

ISAC Report to Governance Committee

Feedback on Feb. 15-17 Science Plan Reporting Session

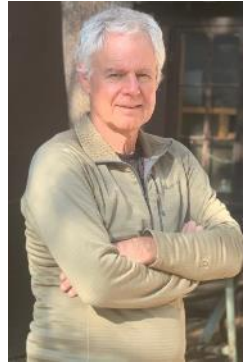
March 8, 2022



David Marmorek, ESSA Technologies Ltd, co-chair



Jennifer Hoeting, Hoeting Consulting, co-chair



Ned Andrews, Tenaya Water Resources



Brian Bledsoe, University of Georgia

Adrian Farmer, Wild Ecological Solutions



David Galat, Coop. Assoc. Prof. Retired, University of Missouri



ISAC actions since last GC meeting

- Reviewed 12 documents in preparation for Feb 15-16 reporting session
- Attended Feb 15-16 reporting session
- Met Feb 17 to discuss our comments with each other and EDO scientists
- Today: overview for GC of our reflections and feedback

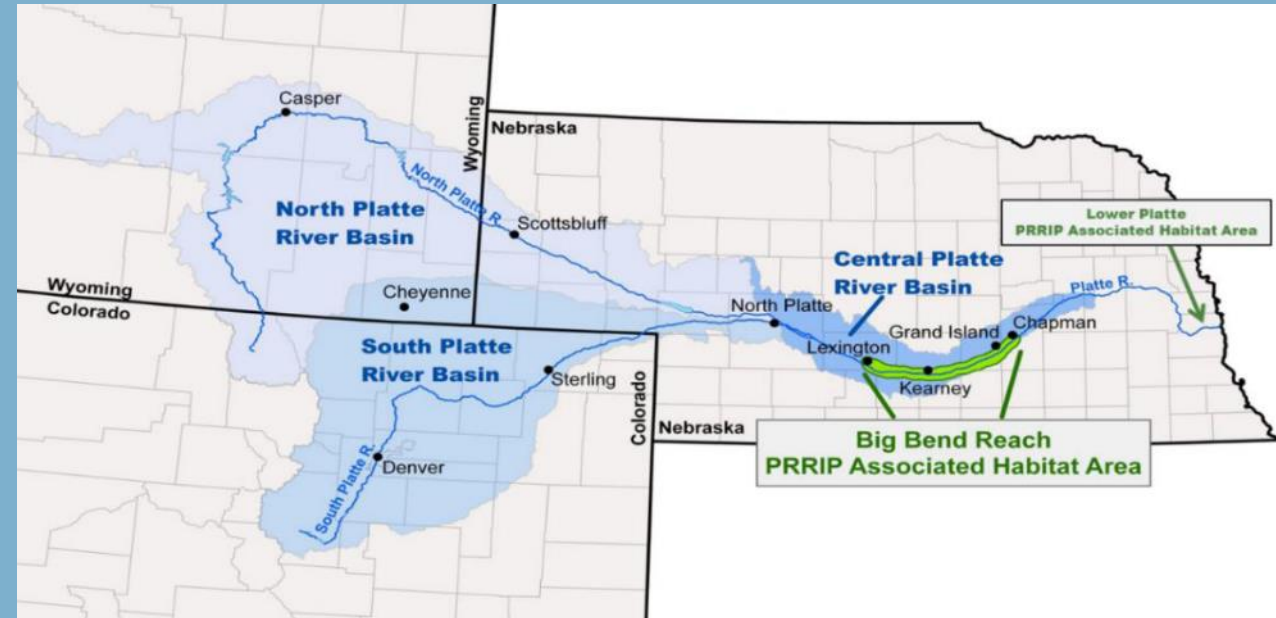
Overall Feedback

1. EDO continues to do high quality science, with a dedicated, talented team
2. Broadening understanding of target species' life histories outside of the AHR will help to guide Program management.
3. Increasingly doing more cross-disciplinary science (also good!)
4. Science Plan is evolving well and is a strong foundation for the Extension.
5. Explore effects of climate change on all Program components.



