

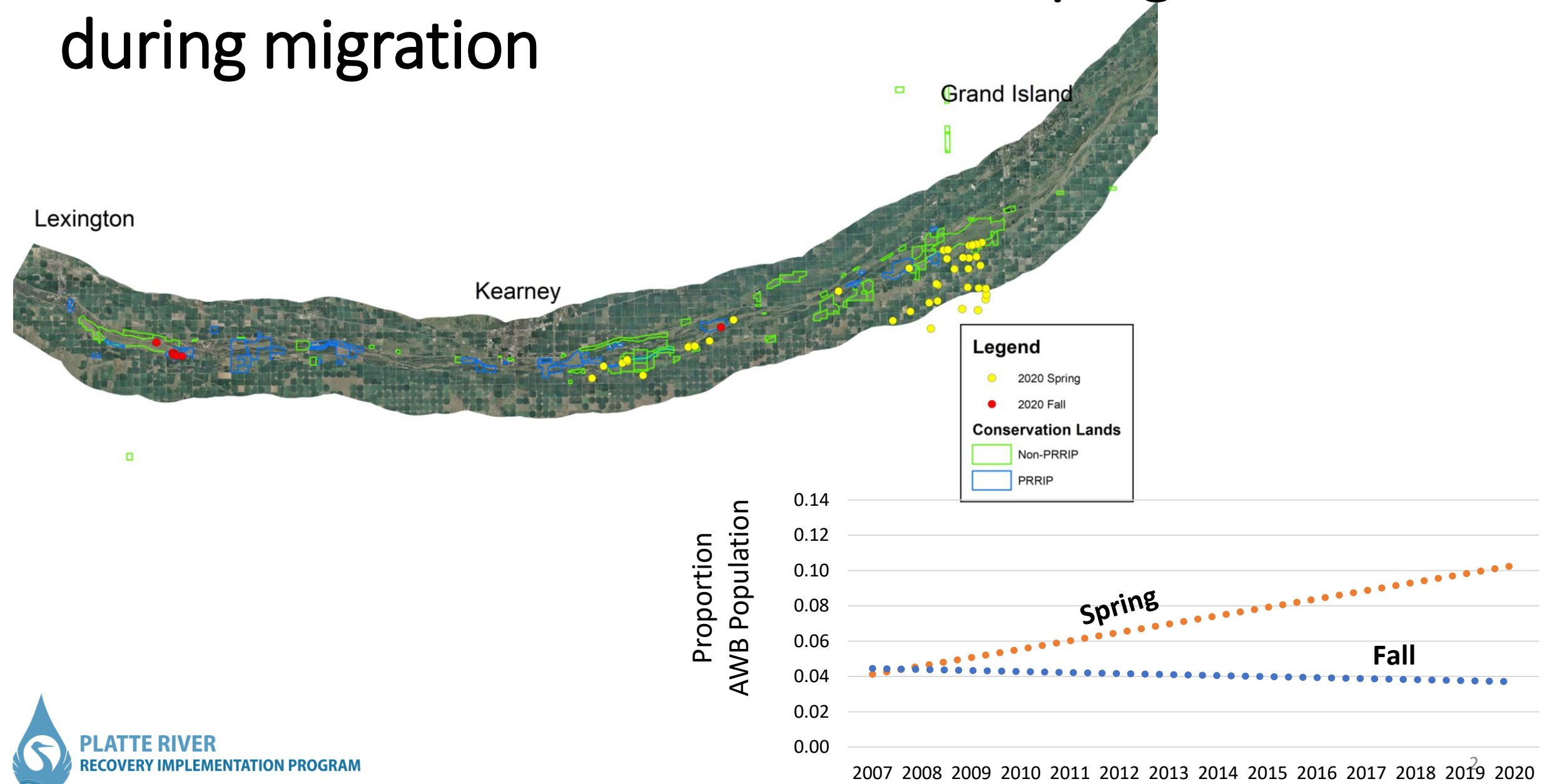
# Adaptive Management Working Group AMP Development Whooping Cranes

Malinda Henry – Science Lead  
PRRIP EDO Staff



*Colleen Childers*

# Contribute to the survival of whooping cranes during migration



# Whooping Cranes - Potential Big Questions

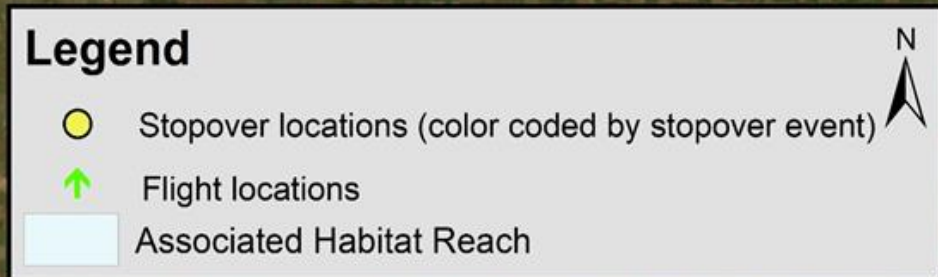
1. Conditions associated with stopovers vs. flyovers?
2. Water maintenance of unobstructed channel width?
3. Are WC that stop along AHR more fit?
4. Conditions influencing length of stay?





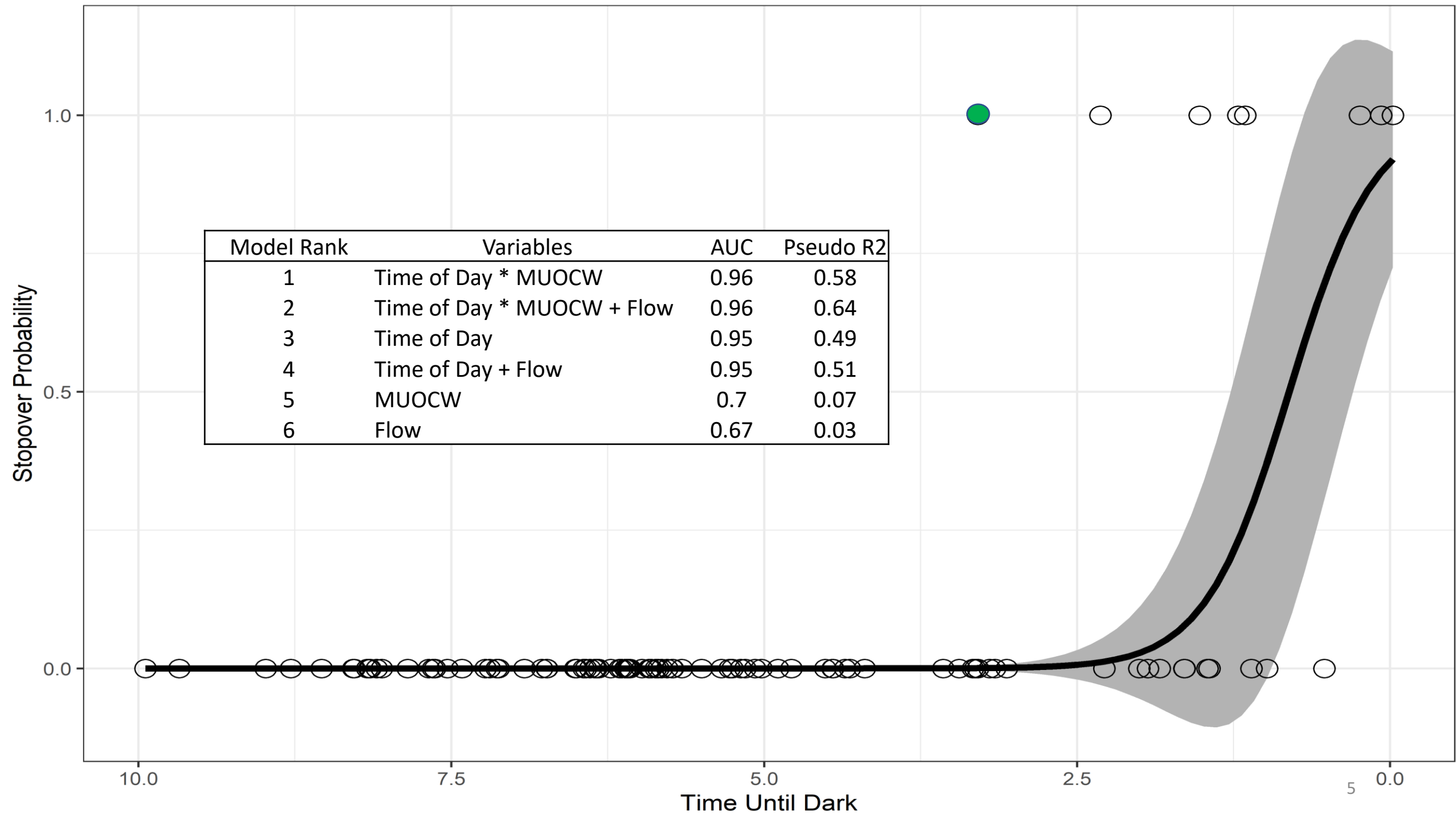
# Stopover/Flyover Locations in AHR

## Fall 2017 – Spring 2020



- Multivariable logistic regression
  - Time of day
  - Maximum unobstructed channel width (MUOCW)
  - Flow





# Stop or flyover the AHR?

## Moving Forward

- Priority variables?
- Low flows and WC use?



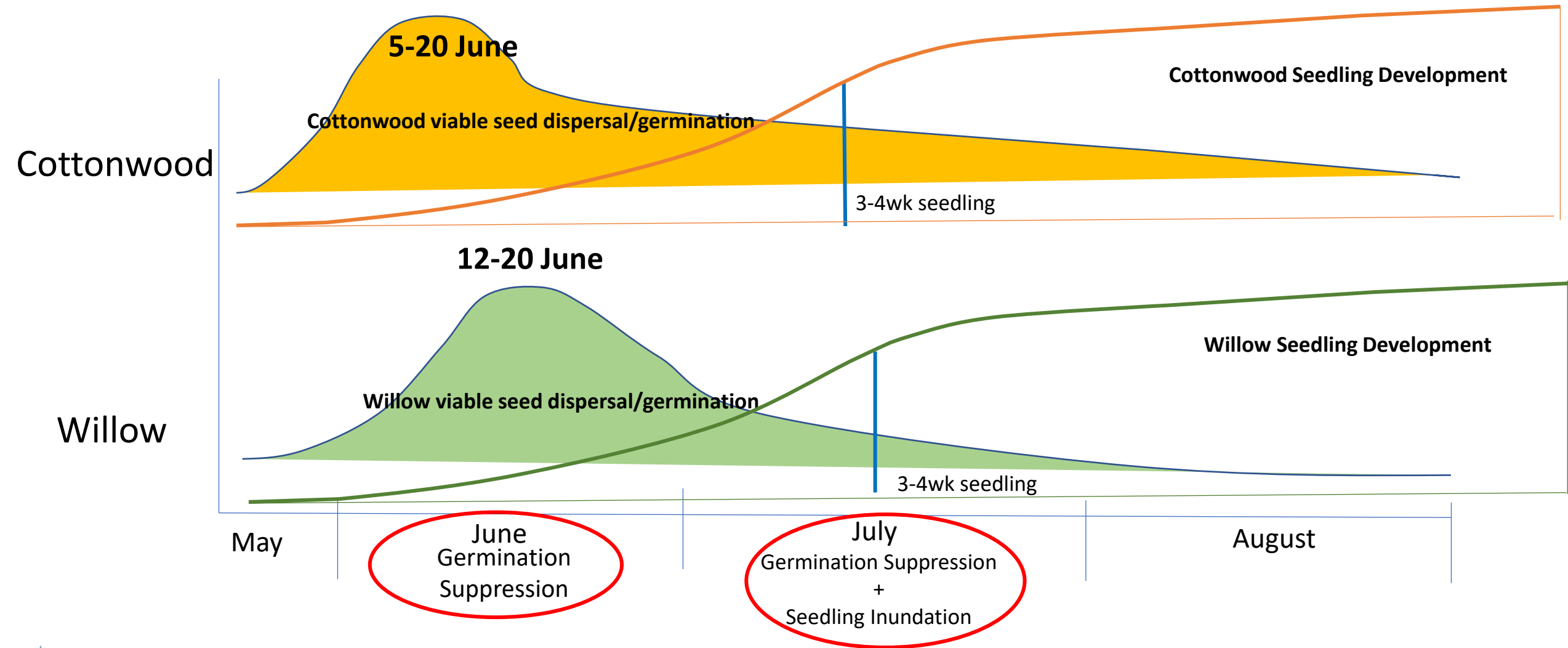
# Water maintenance of unobstructed channel width?

