2019 State of the Platte

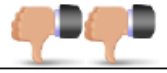
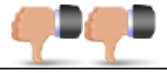
Big Questions
First Increment Summary of Learning
What Don't We Know but Want to Learn?

2019 AMP Reporting Session
Omaha, NE

October 08, 2019

Chad Smith/Dave Baasch/Patrick Farrell/Tom Smrdel
PRRIP Executive Director's Office

TABLE 2. Big Question assessments, PRRIP First Increment (2007-2019).

PRRIP Big Question	First Increment Assessment	Basis for Assessment
Implementation – Program Management Actions and Habitat		
1. Will implementation of SDHF produce suitable tern and plover riverine nesting habitat on an annual or near-annual basis?		Conclusively answered.
2. Will implementation of SDHF produce and/or maintain suitable whooping crane riverine roosting habitat on an annual or near-annual basis?		Conclusively answered.
3. Is sediment augmentation necessary for the creation and/or maintenance of suitable riverine tern, plover, and whooping crane habitat?		Trending positive and certainty about the sediment deficit in the south channel above the Overton bridge; uncertainty about the role of that deficit in habitat creation and maintenance in the rest of the AHR. This Big Question will either be retained in its current form or revised and addressed through implementation of AMP Version 2.0 during the Extension.
4. Are mechanical channel alterations (channel widening and flow consolidation) necessary for the creation and/or maintenance of suitable riverine tern, plover, and whooping crane habitat?		Conclusively answered.
Effectiveness – Habitat and Target Species Response		
5. Do whooping cranes select suitable riverine roosting habitat in proportions equal to its availability?		Conclusively answered.
6. Does availability of suitable nesting habitat limit tern and plover use and reproductive success on the central Platte River?		Conclusively answered.
7. Are both suitable in-channel and off-channel nesting habitats required to maintain central Platte River tern and plover populations?		Conclusively answered.
8. Does forage availability limit tern and plover productivity on the central Platte River?		Conclusively answered.
9. Do Program flow management actions in the central Platte River avoid adverse impacts to pallid sturgeon in the lower Platte River?		This Big Question will either be retained in its current form or revised and addressed through implementation of AMP Version 2.0 during the Extension.
10. Do Program management actions in the central Platte River cumulatively 1) produce detectable changes in the physical environment (i.e. habitat) and 2) result in a detectable increase in tern, plover, and whooping crane use of the Associated Habitats?	**LTPP Off-Channel** Habitat Species Response **WC On-Channel** Habitat Species Response	Conclusively answered.

Management Objective #1 – Improve production of the interior least tern and piping plover from the central Platte River.

❖ **Summary of First Increment Learning – Tern and Plover**

- As currently stated, the Program **met** Management Objective #1 during the First Increment.
- Least tern and piping plover populations in the AHR have increased significantly and proportionately to increases in habitat availability due to Program off-channel habitat creation efforts. Productivity on off-channel habitats has been sufficient to maintain a stable to growing subpopulation.
- Based upon available data, least tern and piping plover productivity is insensitive to river flow. Periods of low flow have not reduced productivity due to a limitation in forage availability.
- The Program agreed to acquire/develop and manage 60 more acres of off-channel tern and plover nesting habitat and 10 acres if MCA habitat to meet the Service's requirement of maintainting stable or growing tern and plover populations within the AHR.
- **Remaining uncertainties** – need for and mechanics of avian predator control related to tern and plover productivity (related to Species Performance indicators in revised CEM).

Management Objective #2 – Contribute to the survival of whooping cranes during migration.

❖ **Summary of First Increment Learning – Whooping Crane**

- As currently stated, the Program **met** Management Objective #2 during the First Increment.
- Whooping crane use of the AHR has increased significantly and proportionally to increases in habitat suitability that are in part due to Program management actions.
- Whooping crane use of the AHR increased significantly while wet meadow use remained stable and low.
- **Remaining uncertainties** – mechanics of flow releases (spring and fall migration flows, summer vegetation germination suppression flows) to ensure Program continues to meet management objective (related to Whooping Crane Use and Occurrence indicator in CEM).

Management Objective #3 – Avoid adverse impacts from Program actions on pallid sturgeon populations.

