A-Team Notes, August 1, 2016 Webinar

Attendees:
Shawn Giblin WI DNR (A-Team Rep, Chair)
Sara Strassman WI DNR (Recorded minutes)
Jennie Sauer USGS
Kristin Bouska USGS
Chuck Theiling USACE-MVR
Derek Ingvalson USACE-MVR
Steve Winter USFWS (A-Team Rep)
Dave Potter USACE-MVP
Nate DeJager USGS
Karen Hagerty USACE-MVR
Kat McCain USACE-MVS
Ken Barr USACE-MVR
Mike McClelland IL DNR (A-Team Rep)
Dave Herzog MO DEC (A-Team Rep)
Nick Schlesser MN DNR (A-Team Rep)
Levi Solomon INHS
Alison Anderson INHS
Dave Bierman IA DNR
Scott Gritters IA DNR (A-Team Rep)
Marv Hubbell USACE-MVR
Jeff Janvrin WI DNR
Jeff Houser USGS
Janet Sternburg MO DEC (A-Team Rep—Dave Herzog will sit in until her replacement begins)

Time & Place—UMRCC WQTS joint meeting in Cape Girardeau, MO, Oct 26-27,

April minutes—amendments from Hagerty & Gritters were incorporated. No other changes. Winter move to approve. Schlesser second. All approved.

Request to send out the discussion topics in advance so folks can contribute.
Next meeting topic is water velocity.

UMRR Program Update: Marv
Financials-Plan for FY18 is roughly same as this year, Presidents budget at $20M, competing for additional funds through "work plan" process-nationally competitive
UMRR 30th Anniversary Event—August 8th in La Crosse, speakers revolving around Anfinson's *River We Have Wrought*, Cong. Kind & Franken will participate, MV Mississippi will be in St. Paul District early Monday
August 9-UMRBA Quarterly Meeting, UMRR-CC quarterly meeting
Report To Congress still in progress

Late September—workshop focusing on HREPs in Quad Cities, purpose is to provide input on science & monitoring related to projects, Kara Mitvalsky sent notice, Sept 27-29 noon-noon

Resiliency Workgroup has been making progress

HNA Workshop was held in RID two weeks ago

TOPIC DISCUSSION: <u>How Water Depth Drives WQ & Habitat Outcomes</u>
Shorthand includes (OW-overwintering, BW-backwater, MC-main channel, DO-dissolved oxygen, V-velocity, T-temp, MSU-moist soil unit)

First Speaker: Derek Ingvalson: "Depth Considerations for Restoration & Enhancement on the UMRS"
Depth can influence habitat in the following ways (these are habitat restoration targets):
      -Shorebirds (0-18cm) sand & mud flats
      -Paddlefish (20+ ft water)
      -Diving duck (18"-6')
      -Bluegill (dredged areas 8')
      -Dabbling ducks (4"-18")

Example-Seasonal requirements of bluegills: carrying capacity is often limited by overwintering habitat, sedimentation continues to impact the habitat, needs warmer water, slower velocities, sufficient DO

Optimal temp: over 4C, but UMRS backwaters don't get that warm. Due to thermal properties of water, in coldest areas, depth can be used to retain a warmer pocket of water

DO: minimum level before stress is around 5 mg/L, DO in bw highly influenced by veg, can get critically low (decomposition) or high DO (clear ice, supersaturation, leading to gas bubble disease); solution has been multiple OW sites, creating diversity of depths, position OW sites on the fringe of where low velocities are present

Example at Harper's Slough—Closure structure at head of Wexford Delta tying to barrier island to reduce flows to meet OW needs in velocity, depths were varied through site to allow for fish movement, an access channel was dredged, but to avoid losing warmer water through channel, a sill was placed at the bottom end of the pocket

Tools for planning include HSI models—Bluegill OW model includes variables, V, DO, T and depth (based on % of OW area greater than 4')
Winter dissolved oxygen model does not assign a weight to supersaturation (may need to provide a threshold from monitoring data)

ArcGIS was used to plot the suitability pixel by pixel (interpolated raster)
BWs needed to be delineated. Each point has velocity, T & DO. Depth was assigned. Continuous raster was created from the layout of data points. Depth was professional judgment within bw delineation.

Sedimentation generalizations & assumptions—1/2" per year, higher energy areas were retained, fraction was applied to reduce the load
Predicting the future without project uses sedimentation rates

Bluegill OW model in ArcGIS utilizes same equations as spreadsheet, but has applied within raster calculator

HSI Units are calculated

Monitoring within the project areas: WI DNR will be monitoring using both SRS and fixed runs to monitor presence of fish/response and SRS to see if population has responded

When approaching 4C, bacteria are consuming oxygen, they are driving force, so there is almost always anoxia in the bw

From monitoring, the sills or "humps" to retain warmer water have shown so far to be achieving OW conditions

Q: Isn't arbitrary assignment of depths of the ow site driving the entire score? Can you use a nearest neighbor data approach to help better reflect real depths?