- Short duration high flows (Fall)?
- Germination suppression flows (Spring/Summer)?
  - Water Need?
    - Target vegetation
    - Timing
    - Magnitude
  - Can we do it?
    - Water Availability
    - Operations Capacity



# Timing

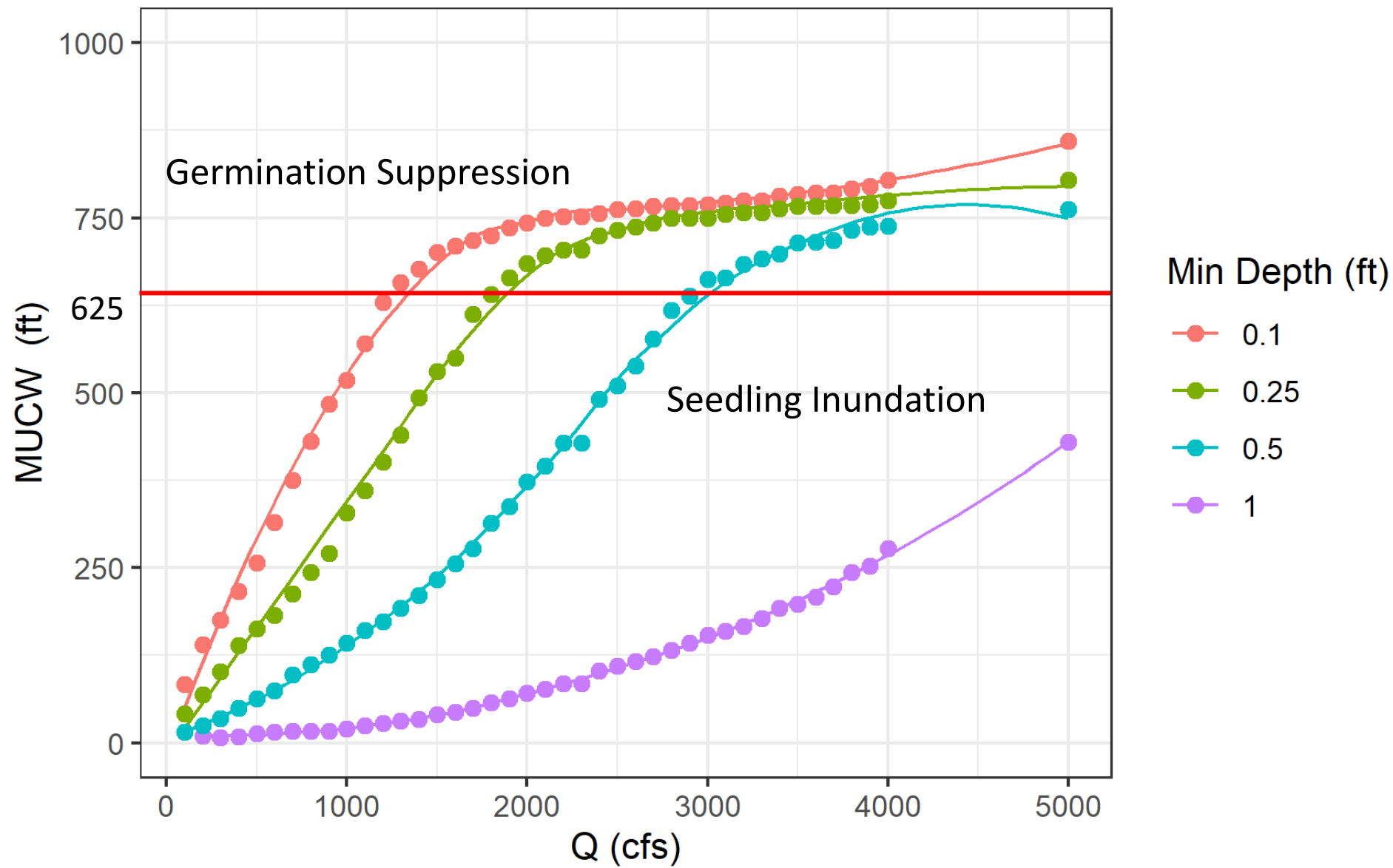
## Germination Suppression vs. Seedling Inundation





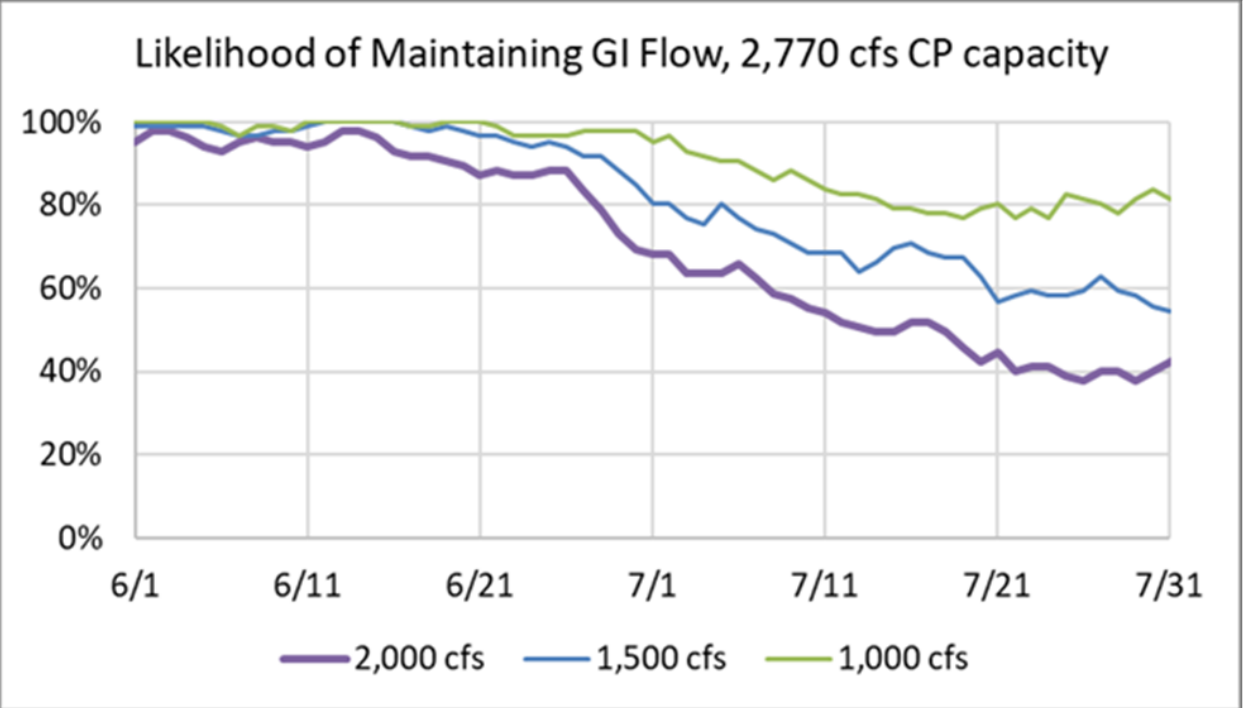
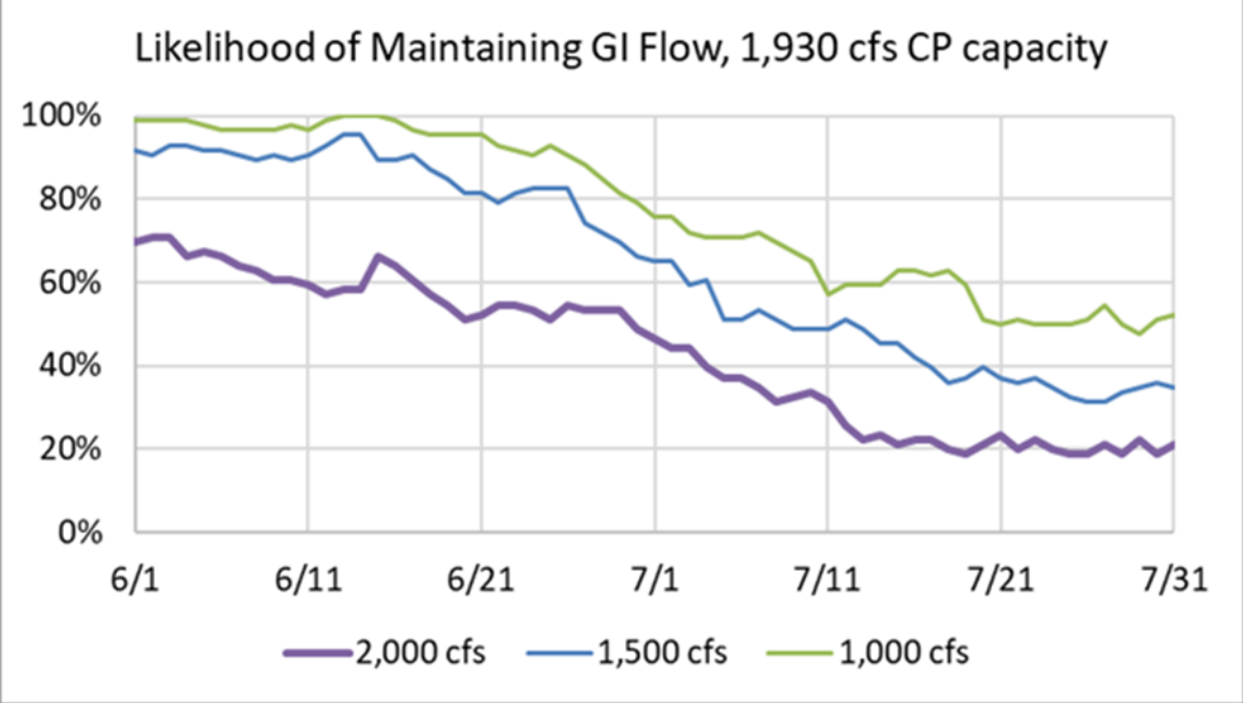
# How much water do we need?