❖ **Summary of First Increment Learning**

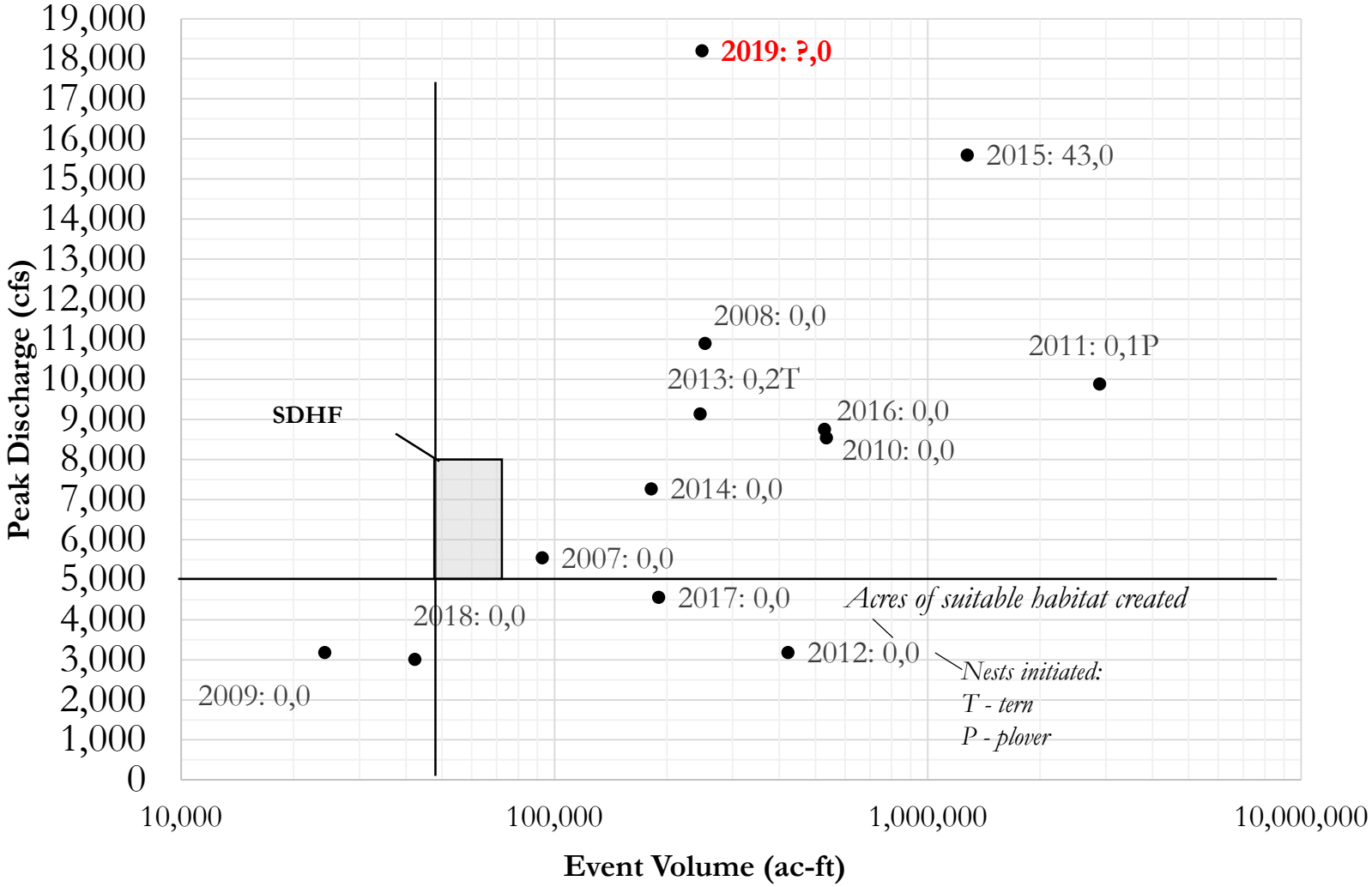
- As currently stated, it is **unknown** if the Program met Management Objective #3 during the First Increment.
- Translation of Program flow management actions from the central Platte to the lower Platte is difficult to detect and thus difficult to relate to effects on habitat and species response.
- **Remaining uncertainties** – substantial uncertainty relating to the life history of pallid sturgeon in the lower Platte River (use, productivity, recruitment) limits the the ability of the Program to develop a clear set of testable hypotheses, management actions, monitoring protocols, and a plan for data analysis and synthesis (related to Pallid Sturgeon Use and Occurrence and Reproduction indicators in CEM).

