Upper Mississippi River Restoration Program Coordinating Committee Quarterly Meeting

February 24, 2016

Highlights and Action Items

Program Management

- **On December 18, 2015, Congress enacted the FY 16 Consolidated Appropriations Act, which funds UMRR at $19.787 million and includes $20 million for the Corps' environmental restoration and compliance (ERC) programs and projects. The Corps published its FY 16 work plan on February 9, 2016 that allocates an additional $1.387 million of the ERC money to UMRR. This brings UMRR's total FY 16 budget to $21.174 million.** Ten Congressional members sent a February 1, 2016 joint letter to President Barack Obama requesting that UMRR receive $8.8 million of the additional FY 16 ERC money.
- The program's FY 16 internal allocations under the $21.174 million budget are as follows:
  - Regional Administration and Programmatic Efforts – $891,000
  - Regional Science and Monitoring – $6,567,000
    - Long term resource monitoring – $4,500,000
    - Regional science in support of restoration – $963,000
    - Regional science staff support – $129,000
    - Habitat project evaluations – $975,000
  - Habitat Restoration – $13,716,000
    - Regional project sequencing – $250,000
    - MVP – $3,631,600
    - MVR – $6,318,500
    - MVS – $3,515,900

  [Note: The District habitat restoration funds are not reflective of the historical split based on river mileage, and instead are reflective of the project priorities as identified in the budget process.]
- **The President's FY 17 budget was published on February 9, 2016 and includes $20 million for UMRR.** On November 12, 2015, eight Congressional members jointly sent a letter to President Barack Obama seeking $33.17 million for UMRR in his FY 17 budget.
- Hubbell outlined a road map for implementing the 2015-2025 UMRR Strategic Plan that includes the following steps:

  1) Advance the 2015-2025 UMRR Strategic and Operational Plans' guidance for program implementation regarding the four goals for enhancing restoration and advancing knowledge of the UMRS ecosystem, engaging and collaborating with other key individuals and organizations in-river and in the watershed, and facilitating a strong, unified interagency partnership in implementing the program.

2) Define ecological resilience concepts as they apply to the UMRS ecosystem, including developing quantifiable indicators of ecosystem resilience to measure the status and trends of various resilience attributes.

3) Renew the UMRR Habitat Needs Assessment (HNA) that incorporates the best available knowledge and ecological resilience concepts.

4) Identify a suite of new habitat projects that improve the UMRS ecosystem's health and resilience, reflecting insights gained from the renewed HNA.

5) Formulate and construct the identified suite of habitat projects, using the Project Planning and Sequencing Framework.

6) Evaluate and learn from constructed habitat projects in an effort to inform future restoration and management of the UMRS ecosystem.

7) Evaluate UMRR's progress in advancing the 2015-2025 UMRR Strategic Plan and continue to learn and improve as a program and in implementing restoration and science techniques.

- **In response to a request from the UMRR Coordinating Committee, leads of the ecological resilience and HNA efforts will provide the Committee with a one- or two-page plan for integrating the two efforts and using them to inform the identification and selection of the next generation of habitat projects.** This document will include:
  - Roles and membership of any workgroups and subgroups
  - A communications scheme for ensuring cross-over between the ecological resilience, HNA, and project identification and selection processes
  - The scope of the efforts (e.g., spatial scale analyzed) and anticipated products and outcomes
  - How the efforts will connect with local stakeholders and watershed programs and projects
  - When and how to involve nonprofits as potential cost share sponsors of UMRR's habitat projects
- **The UMRR Coordinating Committee endorsed the draft Operational Plan for the 2015-2025 UMRR Strategic Plan as provided in the read ahead packet.**
- **A revised draft 2016 UMRR Report to Congress is scheduled for distribution for partnership review in March.** Marv Hubbell will request MVD's and Headquarters' input on the draft report, focusing most specifically on the draft conclusions and policy recommendations to Congress.
- **The UMRR Coordinating Committee selected the following new tagline and logo for UMRR, with minor modifications to the logo design. [This is the version that was presented at the meeting — it does not reflect the minor changes desired.]**
  - **"Leading – Innovating – Partnering"**

- **Kevin Bluhm will present recommendations for developing a UMRR communications plan at the UMRR Coordinating Committee's May 25, 2016 quarterly meeting.**
- District staff are currently in the process of recalibrating the project boundaries of all UMRR's completed habitat projects based on maps and other information. Staff are using the projects' feasibility study area to determine the acres benefited, and have developed a white paper to outline the process for future use. It is the Corps' standardized approach to delineating boundaries for all of its projects nationally. An internal review was completed in each UMRS Corps District and then

project sponsors reviewed the draft updated boundaries. **Michael Doughtery will send U.S. Fish and Wildlife Service and the states' UMRR Coordinating Committee members the project boundary delineation white paper and the updated project boundaries with a request for their review.**

- **Jennie Sauer and Jeff Houser (USGS), Tim Yager (USFWS), Jim Fischer (WI DNR), Gretchen Benjamin (TNC), and Kirsten Mickelsen and Dru Buntin (UMRBA) volunteered to serve on a planning committee for the UMRR's 30th year of success. Any other individuals interested in volunteering are asked to contact Marv Hubbell. The event will likely be held August 2016 in La Crosse in conjunction with the Mississippi River Commission's low water inspection trip and the UMRR's quarterly meeting. The planning committee will provide a proposed plan at the UMRR Coordinating Committee's May 25, 2016 meeting.**

Long Term Resource Monitoring

- Accomplishments of the first quarter of FY 2016 include:
    - Publication of the fish habitat suitability models on the internet at http://www.umesc.usgs.gov/data_library/fisheries/habitat_models.html.
    - Completion of the spatial query tool, which includes long term resource monitoring, land cover, and bathymetric data. It is available at http://www.umesc.usgs.gov/ltrmp/spatial_data_query_tool.html.
    - Publication of 1) a technical report, Accuracy assessment/validation methodology and results of 2010–11 land-cover/land-use data for Pools 13, 26, La Grange, and Open River South, Upper Mississippi River System; and 2) a General Classification Handbook for Floodplain Vegetation in Large River Systems.
- Since the changes in naming convention from EMP to UMRR and LTRMP to LTRM, USGS has completed substantial work in changing naming instances on its UMRR LTRM website. When the name changes occurred in 2014, there were 14,917 instances of long term resource monitoring and 69,467 instances of LTRMP in 13,340 web files. As of February 1, 2016, there were 7,986 instances of long term resource monitoring and 52,827 instances of LTRMP in 12,174 web files.
- The February 16-18, 2016 UMRR Long Term Resource Monitoring Science Meeting was attended by 50 interagency program partners. The meeting included a series of presentations and discussions about where we've been – research completed and ongoing work, where we are – updates on current research frameworks, and where we are going – ideas for new frameworks and future work. In addition, the meeting included discussions on assessing the UMRS's resilience and the HNA II.
- Jeff Houser provided an overview of UMRR's effort to define and apply the concepts of ecological resilience to the UMRS. A workgroup convened a January 5-7, 2016 workshop to discuss the theoretical definitions of resilience and begin to brainstorm how conceptual models might be used to understand resilience at different spatial scales, at different locations, and in terms of different ecosystem processes. A suite of draft conceptual models is being developed with input from many various program partners. **Houser will provide more refined, draft conceptual models of UMRS ecological resilience at the May 25, 2016 UMRR Coordinating Committee quarterly meeting.**
- **Larger-than-anticipated FY 15 carry-over of $180,745 is now available for science in support of restoration in FY 16. This is mostly due to Wisconsin DNR salary savings from leaving positions vacant. The UMRR Coordinating Committee agreed with the Corps' recommendation to allocate $55,980 to spatial patterns of mussels and $7,775 to fish trajectory analysis as these are continuing research efforts. Wisconsin DNR submitted a proposal in lieu of the salary money to evaluate biological shifts due to invasion by curly-leaf**

pondweed. Tim Yager expressed support for this research for informing management. UMRR Coordinating Committee members expressed concern that this decision-making process deviates from the typical science funding allocation solicitation and review process. Given that there was some coordination with the field stations, the UMRR Coordinating Committee agreed to consult with their respective agency staff and provide Karen Hagerty, in a week, with a vote of yay or nay of whether to fund the curly-leaf pondweed proposal. [Note: Subsequent to the meeting, the Committee endorsed the recommendation to fund the proposal in FY 16.]

- Shawn Giblin reported that A-Team met via web-based conference call on January 28, 2016. The call focused on the ongoing efforts that integrate science and restoration, including discussion on ecological resilience, HNA II, and fish indicators. **The next A-Team meeting is scheduled for April 27.**
- Brian Ickes presented on new and improved fish habitat suitability models that incorporate UMRR's long term resource monitoring data and use a statistical approach to predict the sample-site probability of occurrence of 28 UMRS fish species.

Habitat Restoration

- Karla Sparks (USACE) and Cathy Henry (USFWS) presented on the Keithsburg Division habitat project, which is located in Pool 18 and within the Port Louisa National Wildlife Refuge.
- MVR is replacing Boston Bay with Turkey River Bottoms in the planning queue and is considering constructing DeLair habitat project before Boston Bay as well based on USFWS's preference. MVR's design work is focusing on Huron Island Stage II and Pool 12 Overwintering Stage III. The District is fully funding construction of Huron Island Stages I and II and Pool 12 Overwintering Stage III in FY 16. Rice Lake habitat project sustained some damages to the electrical box in the water control structure pumps as a result of two historic floods this year on the Illinois River. The Corps anticipates repairing the damages soon.
- MVP is doing about $1 million to $2 million additional dredging work in North and Sturgeon Lakes. A dedication ceremony for Capoli Slough is scheduled for May 13 in Ferryville, Wisconsin.
- MVS's current planning priorities are Rip Rap Landing, Piasa and Eagles Nest Islands, and Harlow and Open River Islands. The District is working on performance evaluation reports for Calhoun Point, Dresser Island, and Clarksville Refuge. MVS continues design work on Clarence Cannon and Ted Shanks and construction on Ted Shanks, Pools 25 and 26 Islands, and Batchtown. It is anticipated that Batchtown will be closed out in FY 16.
- **At the May 25, 2016 UMRR Coordinating Committee quarterly meeting, District staff will present on the four stages of habitat project development that the Committee agreed to evaluate using Lean Six Sigma techniques for potential process improvements, as well as a proposed process for undertaking the evaluation. The four stages include initial feasibility planning, evaluation of the existing ecological condition, plan formulation, and draft environmental assessment report. As requested by the Committee, the Corps will develop fact sheets that explain these stages in greater detail including partners' roles.**
- The HNA II tri-team chairs developed a project management plan (PMP) for the HNA II effort. The planned scope and timeline of the HNA II development are included in the agenda packet. **In response to a request from the UMRR Coordinating Committee, Tim Eagan (USACE) will send the Committee an email outlining the scope and purpose of an HNA technical team with a request for members to name an individual from their respective agency to serve on the team.**
- Sara Schmuecker (USFWS) presented on the USFWS's newly updated Natural Resource Inventory.

