Whooping Crane Monitoring Results

Mallory Jaymes-Whooping crane lead biologist

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Objective: Increase survival during migration

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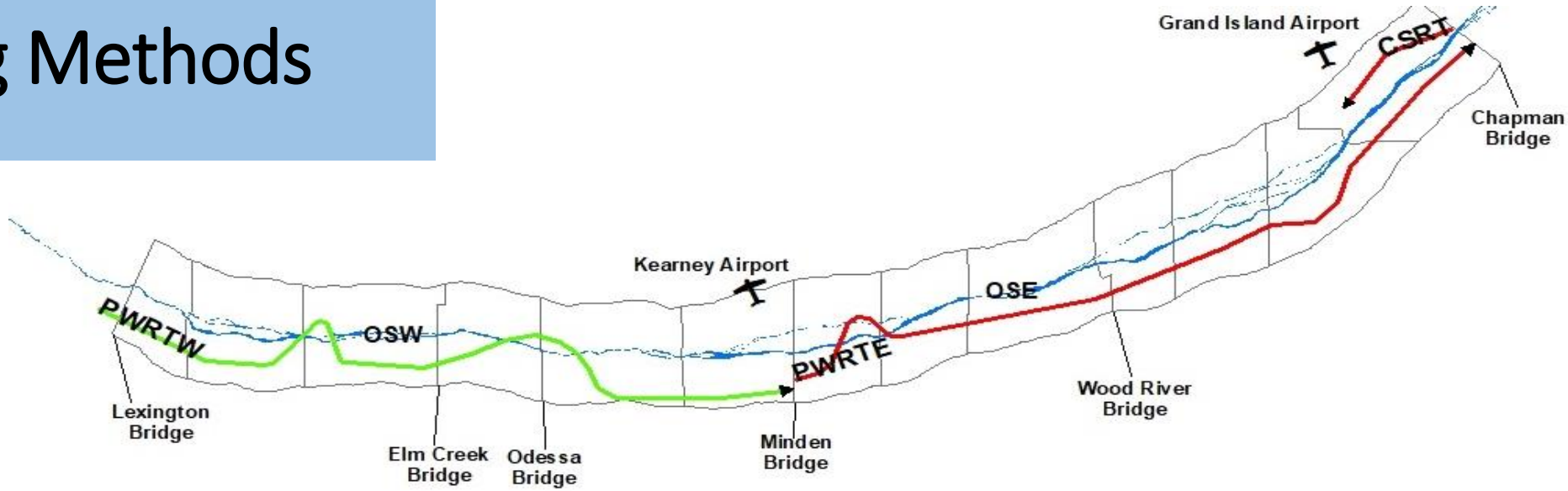
Monitoring Methods

- (Mar. 6th-Apr. 29th)
  (Oct. 9th – Nov. 15th)
- 2 aircrafts
- On & Off channel systematic transects
- Confirmation
  - Ground crew
  - Aerial photographs



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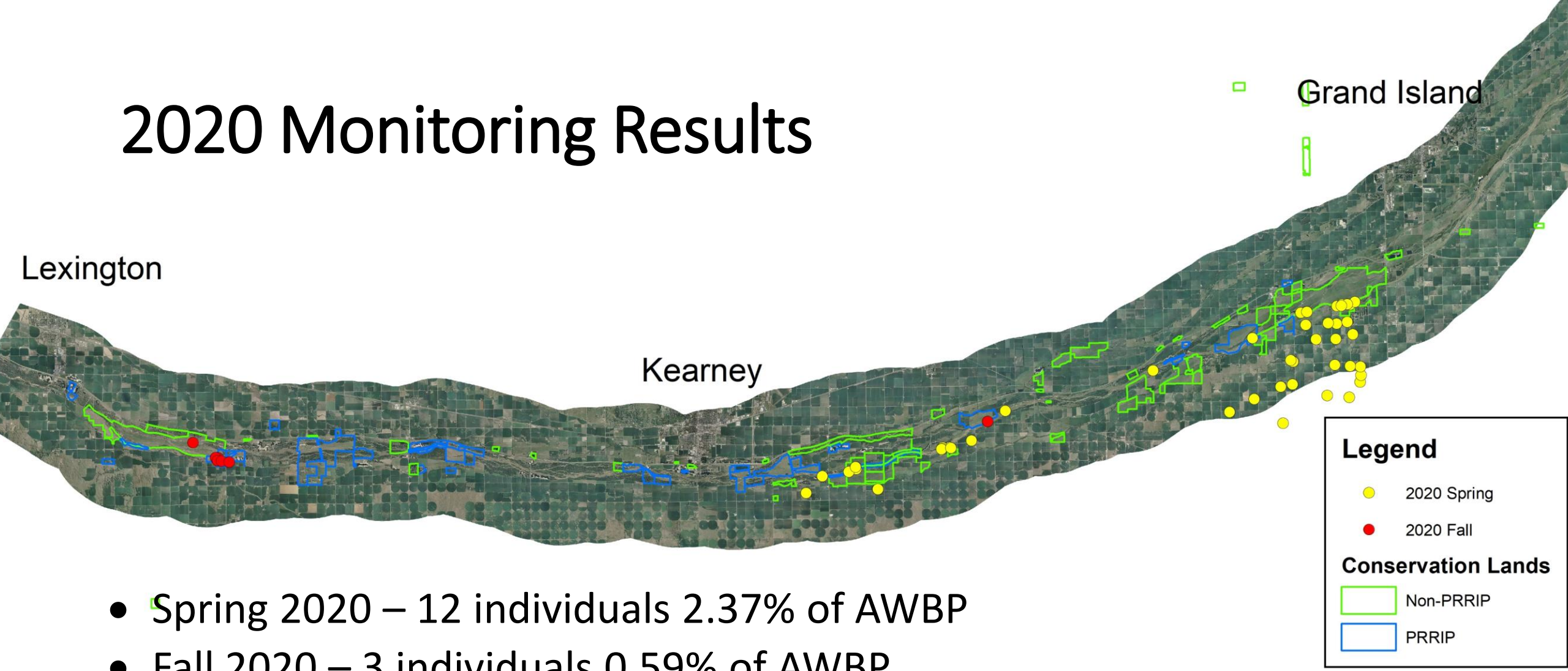
2020 Monitoring Results



- Spring 2020 – 12 individuals 2.37% of AWBP
- Fall 2020 – 3 individuals 0.59% of AWBP

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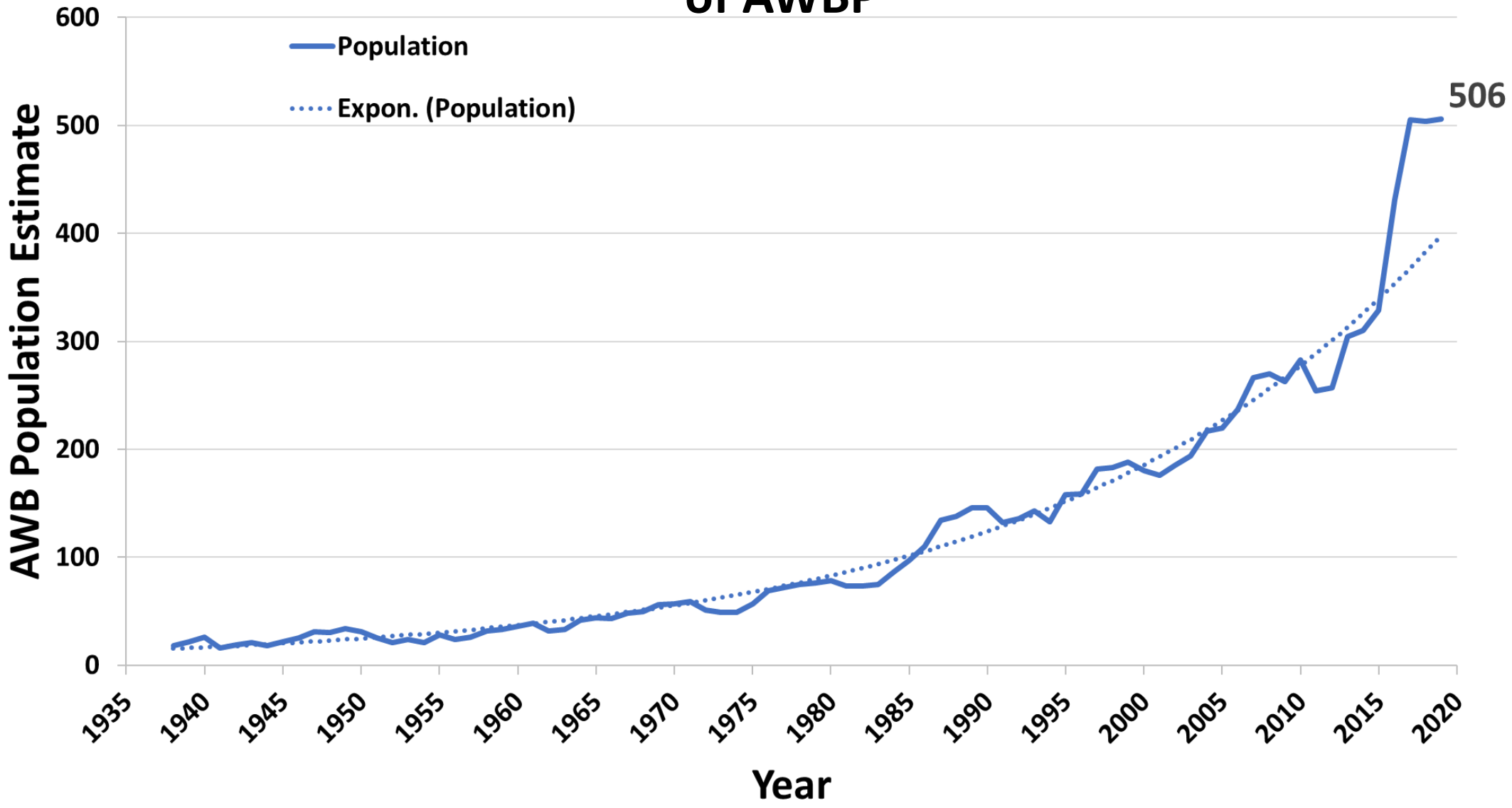
FWS Winter Survey Population Estimates of AWBP