Categories of ISAC recommendations

1. Science Plan
2. Piping Plover Predator Management
3. Whooping Cranes
4. Pallid Sturgeon
5. Geomorphology & In-Channel Vegetation Monitoring
6. Wet Meadow Hydrology
7. Channel Width Modeling
8. Effects of Climate Change



Science Plan

- ISAC impressed with the structure and content of the Extension Science Plan
- Protocols well established. Adjust them if needs change
- Keep moving towards statistically testable hypotheses
- Triggers:
 - Good to see triggers. Purpose?
 - Triggers for other BQs? EBQs?
 - Clarify *why* triggers are proposed for each BQ or EBQ, *how* they were derived, and *what* they would trigger *when*
- Workload:
 - Need to ensure talented group at EDO does not get overloaded; more staff will help
 - Sequence science activities given highest priority information needs for negotiation of Second Increment

FIRST INCREMENT EXTENSION SCIENCE PLAN



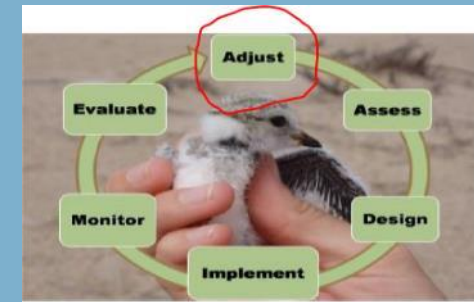
February
15-17, 2022

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM
EXTENSION SCIENCE PLAN
DRAFT for Science Plan Reporting Session



Warning
signs?

OR

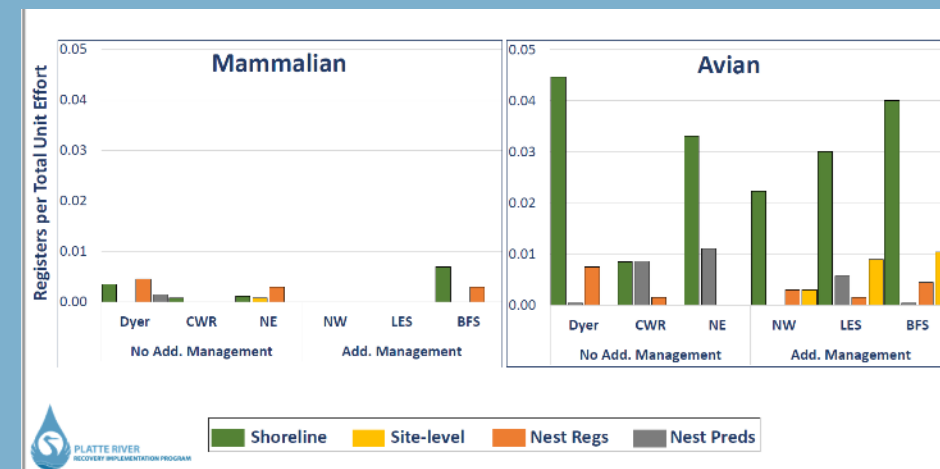


Inputs to AM
decisions?