- **The Corps and USFWS are teaming up to co-chair an HREP workshop in late August or September 2016**. These workshops used to be held biennially. The last one was held in 2006. The workshops provide an opportunity for sharing lessons learned and discussing issues associated with project development.

Other Business

- The UMRR Coordinating Committee expressed gratitude to Gary Meden for all of his work on the Upper Mississippi and especially for UMRR. Gary Meden is retiring on February 29.
- **Upcoming quarterly meetings are as follows:**
  - **May 2016 — St. Louis**
    - UMRBA quarterly meeting — May 24
    - **UMRR Coordinating Committee quarterly meeting — May 25**
  - **August 2016 — La Crosse**
    - UMRBA quarterly meeting — August 9
    - **UMRR Coordinating Committee quarterly meeting — August 10**
  - **November 2016 — Twin Cities**
    - UMRBA quarterly meeting — November 15
    - **UMRR Coordinating Committee quarterly meeting — November 16**

UMRR CC Quarterly Meeting
February 24, 2016

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)

US Army Corps of Engineers
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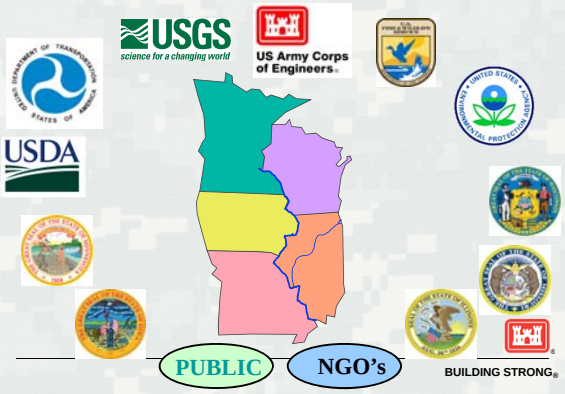
UMRR Program Partners



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FY 16

▪ President's Budget	$ 19,787,000
▪ House	$ 19,787,000
▪ Senate	$ 19,787,000
▪ Appropriation	$ 19,787,000
▪ FY16 Work plan	$ 1,387,000
▪ FY16 Total	$ 21,174,000

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FY16 Plan of Work

TOTAL FY16 Program	**$21,174,000**
Regional Administration and Program Efforts	**$ 891,000**
Regional Management	$ 595,000
Program Database	$ 95,000
Program Support Contract (UMRBA)	$ 76,000
Public Outreach	$ 60,000
2016 Report to Congress	$ 65,000
Regional Science and Monitoring	**$ 6,567,000**
LTRM (Base Monitoring)	$ 4,500,000
UMRR Regional Science In Support Rehabilitation/Mgmt. (MIPR's, Contracts, and Labor)	$ 963,000
UMRR Regional (Integration, Adapt. Mgmt, model cert.)	$ 129,000
Habitat Evaluation (split equally between MVS,MVR,MVP)	$ 975,000*
District Habitat Rehabilitation Efforts (Planning and Construction)	**$13,716,000**
Rock Island District	$ 6,318,500
St. Louis District	$ 3,515,900
St. Paul District	$ 3,631,600
HNA II	$ 250,000

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FY 17 PBUD

▪ President's Budget	$20,000,000
▪ House	$
▪ Senate	$
▪ PBUD in Feb. 2016	

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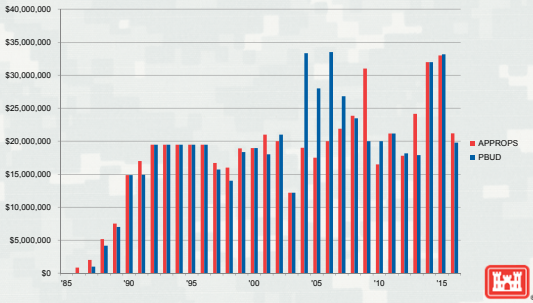
UMRR Program Appropriation/Budget History



FY1985 to FY2017

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UMRR Road Map

- Strategic Plan
  - New Vision and Mission Statements
  - Four Goals
  - Greater emphasis on measuring and reporting progress to HQ and OMB
- Operational Plan
  - Implementation details for Strategic Plan

UMRR Road Map

- Resilience
  - Supports the new UMRR Vision
  - Operationalize resiliency
  - Development of indicators of ecosystem resiliency
  - Refinement of indicators of ecosystem health
  - Interagency working group (UMESC, IL NHS, FWS, UMRBA, Corps
  - Conceptual linkage of HNA II with the identification of the next generation of rehabilitation efforts

UMRR Road Map

- Habitat Needs Assessment (HNA II)
  - Update of original HNA completed in 2000
  - Involvement of River Teams (FWWG, FWIC, RRAT tech, IRWG
  - Tri-Chairs (FWS, Corps, FWS)
    - Partnership Working Group

UMRR Road Map

- Next Generation of Habitat Projects
  - Link habitat needs to project identification and selection
  - Project Planning and Sequencing Framework
- Formulation of future habitat projects
- Post construction evaluation of habitat projects
- Program Evaluation

Operational Plan

- UMRR CC Adoption the Strategic Plan on Nov. 19, 2014
  - Amended the Plan by adding “an explicit intention to develop an implementation plan”.
- 11 member Committee was created and held it’s first meeting on Jan. 20-22, 2015

Operational Plan

- Key recommendations :
  - Communication Plan
  - Update HNA
  - Transparency
  - Increased focus on HREP’s with UMRR CC and River Teams

Operational Plan

- HREP Recommendations
  - Reviving the existing river teams
  - More detailed discussions of habitat rehabilitation efforts at quarterly meetings
  - Web based quarterly meetings so more can participate
  - Greater use of the UMRR Program Database
  - Initially use the HNA II Committee to work on issues
  - Bi-annual restoration/science meeting
  - Refinement of tools like
    - Fact sheets
    - Common understanding of AM

Operational Plan

- Endorsement

2016 Report to Congress

- 2016 Schedule
  - Feb. – Send final draft to Partners for final review.
  - March to May – Official MVD and HQ review
  - Sept. to Nov. – Design and graphics
  - Nov. 15 – Submit final RTC to MVD and HQ

2016 Report to Congress

- Draft Policy Recommendation Statements
  - Project Partnership Agreements (PPA)
  - UMRR-NESP Transition Plan

Communications Plan

- OMB budgeting under UMRR and not EMP
- Program Integration
- Strategic Plan
- Communications Plan

Communications Plan

- Branding (Narrow Concepts to One)
  - Logo
  - Tagline
- Kevin Bluhm

Public Communications and Outreach

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30 Years of Success

- Opportunity to highlight accomplishments
  - ►When
  - ►Where
  - ►How

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Upper Mississippi River Restoration Program

UMRR

Includes:
Main stem of Miss. & IL Rivers and nav. portions of Kaskaskia, St. Croix, Minn. Rivers

KEY POINTS

- UMRR Program is integral to fulfilling the direction of Congress to manage the UMRS as both a nationally significant ecosystem and navigation system.
- UMRR is the largest CG program on the Upper Mississippi River (MVS, MVR, MVP).
- UMRR includes two major elements. Habitat rehabilitation projects and base monitoring of key environmental features.
- To date the UMRR has benefited more than 105,000 acres of habitat. Since 1995 it has accounted for 50% of all the reported acres benefited nationally by the Corps of Engineers'.

CHALLENGES

- Full integration of management, restoration, monitoring, and research based on ecosystem resilience and health.
- Demonstrating to ASA(CW) that feasibility reports are used to formulate projects.
- Making changes to the national model PPA to address sponsor concerns.
- Efficient funding to reduce time and total costs of restoration.

WAY AHEAD

- Continued coordination with vertical team to address ASA(CW) questions.
- Linking rehabilitation, monitoring and science to measure Program impact on the UMRS.
- Maintain a strong regional partnership of 5 states, 5 federal agency's, and 3 Corps District s.
- Continued high program execution.
- Completion of the 2016 report to Congress.