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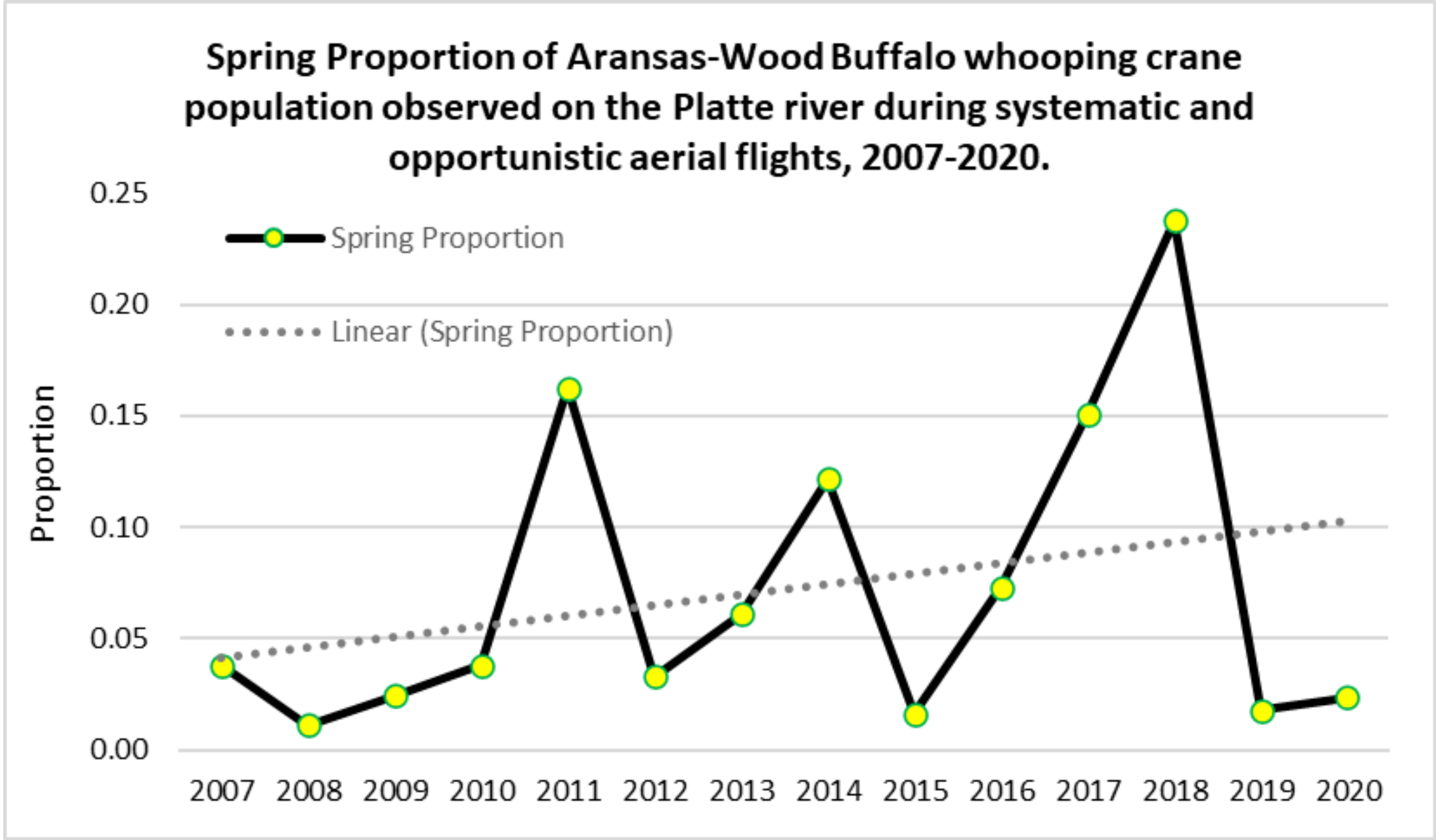

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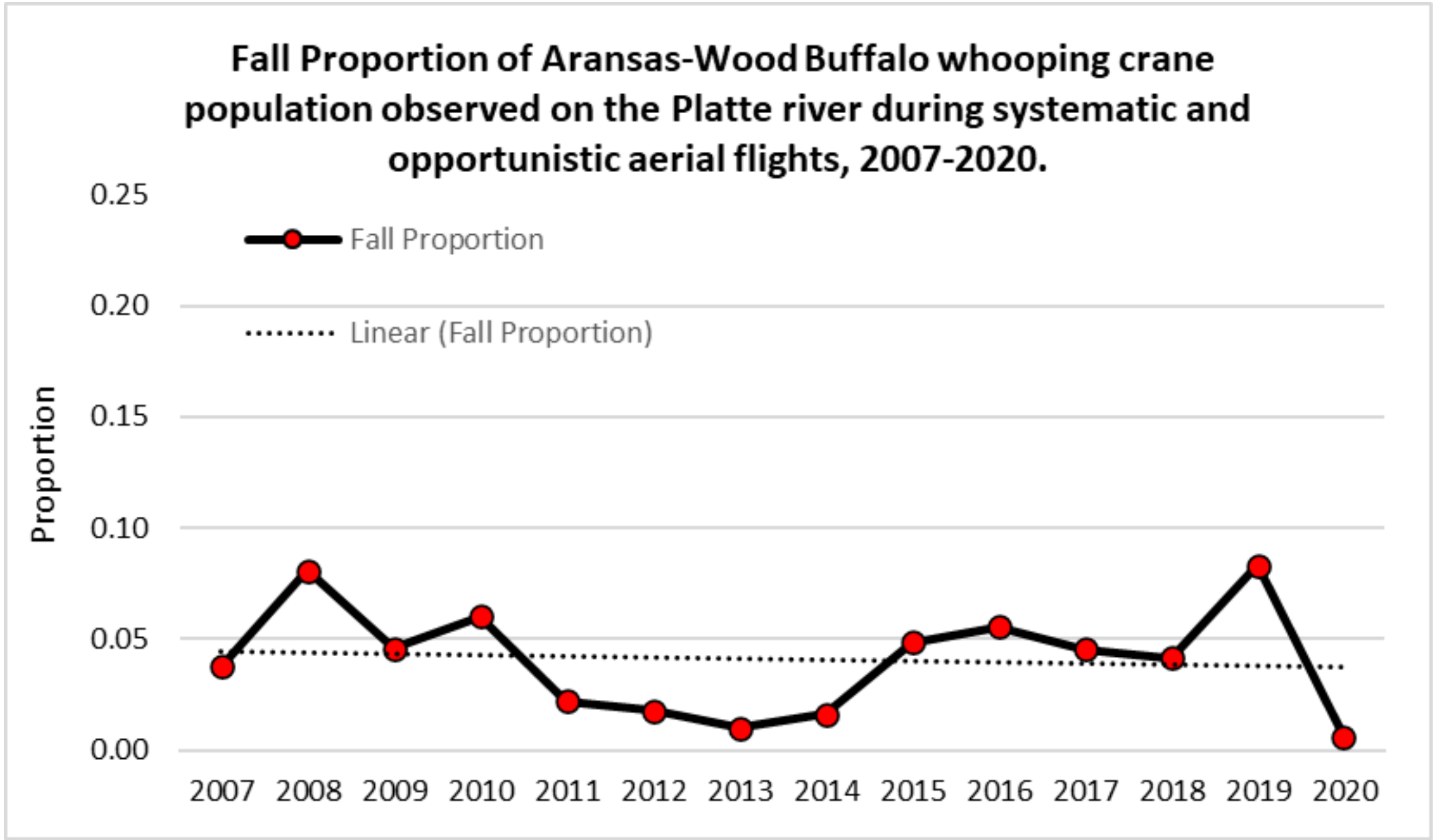

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Recent Publications

Species Status Assessment and Population Viability Assessment (Traylor-Holzer, 2019; USFWS, 2020)

AWBP is self sustaining

Threats to the Species

- Climate change
- Human development

Model sensitive to changes in adult mortality during migration

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PRRIP assessments of characteristics associated with whooping crane roosts and diurnal use sites

Baasch et al., 2019

Flow?