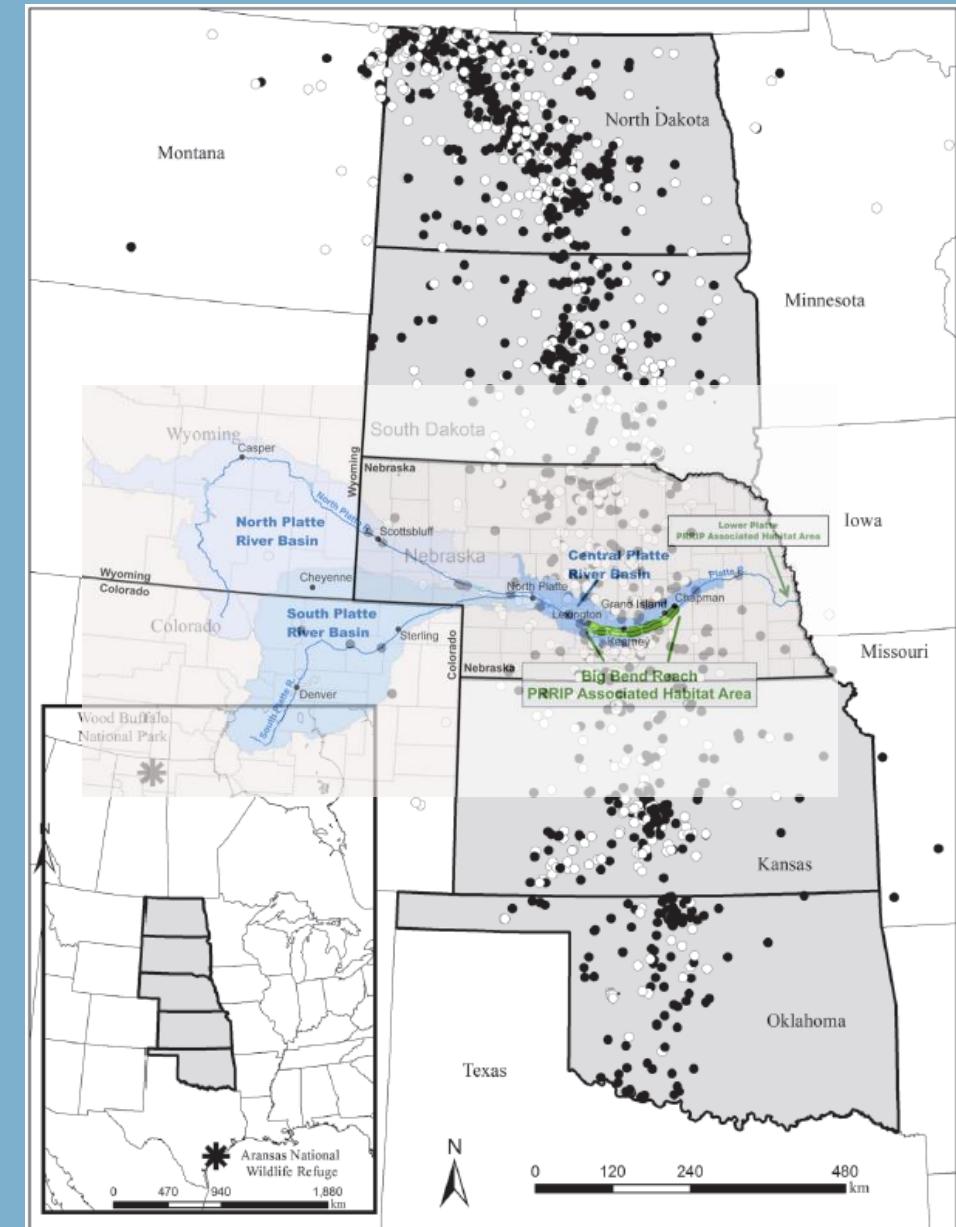
Piping Plover Predator Management

- Very valuable data being collected on predation; worth continuing through 2023
 - Assess effectiveness of trapping, fencing and lighting before adding other actions (e.g., cages)
 - If 2024 assessment shows existing measures insufficient, consider formal test of nest cages
- Key question is how much predation is acceptable to the Program and USFWS?
 - Consider best way to analyze predation data to isolate effects of predator control actions given site differences
 - Want OCSWs to be a population source, not a sink
- Great to have USGS studies summarized by Rose Swift
 - Continue dialogue with other researchers grappling with predation issue (USGS, MRRP)



Whooping Cranes

- For EBQ 4, 5 and 6, better to look at WCs over the entire flyway, not just Platte R.
- How do sites interact to deliver WCs to breeding grounds? What's relative role of the Platte?
- Provide funding for collaborative efforts with other researchers, sign Data Sharing Agreements (not easy, but worthwhile)
- Collaboration will help with other questions (e.g., effects of weather on migration)
- Flow less likely to influence stopovers than other factors visible from the air (e.g., wetted width)
- What's an acceptable level of stopovers and length of stay? How does Platte River rank?