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UMRR Monitoring & Science for 2016

- **2 SOWs in FY16**
  - ►SOW for LTRM base monitoring
    $4.5M
  - ►SOW for science in support (analysis under base)
    $.963M
- **Both SOWs together are equivalent to a fully funded UMRR LTRM element**
  $5,463,000 (FY 2016 funding)

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UMRR Monitoring & Science for 2016

MN	$511,766
WI	$523,176
IA	$453,463
IRBS	$385,618
NGREEC	$364,886
BRWFS	$379,786
States sub total	$2,618,694
equip	$184,163
field meetings	$6,834
science meeting travel	$4,791
added state travel	$3,502
statistics workshop	$5,941
STATES TOTAL	**$2,823,925**

UMESC sub total	$2,680,697
field meetings	$815
added UMESC travel	$5,791
statistics workshop	$15,550
UMESC TOTAL	**$2,702,853**

Corps tech reps	**$68,250**
TOTAL FY16 LTRM BUDGET	**$5,595,028**

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UMRR Monitoring & Science for 2016

- FY16 LTRM SOWs funded with:
  - ►FY 2016 funding
  - ►Carry in funding

- **Funds remaining for science projects**

  $180,745

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UMRR Science in Support of Restoration & Monitoring

Previously Recommended Proposals:

- **Pool 12 AM** $28,386
- **Resilience (Corps)** $52,000

subtotal **$80,386**

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UMRR Science in Support of Restoration & Monitoring

Recommended for funding

Continuation of existing projects:

- **Spatial patterns of mussels (continuation)** $55,980
- **Fish trajectory analysis (continuation)** $ 7,775

New project:

- **Biological shifts due to invasion by curly-leaf pondweed** $33,103

Subtotal (new) **$96,858**

GRAND TOTAL UMRR SCIENCE SUPPORT **$177,244**

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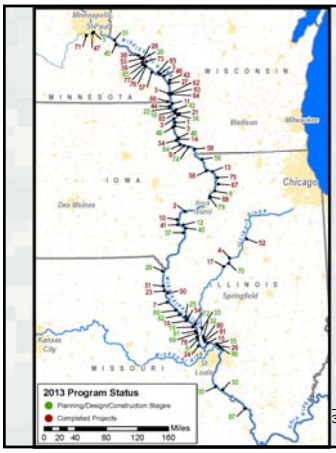

UMRRP Habitat Rehabilitation and Enhancement Projects

As of October 2015:
55 Projects Completed
5 Projects in Construction
27 Projects in Design

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ST. PAUL DISTRICT (MVP)
FY16 HREP Work Plan (24 Feb 2016)

PLANNING – in priority order…..

North & Sturgeon Lakes, Pool 3, MN – ($1.750M)
- Complete Feasibility Phase I&II
- Complete P&S – Phase I
- Award Phase I contract

Conway Lake, Pool 9, IA – ($250k)
- Complete Feasibility

McGregor Lake, Pool 10, WI – ($50k)
- Continue Draft Feasibility

Other studies in the planning queue…
Pool 10 Islands, Lake Winneshiek (Pool 9)
Weaver Bottoms and Clear Lake (Pool 5)
Bass Lake Ponds (Mn Valley),

CONSTRUCTION

Capoli Slough Islands, Pool 9, WI ($20k)
- Turned over to USFWS - Project dedication is set for May 13 2016 in Ferryville, Wisconsin.

Harpers Slough, Pool 9, IA ($300k)
- Stage 1 - Newt Marine – Completed 30% of contract. Remob in spring.

EVALUATION
- Baseline & Post Project Monitoring
- Performance Evaluations Ambrough Slough, Island 42, Polander, Trempealeau & Pool 8 Phase II

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North and Sturgeon Lakes HREP

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North Lake - UMRR
Construct three islands
- Waterfowl benefits
- Vegetation improvement

Dredge for overwintering habitat
- Overwintering fish habitat benefits
- Topsoil for islands and upland placement on PIIC lands for prairie restoration (use easement)
- provides flood stage conveyance

Sturgeon Lake – O&M
Construct one island – Channel maintenance
- Waterfowl benefits
- Vegetation improvement

Brewer Lake Inlet Protection
- MnDNR/PIIC

Lower Pool 3
Initiate summer drawdown – May thru Sept
- Sand for islands allow for DD

13

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ST. LOUIS DISTRICT (MVS)
FY16 HREP Work Plan (Feb 2016)

PLANNING

Rip Rap Landing, IL *$10k*
- Final Draft Feasibility complete –
- MVD additional coordination

Piasa & Eagles Nest Islands, IL *$325k*
- Working to complete numeric H&H model to aid in alterative selection – continue feasibility and select recommended plan

Harlow & Open River Islands, IL & MO *$325k*
- Continue feasibility and select recommended plan

Other studies in the Queue *$30k*
- Open River fact sheet development

EVALUATION *$150k*
Baseline Monitoring & Post Project Monitoring
Performance Evaluation – Calhoun Point –Initial; Dresser -Final; Clarksville –Final

DESIGN

Clarence Cannon Refuge, MO *$775k*
- Gravity Drain
- South Unit Water Control & Channels
- North Unit water Control & Berms
- Pump Station
- Setback Berm & Channel Meanders

Ted Shanks, MO *$250k*
- Deadman Slough

CONSTRUCTION

Ted Shanks, MO *$975k**
- North Berm and Setback
- NS1,NS2, DS Water Control
- Pump Station – underway

Pools 25 & 26 Islands, MO
- Bolters Island *$50k*

Batchtown, IL – Punchlist *$50k*
Clarence Cannon Refuge , MO *$500*
- *Water Control Structure*

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Ted Shanks, MO HREP
Pump Station

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ROCK ISLAND DISTRICT (MVR)
FY16 HREP Work Plan (Feb. 2016)

PLANNING
- Beaver Island, Pool 14, IA **($260K)**
- Turkey River Bottoms, Pool 11, IA **($173K)**
- Keithsburg Division, Pool 18, IL **($228K)**

DESIGN
- Huron Island Stage II, Pool 18, IA **($284K)**
- Pool 12 Overwintering Stage III, Pool 12 IL **($255K)**

CONSTRUCTION
- Lake Odessa Flood Recovery, IA Pools 17 and 18, IA3 **($357k)**
- Pool 12 Overwintering Stage I, Pool 12 IL **($47k)**
- Pool 12 Overwintering Stage II, Pool 12 IL **($95K)**
- Pool 12 Overwintering Stage III, Pool 12 IL **($1-5M)** *
- Huron Island Stage I, Pool 18, IA **($171K)**
- Huron Island Stage II, Pool 18, IA **($1-6M)**
- Fox Island, Pool 20, MO **($40K) CW450**
- Rice Lake Stage I, IL LaGrange Pool **($590K + $1M) CW450**

EVALUATION
- FWS **($174K)**
- Baseline Monitoring
- Post Project Monitoring
- Performance Evaluations **($236K)** Bay Island, Andalusia, Brown's Lake
- Adaptive Mgmt. Pool 12

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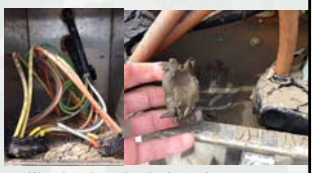
HREP: Rice Lake

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. Contract includes a reinforced concrete pump station, masonry pump station control building, discharge channel excavation, water control structures, overflow and natural spillway embankment, reinforced concrete outlet structure & mechanical dredging.

- Additional defect identified CT working with contractor to remedy
- Damage inspections show need for rip rap downstream of inlet structure and potential bulk head repair
- Awarded W912EK-15-P-0182 for 3,900 pounds of State Certified Seed for Rice Lake due to flood damages 18 Sept 15
- Water intrusion on pumps working with contractor to determine cause of defect



Water intrusion on junction box and pumps
17-Sep-15

Site	Project	Contract Amt.	% Earned	Start Complete
Rice Lake	Pump Station Spillway Transfer ditch Water control	$9,522,963	100%	Sept. 20, 2011 June 16, 2015

Pool 12 Sunfish Lake Reshaping

Huron Island

Keithsburg Division

Lean Six Sigma

- Status
  - Complete review of an additional process
  - Detailed report in May

Habitat Needs Assessment II

- Recommendations
  - Build upon the 2000 HNA using:
    - New tools
    - Updated and new data
    - Knowledge and Lessons learned
  - Create a partner based team to develop the HNA II
    - Utilize the 2003 Habitat Sequencing Policy
    - Integrate River Teams into the entire process
  - Connect the HNA II to the Vision and Mission Statements and link directly to the resiliency work group
  - Strike an appropriate balance between the use of new tools and data with policy and management

HNA II

- Creation of the HNA II Work Group
  - Tri-Chairman to guide the effort
    - USACE
    - USGS
    - US FWS
  - Work Group Make-up
    - A representative from all interested Program partners
    - Will bring in others to help address special issues
  - Duration of effort 18 – 24 months
  - Draft Project Management Plan
  - Adding members to the Work Group

Habitat Restoration Workshop

- Kara Mitvalsky

UMRR Road Map

- Next Generation of Habitat Projects
  - Link habitat needs to project identification and selection
  - Project Planning and Sequencing Framework
- Start 2nd or 3rd Quarter of FY17

Communications Plan

- Results from “voting”
- Branding (Narrow Concepts to One)
  - Logo
  - Tagline

Mud Lake Pool 11 July 2006

UMRR Outreach Plan STAGE 1: BRANDING

UMRR Coordinating Committee Quarterly Meeting

Target Audience for Branding

Most Important Target Audiences

AUDIENCE	RESPONSES	%
Congress	9	45%
General Public	9	45%
Children	2	10%
Corps & OMB	1	—

Second-Most Important Target Audiences

AUDIENCE	RESPONSES	%
Partner States	9	50%
Congress	3	17%
General Public	3	17%
Children	2	11%

How familiar are the stakeholders with UMRR?

STAKEHOLDER	FAMILIARITY WITH UMRR
Residents of UMRR Towns	2.9
Local Public Officials	3.5
University Scientists	4.6
Local Media	3.5
National Media	1.6
River Tourists	3.1

SCALE: 1= "NOT AT ALL FAMILIAR" ... 10="VERY FAMILIAR"

Infinity Logo

Upper Mississippi River Restoration

Infinity symbol doubles as flowing river with fish and raptor in flight. Indicates:

- balance
- water quality
- science & innovation
- legacy and history
- continuous cycle
- flow
- green sensibility
- high quality
- freshness
- intelligence
- nature

Landscape Logo

Upper Mississippi River Restoration

An eagle in flight also reads as hills and waves; a fish reads also as water; a rising sun completes the circle. Indicates:

- flow
- natural beauty
- interdependence
- partnership
- wildlife
- wholeness
- renewal
- homegrown nature
- versatility
- health
- freshness
- intelligence

Water Logo

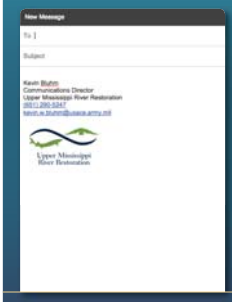
Upper Mississippi River Restoration

Flowing water in different colors. Indicates:

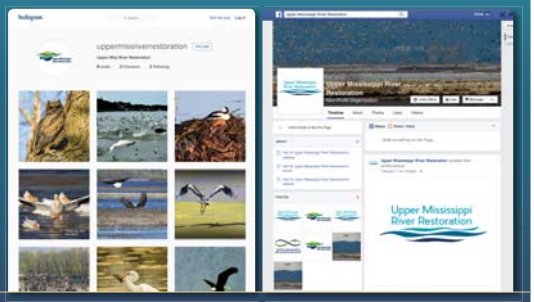
- flow
- health
- partnership
- bold thinking
- fresh ideas
- focus
- clean water as a unifying value
- elegance

Logos in Use

In email ...



