

Spring 2024 Whooping Crane Monitoring



Ethan Ideus, PRRIP EDO

Technical Advisory Committee Meeting, October 22, 2024

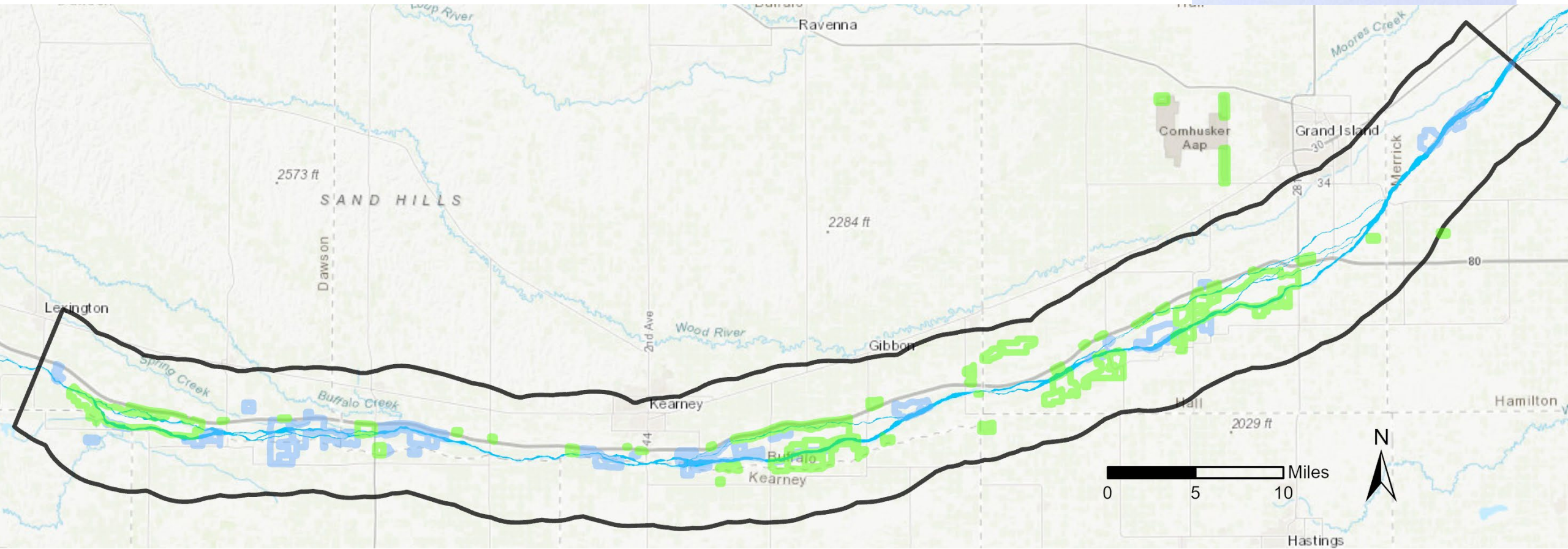
PRRIP Whooping Crane Monitoring

- Assess success of PRRIP management objective
- Collect systematic data
- Evaluate stopover metrics
- Address Extension Big Questions