Rowe Sanctuary



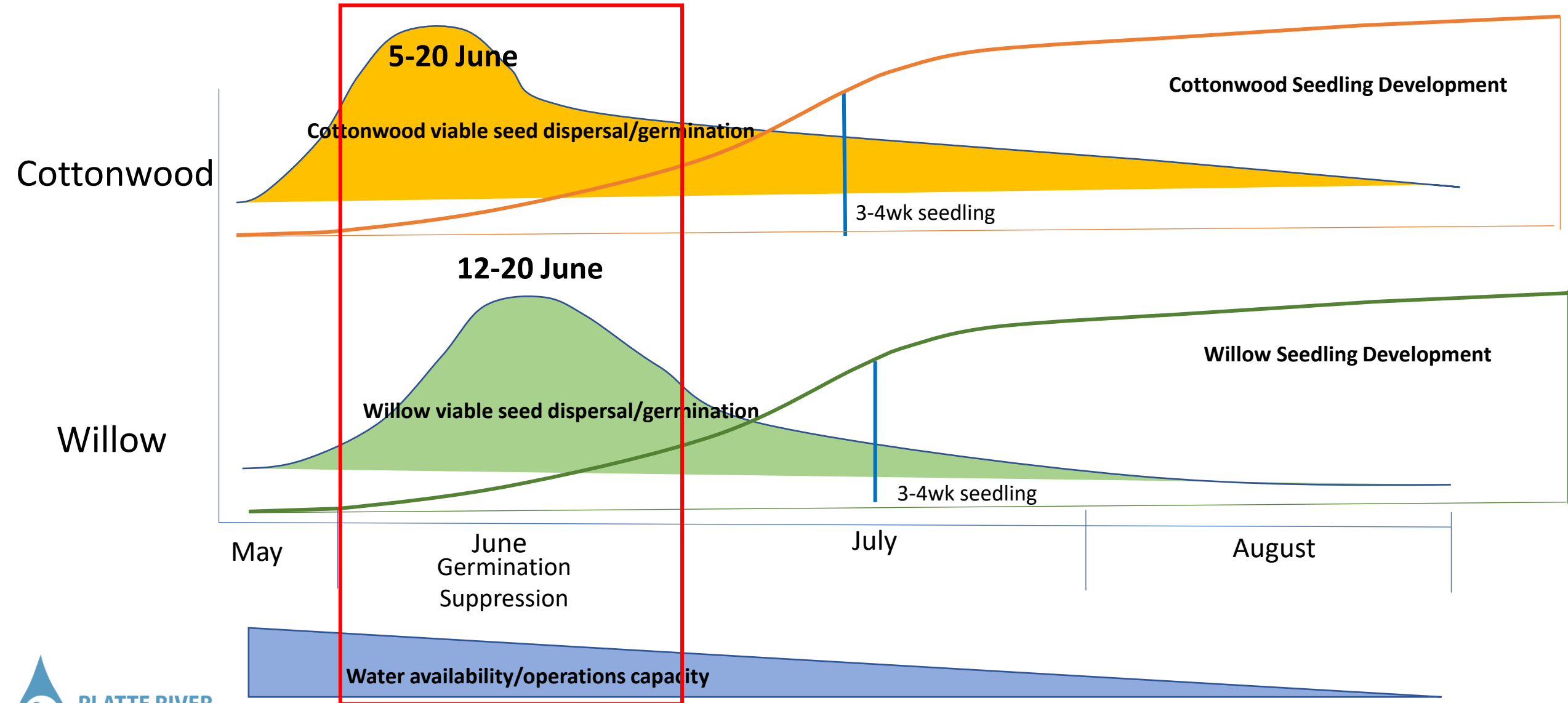
# Can we do it?

## Water Availability/Operations





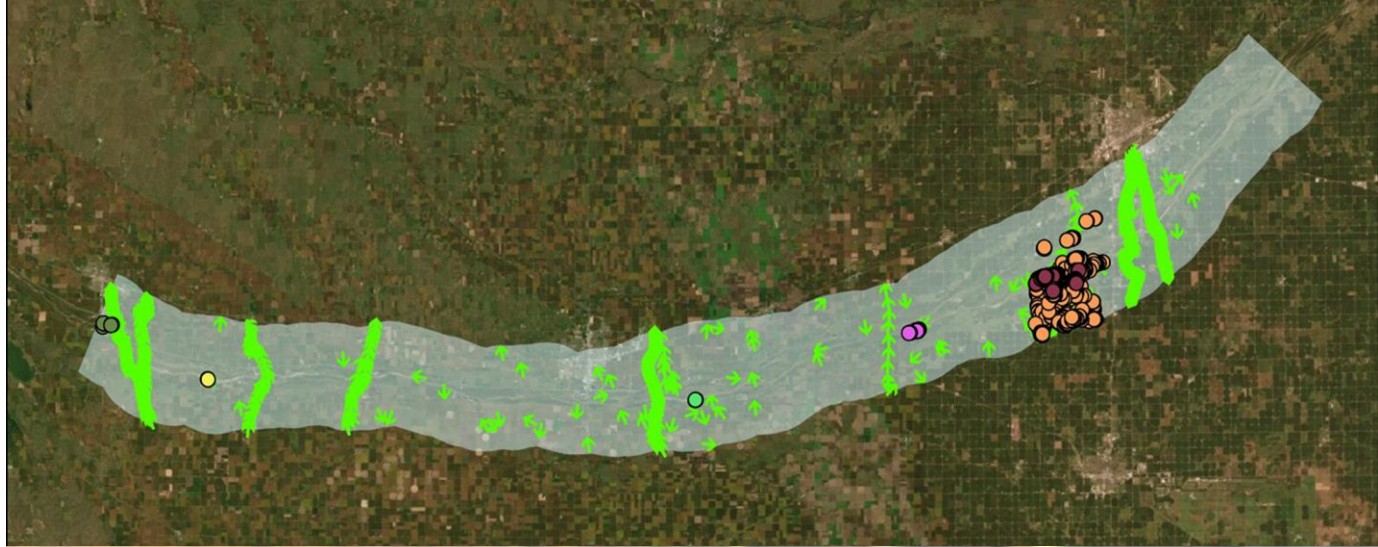


# Germination Suppression vs. Seedling Inundation



# Are WC that stop along the AHR more fit?

-  Survival
-  Reproductive Output





# Conditions influencing length of stay?

---

Are longer stopovers beneficial?

- Increased survival?
- Higher reproductive output?

Factors associated with longer stopovers?

- On-channel
- Off-channel
- Age, time at previous stop, season, weather, presence of sandhills



# WC - Potential Big Questions

1. Conditions associated with stopovers vs. flyovers?
2. Water maintenance of UOCW?
3. Are WC that stop along AHR more fit?
4. Conditions influencing length of stay?





# March 2021 ISAC Check-in with PRRIP GC

## PRRIP GC Virtual Quarterly Meeting March 10, 2021

**David Galat**, Ph.D., Cooperative Associate Professor Retired, University of Missouri – 2020 ISAC Co-Chair

**Jennifer Hoeting**, Ph.D., Colorado State University – 2020-21 ISAC Co-Chair

**Dave Marmorek**, M.Sc., ESSA Technologies Ltd. – 2021 ISAC Co-Chair

**Ned Andrews**, Ph.D., Tenaya Water Resources

**Brian Bledsoe**, Ph.D., University of Georgia

**Adrian Farmer**, Ph.D., Wild Ecological Solutions



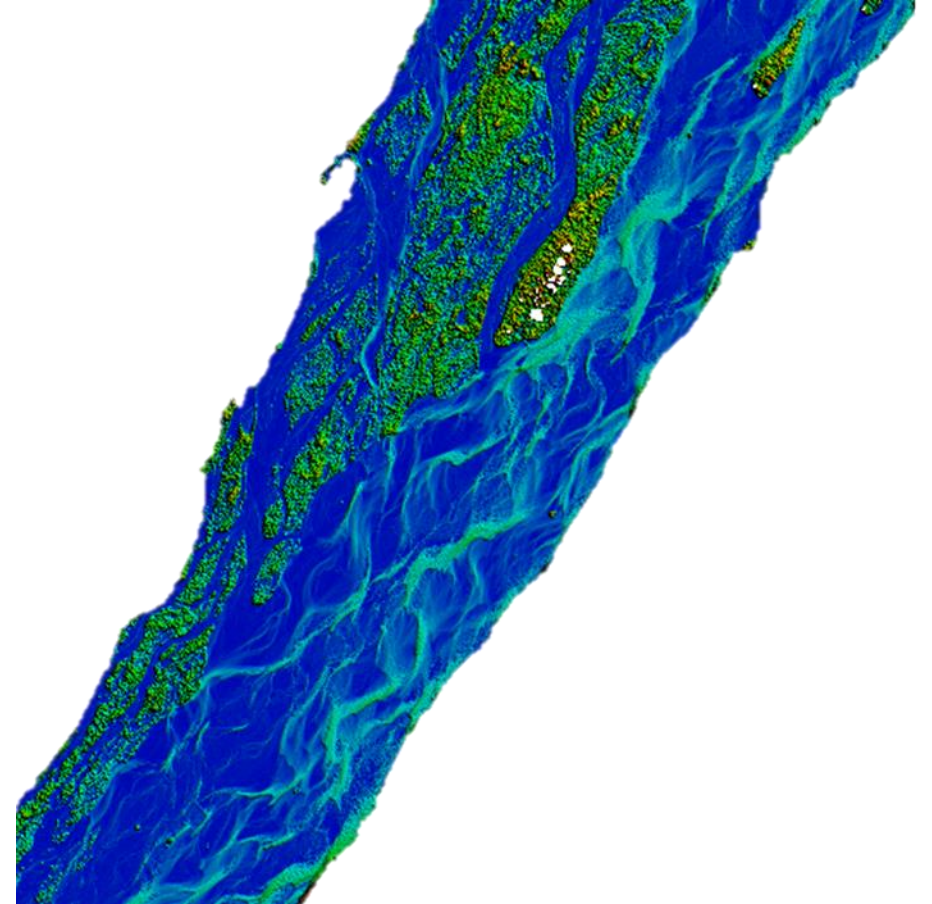
# Program Accomplishments

- Most 1st Increment milestones have been achieved
- Most 1st Increment Big Questions have been answered clearly
- Effectiveness of disking, spraying, and suppression of germination represents significant progress
- Major issues and challenges remaining have been identified.
- Excellent progress on water prioritization model
- Specific studies and modeling efforts are focused on key issues.
- Excellent EDO staff – creative, curious, hard-working, dedicated.