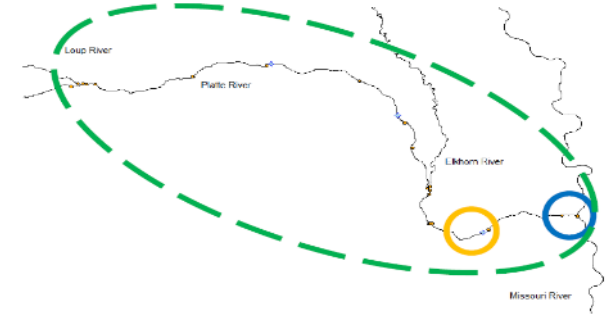


Spring (○); Fall (●); Jorgensen et al. 2017

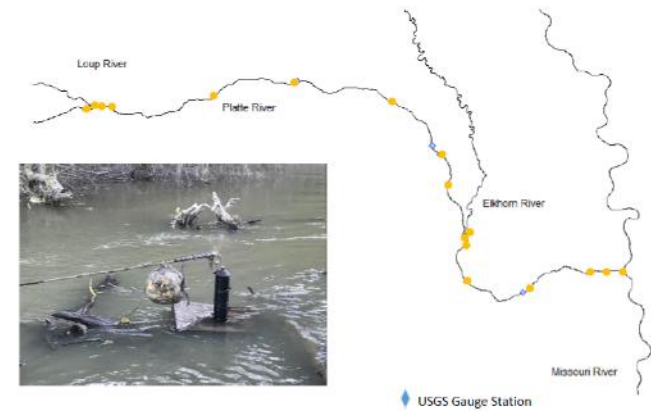
Pallid Sturgeon

- Great progress working with UNL, SIU and NGPC; Malinda's role on thesis committees is important
- LiDAR flyover of Lower Platte River is worth doing (during low flows) - will help to estimate water depths and roughness for hydraulic modeling (but just 1 flyover)
- Continue to encourage UNL and NGPC to use good study design principles so results will be usable in the future
- Will be difficult to determine relationships between habitat conditions (flows, depth, velocity) and habitat selection by juvenile and adult fish
- Will also be difficult to determine % contribution of Platte R to Missouri R population (age-0 PS are rare)

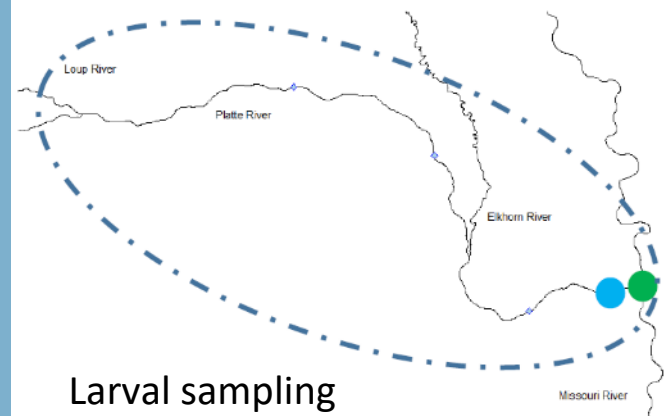
Sources of juvenile and adult pallid sturgeon



Tentative listening station locations



Larval sampling



Geomorphology & In-Channel Vegetation Monitoring

- Tremendous progress on use of LiDAR and data analysis; huge progress since 2016!
- Uncertainty in 2010-2016 estimates of sediment balance much larger than shown (drop these data)
- Program at leading edge of sediment balance analysis. Excellent work! Worth publishing
- Sediment augmentation effective, appears to protect main channel below Overton Bridge
- Bank / lateral erosion in south channel = natural sediment augmentation (good).
- Effects on sediment stored vs. effects on sediment transport downstream. Over entire reach, close to sediment balance.
- Existing analysis filters out a lot of the LiDAR data; important to explore this further

