Lake* |
|--------------|-----------------------------|
| Sunfish | \$6.4m |
| Stone | \$3.9m |
| Tippy | \$3.0m |
| Kehough | \$4.2m |

*Project First Costs including construction, site specific monitoring and adaptive management, systemic benefits monitoring, and contingency. Does not include PED or construction management.

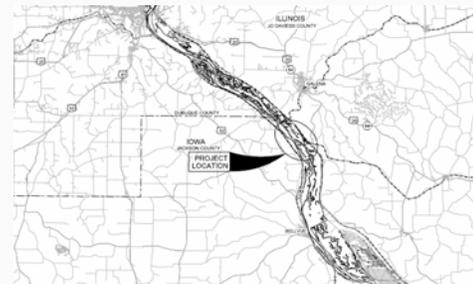
15

Construction –Stage I Sunfish Lake

- Awarded Contract(August 2014) to Dubuque Barge and Fleeting Service
- Contract price: \$4,015,575.60
- 745 calendars to complete the base and all options (3 options)

17

Construction –Stage I Sunfish Lake



18

Construction –Stage I Sunfish Lake



19

Construction –Stage I Sunfish Lake



20

Construction –Stage I Sunfish Lake



21

Construction –Stage I Sunfish Lake



22

Construction –Stage I Sunfish Lake



23

Construction –Stage I Sunfish Lake



24

Stage II-Stone Lake

- Start plans and specification FY 14 and award FY15