System Learning

❖ **Summary of First Increment Learning**

- Attempts to implement the FSM management strategy have **generally produced poor results**.
- SDHF (5,000-8,000 cfs for three (3) days at Overton, NE) will not create or maintain suitable least tern and piping plover nesting habitat or whooping crane roosting habitat.
- Flow consolidation is not feasible due to legal and permitting constraints.
- A sediment deficit exists in the south channel downstream of the J-2 Return. Five to seven years of full-scale sediment augmentation are necessary to assess efficiency and effectiveness in preventing downstream migration of incision and narrowing.
- First Increment learning occurred largely through natural flow events as the Program was unable to implement a true SDHF and was not able to conduct flow consolidation actions.
- **Remaining uncertainties** – effectiveness of summer vegetation germination suppression flow and spring/fall WC migration flows in maintaining channel width (both related to Riparian Vegetation Characteristics and Channel Characteristics indicators in CEM).

Big Question #2 - Will implementation of Short-Duration High Flow releases produce and/or maintain suitable whooping crane riverine roosting habitat on an annual or near-annual basis?



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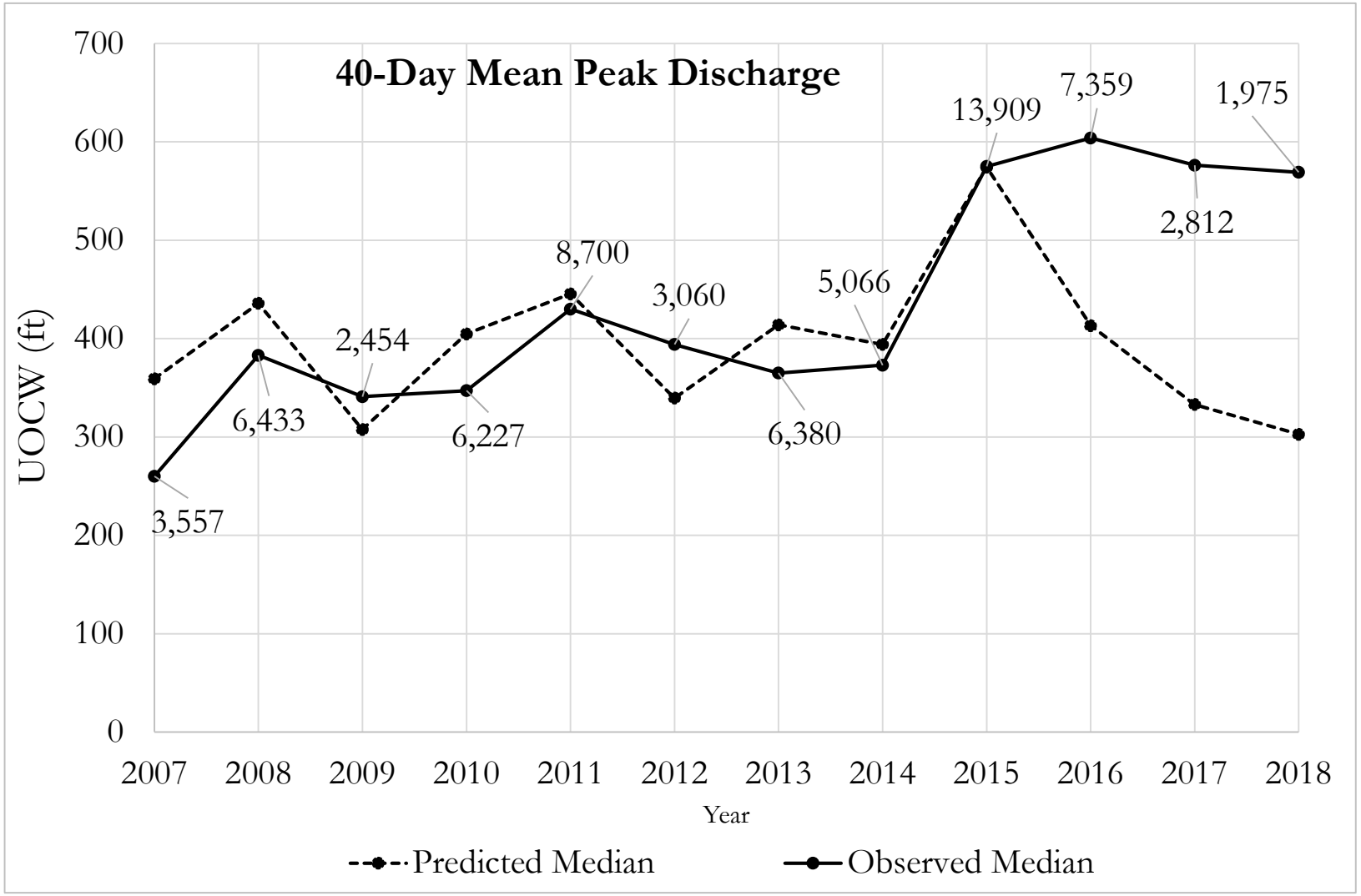