# March 2021 ISAC Check-in with PRRIP GC

## Topics:

- Adaptive Management
- Program Milestones
- Target Species: How to monitor
- Target Species: How to manage
- Water





# Adaptive Management

## Challenge: Formal AM experiment vs. standard management practice

### Why it matters:

- Don't need AM if there's no uncertainty; save \$
- BUT, ignoring uncertainty and assuming "we know best" has proven wrong multiple times
- Focusing science on critical uncertainties with biggest impact on key management decisions is wise use of limited staff & resources

### Possible ways forward:

- Start with key decisions on different timescales (within year, across multiple years)
- Rank uncertainties, assess risks & benefits of reducing uncertainties
- Determine highest priorities for formal AM



*"Shouldn't you rake those up first and then set them on fire?"*

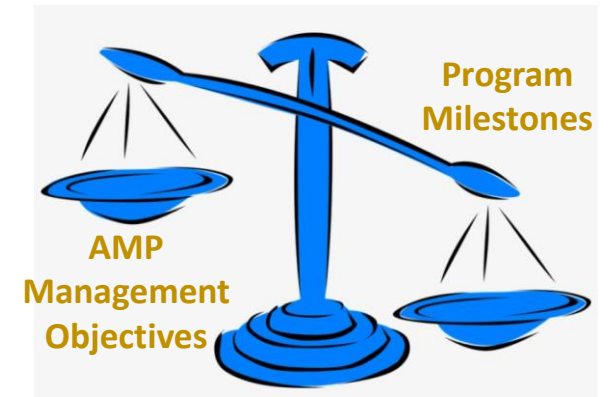
# Program Milestones

**Challenge:** Connecting GC program milestones to AMP management objectives focused on the species

**Why it matters:** A clear connection between management objectives & milestones allows science to facilitate learning, focuses benefits on target species, and enables species-relevant decision making

**Possible ways forward:**

- Formalize decision process to distribute available water/land/\$\$ to achieve species objectives in space and time
- Communicate species management outcomes to GC in terms relevant to their stakeholder interests
- ID which Extension GC decisions can be most influenced by science
- ID risks-benefits of alternative management actions over next decade



# Program Milestones

**Challenge:** The future is uncertain; will current milestones be sufficient?

## Why it matters:

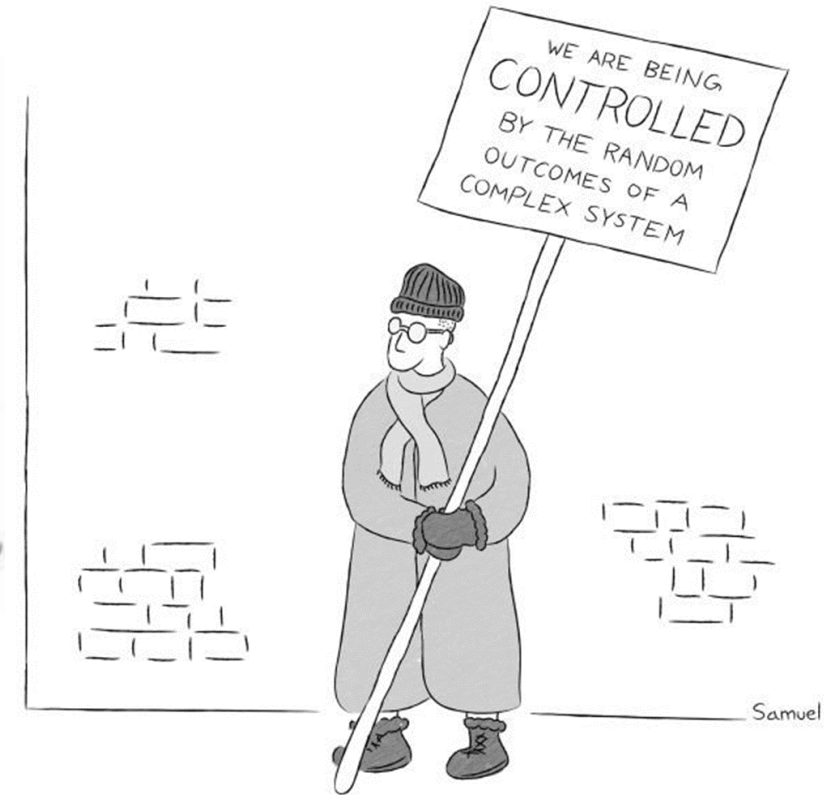
- Use learning during 1<sup>st</sup> Increment to re-assess milestones
- Institutional agreements become set in stone, while other Program aspects evolve

“When life looks  
like easy street,  
there is danger  
at your door.”

— Jerry  
Mencia

## Possible ways forward:

- Capitalize on 1<sup>st</sup> Increment learning to prioritize resource allocation
- Develop future water scenarios relative to prioritized species management actions





# Target Species

**Challenge:** Objectives for target species are subjective and vague

## Why it matters:

Clear quantitative objectives facilitate efficient use of program resources

## Possible ways forward:

- Think of objectives as management guidelines, not regulatory thresholds
- Objectives need not be a single value
- Explicitly define what constitutes success more than just “increasing production.” Test if trends are statistically significant. Formalize the baseline



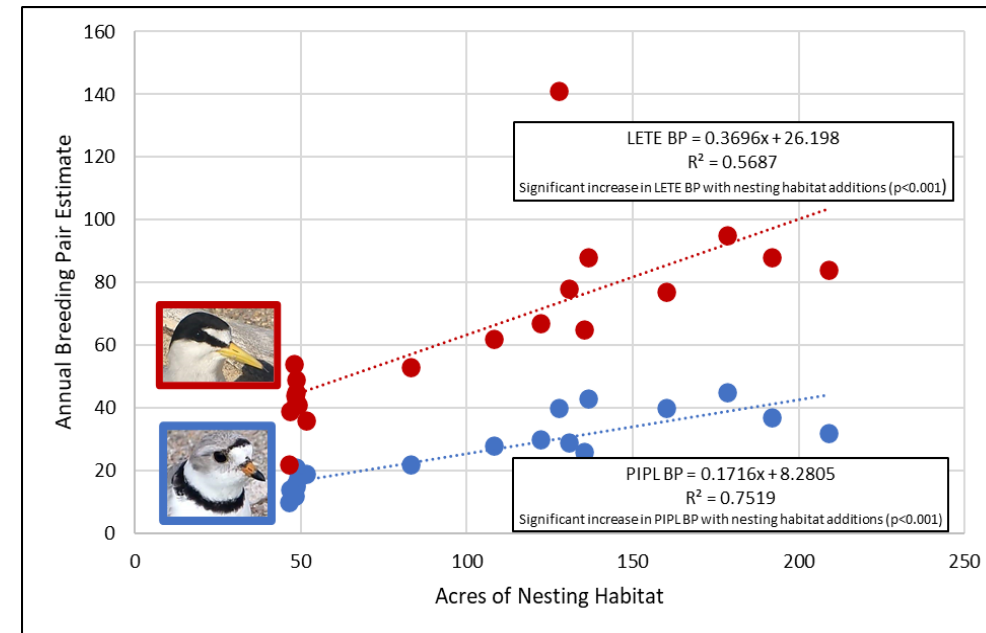
# Target Species - How to monitor

**Challenge:** How can qualitative performance indicators for target species management actions inform Program milestones?

**Why it matters:** Interpretation of qualitative indicators is subjective

## Possible ways forward:

- Refine suite of proxy performance indicators backed by sound science
- ID which anticipated Extension GC decisions can be most influenced by science
- Communicate to GC how acres of land (a program milestone) yields targeted outcomes in proxy indicators and how these will improve LT and PP production and/or help WC



# Target Species - How to manage

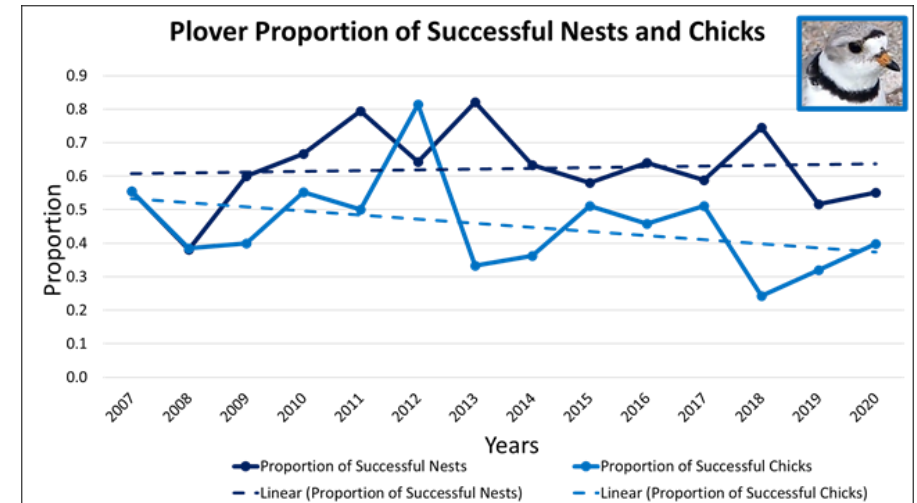
**Challenge:** High spatial & temporal variability make it unlikely to rigorously statistically test predator management actions.

## Why it matters:

- TAC will likely fail to reach consensus recommendations to GC using expert opinion
- There is enough uncertainty about predation that merits investing in more formal science
- If we can't do something about a recognized issue now, it's likely to cost more in the future

## Possible ways forward:

- Formulate alternative hypotheses to predator control
- Explore Before-After-Control-Impact (BACI) designs at site scale
- Apply multivariate approaches to generate hypotheses about why some sand pits have more nests / fledglings than others
- Trade-off analysis on risk-benefit of competing management actions to improve T&P production





# Target Species - How to manage piping plovers

**Challenge:** Management of off-channel sand and water (OCSW) nesting areas for plovers is a novel approach; its long-term success is uncertain.

**Why it matters:** OCSW sites are the only feasible option currently available; it is imperative to get their management right.

## **Possible ways forward:**

- Research on predation outlined by EDO is important.
- Continue exploring ways to mitigate predation.
- Explore apparent effects of site age and possible actions to tackle age effects.



# Target Species – Whooping Cranes

**Challenge:** How to prioritize among different water goals for whooping cranes (WC), particularly during drought conditions?

The Program wants low flows when WC arrive, moderate flows to flood vegetation during stopovers, and high flows to maintain suitable channel widths for WCs.

**Why it matters:** Water is the big uncertainty

**Possible ways forward:**

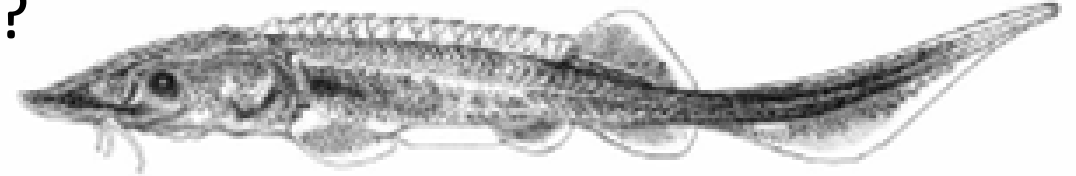
- Implement a process to allocate water across prioritized annual species needs under a range of water availability scenarios within a dynamic system.
- ID what breaks the system under future scenarios – what is the risk of underinvesting vs. over investing.