Unobstructed Channel Width

>650 ft

Unforested Corridor

>1,100 ft

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Cellular telemetry tracking partnership: Applications for the Program

Patrick Farrell

Statistical Ecologist

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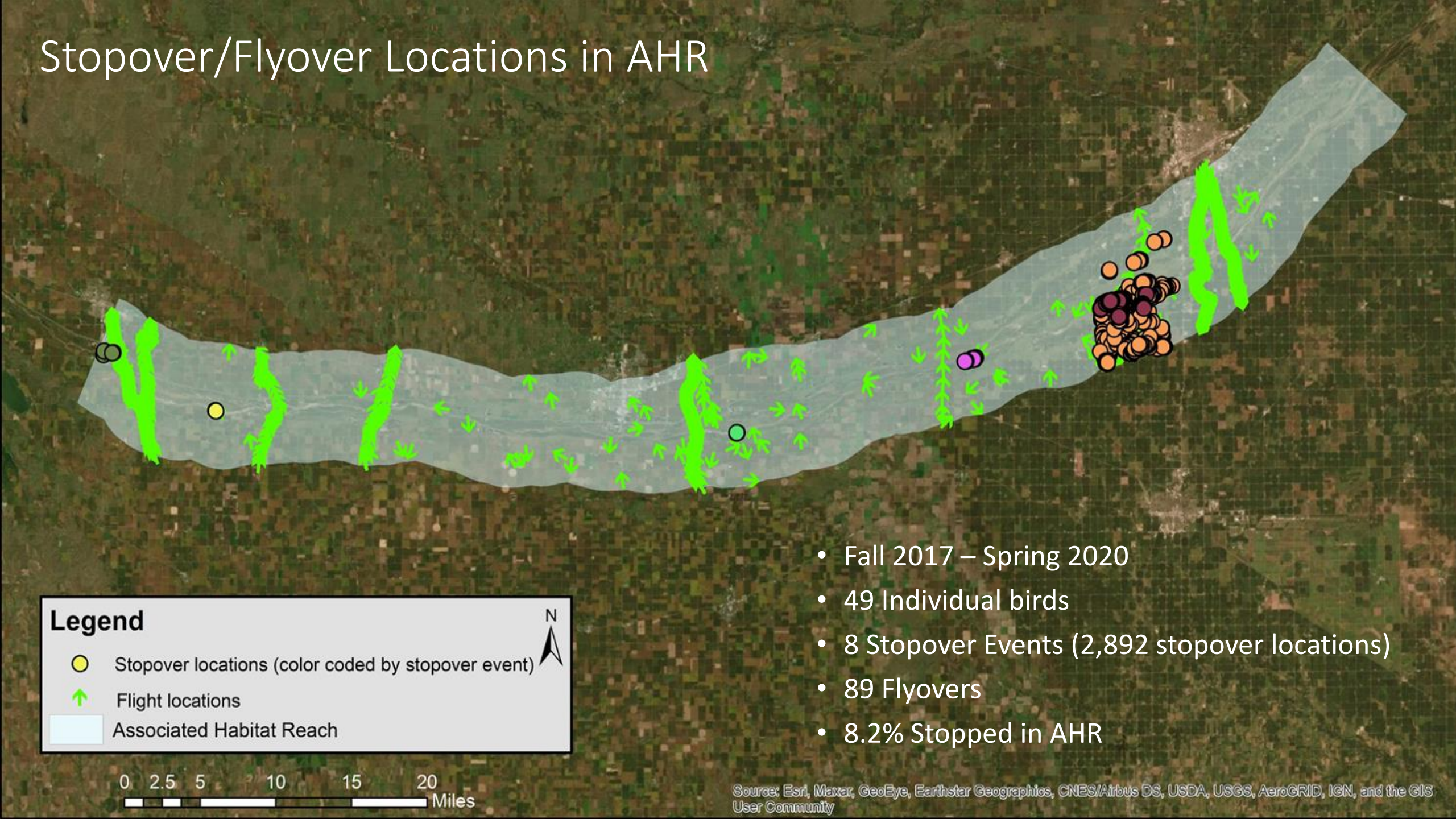
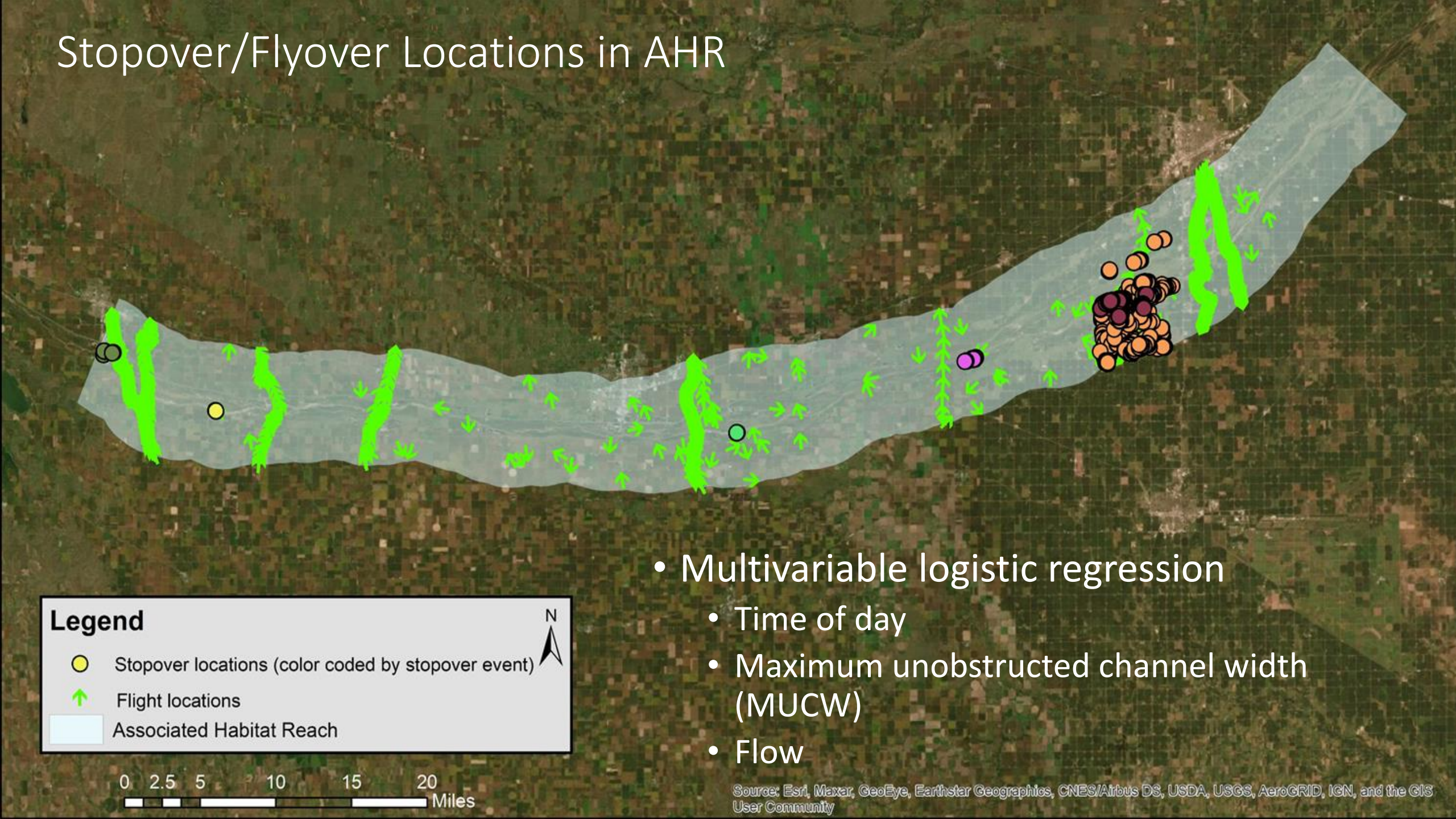
Stopover/Flyover Locations in AHR



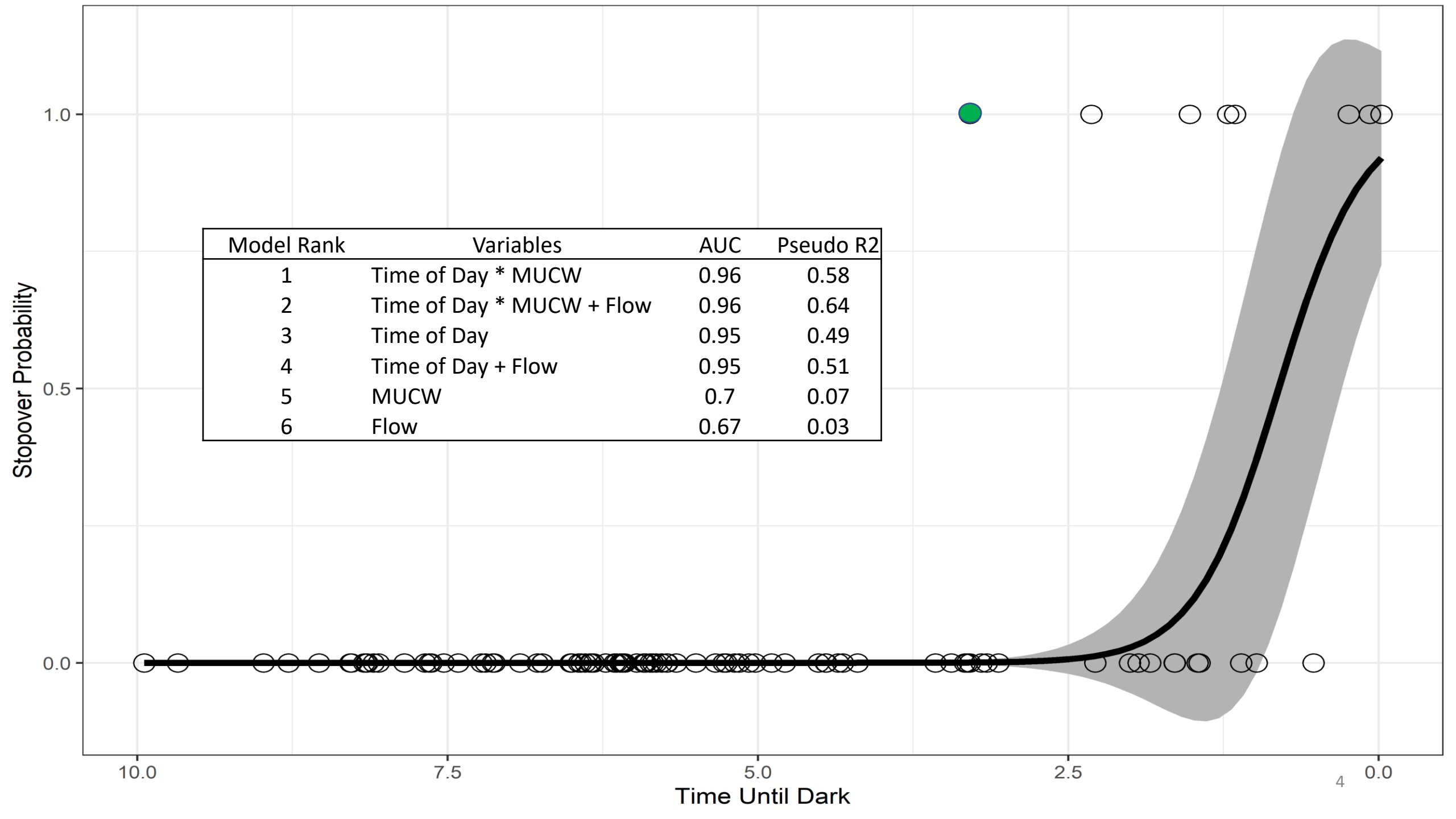
- Fall 2017 – Spring 2020
- 49 Individual birds
- 8 Stopover Events (2,892 stopover locations)
- 89 Flyovers
- 8.2% Stopped in AHR