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2015 - ~ 13,000 cfs

2019-06-26 11:30:00 AM
82°F
T 1/1
2019 – June 26th
(3,000 cfs)
PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM
ULTRAFIRE XR6
RECONYX

2019-07-10 07:30:00 AM 64°F T 1/1
2019 – July 10th
(~19,000 cfs)
PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

2019-07-26 09:30:00 AM
86°F
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2019 – July 26th
(3,000 cfs)
PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM
ULTRAFIRE XR6
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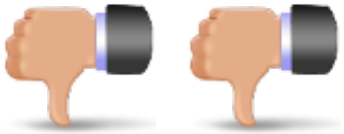

Implementation of Short-Duration High Flow releases **<u>will not</u>** produce and/or maintain suitable whooping crane riverine roosting habitat on an annual or near-annual basis.

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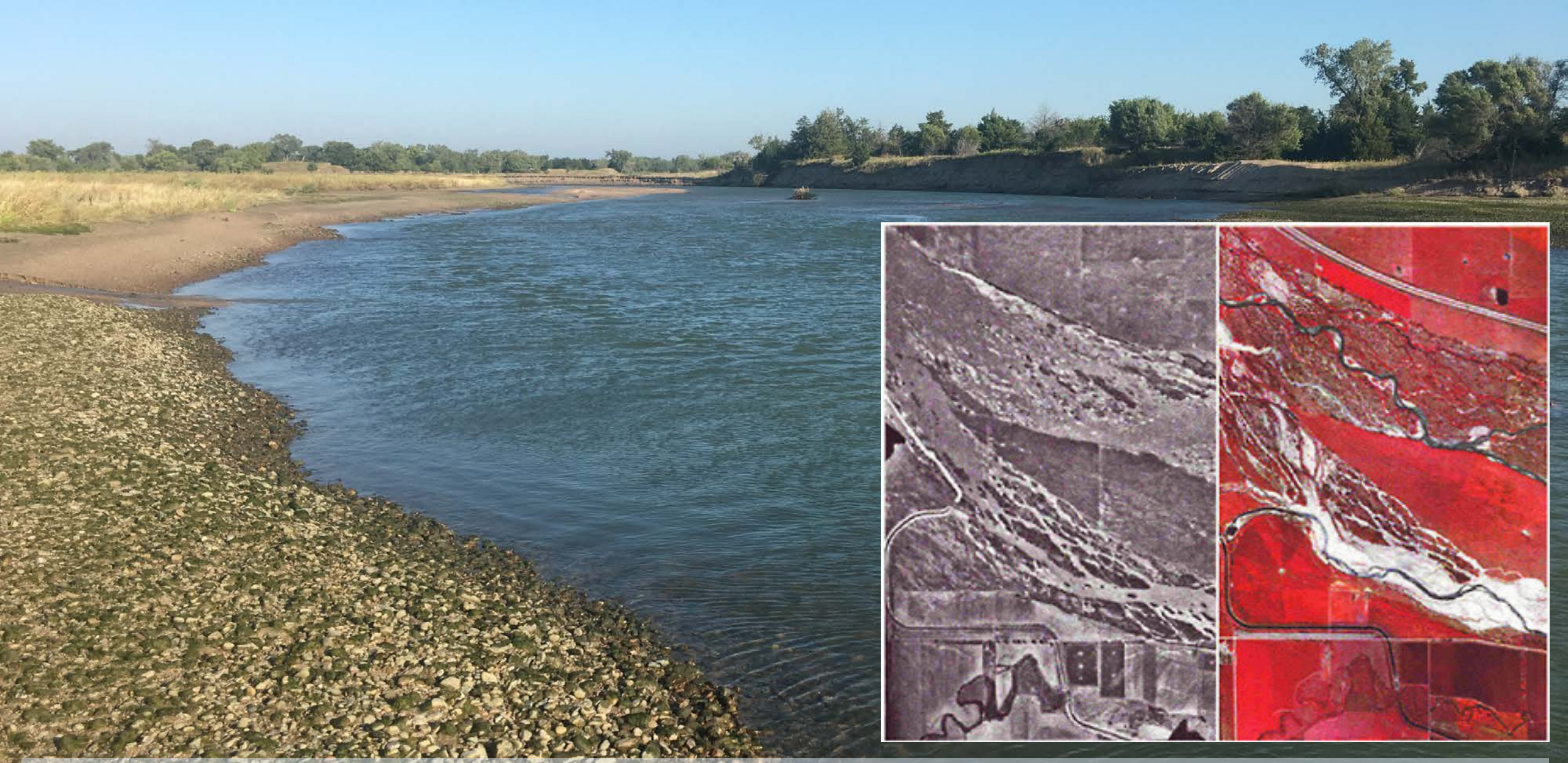
Big Question 3: Is sediment augmentation necessary for the creation and/or maintenance of suitable riverine tern, plover and whooping crane habitat?