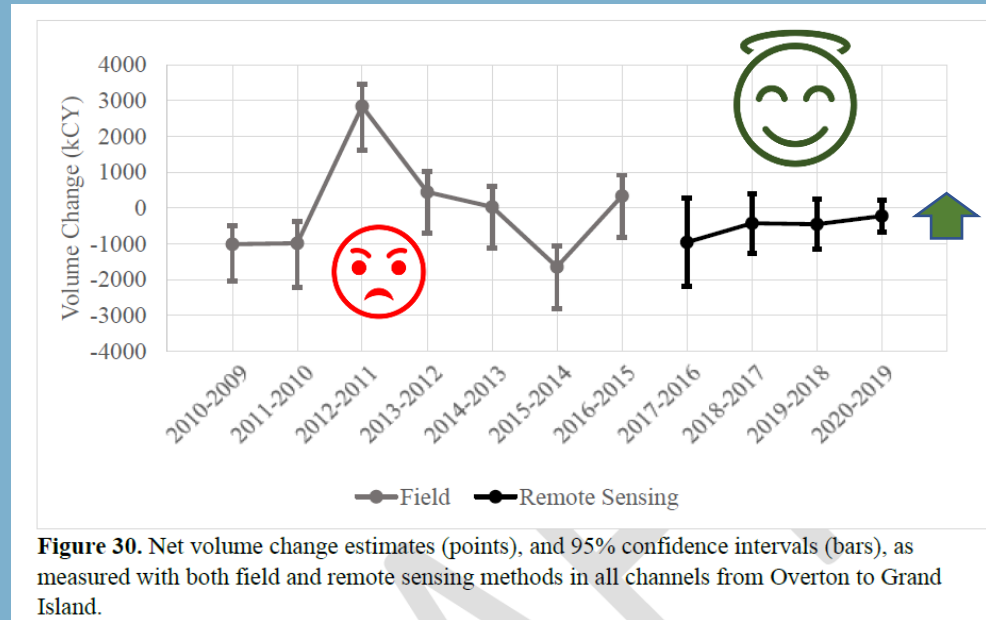


Figure 30. Net volume change estimates (points), and 95% confidence intervals (bars), as measured with both field and remote sensing methods in all channels from Overton to Grand Island.