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Stopover/Flyover Locations in AHR

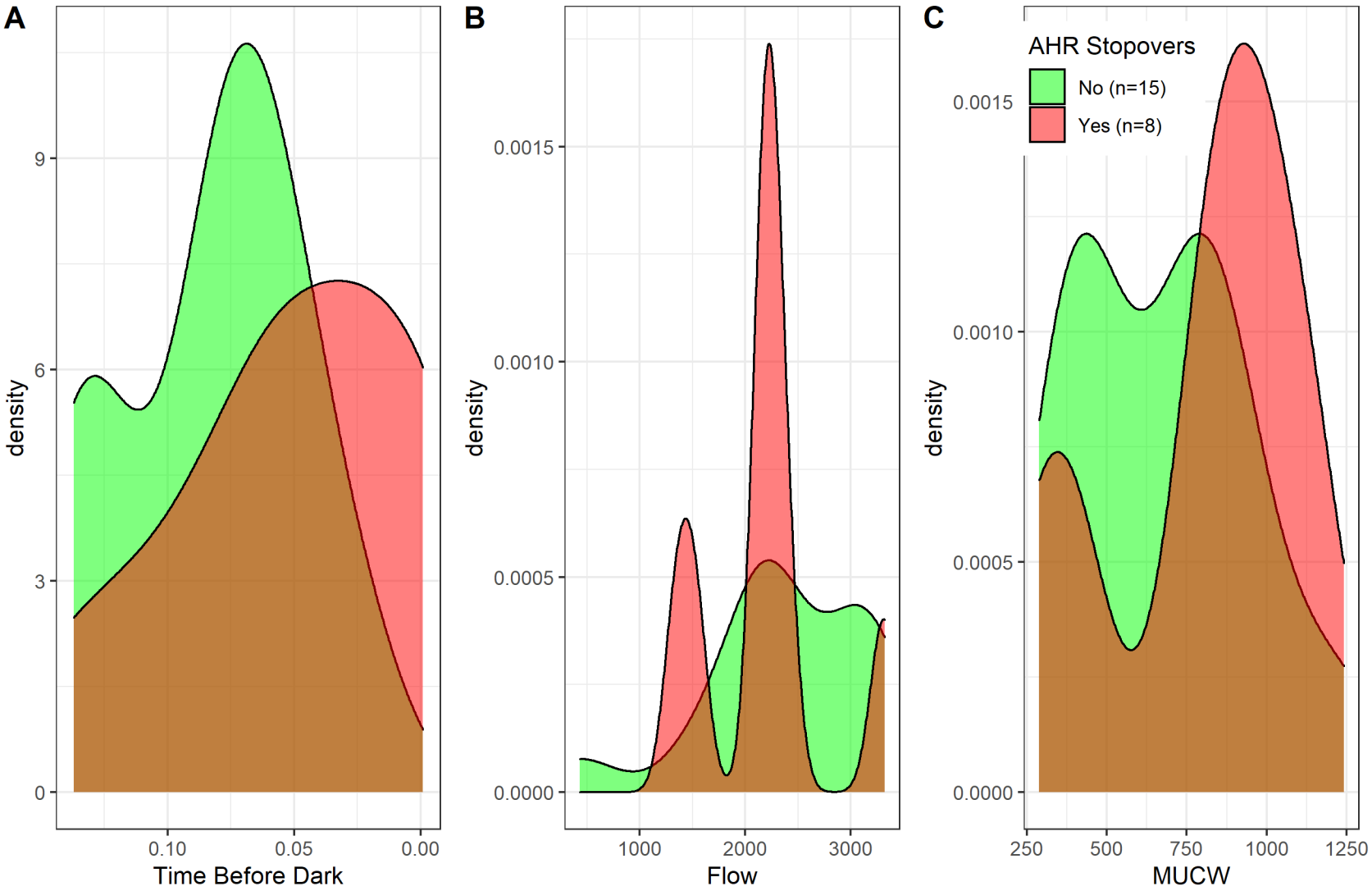


- Multivariable logistic regression
  - Time of day
  - Maximum unobstructed channel width (MUCW)
  - Flow



Model Rank	Variables	AUC	Pseudo R2
1	Time of Day * MUCW	0.96	0.58
2	Time of Day * MUCW + Flow	0.96	0.64
3	Time of Day	0.95	0.49
4	Time of Day + Flow	0.95	0.51
5	MUCW	0.7	0.07
6	Flow	0.67	0.03

Limited to ≤3 hours before dark



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Preliminary Conclusions

- Highest Order: Time of day
- Secondary Order: Maximum unobstructed channel width, flow, other variables?
- Preview of types of analyses possible for answering the question.
- More data!

Next Steps

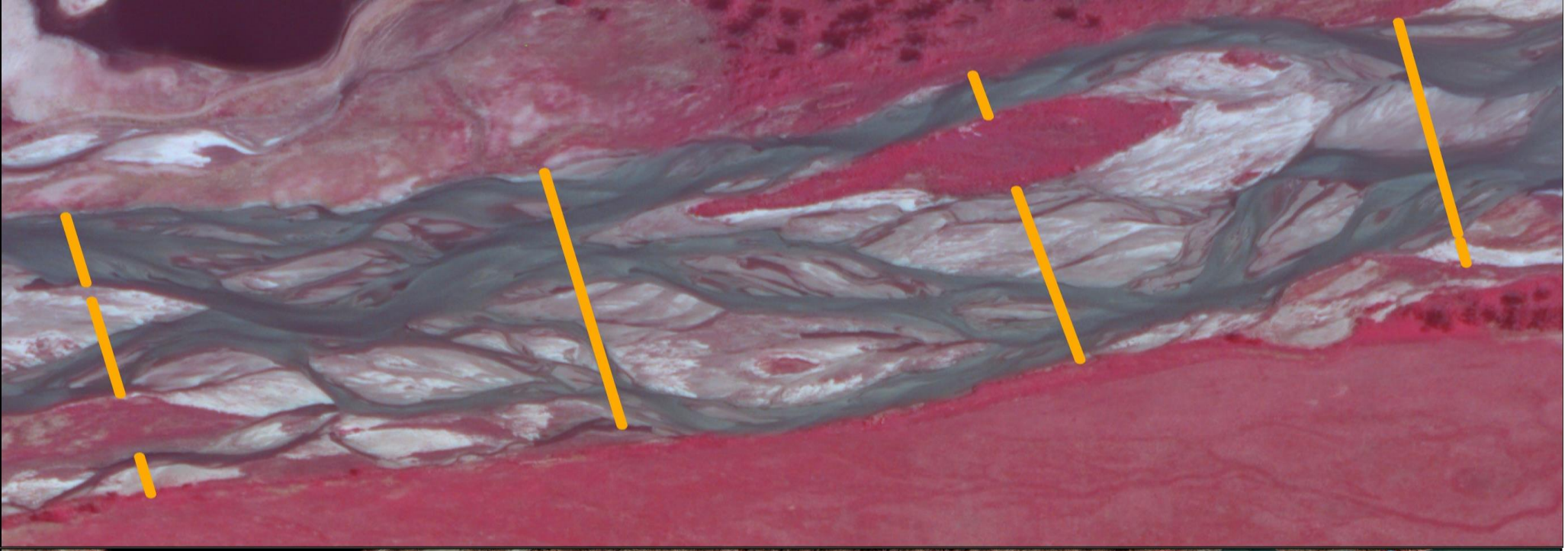
- Explanatory variable refinement
  - Maximum unobstructed channel width
  - Instantaneous flow
  - Landscape-scale influences