A: In the FWOP evaluations, the bw is defined as the entire complex, which is a different approach than the future with project, but the bias is reduced by dividing it over greater area.

The delineated ow habitat is a single unit for depth, and the rest of the complex is defined as a single unit for depth.

Q: Rock sills leak over time, so IA DNR monitoring is showing that the V threshold is exceeded below sill. So the model shouldn't show that the habitat below the sill will be ow. A point on monitoring: a census approach has been used in IA to avoid problem with randomized samples being applied to mainly areas that cannot be sampled.

A: Model is essentially the worst average annual condition, so variability in depths is not a huge issue.

Second Speaker: Jeff Janvrin "HREP projects backwater restoration"
In WI boundary waters, 66% of HREPs have included an objective to improve or restore bluegill habitat

WI Monitoring Approach:
Following 3rd period sampling, temperatures approach 10C, movement to ow sites can be observed, even distribution of zero samples changes to clustered. Bass move in to the sites first, then bluegill.

When main channel temps fall below 10C, WI DNR has continued shocking to answer questions about fish movements during 4th quarter.   Found differences in CPUE based on main channel temps, which plays into the HREP monitoring designs.

2001-2007 IA, MN & WI monitored all known ow sites, total of around 800 sites electroshocked. Then can apply ratings to the ow sites.

Largemouth ow is concentrated by deeper areas (6-8') and adults can tolerate a bit more V

WI has observed that velocities at 0.003m/s (suggest feet/second flip to increase resolution) is too high to achieve successful OW site
Water depth should be greater so that the project life is retained over 50 year design intent
Connectivity management is critical—this may expand project influence area to places where MC threatens to break through
3 types of Dredging: 1) the base for the islands has been coming from the main channel, which has no benefit to the bw and generally no benefits to fishes or even to navigation; 2) there is also dredging for construction access (6-6.5' deep and 40-60' wide); 3) then intentional habitat dredging
From construction standpoint, the cuts are straight edged and the sides slough off. Have tried to apply stair-step design approach to extend more of a slope along edges of dredge cut
Sedimentation rates were really high within steep walled channels (Brown's Lake had 3.5" within the bottom of cut) due to sloughing from side walls and high sediment trapping efficiencies

WI DNR hypothesizes that we are establishing new populations of fish within the ow areas created through HREPS. Monitoring does not support the hypothesis that existing fish are simply redistributed.

Ex: HREPs compared to other sites—significantly higher CPUE
Over 80 spp have been sampled in the sites
Samples during floods have led to idea that they may serve as refugia

New light penetration data indicates that increased dredging depths will be necessary to avoid aquatic veg

HREPs for the future will need to have flood conveyance and global warming considerations. By increasing the depth of dredge cuts and then placing sills lower, we can allow flows through but still keep ow.

P8 islands have increased frequency of occurrence of emergent veg, but have also contributed to revegetation of areas. Maybe even facilitating vegetation encroachment into increased water depths.

Jeff suggests updating the models because the variables are not portraying quality ow habitat.

Q: will light penetration continue to increase? Seems like we may be near highest achievable at present. TSS has been going down somewhat. Becky Kreiling's new work touches on this. MN observes that individual storms are having a big influence on overall conditions. If storm-related WQ conditions impact veg establishment windows, there will be some changes to community that are not necessarily reflected in avg light pen.

A: Regarding updating the model. The Corps uses it to compare alternatives. Going through certification may not be worth the effort. But we may want to use better data for HNA or resiliency efforts, not just HSI model output.

Third Speaker: Levi Solomon "Water Depth Issues from IL River"
Issues with sedimentation reducing bw/side channel depths and diversity, lack of veg, reduced floodplain connectivity
Need off channel areas for sportfish nursery, spawning, etc., also important habitat for other species

IL connected backwaters have seen reductions in largemouth bass CPUE for trophy fish since 1993
stock & substock sizes since 1993 have been fine

Age classes above 5-6 of white bass are almost entirely lacking in OR, LG, P16
Otolith data shows almost nothing in older age classes

Sportfish lacking over age 3 and larger size; seemingly a bottleneck between reproduction/recruitment and occurrence of older/larger fish (lack of ow? Lack of resources?)