# Target Species – Pallid Sturgeon

**Challenge:** Does a contribution to research ‘avoid adverse impacts to PS populations’ in the lower Platte River?

## Why it matters:



- Pallid sturgeon (PS) use of the Lower Platte River and major tributaries is increasing.
- Program document goal language (benefit PS) and AMP Management Objective (avoid adverse impacts to PS) remain inconsistent.
- Consensus on the ‘pallid issue’ during the Extension needed to inform Second Increment.

## Possible ways forward:

- Follow guidance: Compass’s Proposed Approach to Pallid Sturgeon Decision Support (9/2017) & EDO’s Pallid Sturgeon Discussion Summary White Paper (1/8/2018);.
- Embrace phased approach in ‘Priority Management Hypotheses’ (PS1-PS3), August 2019 draft AMP
- Justify how a genetics study achieves the “Thabault Doctrine”. Benefit is improved understanding of status of pallid sturgeon population and trends in its genetic diversity.



# Water

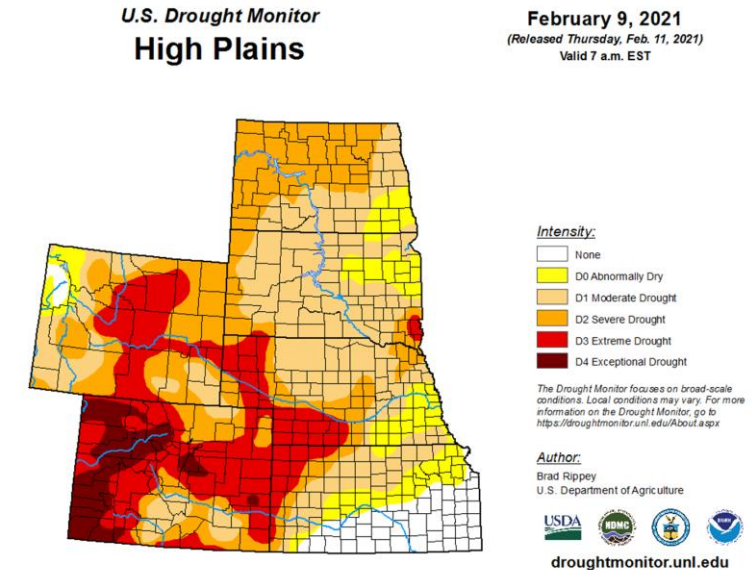
## Challenge: Water management under uncertainty in climate & weather

### Why it matters:

- Water supply is uncertain on both short & long time scales
- Decisions need to be made on Environmental Account water & other water buckets
- Current management approaches could fail under novel future conditions

### Possible ways forward:

- Methods exist for identifying future vulnerabilities & proactively building resilience against them
- Continue to integrate/improve/test tools for in-season & multi-year water management
- Explore pros & cons, tradeoffs of different water management decisions



# Water

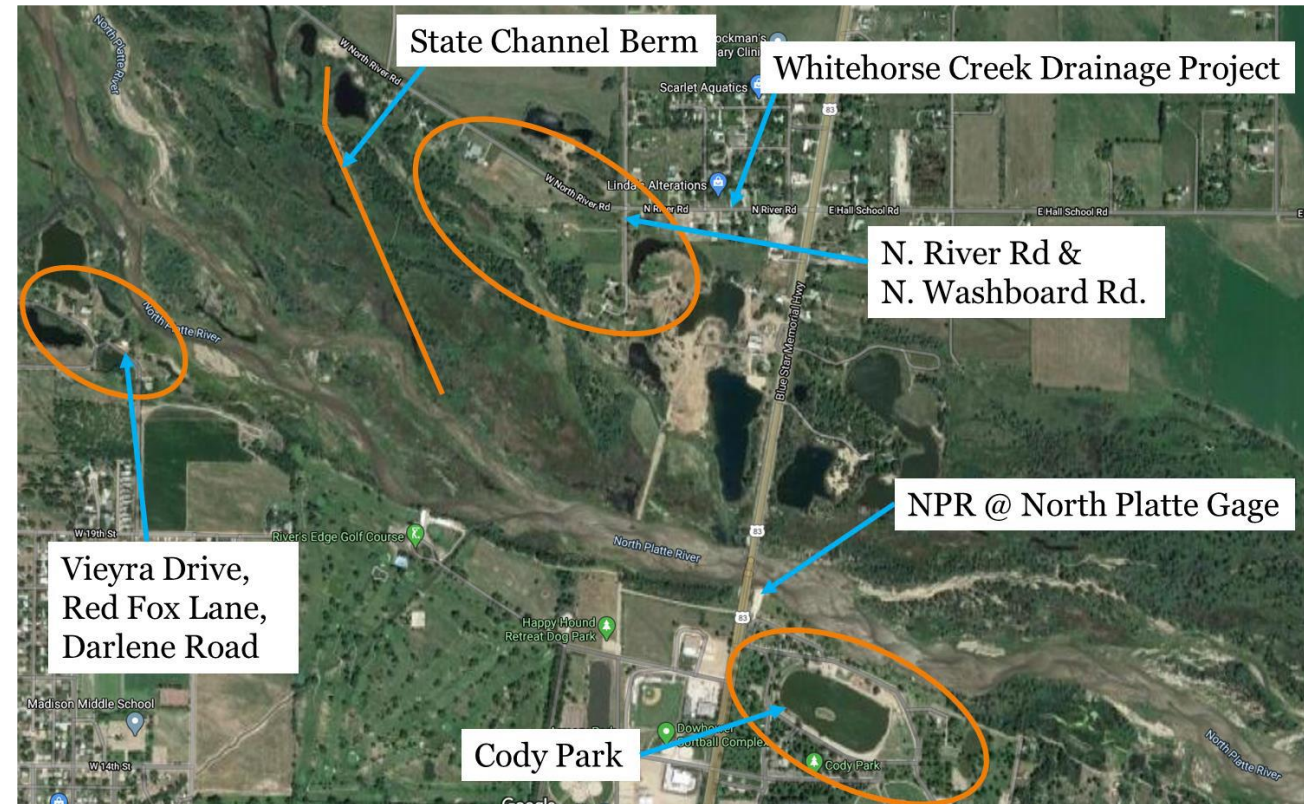
**Challenge:** North Platte choke point significantly limits flow management options

## Why it matters:

- Flexibility in water operations & flow management increases resilience & options for maintaining habitat

## Possible ways forward:

- FEMA programs for addressing repeated loss properties
- FEMA Community Rating System incentives
- Buyouts





# Water

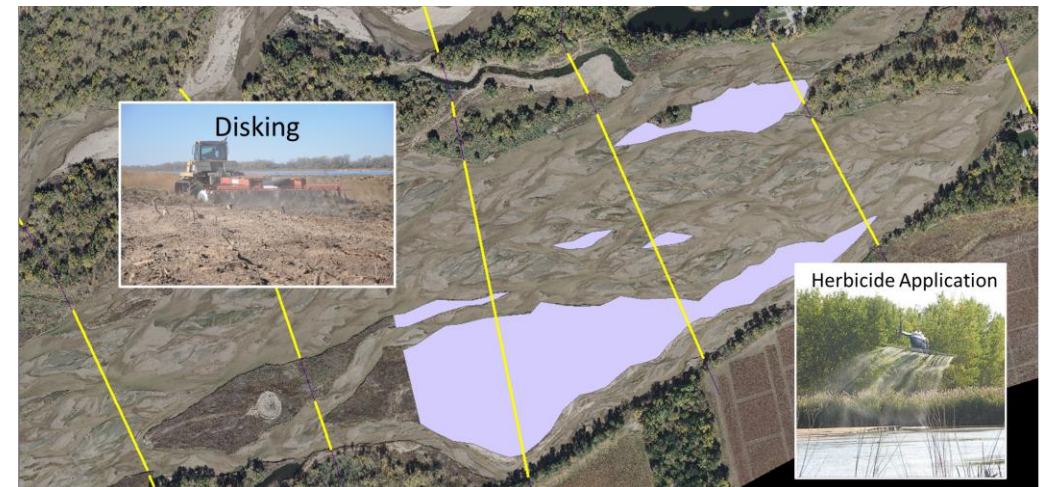
## Challenge: Maintaining desired channel width

### Why it matters:

- Maintain roosting habitat for whooping cranes
- Unobstructed channel width in Associated Habitat Area is highly variable year-to-year compared to most rivers
- Water supply is uncertain on both short- & long-time scales
- Decisions need to be made on Environmental Account water & other water buckets

### Possible ways forward:

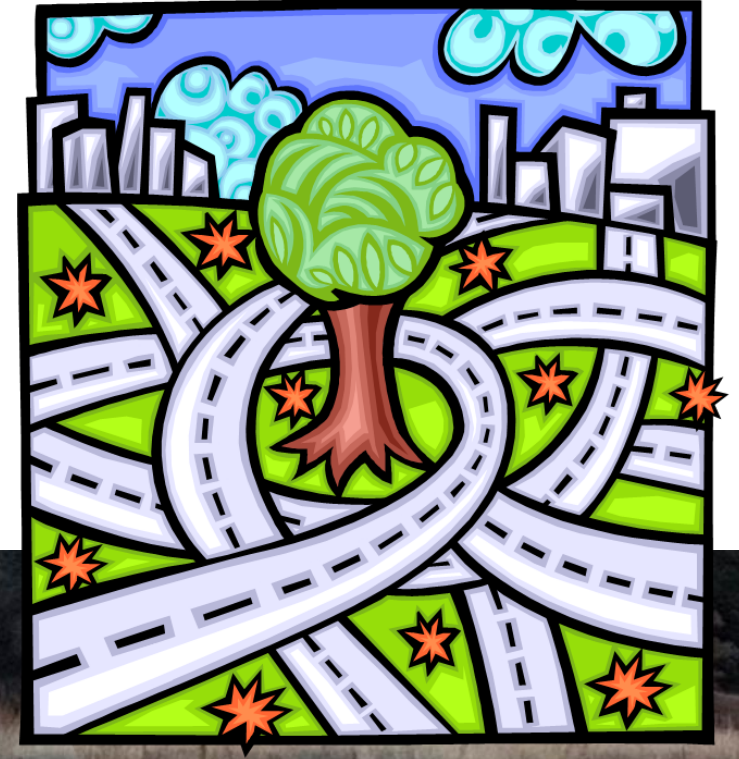
- Acquire additional information on observed range of channel widths & an estimate of measurement uncertainty.
- Refine water model to improve predictions of channel width
- Continue control of vegetation & river flows to suppress germination - essential to maintaining channel width.