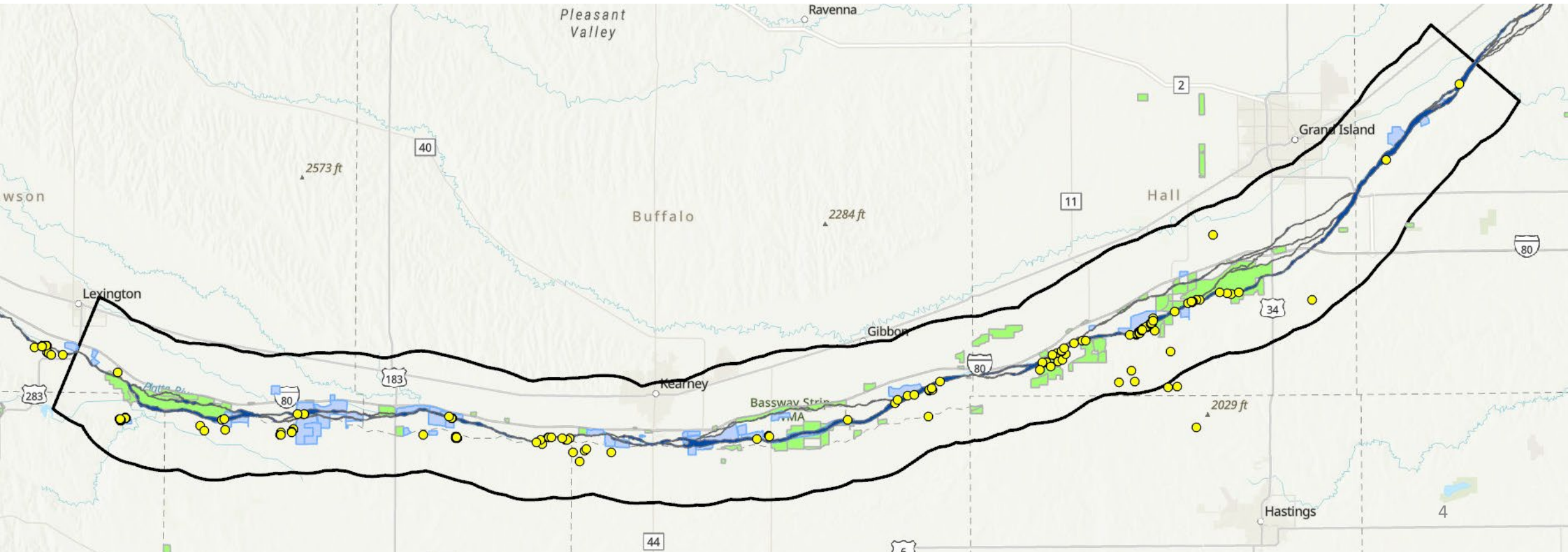
PRRIP Monitoring Methods

- Systematic aerial surveys and ground monitoring
- March 5 – April 19
- West and east transects flown daily



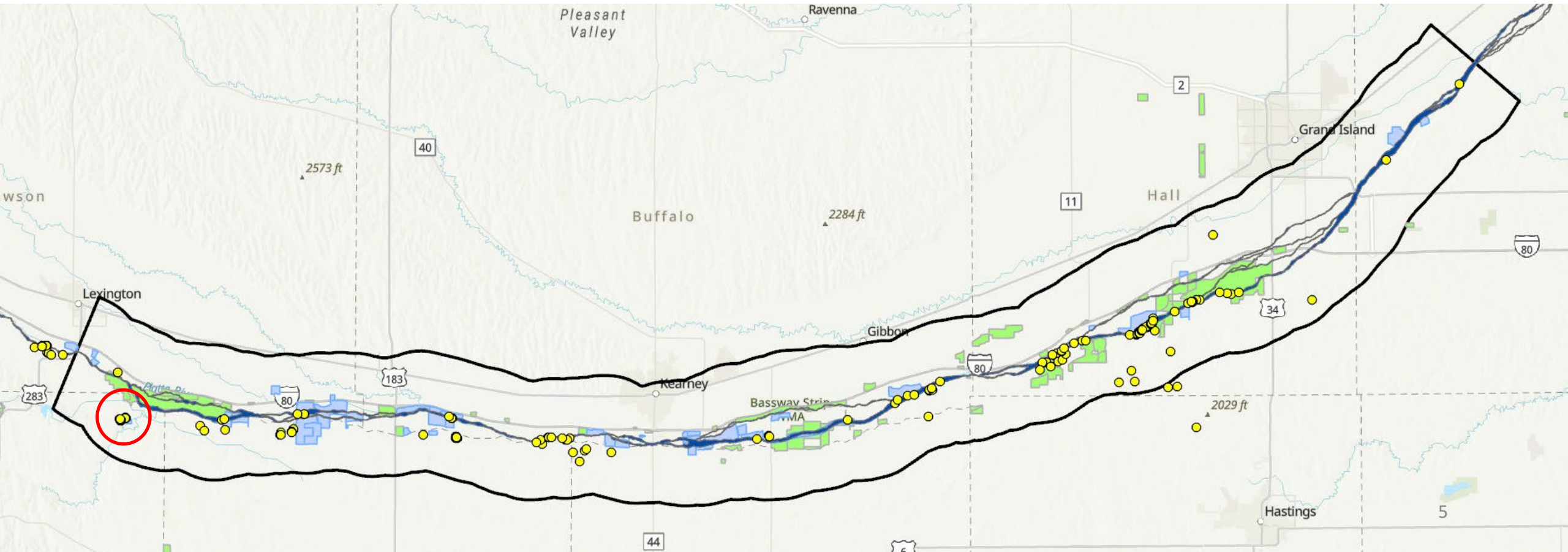
PRRIP Spring 2024 Monitoring

- 187 individual whooping cranes
- 44 unique groups
- March 5 – April 12
- 154 group locations