In social media ...



Logos in Use

In print ...

Taglines

Upper Mississippi River Restoration
30 years of Partnering, Restoring, Innovating

Upper Mississippi River Restoration
New Thinking for a Natural Treasure

Upper Mississippi River Restoration
Reviving our River

Upper Mississippi River Restoration
Partnering · Restoring · Innovating

Upper Mississippi River Restoration
[stand-alone logo with no tagline at this time]

Next Steps

- Consistent use of branding tools
- Social media campaign
- Media Relations outreach/hosting
- Development of photo and video library
- Website and education materials
- Communications staff

The Original Concepts

UPPER MISSISSIPPI RIVER RESTORATION
Partnering to Rewild America's River

Upper Mississippi River Restoration
NEW THINKING *for a* NATURAL TREASURE

Upper Mississippi River Restoration
REVIVING OUR RIVER

REWILD
Upper Mississippi River Restoration

REWILD
UPPER MISSISSIPPI RIVER RESTORATION

Tagline Ratings

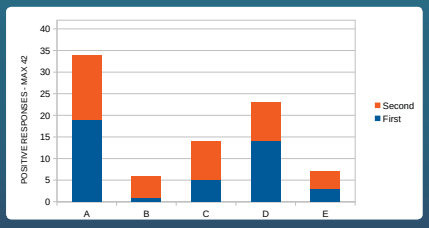
60 people rated the following taglines:
SCALE: 1 – 10

New Thinking for a Natural Treasure	5.39
Reviving Our River	5.61
Partnering to Keep it Mighty	4.87
ReNaturing America's River	2.76
Partnering to Rewild America's River	3.05
Partnering to Renature America's River	2.81
Keeping Our River Resilient for All	4.84
Partnering. Restoring. Innovating.	6.73

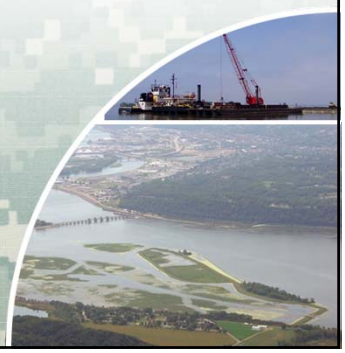
Initial Partner Feedback

Which of the provided logos would you be most excited about using to represent the Upper Mississippi River Restoration program?

LOGO	NUMBER WHO SELECTED AS FIRST OR SECOND CHOICE
A	34
B	6
C	14
D	23
E	7



HREP Boundary Review



Michael Dougherty
Geographer
February 2016

US Army Corps of Engineers
BUILDING STRONG®

Purpose

- Ensure acreages in 2016 Report to Congress are reliable
- Use one mapping definition: Feasibility Study Area
- Align with highest resolution geospatial data
- Correct minor historic mapping inconsistencies
  - o Between USACE districts
  - o Early HREPs vs. recent HREPs

Review Process

1. Small USACE district teams (2-3) perform detailed review of relevant HREP documents and geospatial data **(complete)**
2. Discuss inconsistencies with staff that worked on HREP **(complete)**
3. Adjust HREP boundary as needed **(complete)**
4. Distribute proposed revisions to wider group of USACE district staff familiar with HREPs for comment and adjustment **(complete)**
5. Distribute proposed revisions to partner agencies for comment and adjustment

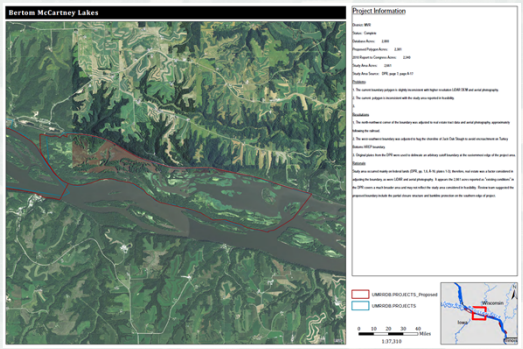
Datasets Consulted

1. Review Feasibility Report
   a. Goals and Objectives
   b. Maps and Diagrams
2. As-built drawings
3. Operations & Maintenance Manuals
4. Aerial photos (current and historic)
5. Real Estate boundaries (USACE, USFWS, state, etc.)
6. LiDAR derived terrain surfaces

White Paper

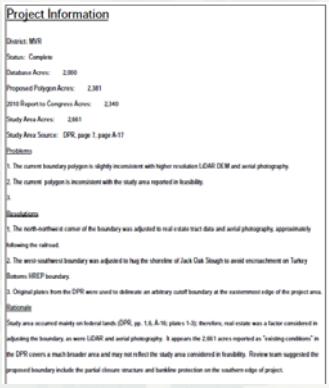
1. Determine the scope of the problem
2. Define the boundary to be mapped: Feasibility Study Area
3. Develop mapping guidelines
4. Clarify mapping rules (i.e., real estate, missing DPR figures)
5. Establish review process

Examples



Examples

1. Problems
2. Resolutions
3. Rationale


Project Information

District: MVR

Status: Complete

Database Acres: 2,000

Proposed Polygon Acres: 2,381

2010 Report to Congress Acres: 2,340

Study Area Acres: 2,661

Study Area Source: DPR, page 1, page A-17

Problems

1. The current boundary polygon is slightly inconsistent with higher resolution LiDAR DEM and aerial photography.

2. The current polygon is inconsistent with the study area reported in feasibility.

3.

Resolutions

1. The north-northwest corner of the boundary was adjusted to real estate tract data and aerial photography, approximately following the railroad.

2. The west-southwest boundary was adjusted to hug the shoreline of Jack Oak Slough to avoid encroachment on Turkey Bottoms HREP boundary.

3. Original plates from the DPR were used to delineate an arbitrary cutoff boundary at the easternmost edge of the project area.

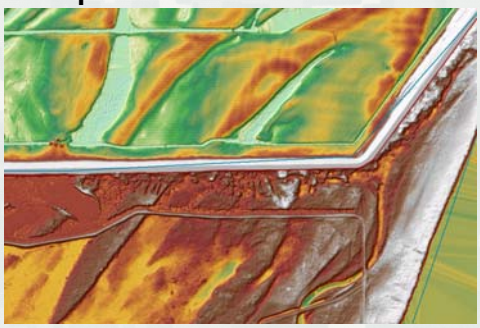
Rationale

Study area occurred mainly on federal lands (DPR, pp. 1-5, A-16, plates 1-3); therefore, real estate was a factor considered in adjusting the boundary, as were LiDAR and aerial photography. It appears the 2,661 acres reported as "existing conditions" in the DPR covers a much broader area and may not reflect the study area considered in feasibility. Review team suggested the proposed boundary include the partial closure structure and bankline protection on the southern edge of project.

Examples

Bertom McCartney Lakes

Examples



Bay Island

Preliminary Conclusions

1. No major discrepancies discovered
2. Changes were limited to a small number of HREPs
3. Most changes were due to availability of higher resolution real estate data or LiDAR topography

Requests for Review

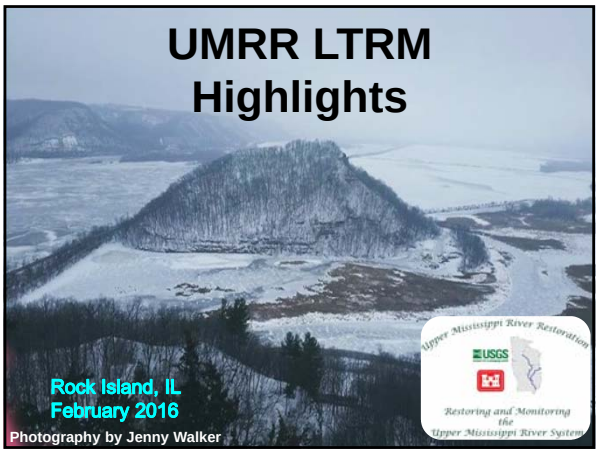
1. Send Marvin Hubbell an email requesting the boundary data for review. (1 week)
2. We will email you the GIS data/pdf maps for review.
3. Email back the GIS data/pdf maps with your review comments. (2 weeks)
4. Comments will be addressed by a USACE team for possible inclusion in the boundary update.