Tom Smrdel
Fluvial Geomorphologist



Is sediment augmentation necessary for the creation and/or maintenance of suitable riverine tern, plover and whooping crane habitat?

Hypothesis – Full Scale Sediment Augmentation is a viable mechanical action to mitigate for incision and narrowing.

What does sediment augmentation look like? (flow…1600 or 1000)

Water Year	Sediment Augmented (tons)	Augmentation Location
2006	15,570	Cottonwood Ranch
2007	21,875	Cottonwood Ranch
2008	42,500	Cottonwood Ranch
2009	50,000	Cottonwood Ranch
2010	50,000	Cottonwood Ranch
2011	50,000	Cottonwood Ranch
2012	0	
2013	182,000	Cottonwood Ranch & Plum Creek Complex
2014	0	
2015	0	
2016	0	
2017	75,000	J2 Return ($172,315)
2018	60,000	J2 Return ($66,800)
2019	60,000	J2 Return ($109,560)

YEAR 3 – FULL SCALE SEDIMENT AUGMENTATION

60,000 more tons to the south channel below J2 Return…channel continues to widen (and augment) to the north. Completion by 10/9/2019

New Video of flyover

-Assessment of volume and where they went. More? Stop?
-Continue monitoring
-Satisfy Permit requirements
-Extend permit
-Start moving downstream (of use one more year at Jeffrey…

Where do we go from here?