# March 2021 ISAC Check-in with PRRIP GC

## Questions?



*Colleen Childers*

# Interior least tern delisting

Matt Rabbe, USFWS

Platte River Recovery Implementation Program Governance Committee  
Meeting

March 10, 2021



# Purpose and Framework for GC Discussion

- What we want to do:
  - Discuss changes to Federal legal status and PRRIP implications
  - Discuss options, potential management, and monitoring for the PRRIP going forward
  - Engage PRRIP with other interested parties
  - Describe areas of uncertainty that still remain
    - Some questions may not have answers at this time
  - Formalize GC decisions and develop a suite of actions to undertake
    - All actions are voluntary, not required for ESA compliance (Federal)
    - Regardless of PRRIP commitments, decisions are needed to document potential changes as a result of ILT delisting





# Background

- January 13, 2021- USFWS published rule in the Federal Register to remove the Interior least tern from the list of Federally threatened and Endangered Species (86 FR 2564)
- Rule became effective February 12, 2021
- Delisted due to recovery
  - Threats to the species eliminated or reduced to the point the species no longer meets the definition of Federally listed T&E species under the ESA
  - Prohibitions and protections provided by the ESA no longer apply

# Current Federal Protections

- ILT still protected under the Migratory Bird Treaty Act
- New MBTA rule and M-Opinion
  - Issued January 7, 2021- Incidental take of migratory birds is not prohibited
  - February 9, 2021- Rule issued to delay the Rule's effective date to March 8, 2021, following public comment period
  - March 8, 2021- "The Interior Department rescinded the M-opinion on the Migratory Bird Treaty Act that overturned decades of bipartisan and international consensus and allowed industry to kill birds with impunity. The reasoning and basis behind that M-Opinion were soundly rejected in federal court. In the coming days, Interior will issue a proposed rule to revoke the corresponding rule that went into effect Monday. The Department will also reconsider its interpretation of the MBTA to develop common sense standards that can protect migratory birds and provide certainty to industry."
  - Could be challenged in Supreme Court
  - Direct take (intentional) and other prohibitions associated with MBTA (possession of migratory birds, eggs, etc.) prohibited without a permit regardless of outcome of Migratory Bird Rule

# Current State Protections

- ILT remains protected as listed species under the Nebraska Nongame and Endangered Species Conservation Act
- EDO undergoing process of application for 2021 research, recovery, and monitoring permit with the State
- PRRIP should coordinate and engage with NGPC on recommendations and requirements under state law
  - FWS not the authority on state law
- Remainder of Presentation Focusses on PRRIP implications due to removal of ILT from Federal protections under the ESA





# How do we fix...the Paper trail

- ILT woven into the very fabric of PRRIP
- Numerous Documents with goals and objectives, legal requirements, reporting requirements, monitoring requirements, etc.
- Program and Extension Document, Program BO and Supplement, EIS, EA, Science Plans, Adaptive Management Plans, Bi-ennial reports, Program website, etc... just to name a few
- Physically updating these would be a full-time multi-person job
  - Cumbersome and time consuming



# Path to Updating the Paper Trail

- Historical Perspective
  - Bald Eagle included in original 2006 PRRIP BO-Included an Incidental Take Statement
  - Did not amend BO when delisted
  - Not a trigger for re-initiation
- Incidental Take Statement/Terms and Conditions in PBO (2006) and Supplement (2018) no longer apply for ILT language
  - No reporting requirements for ILT under this BO
  - PP ITS still applicable
- PRRIP tiered BA/BO templates need updating, similar to how Bald Eagle delisting was addressed-will address future ESA actions for water depletions projects
- No Requirement to physically update remaining Final Documents related to PRRIP
- GC decision on changes to specific components of those documents?
- Potential path forward?

# What are our Options?

- 1) Could develop a new comprehensive stand alone document that addresses regulatory implications and GC agreed upon changes for implementation going forward
  - Document would address USFWS BO, ITS, GC agreed management/monitoring actions, Adaptive Management or Science Plan changes, status within the PRRIP, etc.
- 2) Could attempt to physically revise Program Document, other PRRIP documents- Where to start and where to end?
- 3) Other potential options?

No matter the option, other decisions are needed...  
(See GC decision document handout)



# Status as “Target Species”

- Target Species designation under PRRIP
  - Could remain a target species, but not tied to ESA compliance
  - Could eliminate as target species, no special status
    - If not a target species, how do we refer to ILT’s status under PRRIP?
  - Could remove as target species and add to “Species of Concern” under PRRIP designation (See NEFO listing/delisting status document)
    - May provide an opportunity to review and update Program Species of Concern list
    - Example: Monarch Butterfly recent 12 month finding of “warranted but precluded”

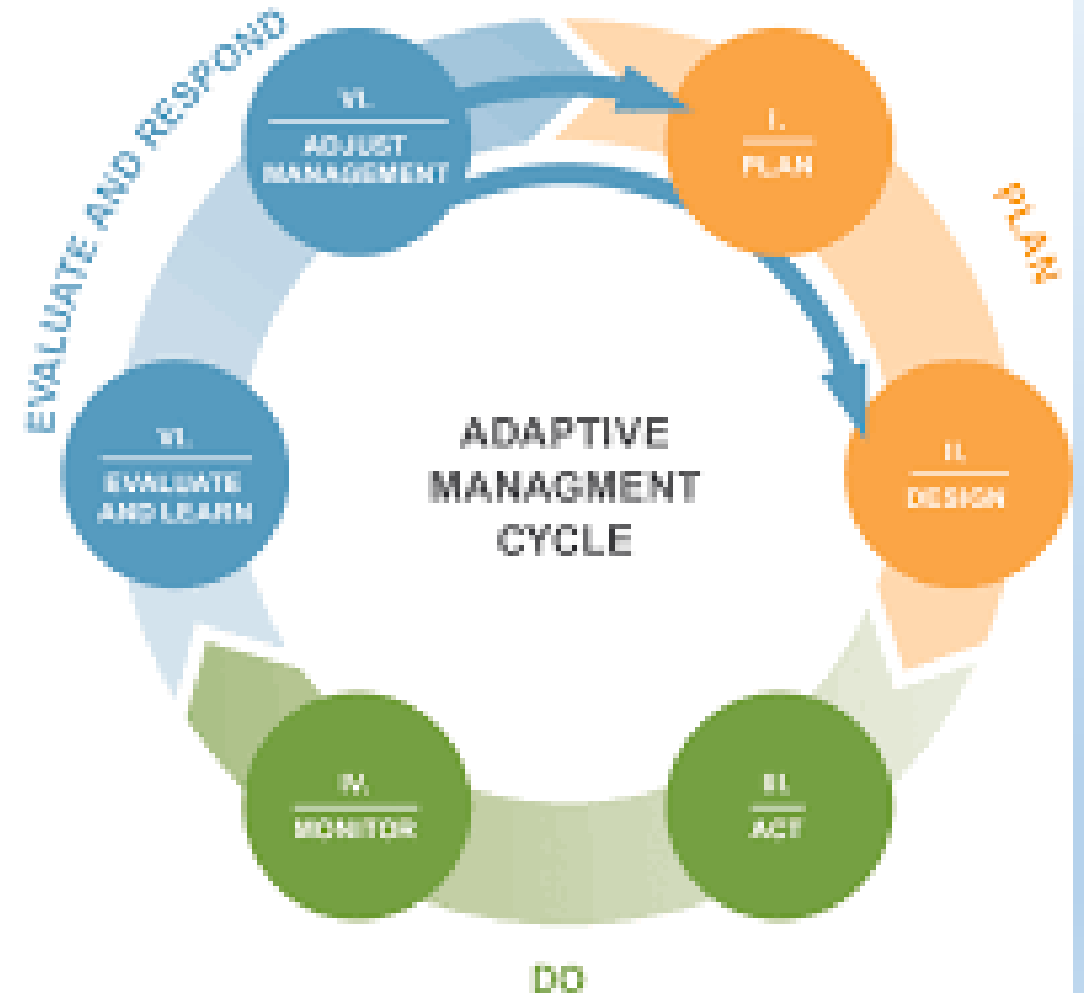


# Changes to PP/ILT Goals/Management Objective?

- PRRIP Management Objectives
  - Terns and Plovers currently share one management objective- could keep unchanged
  - Could remove ILT from management objective leaving only PP management objective
  - Could develop stand-alone “conservation goal/objective” for ILT
    - Would not be tied to ESA compliance
    - New Conservation goal could suggest “continue to manage PP habitat to benefit ILT as well”
- PRRIP Program Goals
  - Similar to Management Objective – Decision needed to remove or modify

# Adaptive Management, Monitoring and Research

- Remove ILT from targeted Adaptive Management Experiments?
  - Hypotheses specific to PP only
- Remove from Science Plan?
- PRRIP decision on monitoring ILT
  - Post Delisting Monitoring Plan not final
  - Direct Take prohibited, Uncertainty related to recent and ongoing changes to MBTA M-Opinion and Rule
- PRRIP current Section 10 Research and Recovery Permit still valid for PP- will be revised to remove ILT when re-issued or modified
- Decision on 2021 monitoring?
  - Could continue status quo on monitoring protocol while awaiting PDM Plan finalization
  - Monitoring voluntary for all Partners, but was anticipated when de-listed during PDM period
  - Annual Monitoring Reports?
- Long-term decision on monitoring commitment could be made once PDM final



# Avoidance and Minimization Measures

- USFWS and NGPC previously developed avoidance and minimization measures/survey protocol for both species
  - Seasons currently combined
  - Includes Survey Protocol for construction activities
  - Discussion with NGPC ongoing, no decision made to update
  - Could continue following Protocol for the time being
    - PP have been known to nest or have chicks throughout entire season
    - Affects habitat restoration, public access periods, etc.



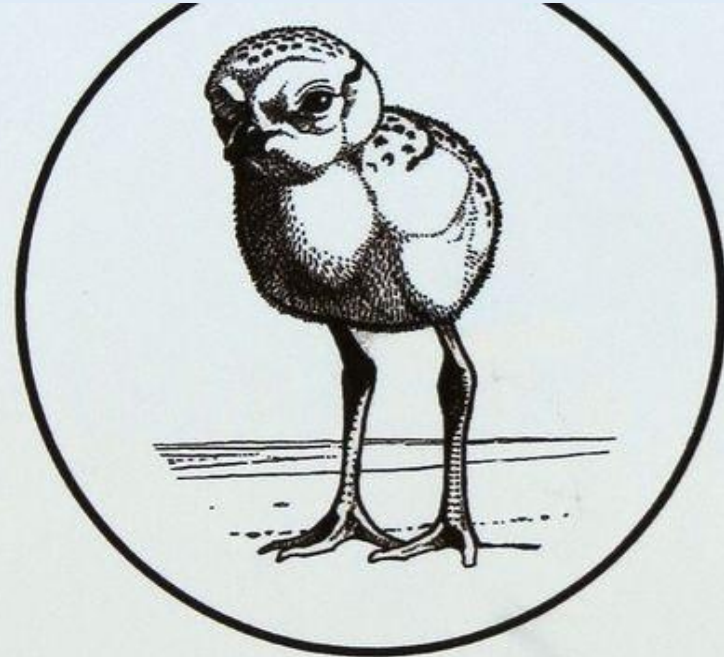


# Target Flows... because why not?

- USFWS previously developed current Target flows for a suite of species beyond PRRIP target species
  - Target flows intended to maintain healthy fish guilds
  - Fish guilds are important for a variety of species including ILT, Piping plover, and whooping cranes
  - Supports PRRIP goal of preventing the need to list other species
- GC most recent guidance- no need to peer review or modify
  - Use as water administration tool, used to determine the timing and magnitude of excess flow availability for recharge and/or retiming
- Flexibility exists in priority for EA releases/WAP projects to allow PRRIP to work within framework to provide benefits
- Can test flow management actions that deviate from target flows

## Other Updates and Actions to Consider

- Update PRRIP website
- Biennial Report
  - Celebrate PRRIP contribution toward recovery and outline continued efforts that will benefit ILT going forward
- ~~Hold weekly 8-hour MS Teams virtual meeting to discuss progress... ?~~
- Education and Outreach
  - Where appropriate, incorporate delisting announcement and updates on what it means for PRRIP going forward
- Update PRRIP signage



Least Tern and Snowy Plover chicks  
often wander onto the road.