Questions

Marvin Hubbell, UMRR Program Manager
Marvin.E.Hubbell@usace.army.mil
309-794-5428

Michael Dougherty, Geographer
Michael.P.Dougherty@usace.army.mil
309-794-5491

UMRR LTRM Highlights



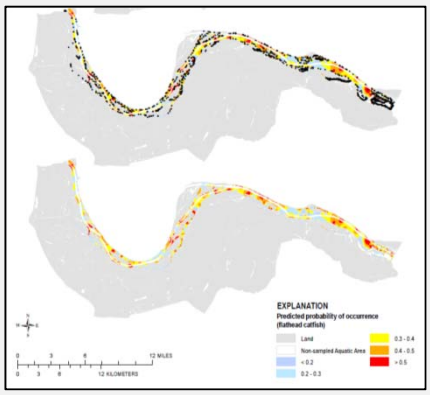
Modelling presumptive fish habitat in a large river system

Ickes, B. S., J. S. Sauer, N. Richards, M. Bowler, and B. Schlifer. 2014. Spatially-explicit habitat models for 28 fishes from the Upper Mississippi River System (AHAG 2.0). LTRMP Program Report 2014-P001

- Web site now on-line!
- Visualizations of the models found in the report
  - Spatially Explicit Habitat Models for 28 Fishes from the Upper Mississippi River System (AHAG 2.0)
- Viewable PDF versions of habitat maps
- GIS IMG files and XML Metadata

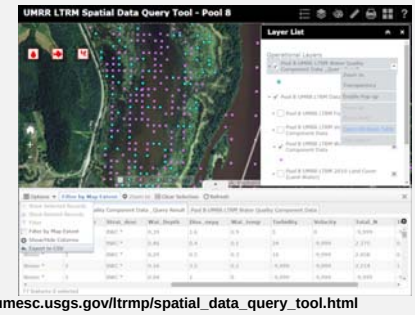
Access through the LTRM Fisheries page under focused research:
http://www.umesc.usgs.gov/data_library/fisheries/habitat_models.html

UMRS Pool 26
Flathead Catfish



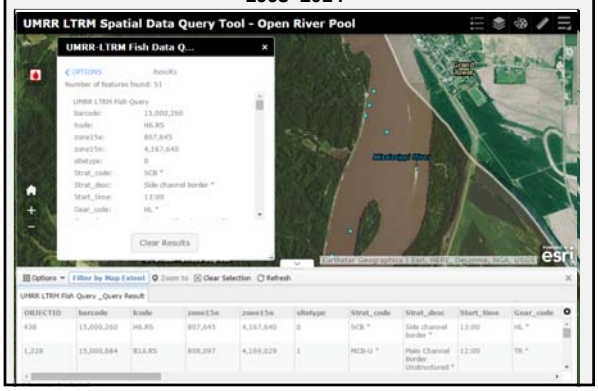
Spatial Data Query Tool

Query, display, mapping, and data extraction of UMRR LTRM component data using an easy-to-use graphical user interface

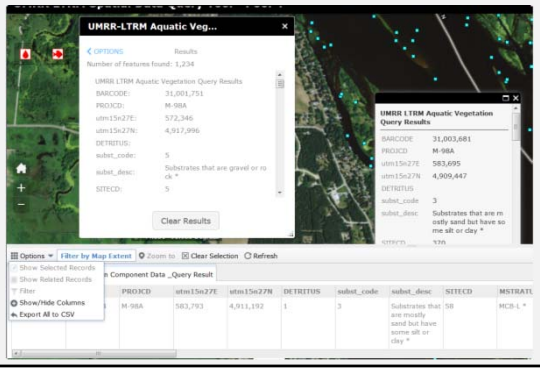


http://www.umesc.usgs.gov/ltrmp/spatial_data_query_tool.html

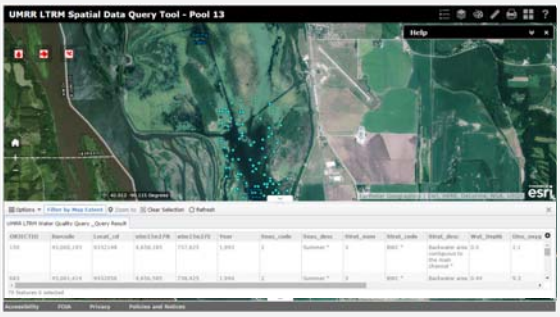
Open River Reach; Sturgeon 1993–2014



Lower Pool 4; Wild Celery 1998–2014



Sites sampled for WQ during summer in a selected area



Accuracy assessment/validation methodology and results of 2010–11 land-cover/land-use data for Pools 13, 26, La Grange, and Open River South, UMRS

J. Jakusz, J. Dieck, H. Langrehr, J. Ruhser, and S. Lubinski

- Validation (Process and results presented for Pool 13, 26 and Open River):
  - Compares map to assessment of same imagery by multiple interpreters
  - Simpler and less costly
- Accuracy assessment (Process and results presented for Pools 13 and La Grange):
  - Compares map directly with vegetation data collected in the field for the same geographic point.
  - Key to a true understanding of how well the map represents vegetation on the ground.
- Both approaches have value.
- Thematic accuracy assessment recommended for future accuracy efforts on UMRS Land cover/use data.

https://pubs.er.usgs.gov/publication/70159276

General classification handbook for floodplain vegetation in large river systems

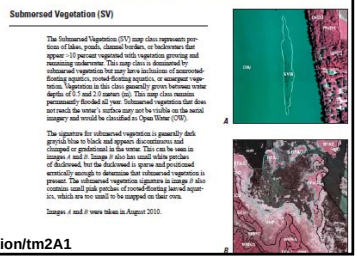
J. Dieck, J. Ruhser, E. Hoy, and L. Robinson

- Vegetation mapping is an important tool used in vegetation science, landscape ecology, and natural resource management.
- Handbook describes a wetland vegetation classification system developed for large river floodplains in the Upper Midwest and explains its use in interpreting of aerial imagery to create vegetation data layers.
- Updates 2004 version with substantial revisions to text, new images, and other improvements.

https://pubs.er.usgs.gov/publication/tm2A1

General classification handbook

- Description of each of the 31 map classes in the General Wetland Vegetation Classification System
- Representative images of each map class from the field and as they appear on classified imagery.



https://pubs.er.usgs.gov/publication/tm2A1

Updating the UMRR Web Pages Behind the Scenes Work

- Changing naming conventions began November 2015
  - UMRR-EMP to UMRR
  - LTRMP to LTRM element
  - Logo changed
- Magnitude of the change
  - 14,917 instances of Long Term Resource Monitoring Program
  - 69,467 instances of LTRMP in 13,340 files in the web site.
- As of February 1, 2016
  - 7,986 instances of Long Term Resource Monitoring Program
  - 52,827 instances of LTRMP in 12,174 files in the web site.
- Additional work:
  - Web applications (Graphical browsers)
  - Metadata

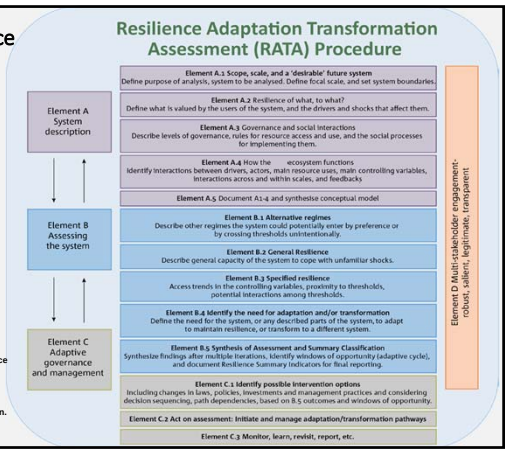
Upper Mississippi River Restoration Program
Long Term Resource Monitoring element
Land Cover/Land Use

UMRR – LTRM Science Meeting

- February 16 – 18, La Crosse WI
- > 50 attendees
  - USGS, USACE, USFWS,
  - IDNR, INHS, MDC, MN DNR, WDNR,
  - NGRREC
  - UMRBA

- Where we've been -- recently completed and ongoing work
- Where we are – updates on current research frameworks
- Where we are going:
  - ideas for new frameworks and future work
  - Assessing the resilience of the UMRS
  - Habitat Needs Assessment II

Resilience of the UMRS



O'Connell et al. 2015. The resilience adaptation and transformation assessment framework: from theory to application. CSIRO, Australia.

Resilience Working Group

Kristen Bouska (USGS UMESC)
Andy Casper (INHS)
Nate De Jager (USGS UMESC)
Shawn Giblin (WDNR)
Jon Hendrickson (USACE)
Dave Herzog (MDC)
Jeff Houser (USGS UMESC)
Marvin Hubbell (USACE)
Stephen Winter (USFWS)
Nathan Richards (USACE)

Resilience of the UMRS

- Resilience assessment workshop:
  - January, La Crosse, WI
  - Leaders:
    - Lance Gundersen (Emory U.) and Allyson Quinlan (Resilience Alliance)
    - Resilience concepts
    - Approaches to assessing ecological resilience
    - Initial discussions of conceptual models of resilience of the UMRS
- Science Meeting
  - February, La Crosse, WI
  - Draft conceptual models presented for critique.
- UMRCC
  - March 14 – 17; Dubuque.
  - Presentation of revised conceptual models and other progress

Subsystem	Big resource issue	Key Controlling variable	Thresholds of potential concern	"Big" drivers	Source
Lentic backwater lakes and impounded areas	Backwater loss and deterioration	Sedimentation rate		Watershed land use, conservation programs, Locks and dams	
		Hydraulic connectivity			
	Duckweed/ blue green algae	Water velocity	<0.095 m/sec	Flood, drought	Giblin et al. 2014
		Depth	<1.5 m	Watershed land use, channel infrastructure	Giblin et al. 2014
		Presence of SAV		Light availability, drought/flood	
	SAV distribution, abundance, & persistence	Light availability (depth, water clarity)	Depth at 1% of surface light TSS< 17 mg/L	Watershed land use	Giblin et al. *in review* Kreiling et al. 2007
		Water velocity		Flood, drought	
		Sediment nutrients		Drought, watershed land use	
		Water level fluctuations		Lock and dam operations	
		Propagule density			
	Support desirable, native fish community	Overwintering habitat (Depth, water velocity)	<1 cm/sec (centrarchids)	Sedimentation	Knights et al. 1995
		SAV		Light availability, drought/flood	
	Support waterfowl	SAV		Light availability, drought/flood	

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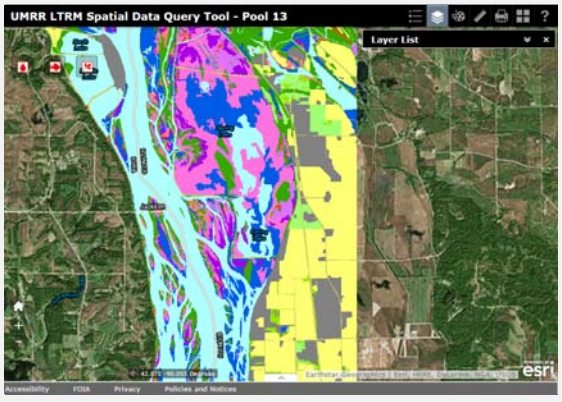
Questions?