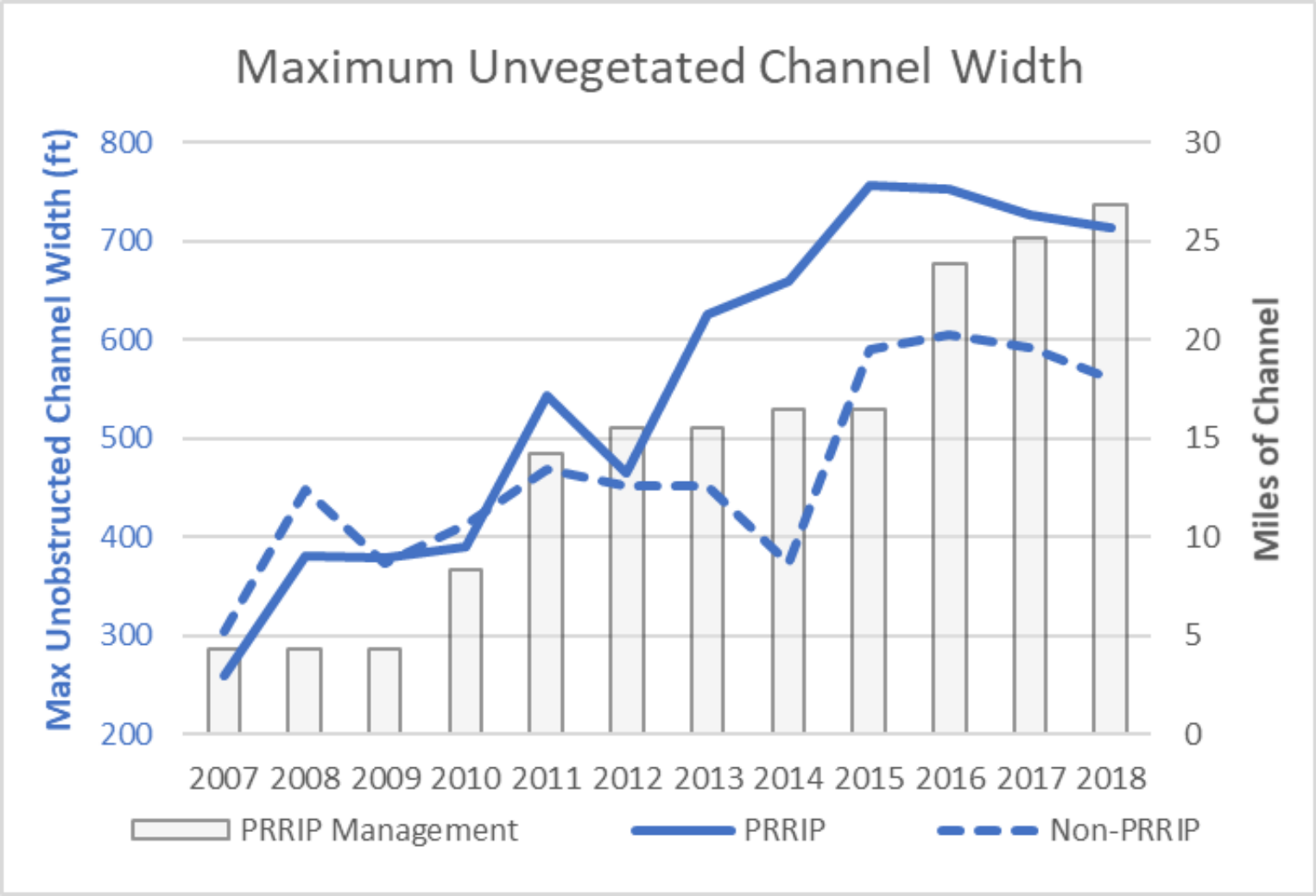
Big Question #9 - Do Program flow management actions in the central Platte River avoid adverse impacts to pallid sturgeon in the lower Platte River?

- What is the Program's obligation to pallid sturgeon in the lower Platte River?
- Uncertainty about pallid sturgeon life history and use in the lower Platte River
- What is pallid sturgeon habitat?
- What is the Program ability to influence flow and pallid sturgeon habitat (once defined) in the lower Platte River?
- GC direction – treat pallid sturgeon like other target species in development of Extension AM; where does that lead us?

Big Question #10 - Do Program management actions in the central Platte River cumulatively produce detectable changes in the physical environment (i.e. habitat) that are associated with a detectable increase in tern, plover, and whooping crane use of the Associated Habitats?

Species 👍 👍

Habitat 👍 👍



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Species

Habitat

- Unvegetated channel widths on Program lands transitioned from narrower than non-Program lands in 2010 to significantly wider in 2013 through 2019.
  - Whooping crane use has increased significantly
  - Use of Program in-channel habitat has increased significantly
  - Wet meadow and palustrine use has remained steady and low

- Tern and plover use has increase 4-fold as habitat increased

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Species 👍 👍

Habitat 👍 👍

Program management actions **DO** produce detectable changes in the physical environment (i.e. habitat) that are associated with a detectable increase in tern, plover, and whooping crane use of the Associated Habitats.

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