- Utilize non-AHR stopover locations/events

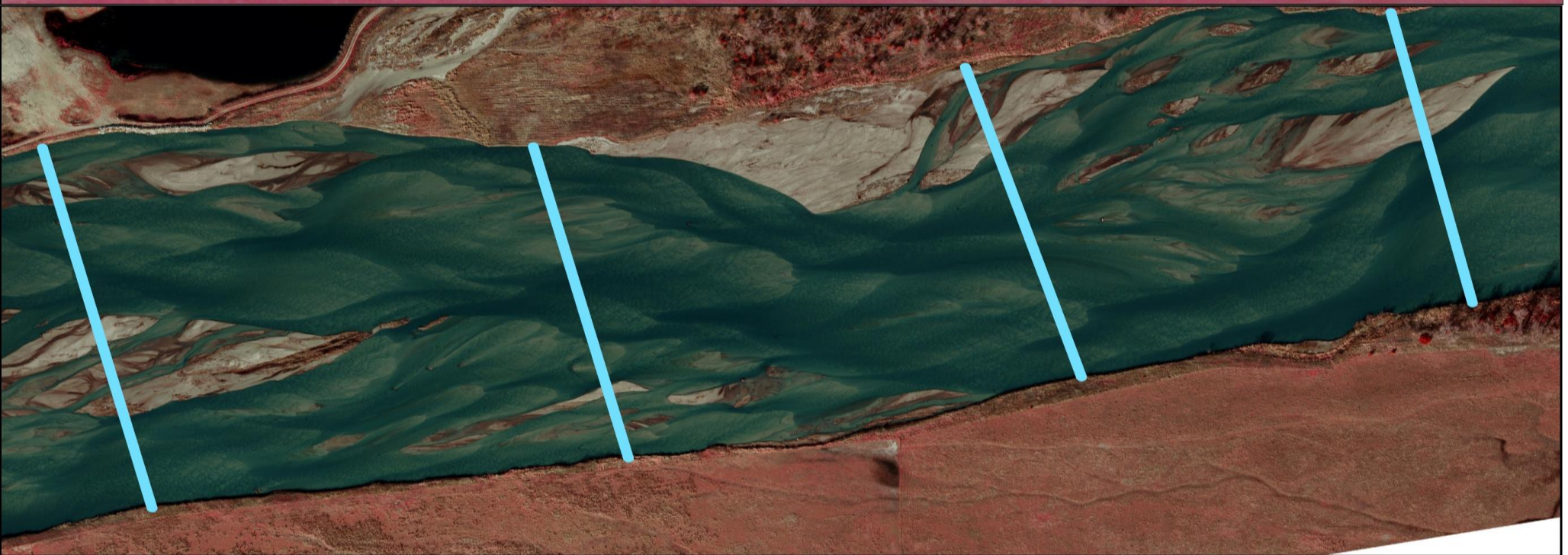
Updated channel width modeling

Patrick Farrell

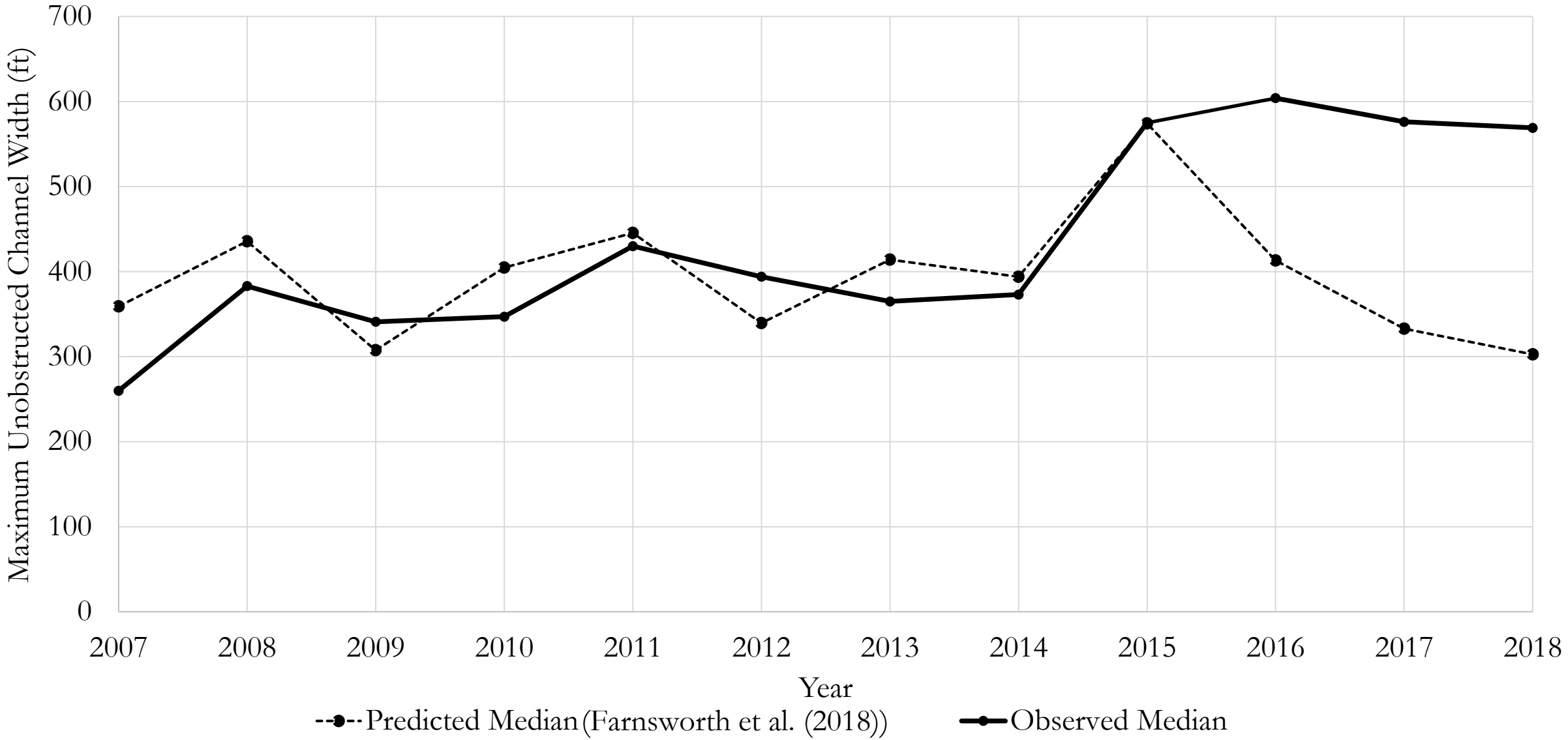
Statistical Ecologist



2008



2015



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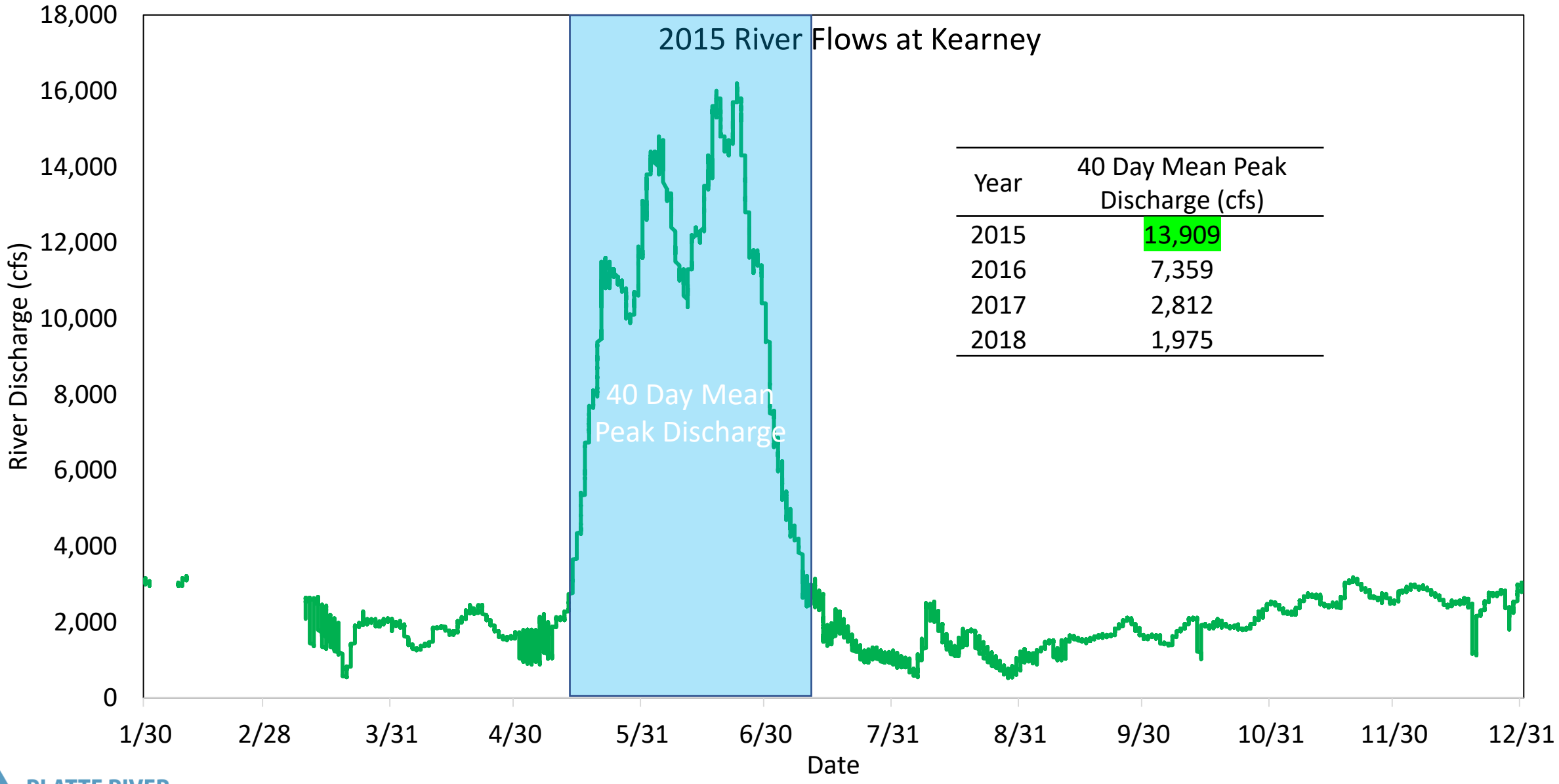
Farnsworth, J. M., D. M. Baasch, P. D. Farrell, C. B. Smith, and K. L. Werbylo. 2018. Investigating whooping crane habitat in relation to hydrology, channel morphology and a water-centric management strategy on the central Platte River, Nebraska. Heliyon 4:e00851.