# Final Thoughts/Questions

- PRRIP not required to undertake actions for ILT under Federal ESA (Actions are voluntary)
- State listed protections and requirements still apply
- PRRIP to continue implementation that benefits Piping Plovers
  - Will result in habitat management and benefits to least terns
- Take credit for it!





# PRRIP Pallid Sturgeon Discussion



**U.S. Fish and Wildlife Service**

**PRRIP Governance Committee Meeting  
March 10, 2021**



# Pallid Sturgeon and the PRRIP

## Background:

- **Program Goal** - Testing the assumption that managing flow in the central Platte River also improves the pallid sturgeon's lower Platte River habitat.
- **AMP Management Objective** - Avoid adverse impacts from Program actions on pallid sturgeon populations.



# **Pallid Sturgeon Management Objective**

## **PRRIP Biological Opinion (Page 44)**

- **Impacts to the pallid sturgeon that are caused by Program activities or by new water-related activities covered by the States or Federal depletions plans will be assessed.**
- **The assessment will be conducted through the pallid sturgeon research and monitoring activities described in the Program's AMP and complimentary research conducted by others involved with the Missouri River and its tributaries.**

# **Pallid Sturgeon Management Objective**

## **PRRIP Biological Opinion (Page 44)**

- An assessment stage change study will be completed by the end of the third year during the first increment.**
- If such impacts are deemed to adversely affect the pallid sturgeon, appropriate conservation measures that either negate or offset the occurrence of adverse impacts on the pallid sturgeon will be developed and implemented during the first increment.**



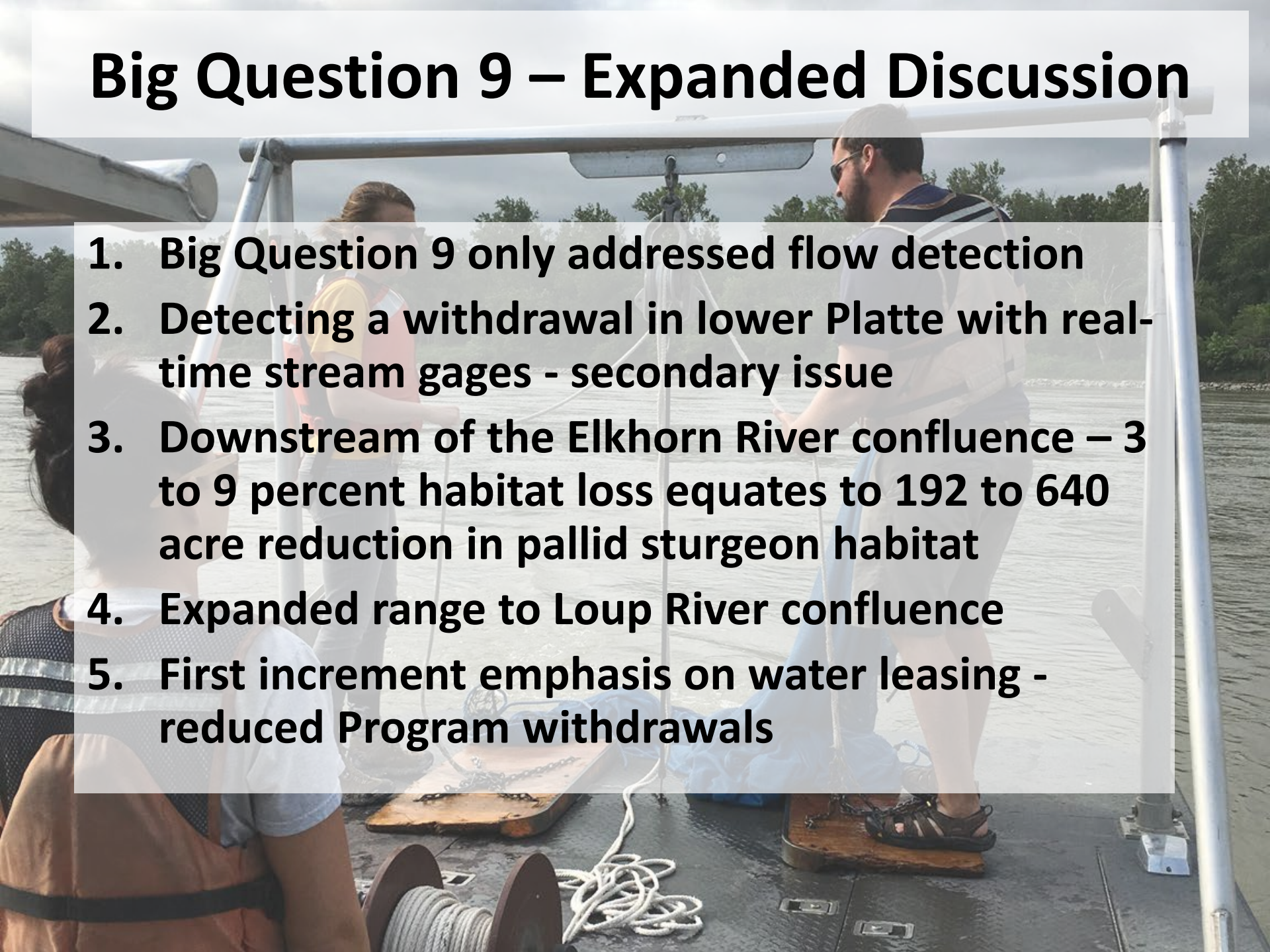
# Stage Change Study and Big Question 9

## Program Water Effects to Habitat:

1. Program water management activities would be very small to undetectable.
2. Decreases in pallid sturgeon habitat is generally around 3 percent.
3. The maximum potential reduction in habitat is 9 percent.



# Big Question 9 – Expanded Discussion

- 
1. Big Question 9 only addressed flow detection
  2. Detecting a withdrawal in lower Platte with real-time stream gages - secondary issue
  3. Downstream of the Elkhorn River confluence – 3 to 9 percent habitat loss equates to 192 to 640 acre reduction in pallid sturgeon habitat
  4. Expanded range to Loup River confluence
  5. First increment emphasis on water leasing - reduced Program withdrawals

# **PRRIP, Pallid, and Path Forward**

## **GC considerations:**

- 1. Assess pallid sturgeon effects?**
- 2. To approve offsets: avoidance or minimization?**
- 3. Types of offsets: In-Kind or Out-of-Kind?**
  - In-Kind – do not divert under certain conditions**
  - Out-of-Kind – habitat, research**
- 4. Other considerations: time, cost, risk**



# PRRIP, Pallid, and Path Forward

Alternative	Impact	Offset	Cost	Effort
Genetic	Not Defined	?	Known	Low
Alt. Study	?	Out-of-Kind	?	?
Alternative “Z”	Defined	In-Kind	?	High

**Risk?**

**Long-term Sustainability of Offsets**



Questions?