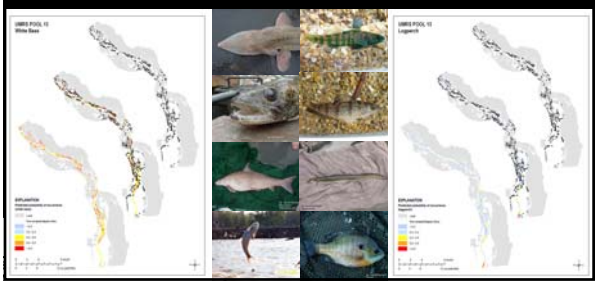


Management relevant presumptive fish habitat models for the Upper Mississippi River System

UMRR - CC, Rock Island, IL 24 Feb 2016

Brian S. Ickes (bickes@usgs.gov) (608) 781-6298

U.S. Geological Survey (Upper Mississippi River Restoration – Long Term Resource Monitoring element: http://www.umesc.usgs.gov/ltrmp.html)



Acknowledgments

Ben Schlifer, USGS/UMESC

Mel Bowler, IDNR

Jennifer Sauer, USGS/UMESC

Nate Richards, USACE Rock Island

Field station personnel 1993-present

Non-funded MSP project under UMRR

http://www.umesc.usgs.gov/ltrmp.html

USGS

Problem Statement

1. Environmental management actions in the UMRS require pre-project assessments of predicted benefits for a range of project scenarios
2. These are typically achieved using models, that now need to be certified for use
3. Previously, fish habitat benefits were estimated using the Aquatic Habitat Appraisal Guide (AHAG), a Habitat Suitability Index approach that uses Best Professional Judgment (BPJ)
4. A recent scientific review of AHAG suggested (a) the approach was dated, (b) there were uncertainties regarding the data inputs and modeling rationale, and (c) there was a lack of field validation of project benefits.
5. Two recommendations were made (a) incorporate data (rather than BPJ) in defining species:environmental relationships, and (b) conduct post-project biological evaluations to test pre-project benefits estimated by AHAG

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Goal and Objective

Goal: Address the first AHAG review criticism; apply data from the UMRS to quantify the relation of species distribution to environmental variables

Objective: Use a statistical modeling approach to predict the sample-site scale probability of occurrence of 28 UMRS fish species

- Representing three habitat guild classes (Lotic; Lentic; Generalist)

- As a function of 17 environmental variables observed during LTRM fisheries sampling within each of six study reaches

- Representing 1930km of river.

USGS

Model comparisons

AHAG 1.0

- Based on best professional judgment (mostly)
- Spreadsheet application
- Requires users to change values and weight importance (species and env data) in often non-reproducible ways
- Output is a score (not a predicted response), with no link back to actual habitat associations or needs
- Bulky and clumsy
- Generalized and "fuzzy" results – no spatial domain

AHAG 2.0

- Based on arguably the best large river fisheries data on the planet
- Predictive
- Directly links the species response (occurrence) to the environmental variables that actually determine site occupancy
- Spatially-explicit
- Able to be used regionally (outside of LTRM study reaches)
- Reproducible results
- Validation tests performed (and additional ones possible)
- Much more elegant and easy to use than AHAG 1.0.
- More species than were available in AHAG 1.0.

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Methods

- All day electrofishing obs, 1993-2014, for all six study reaches (Nobs = 6,848 per species)

- Non-zero catch transformed to "presence" – zero catch transformed to "absent/not detected"

- Assembled and QA'ed 17 synoptic env variables and retained UTMs for predictions

- Used multiple logistic regression for binary responses, modeling occurrence as a function of the 17 env variables

Table 1. Fish species selected for inclusion in the Aquatic Habitat Appraisal Guide for the Upper Mississippi River System.

Species	Scientific name	Guild
Black crappie	*Pomoxis nigromaculatus*	Lentic
White crappie	*Pomoxis annularis*	Lentic
Bluegill	*Lepomis macrochirus*	Lentic
Largemouth bass	*Micropterus salmoides*	Lentic
Warmouth	*Lepomis gulosus*	Lentic
Northern pike	*Esox lucius*	Lentic
Yellow perch	*Perca flavescens*	Lentic
Blue catfish	*Ictalurus furcatus*	Lotic
Flathead catfish	*Pylodictis olivaris*	Lotic
Rock bass	*Ambloplites rupestris*	Lotic
Skipjack herring	*Alosa chrysochloris*	Lotic
Blue sucker	*Cycleptus elongatus*	Lotic
Shovelnose sturgeon	*Scaphirhynchus platorynchus*	Lotic
Sauger	*Sander canadense*	Lotic
Golden redhorse	*Moxostoma erythrurum*	Lotic
Shorthead redhorse	*Moxostoma macrolepidotum*	Lotic
Channel catfish	*Ictalurus punctatus*	Generalist
Red Shiner	*Cyprinella lutrensis*	Generalist
Logperch	*Percina caprodes*	Generalist
Brook silverside	*Labidesthes sicculus*	Generalist
Freshwater drum	*Aplodinotus grunniens*	Generalist
Emerald shiner	*Notropis atherinoides*	Generalist
Blackstripe topminnow	*Fundulus notatus*	Generalist
Smallmouth bass	*Micropterus dolomieu*	Generalist
Longnose gar	*Lepisosteus osseus*	Generalist
White bass	*Morone chrysops*	Generalist
Smallmouth buffalo	*Ictiobus bubalus*	Generalist
Walleye	*Sander vitreus*	Generalist

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Environmental variables

Variable name	Abbreviation	Variable type	Unit(s)
Environmental variables			
Secchi	Secchi	Continuous	cm (nearest 1)
Conductivity	SpecCond	Continuous	µS/cm (nearest 1)
Water velocity	Watervel	Continuous	m/s (nearest 0.1)
Water temperature	Temp	Continuous	°C (nearest 0.1)
Water depth	Depth	Continuous	m (nearest 0.1)
Dissolved Oxygen	DO	Continuous	mg/L (nearest 0.1)
% emergent submersed vegetation	AqVeg	Categorical (4 categories)	%
Vegetation Density	VegDens	Categorical (2 categories)	scaleless
Predominant substrate	Substrate	Categorical (4 categories)	descriptive
Other structures			
Woody debris	Woody	Binary	Presence absence
Tributary mouth	Trib	Binary	Presence absence
Inlet/outlet channel	InOut	Binary	Presence absence
Flooded terrestrial	FloodTer	Binary	Presence absence
Wing dam/dyke	WingDam	Binary	Presence absence
Revetment	Revetment	Binary	Presence absence
Low-head dam, closing dam, weir	LowHead	Binary	Presence absence
Diagnostic variables			
Field station	Fstation	Diagnostic	Numeric ordinal label
Period	Period	Diagnostic	Numeric ordinal label

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Methods

- For each model region (N = 2) and species (N = 28), validated model fit using "goodness of fit" tests.
- Presence/occurrence was selected for the response because this scales all response data similarly (0-1, or 0% to 100%), enabling inter-species comparisons. Presence also tends to be a more sensitive response to local habitat selection than abundance.
- I used partial methods on the predictor set to gain model parameters that reflected the unique contribution of each predictor relative to the response.

Results

Two primary sets of results

1. Model fits with predictive equations (presented in Appendix 2 of Ickes et al. 2014)
   A. Of the 56 potential regional models (28 species x 2 regions), 33 were well fit (passed goodness of fit test)
      1) Some species were rare or absent in one of the regions, precluding a model fit
      2) Some species did not fit well even given sufficient occurrences. Usually due to "field station" being the best predictor, suggesting study reach specific models are needed rather than a regional model.
   B. Nine species yielded good regional fits for both regions (3 lotic and 6 generalist). Good fits for lentic species were only achieved in the Upper Reach (Pools 4, 8, and 13).

Ickes, B.S., Sauer, J.S., Richards, N., Bowler, M., and Schlifer, B. 2014. Spatially explicit habitat models for 28 fishes from the Upper Mississippi River System (AHAG 2.0) (ver. 1.1, July 2014): A technical report submitted to the U.S. Army Corps of Engineers' Upper Mississippi River Restoration-Environmental Management Program, Technical Report 2014-T002, 89 p., including appendices 1 and 2. http://pubs.usgs.gov/mis/lrmp2014-002

USGS

Results

Two primary sets of results

2. Maps of predicted occurrence probabilities (N = 90)
   A. Available via the UMRR-LTRM Fish Component homepage
   B. Stand alone pdf's.
   C. Raster data for user-defined usage.