Recent Peak Flows



Year	40 Day Mean Peak Discharge (cfs)
2015	13,909
2016	7,359
2017	2,812
2018	1,975

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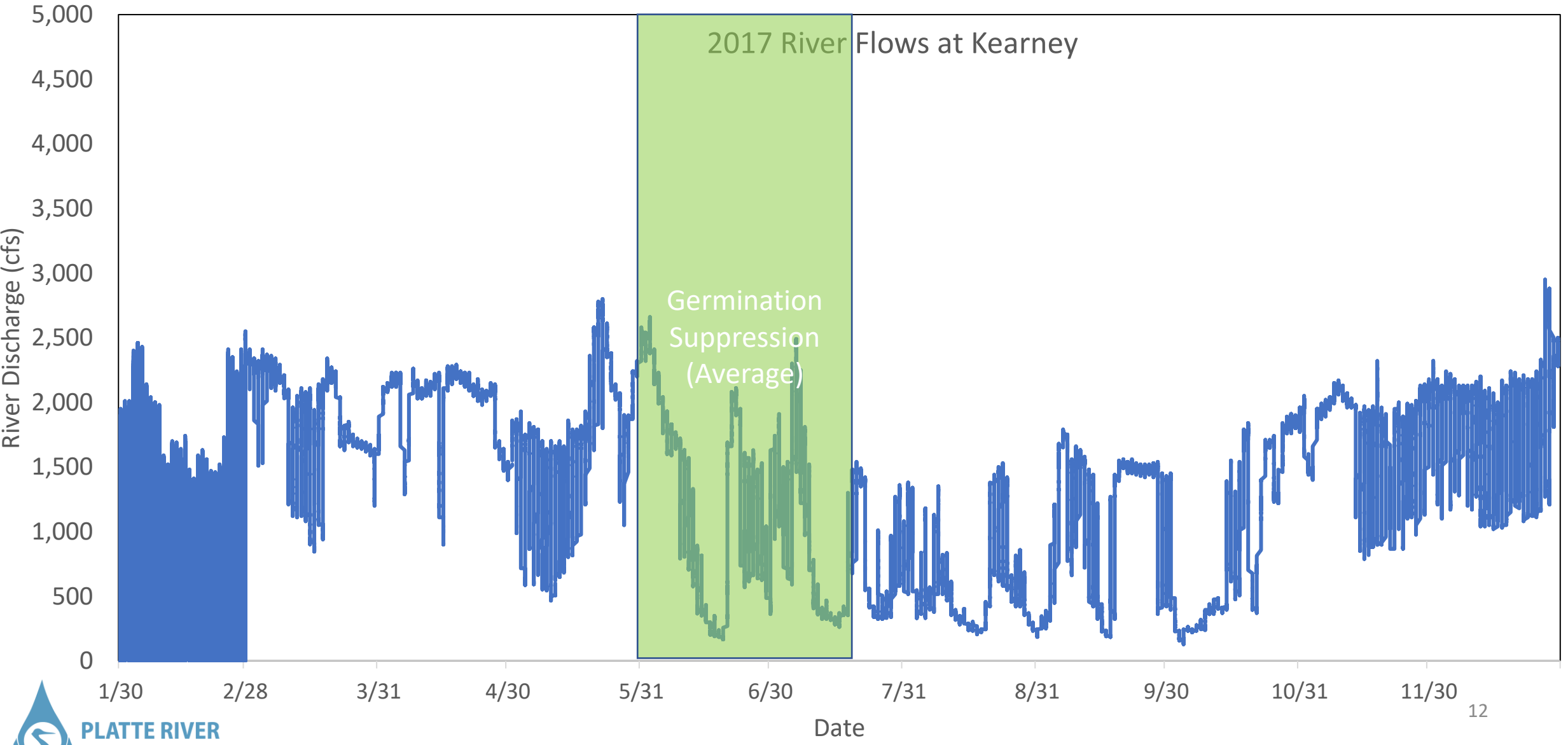
Annual channel maintenance flows



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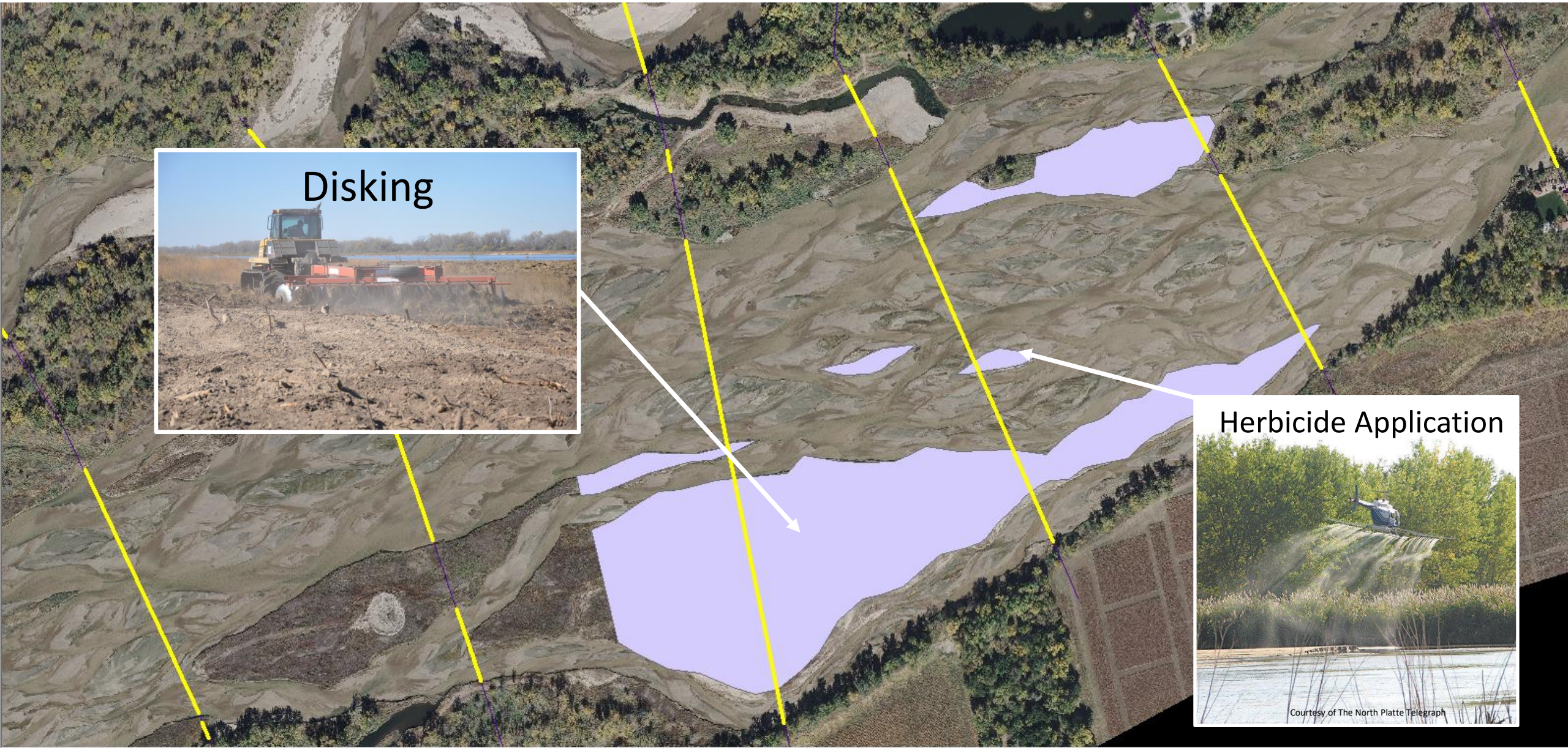
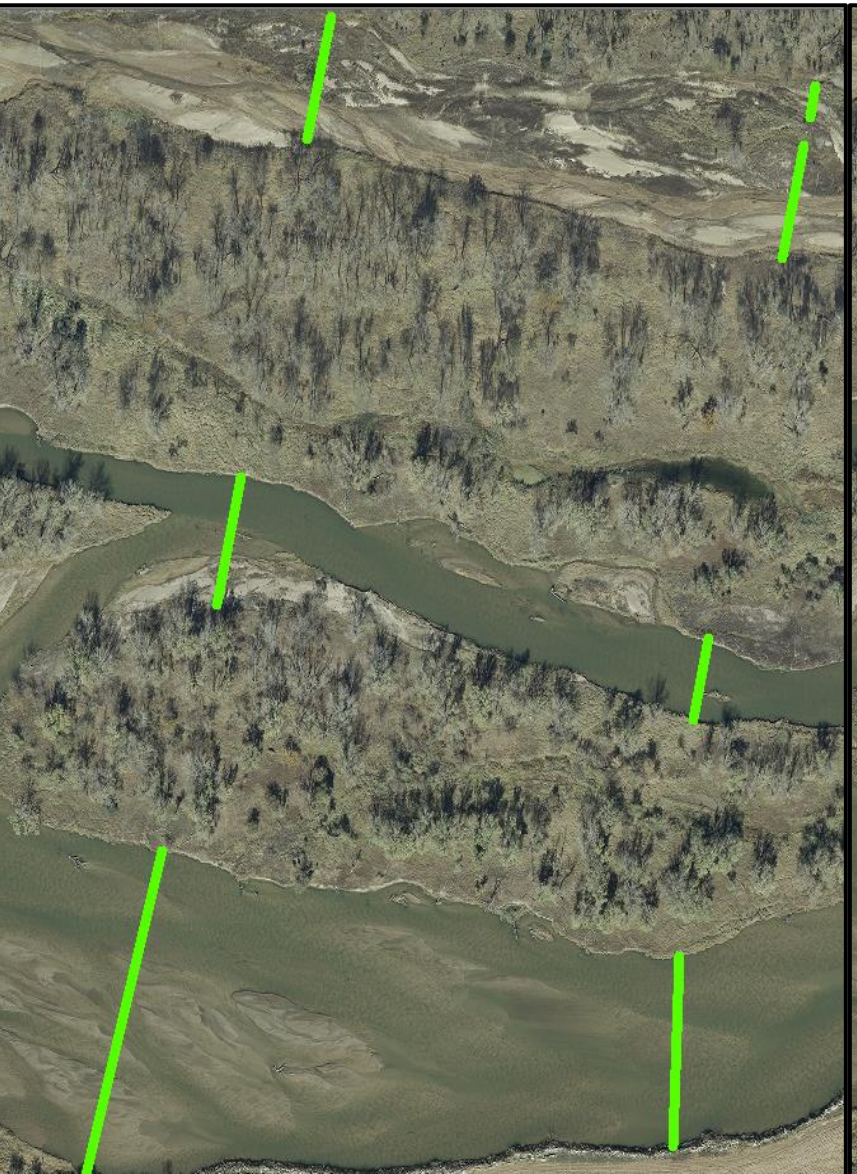
River Management