# Water Action Plan Update

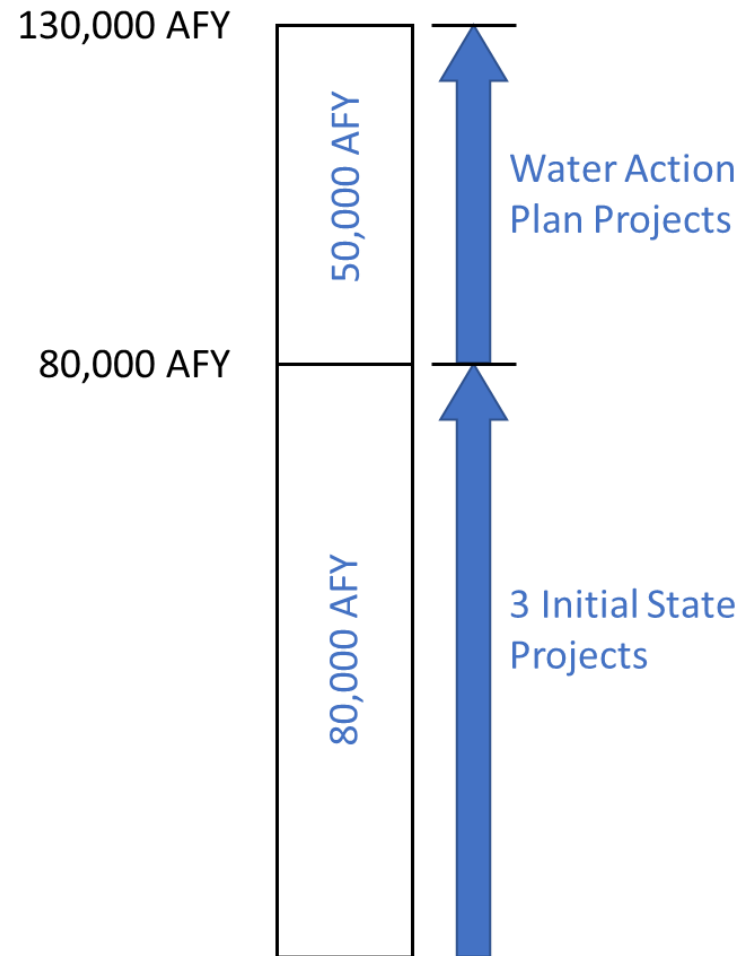
Seth M Turner, PE

PRRIP Governance Committee Meeting

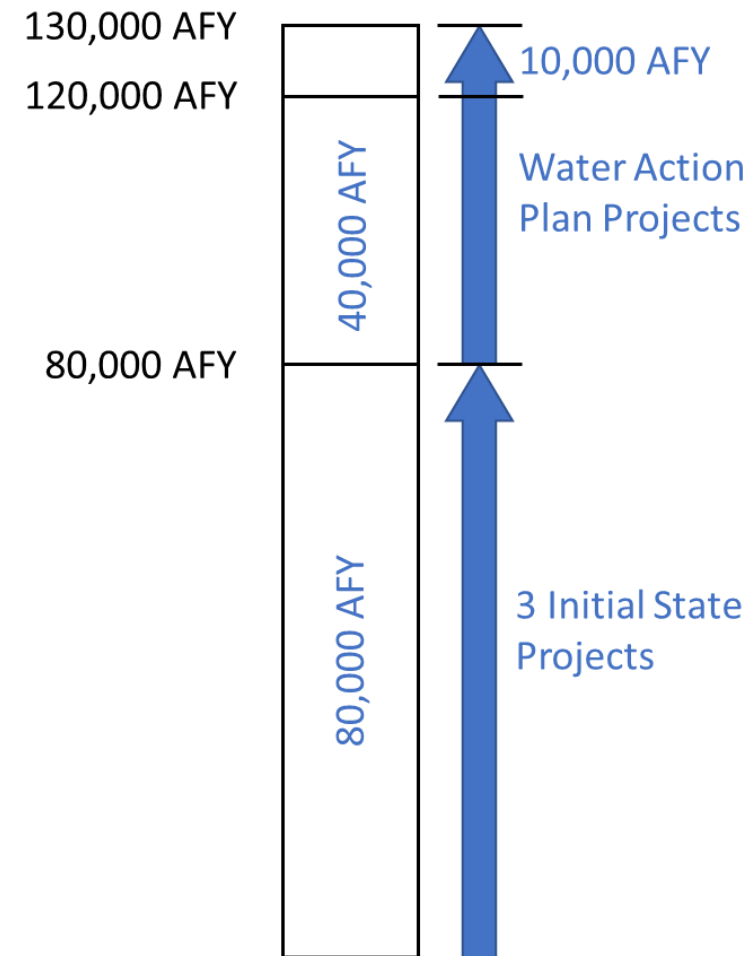
March 10, 2021

# Program Water Goals

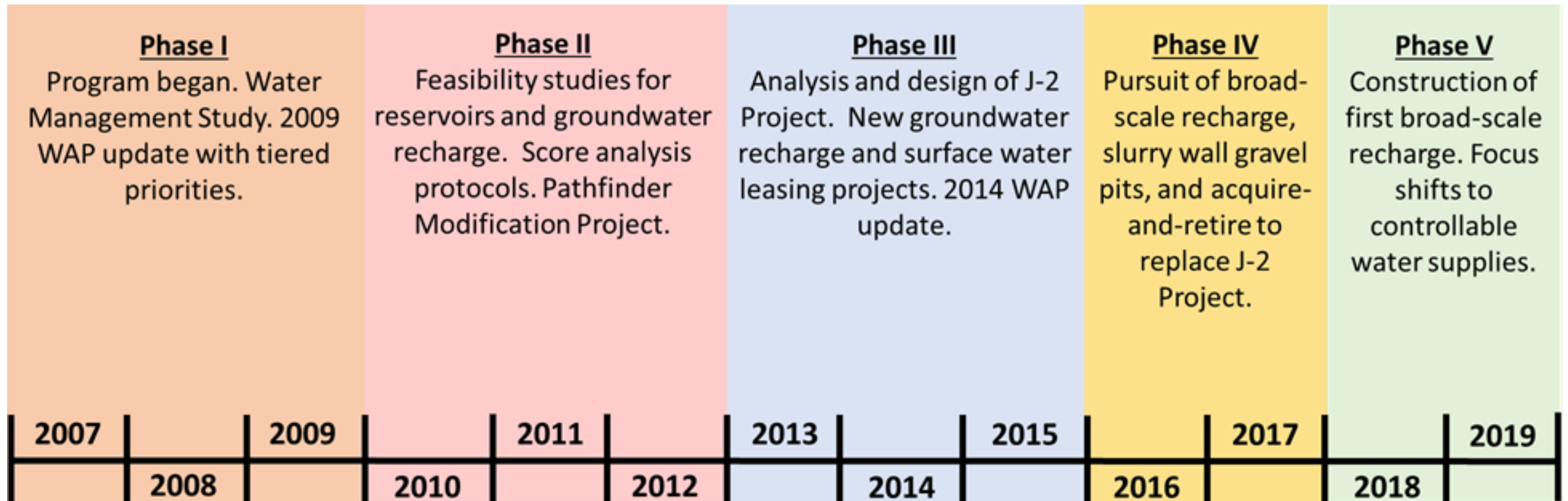
## First Increment (2007 – 2019)



## Extension (2020 – 2032)



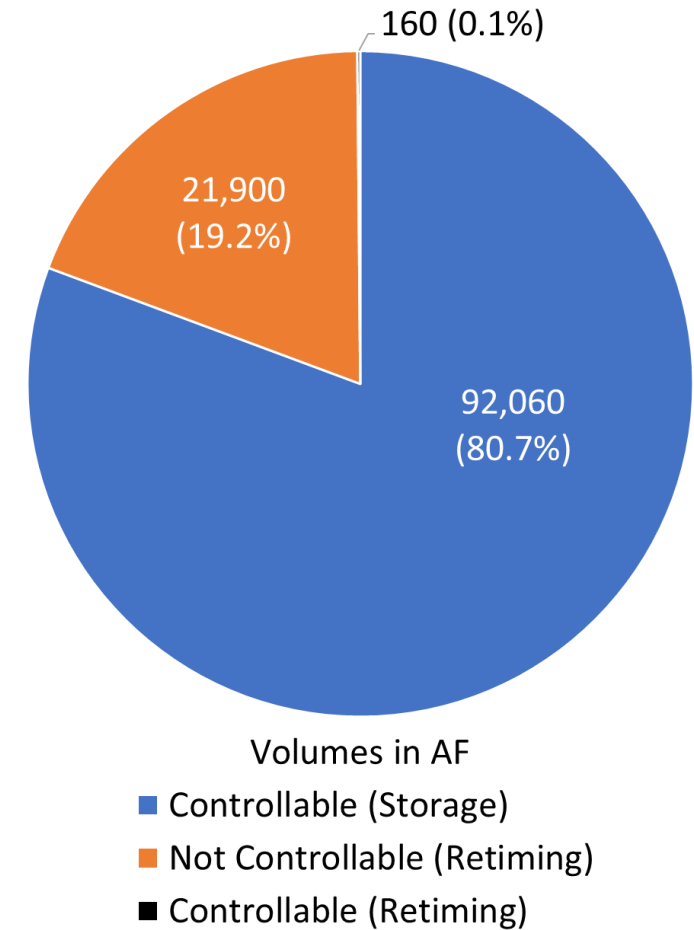
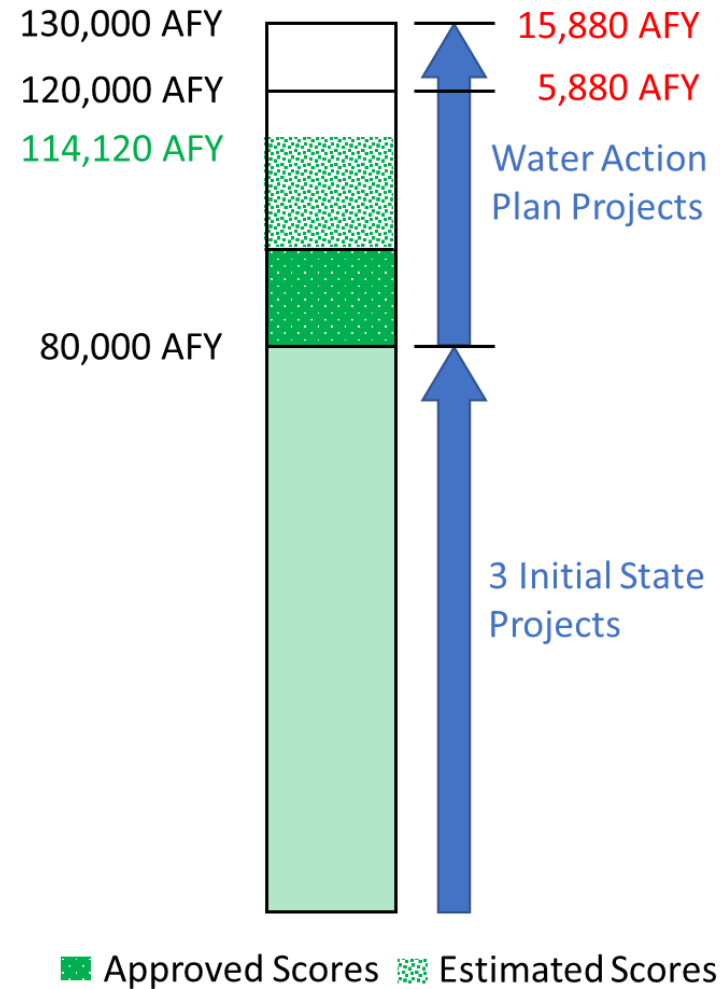
# WAP Update Report: First Increment Progress, 2007-2019





# Status of Program Water Projects

Project	Score [AFY]
3 Initial State Projects	80,000
6 Active WAP Projects (Approved)	14,170
5 Active WAP Projects (Estimated)	19,950
<b>TOTAL =</b>	<b>114,120</b>



# Water Action Plan – Next Steps

- Need ~6,000 AFY to reach 120,000 AFY
- 3 potential future projects
  - Controllable water supplies
  - Combinations provide flexibility
  - Buffer for active WAP projects

Project	Score [AFY]
Recharge Recapture Project(s)	8,000
North Platte Irrigator Lease(s)	2,500
CNPPID Storage Lease	6,600
<b>TOTAL =</b>	<b>17,100</b>

# Other Program Water Updates and Activities

# Score Analysis Update

- 5 active WAP projects with estimated scores = 19,950 AFY
- CPNRD (600 AFY) and NPPD (1,800 AFY) canals groundwater recharge
  - Draft presented to Scoring Subcommittee in April 2020
  - Nebraska DNR developing new URFs using COHYST
  - Combined scores > 2,400 AFY estimate
- CPNRD (10,800 AFY) and NPPD (2,750 AFY) surface water leases
  - 1-year agreements since 2018-2019
  - Waiting for long-term contracts before proceeding
- Cottonwood Ranch broad-scale recharge (4,000 AFY)
  - Test fill operations in Jul-Aug-Sep 2020
  - Regular operations just getting underway
  - Need to collect data to inform models



# 2020 WAP Projects Operations Update

Project	Volume [AF]
Groundwater Recharge	
CPNRD Canals	2,950
NPPD Canals	2,817
Cottonwood Ranch BSR	360
Phelps County Canal	1,986
Cook Recapture Well	217
Elwood Reservoir	0
Surface Water	
CPNRD Pilot Exchange	14,073
NPPD Pilot Exchange	3,306
CNPPID Irrigator Lease	2,242
No-Cost NCCW	314
Pathfinder Municipal Account Lease (Released)	9,600
Lake McConaughy SNI	55,000
Pathfinder EA (Released)	32,000

# Early 2021 WAP Projects Operations Update

- Recharge diversions at Phelps and Dawson in January
- Cook well pumped ~32 AF in February
- CNPPID Irrigator Lease
  - Unit cost reduced to \$100/acre (\$133/AF)
  - Enrollment = 1,030 acres (down from 2,989 acres in 2020)
  - Will result in 773 AF credit to Lake McConaughy EA
- Upcoming operations and activities
  - Cottonwood Ranch fill (after fencing project, if excesses available)
  - Spring whooping crane EA release (1,700 cfs during migration)
  - Germination suppression experiment design and implementation (June, target approx. 2,000 cfs)
  - Water projects accounting for 2019 and 2020

# North Platte Chokepoint Update

- Chokepoint Test Report finalized December 2020
- Options to consider
  - Revisit large-scale engineering solutions
  - Vegetation management
  - Property buyouts
  - Modify the Program Document
  - Work within existing flood stage and capacity constraints
- Reconvene Chokepoint Planning Workgroup (meeting March 23)
- 2021 budget includes up to \$10k for vegetation control measures

# Questions and Discussion

Please submit any comments on the  
WAP Update Report  
by Friday March 26

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