Pekin Lake (519 program identified as "critical") with goal to restore 45 acres of ow and restore MSU to 700 acres. Primarily managed connection project to address extreme low and high water issues. Preliminary monitoring showed depth, DO, T were ok, but V was too high

Flat pool stages make the bw shallow/dry, but then too much connection at higher river stages. The conditions in Pekin Lake are typical in IL River basin for fully connected bw.

Restoration efforts need to focus on bw/side channels/floodplain connectivity and control sedimentation

Q: Does IL nominate bw projects for HREPs?

Q: Southern River doesn't necessarily have the baseline info about where those functions presently exist.
A: MN observed that in previous lake, grass carp had destroyed veg beds so there were no bluegill to forage, so all forage was macros, limited growth

Fish Indicators: Alison Anderson
The presentation is meant to be an update to respond to questions that were raised last time at the A-Team meeting.

Suggestion to use a common axis to display results between the pools. Or box plots for among pool variations.

Agreement that system-wide migrant reductions were good.

We cannot tell from these bw assemblages with UMRS species total whether there is some offsetting change or if the bw is just stable

Can we create a threshold of backwater fidelity to reduce the total UMRS list?

Can we incorporate impounded strata condition and how it has changed over time?

Everyone send Alison comments by Friday, August 5.

Dave Potter: Standardized fisheries monitoring of HREPs
Handbook for monitoring is the final goal. Vegetation already completed.

UMRCC Fish Tech group gave a start to priorities:
-Random was best
-Strong interest in web-based sample size and locations
-8 gear types
-Attempt to utilize LTRM methods

Looking for A-Team to agree that this is only for HREP evaluation, but not really a scientifically rigorous monitoring approach

Proposed method:
-Rely heavily on LTRM protocol
-Site selection following LTRM
-4 periods
-typical gears plus trawling
-abundance, size, CPUE

Can Brian Ickes develop a web-based tool that can help with size and location of sampling from existing data set? This is a long-standing request from the agencies to help create monitoring layouts in new areas.

Agencies have already been evaluating HREPs, so how do we carry forward older sites that used other monitoring approaches?
Dave will send out a draft to A-Team for review. Distribute within agencies and collate.

Chuck Theiling: Modeling Interactions of Flow and Riparian Vegetation for Improved Riverine Ecosystem
Model certification process is not overly onerous, but has been a requirement for Corps after reform requirements from Congress
-Goal is to understand how vegetation is controlling channel form, flood stages and flood performance

HEC-RAS Primer incorporating Riparian Vegetation Simulation Module

Timeline for completion is end of calendar year 2016.

Regional sediment management:

Conceptual model development for Sangamon River

Custom Soil Blending (tree mulch from Davey, sand from Sangamon, fines from Pekin Lake)

Developing a pilot and budget for the project

Costs avoided on potential purchase of 140 acres of farm field

Thinking of applying collector at Turkey River in P11

Nate DeJager HNA update:

River teams to distribute ideas and develop "wish list" from agencies from last HNA. How will the HNA be used? How will they merge with the resiliency effort? Meaningful aquatic habitat classification. Also floodplain classification. One of the biggest challenges on the river is differing levels of expertise and also the particular habitats that people want to promote are the only ones they understand well. The HNA group would like to level the playing field between different habitat types. What variables? Habitat for what species? Many constraints exist and data gaps?

Q: Have the river teams received some authority and direction to proceed? Nate is going to proceed with some examples for folks to respond to.

Kristen Bouska-Resilience Update:

Loosely following the Resilience Framework from CSIRO, Australia

Specified resilience—controlling variables are known

General resilience—capacity of the system to cope with unpredictable events

Conceptual models have been developed for some specified resilience

Connections to the HNA—looking at potential system-wide GIS layers to be able to extrapolate to outpools

General resilience—maintain diversity & redundancy, manage connectivity, manage slow variables & feedbacks

Possibility of graphing out upstream connectivity, floodplain connectivity, aquatic habitat,

Timeline: Read aheads and resilience group will meet in September, then Jeff will present at the HREP workshop

Agency Updates:

USGS—KathiJo Jankowski will be the new WQ Component Specialist, starts Sept 4

USACE--New Colonel Calkins in St. Paul (http://www.mvp.usace.army.mil/Media/News-Releases/Article/814895/calkins-to-command-corps-of-engineers-st-paul-district/)

MN—Megan Moore has new LTRM Lake City, new veg specialist Eric Lund, Dan Dieterman has small dredging project in Weaver underway

MO--Janet Sternburg is no longer Mississippi River policy coordinator, moved on & up at MO DEC, she will sit in and Dave Herzog will sit in until a replacement has been hired

IA--Ryan Haupfeld will be moving to Missouri River

WI—piloting the CWA monitoring at present, collecting information on fish kills happening now