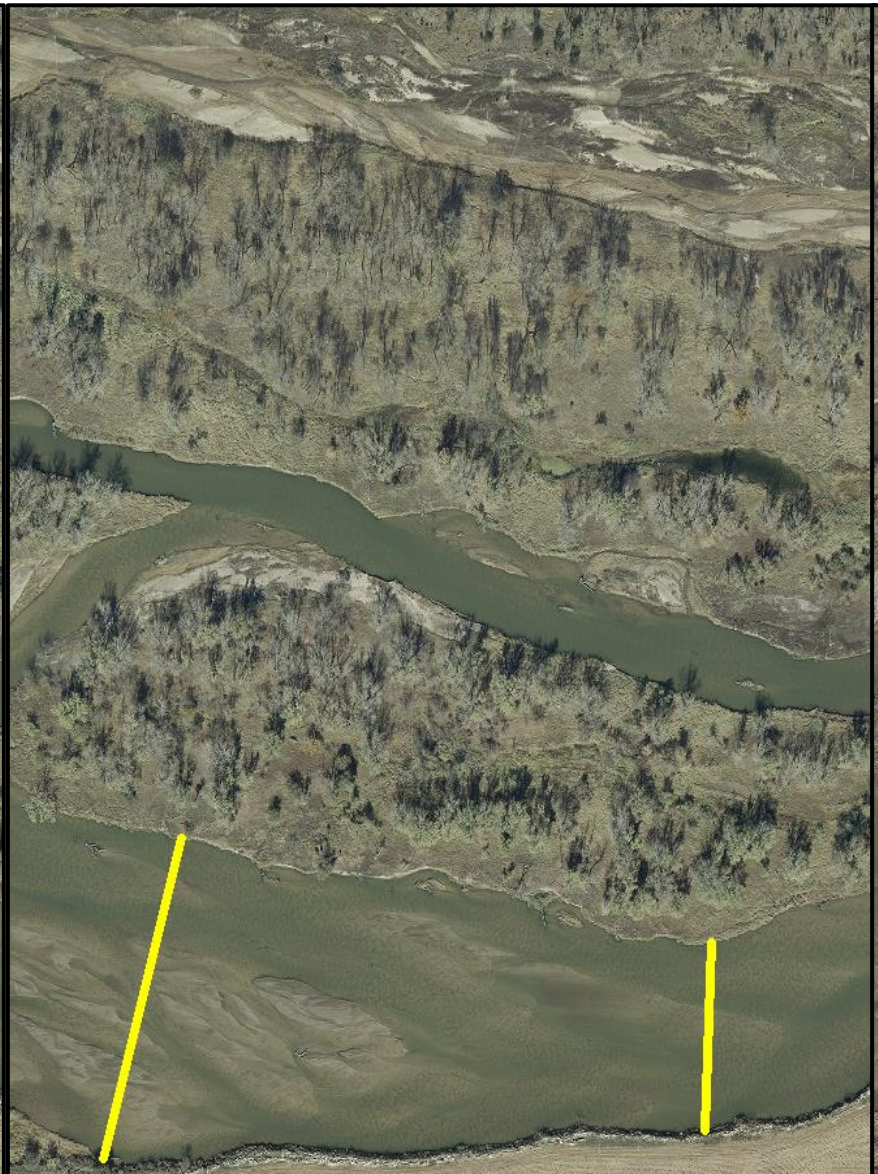
Main channel total channel width = Channel width at bankfull discharge

Unobstructed Channel Widths

Total Unobstructed Channel Width



Maximum Unobstructed Channel Width



Main Channel
Total Unobstructed Channel Width

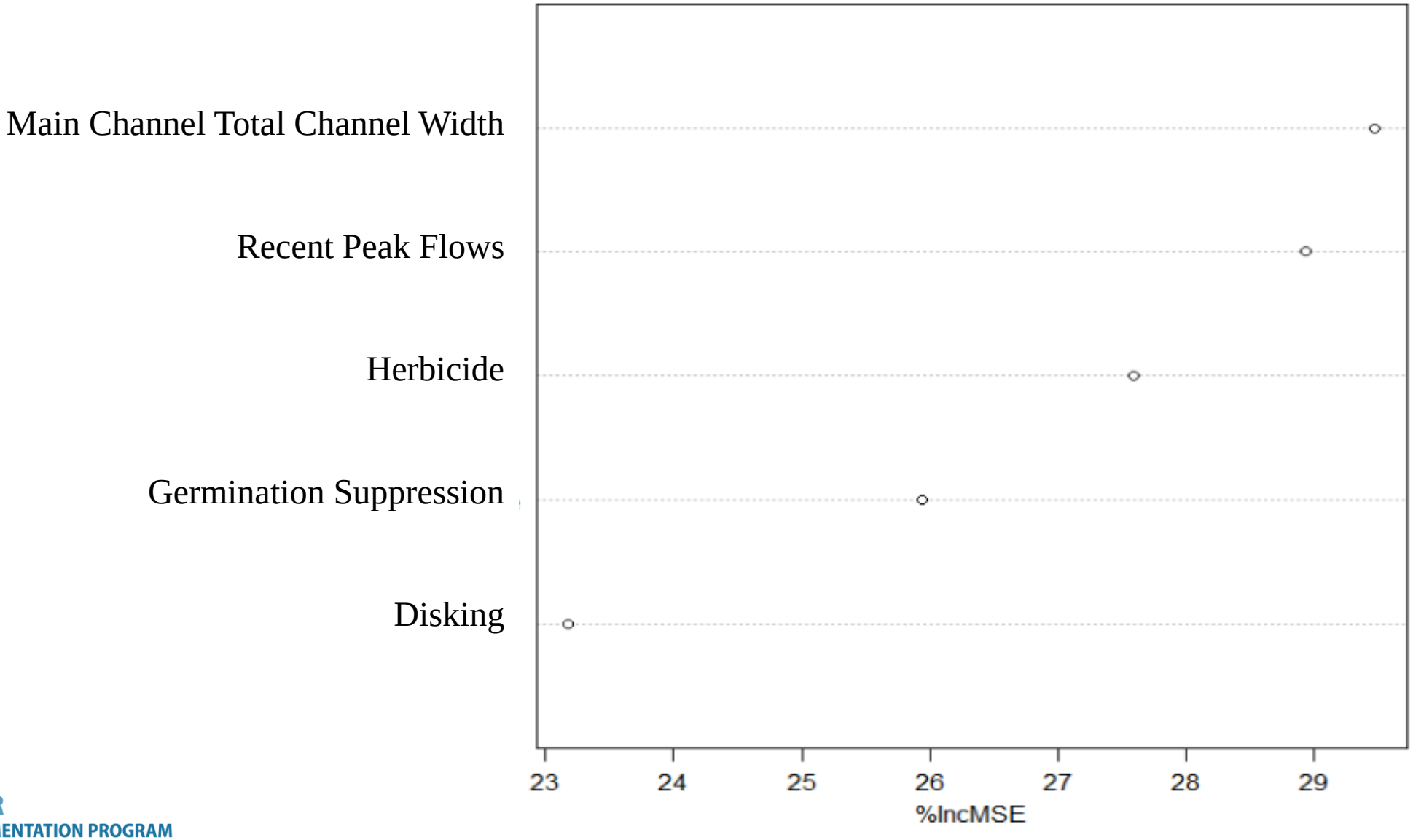
Analysis

- Machine learning Random Forest regression model

- First Increment Extension (2021-2032) Scenarios

Scenario	Recent Peak Discharge	Germination Suppression	Herbicide	Disking	Total Channel Width
2,000 cfs	High	2,000 cfs	X		X
500 cfs	High	500 cfs	X		X
2,000 cfs	High	2,000 cfs	X	X	X
500 cfs	Medium	500 cfs	X	X	X