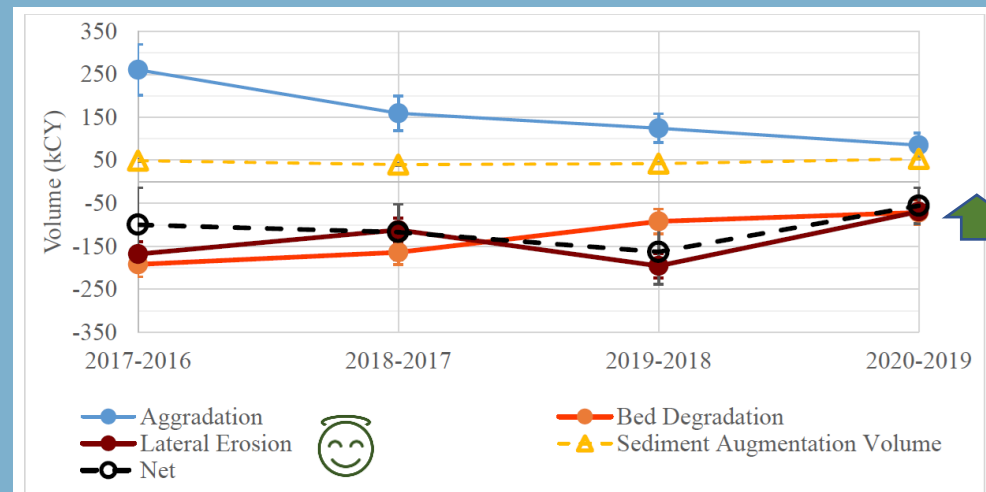
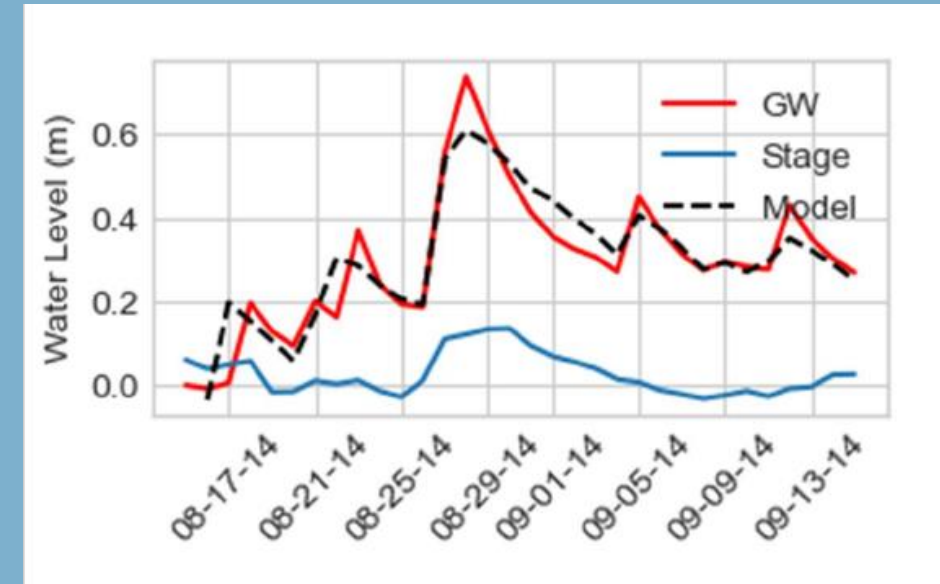
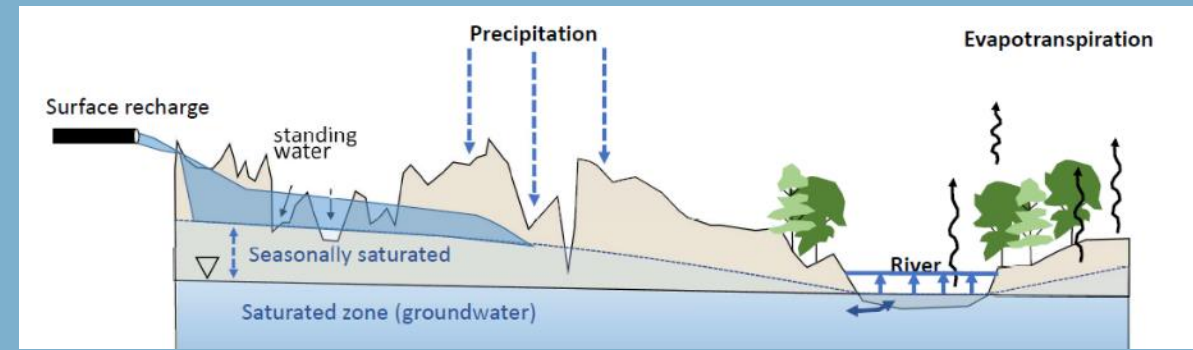


Figure 35. Total volumes of classified areas of significant elevation change by year, and sediment augmentation volume, for the J2 Return to Overton reach