http://www.umesc.usgs.gov/data_library/fisheries/habitat_models.html

USGS

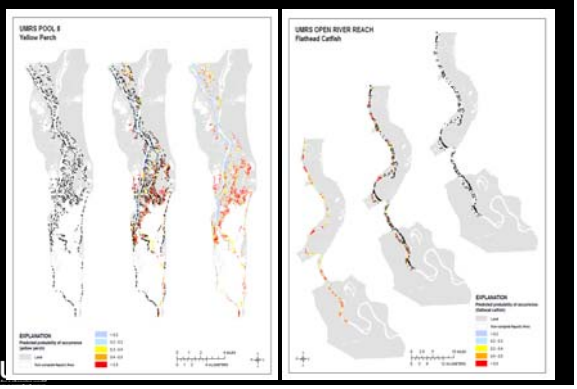
Viewable PDF versions of habitat maps

Species	Scientific name	Upper Reach Models: Pool 4	Pool 8	Pool 13	Lower Reach Models: Pool 26	Open River	La Grange
Black crappie	*Pomoxis nigromaculatus*	p04_bkcp.pdf	p08_bkcp.pdf	p13_bkcp.pdf			
White crappie	*Pomoxis annularis*						
Bluegill	*Lepomis macrochirus*	p04_blgl.pdf	p08_blgl.pdf	p13_blgl.pdf			
Largemouth bass	*Micropterus salmoides*	p04_lmbs.pdf	p08_lmbs.pdf	p13_lmbs.pdf			
Warmouth	*Lepomis gulosus*	p04_wrmh.pdf	p08_wrmh.pdf	p13_wrmh.pdf			
Northern pike	*Esox lucius*	p04_ntpk.pdf	p08_ntpk.pdf	p13_ntpk.pdf			
Yellow perch	*Perca flavescens*	p04_yepch.pdf	p08_yepch.pdf	p13_yepch.pdf			
Blue catfish	*Ictalurus furcatus*				p26_blcf.pdf	or_blcf.pdf	lg_blcf.pdf
Flathead catfish	*Pylodictis olivaris*	p04_fhcf.pdf	p08_fhcf.pdf	p13_fhcf.pdf	p26_fhcf.pdf	or_fhcf.pdf	lg_fhcf.pdf
Rock bass	*Ambloplites rupestris*	p04_rkbs.pdf	p08_rkbs.pdf	p13_rkbs.pdf			
Skipjack herring	*Alosa chrysochloris*						
Blue sucker	*Cycleptus elongates*	p04_busk.pdf	p08_busk.pdf	p13_busk.pdf	p26_busk.pdf	or_busk.pdf	lg_busk.pdf
Shovelnose sturgeon	*Scaphirhynchus platorynchus*						
Sauger	*Sander canadense*	p04_sger.pdf	p08_sger.pdf	p13_sger.pdf	p26_sger.pdf	or_sger.pdf	lg_sger.pdf
Golden redhorse	*Moxostoma erythrurum*				p26_gdrh.pdf	or_gdrh.pdf	lg_gdrh.pdf
Shorthead redhorse	*Moxostoma macrolepidotum*	p04_shrh.pdf	p08_shrh.pdf	p13_shrh.pdf	p26_shrh.pdf	or_shrh.pdf	lg_shrh.pdf
Channel catfish	*Ictalurus punctatus*						
Red shiner	*Cyprinella lutrensis*						
Logperch	*Percina caprodes*	p04_lgph.pdf	p08_lgph.pdf	p13_lgph.pdf	p26_lgph.pdf	or_lgph.pdf	lg_lgph.pdf
Brook silverside	*Labidesthes sicculus*	p04_bkss.pdf	p08_bkss.pdf	p13_bkss.pdf	p26_bkss.pdf	or_bkss.pdf	lg_bkss.pdf
Freshwater drum	*Aplodinotus grunniens*	p04_fwdm.pdf	p08_fwdm.pdf	p13_fwdm.pdf	p26_fwdm.pdf	or_fwdm.pdf	lg_fwdm.pdf
Emerald shiner	*Notropis atherinoides*	p04_ersn.pdf	p08_ersn.pdf	p13_ersn.pdf	p26_ersn.pdf	or_ersn.pdf	lg_ersn.pdf
Blackstripe topminnow	*Fundulus notatus*				p26_bttm.pdf	or_bttm.pdf	lg_bttm.pdf
Smallmouth bass	*Micropterus dolomieu*						
Longnose gar	*Lepisosteus osseus*	p04_lngr.pdf	p08_lngr.pdf	p13_lngr.pdf	p26_lngr.pdf	or_lngr.pdf	lg_lngr.pdf
White bass	*Morone chrysops*	p04_wtbs.pdf	p08_wtbs.pdf	p13_wtbs.pdf	p26_wtbs.pdf	or_wtbs.pdf	lg_wtbs.pdf
Smallmouth buffalo	*Ictiobus bubalus*	p04_smbf.pdf	p08_smbf.pdf	p13_smbf.pdf			
Walleye	*Sander vitreum*				p26_wlye.pdf	or_wlye.pdf	lg_wlye.pdf

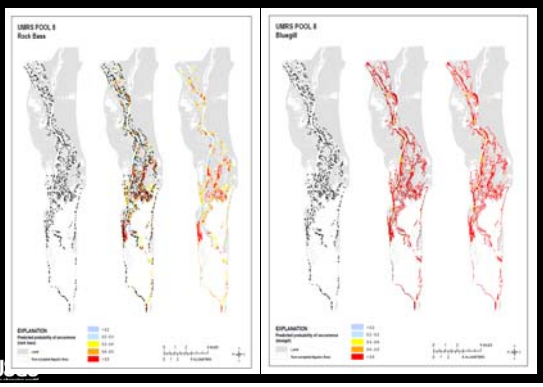
USGS

http://www.umesc.usgs.gov/data_library/fisheries/habitat_models.html

Examples



Examples



Model applications

Objective approach to habitat project planning

1. Use the maps to evaluate habitat suitability [high P(occurrence) = highly suitable; low P(occurrence) = low suitability]
2. Permits "pool/study reach scale" evaluations of species-specific habitat suitability
3. Identify species upon which suitability assessment will be based
4. Go the predictive equations in Appendix 2 of the report and regard those environmental factors contributing to site occurrence for selected species (+ and -, and their magnitudes)
5. Determine the extent to which the environmental variables that determine site suitability are potentially under management influence.
6. State environmental goals (quantitatively) for variables contributing to occurrence.
7. Calculate the presumptive increase in site occurrence if project goals are met, using the equations in Appendix A.

NOTE: Limited to LTRM study reaches

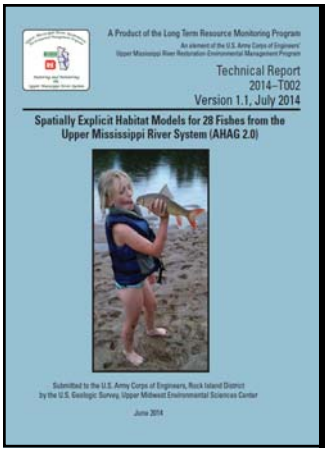
Model applications

Habitat project locality already selected

1. Gain an environmental data series from the project site
2. Impute those data into the selected species equations in Appendix 2
3. Calculate pre-project occurrence probabilities for all desired species at each sample location
4. State quantitative post-project targets for the environmental attributes and again enter these into the equations in Appendix 2
5. Calculate post-project presumptive changes in fish responses (probability of occurrence).

Assumes:

1. The environmental data is gained with comparable methods to those used to generate the models (LTRM protocols)
2. The environmental data series derive from a similar time period used to generate the models (summer/fall)
3. The project site is within the spatial domain of the model being used to make the estimates (Upper or Lower Reach model)



Report available at:

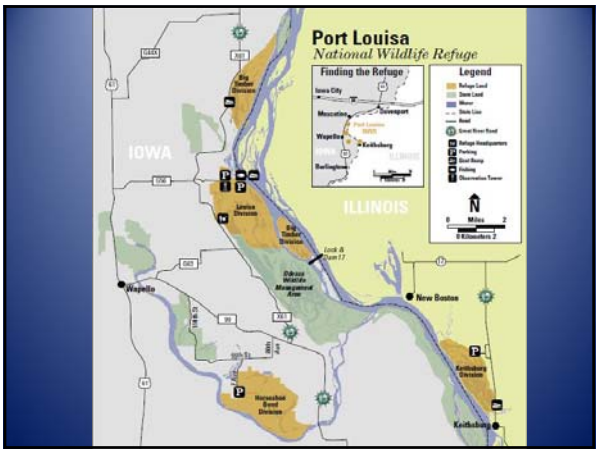
http://pubs.usgs.gov/mis/ltrmp2014-t002/pdf/ltrmp2014-t002.pdf

Maps and raster data available at:

http://www.umesc.usgs.gov/data_library/fisheries/habitat_models.html

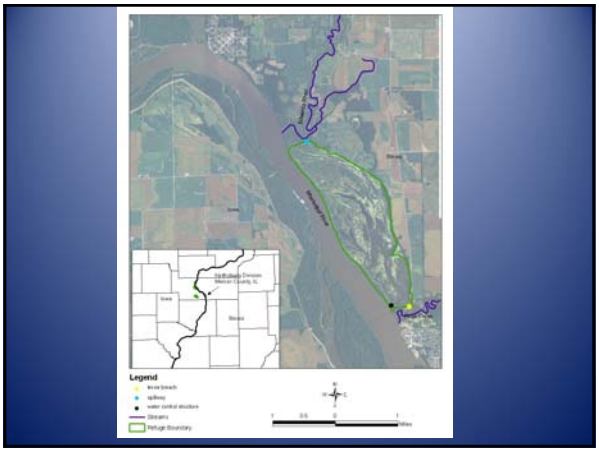
Brian S. Ickes
UMRR-LTRM Fisheries PI
2630 Fanta Reed Rd.
La Crosse, WI 54603
bickes@usgs.gov
(608) 738-2044

Questions?



History

- Town of Keithsburg established in 1827 dominated by logging and agriculture.
- Keithsburg drainage district formed in 1906 and constructed the levee.
- Former agricultural levee district and farmed and grazed prior to USACE purchase.
- USACE purchased in 1941 and transferred management authority to USFWS in 1945.
- Refuge established 1958
  Refuge purposes: migratory birds, T&E species, wetlands
- Some farming on the refuge until 1984
- Water control structures 1960's, 1970s
- South levee break 1993



Management

Fall closed period
Summer drawdowns
Manage public use
Periodic surveys

Available data

- Keithsburg HGM 2009
- Contaminant Assessment Process 2011 (information gathering process and initial assessment in relation to environmental contaminants)
- USFWS Water Resources Inventory and Assessment 2014
- Water quality sampling
- Wildlife surveys
- Forest inventories
- Fisheries sampling

Vegetation

1970s maps indicated small areas of oak and pecan and expanding areas of silver maple and willow.

Large swales contained more permanent water and aquatic veg.

By 1995, forest areas had begun to decrease and increased decline in forest area continues.