Results: Variable importance



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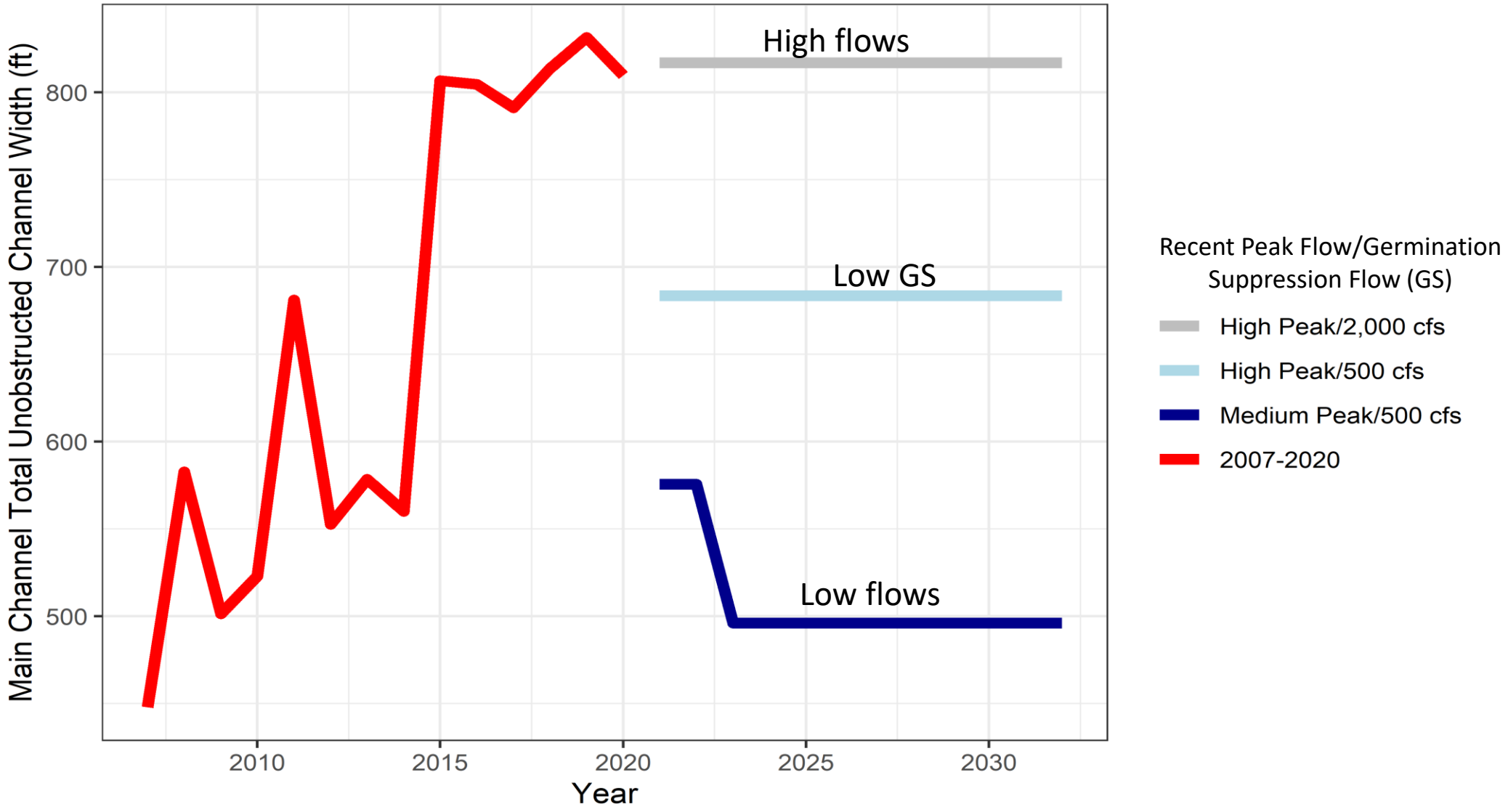
Results: Channel maintenance flow impacts



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Adaptive Management Working Group
AMP Development
Whooping Cranes

Malinda Henry – Science Lead

PRRIP EDO Staff

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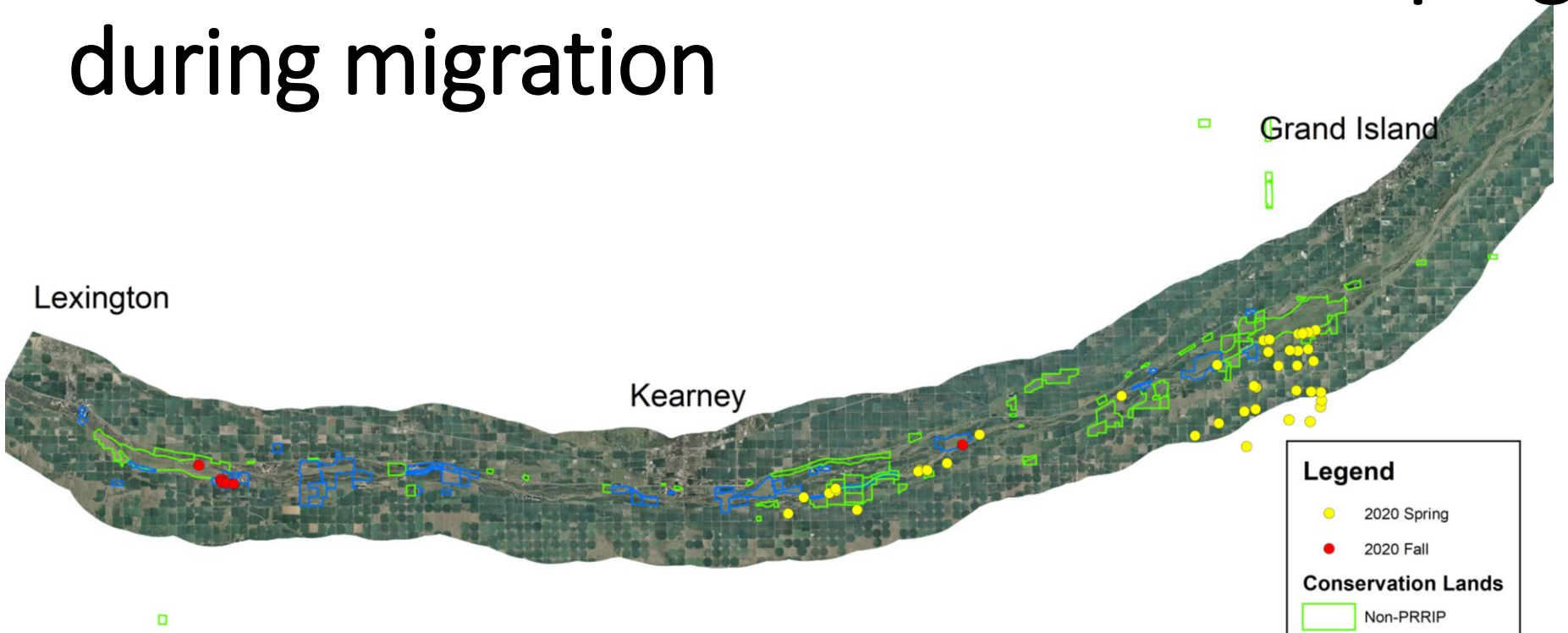
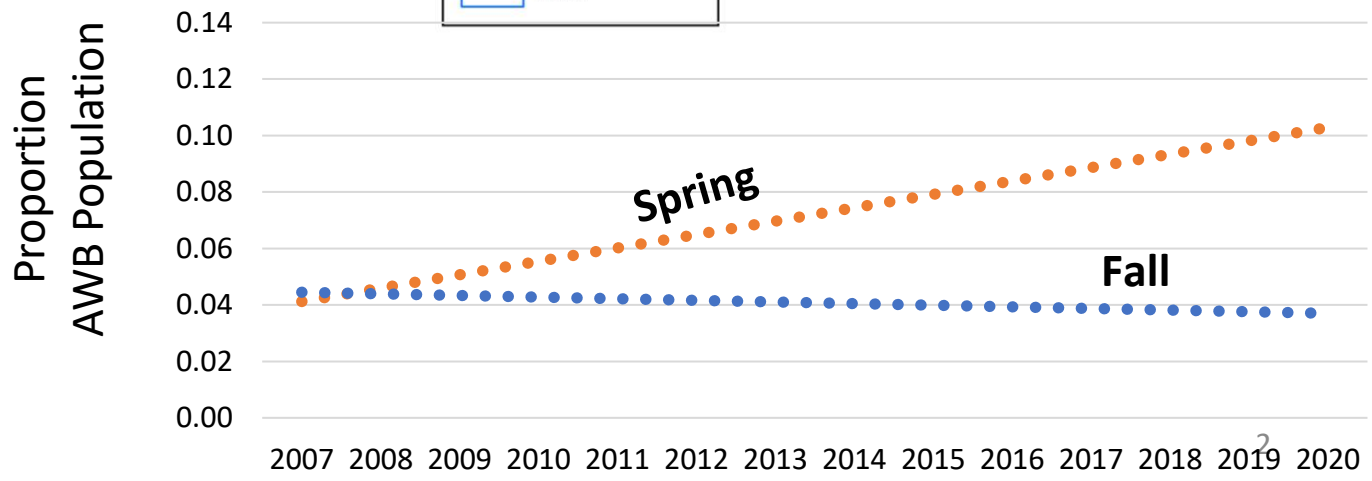
Contribute to the survival of whooping cranes during migration





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Potential Big Questions

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

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Stop or flyover the AHR?

Moving Forward

- Priority variables?
- Appropriate scale?
- Low flows and WC use?

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Water maintenance of unobstructed channel width?

- Germination suppression (Spring/Summer) flows?
  - Water Need
    - Target vegetation?
    - Magnitude, duration, timing?
  - Water Availability
- Short duration high flows (Fall)?

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Potential Big Questions

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