Wet Meadow Hydrology

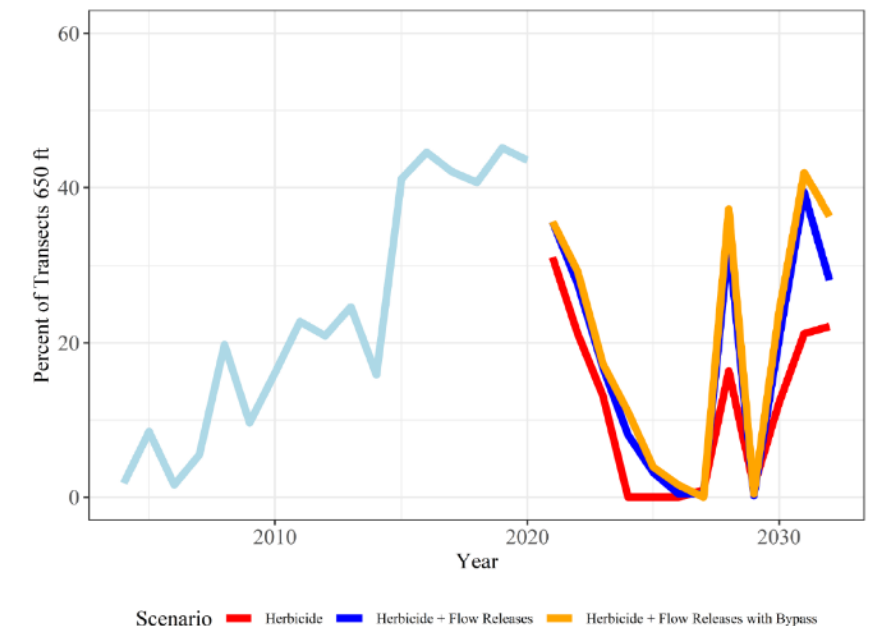
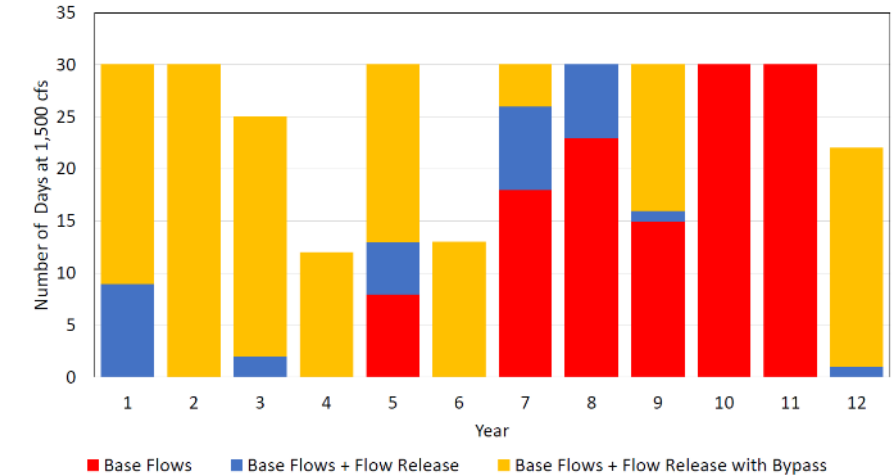
- ISAC agrees with Program that wet meadows are an important part of the AHR ecosystem
- Great progress by EDO in melding empirical information and modeling
- Work helps to better understand effects of flow (and factors beyond Program control) on wet meadows
- Good first step in helping land managers to better manage wet meadows
- Since WCs don't use wet meadows much,
 - meadow management likely won't change WC use, and
 - likely won't motivate changes in Program flows.
- But managing wet meadows well has other benefits
- How sensitive to drought?



Channel Width Modeling

- Modeling is a great advance; connects [climate + flow + herbicide] to channel widths to WC habitat.
- Also complex. Need further model testing, understand causes of counter-intuitive predictions
- Benefits of bypass may change with more model testing
- Parts of system (e.g., changes in vegetation over multiple year droughts) are outside of model
- Climate variation may have more effects on outcomes for WC habitat than management actions
- Existing model is anchored in historical data; other analyses and tools might be helpful to explore scenarios beyond past conditions
- Important to test model predictions with field data (e.g., predicted vs. observed changes in Maximum Unobstructed Channel Width)

Flow scenario: Base Flows + Flow Releases with Bypass



White Paper on Climate Change / Extreme Weather

ISAC proposes the EDO develop a white paper discussing potential impacts of climate change on Program:

- Water
- Species and their habitats
- Use of analytical tools to rigorously explore the range of possible future conditions under climate change
- Actions doable now to make AHR more resilient to climate change impacts
- Ability to meld Adaptive Management and Climate Change Adaptation



<https://www.ecowatch.com/flooding-nebraska-bomb-cyclone-2631998694.html>
<https://cropwatch.unl.edu/2017/should-you-hay-or-cut-silage-drought-damaged-corn-fields>

Conclusions

- EDO has made excellent progress on the Draft Science Plan and associated analyses
- Strong team of scientists at the EDO - analytical, creative and open to suggestions for improving tools and methods
- Prioritization of information needs for negotiation of the Second Increment will help manage work loads



End of March 2022 ISAC Check-in with PRRIP GC

Questions?