Mississippi River at Keithsburg Historical Flood Frequency

Decade	Number of Years with Flooding	Major Flood Years (Description of Magnitude)	Duration of Flooding	Drought Years
1900 to 1909	1 Yr out of 10	---	1 days	---
1910 to 1919	1 Yr out of 10	---	1 days	1911
1920 to 1929	1 Yrs out of 10	---	4 - 14 days	1921, 23, 26
1940 to 1949	1 Yrs out of 10	---	4 - 6 days	1940
1950 to 1959	2 Yrs out of 10	1951 - 51 days with max. depth of 17.1 ft. 1952 - 23 days with max. depth of 16.8 ft.	22 - 34 days	1957, 58
1960 to 1969	4 Yrs out of 10	1965 - 12 days with max. depth of 19.6 ft. 1965 - 14 days with max. depth of 20.3 ft. 1969 - 28 days with max. depth of 21.2 ft.	2 - 14 days Minor Floods 28 - 34 days Major Floods	1968
1970 to 1979	6 Yrs out of 10	1972 - 42 days with max. depth of 19.1 ft. 1973 - 18 days with max. depth of 17.4 ft. 1979 - 57 days with max. depth of 16.9 ft.	8 -18 days Minor Floods 28 - 57 days Major Floods	1977
1980 to 1989	4 Yrs out of 10	1987 - 24 days with max. depth of 15.3 ft. 1983 - 49 days with max. depth of 15.8 ft. 1985 - 69 days with max. depth of 17.3 ft.	4 - 9 days Minor Floods 25 - 69 days Major Floods	1987
1990 to 1999	8 Yrs out of 10	1993 - 138 days with max. depth of 24.8 ft. 1997 - 27 days with max. depth of 18.8 ft. 1998 - 47 days with max. depth of 18.6 ft. 1999 - 38 days with max. depth of 15.0 ft.	5 - 26 days Minor Floods 27 - 156 days Major Floods	---
2000 to 2009	8 Yrs out of 10	2001 - 54 days with max. depth of 20.7 ft. 2008 - 66 days with max. depth of 24.5 ft.	3 - 35 days Minor Floods	2005

Management Issues

- Altered, more prolonged hydroperiods that have shifted vegetation communities to wetter types and killed some areas of floodplain forest
- Limited water control
- South levee on private land
- Water quality including siltation
- Distance from headquarters
- Recreation also important

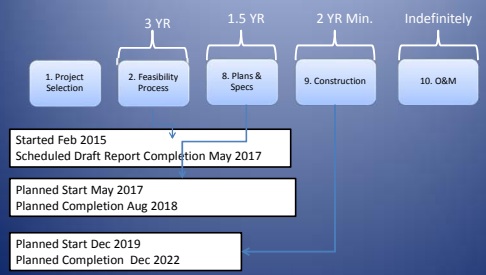
From HGM:

- Future management should attempt to more closely emulate seasonal and long-term water regimes to restore forest and aquatic communities.
- Increased water control capabilities will be required to accomplish more natural water regimes
- Management philosophy should accept periodic drying periods, with alternating flooding, over seasons and years and communicate with the public about reasons for changing water management.
- More problems accrue from poor and late drainage than from inadequate flooding capability
- Major floods cannot be prohibited and lower level floods that occur almost annually now have greater detrimental potential. Consequently, infrastructure changes should allow quicker drainage following flood peaks and reduced backwater entry during summer when river levels historically were lower.

Keithsburg Schedule

6 Month Outlook	Feature Workshop • create manageable list of features, • determine tree forestry site potential • acres, composition, etc. and associated measures for success Preliminary quantities for levee upgrades Perform geotechnical borings Real Estate Requirements H&H modeling Cultural Survey Bat Habitat Survey Habitat modeling Preliminary cost estimate on culverts, pumps, levee, islands, Incremental Cost Analysis on Alternatives Cost Estimation Center of Expertise Review
12 Month Outlook	Prep for public meeting Hold Public Meeting, Complete Biological Assessment Complete Floodplain Analysis Development of Feasibility Chapters Planning Review and Draft Page Turn Complete EA Coordination, Draft Feasibility Report; Start review process

Keithsburg Division Planning Timeline



Upper Mississippi River Restoration Habitat Needs Assessment II

Tim Eagan

UMRR CC Quarterly Meeting
February 2016

US Army Corps of Engineers
BUILDING STRONG®

HNA II

- General Info
- Scope
- Purpose
- Teams
- Schedule
- Funding

General Info

- Project Kick-Off November 2015
  - ► Tri-Chair Team
    - Sara Schmuecker USFWS
    - Nate DeJager USGS
    - Tim Eagan USACE
- Project Management Plan Development
- UMRR CC Feb Quarterly Decisions

Scope

- Update of original HNA, completed in 2000
- Habitat Assessment of Mississippi River main north of Cairo, Illinois; Minnesota River, Minnesota; Black River, Wisconsin; Saint Crox River, Minnesota, Minnesota and Wisconsin; Illinois River and Waterway, Illinois; and Kaskaskia River, Illinois
- **Will not identify next round of HREPs**

Purpose

- Incorporate findings from the Resiliency Team into its process;
- Identify historic conditions;
- Identify current conditions;
- Identify problems and opportunities;
- Identify future conditions without restoration efforts;
- Identify desired future conditions with restoration efforts; and
- Document all the above information into a product to be used in next phase of the Strategic Plan Process, Identification of new HREPs

Teams

- UMRR CC
  - ► Executive oversight and decision makers
- Tri-Chair
  - ► Lead project delivery team
- Technical Group
  - ► UMRR CC representatives
- Working Group
  - ► Specialists from various technical fields
- River Resource Teams

Date	Meeting	Subject
24 Feb 2016	UMRR-CC Quarterly	**Solicit participants for HNA-II Technical Group**
08 Mar 2016	C.C. Meeting	**Meeting 1 – Confirm team members for Technical Group, discuss schedule, meetings, and begin formulating purpose, goals, and objectives from each agency. Additionally discuss format of report and report writing.**
15 Mar 2016	C.C. Meeting	**Meeting 2- Meeting with the River Resource Teams to begin coordination.**
29 Mar 2016	Email	**Project Management Plan Review by Technical Group, emphasis on scope, purpose, goals, objectives**
12 Apr 2016	Email	**Project Management Plan Review For Approval by UMRR CC**
03 May 2016	I.P. (2 Day)	**Meeting 2 – Management Team and Technical Group** • **Identify Past Efforts** • **Review HNA-I and determine what will be carried forward and what gaps can be closed** • **Identify process for conducting Assessment** o **Historic Conditions, Current Conditions, System Needs, Future Without, Desired Future** • **Identify key technical areas for development of the Working Group** • **Develop Communication Plan, which includes Public Outreach**
Fall 2016	I.P. (3 Day)	**Meeting 3 – Workshop / Charrette**
Winter 2016	I.P.	**Meeting 4 – 1st Public Meeting, Presenting current status and path forward**
TBD	TBD	**TBD**
Nov 2017	**UMRR CC Quarterly**	**Final Review and Acceptance of Habitat Needs Assessment II**

Questions

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Natural Resource Inventory 2015

Sara Schmuecker

Background

Uses

- Land-use planning
- Impact assessment
- Environmental/ permit review
- Natural area selection/ design/ stewardship
- Resource management
- Etc.

Previous Versions

1984 Version

2000 Version

Resources Inventoried

- Commercial fisheries
- Sport fisheries
- Fish overwintering habitats
- Fish spawning and nursery habitats
- Other important fishery resources
- Mussels and fingernail clams
- Reptiles and amphibians
- Bald eagle nests
- Bald eagle roosts and feeding areas
- Heron and egret rookeries
- Resident and migratory bird habitat
- Waterfowl
- Mammals
- Unique areas

Other Layers

- Boat access
- UMRR Projects (USACE)
- Potential restoration projects
- Island and water feature names (USACE)
- Wingdams (USACE)
- Locks and Dams
- River miles
- Bankline armoring (USACE)
- Barge fleeting (USACE)
- Important bird areas (Audubon)
- Current & historic dredge cuts and disposal sites (USACE)

2015 NRI Update

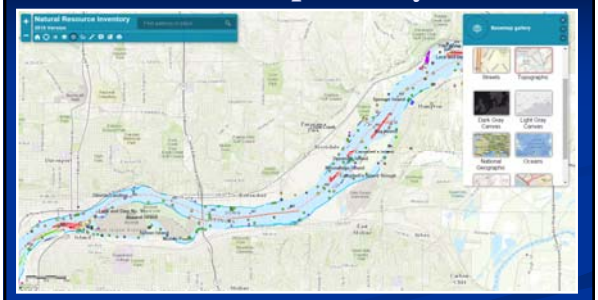
- ArcGIS Online
- Can access from anywhere with internet or cell reception
- Features:
  - Find my location
  - Layers
  - Basemap gallery
  - Overview map
  - Measure
  - Details
  - Bookmarks
  - Print

Location

- Find my location
- Zoom to pool
- Type in desired location
- Overview map

Layers

Basemap Gallery



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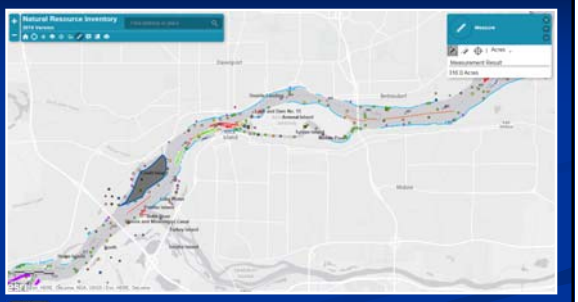
Measure: Area & Distance



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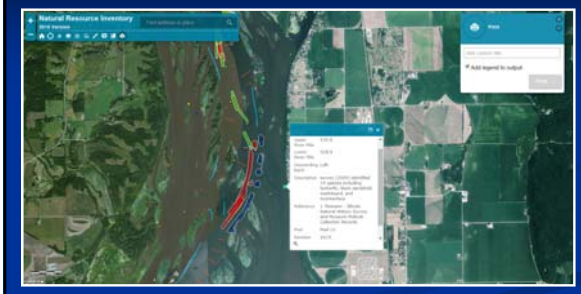
Point Description & Print



Rock Island Field Office - Ecological Services

Access to 2015 Update

- Instructions on page D-4 of UMRR-CC Read-Ahead Materials
- Please send email to sara_schmuecker@fws.gov
  - Subject line: NRI Collaborator Account
  - First Name, Last Name, Work Station, Email
  - Names of individuals using NRI
  - Short description of what project types NRI will be used for

Rock Island Field Office - Ecological Services

THANK YOU

to everyone who provided data, participated in workshops, and supported the development of this project.

Rock Island Field Office - Ecological Services