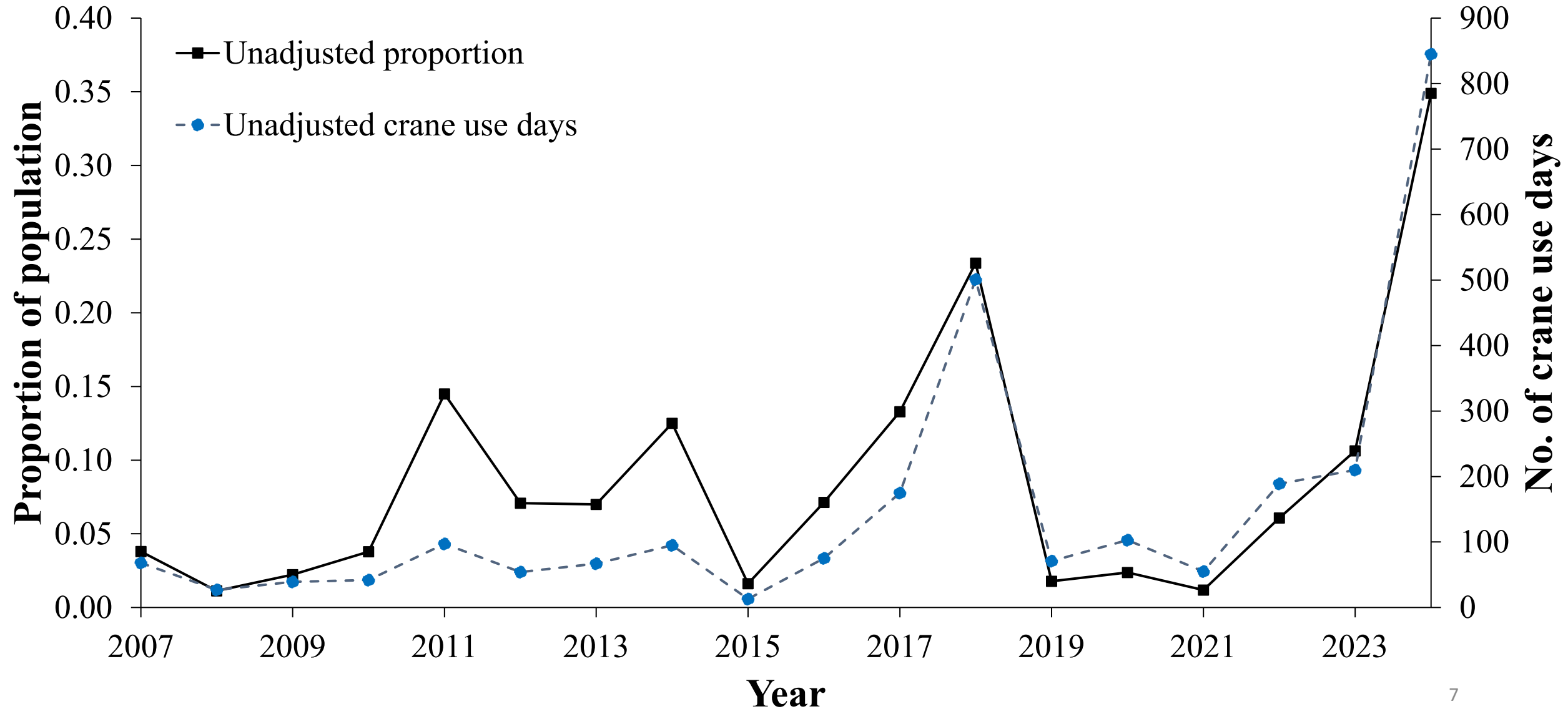


PRRIP Spring 2024 Monitoring

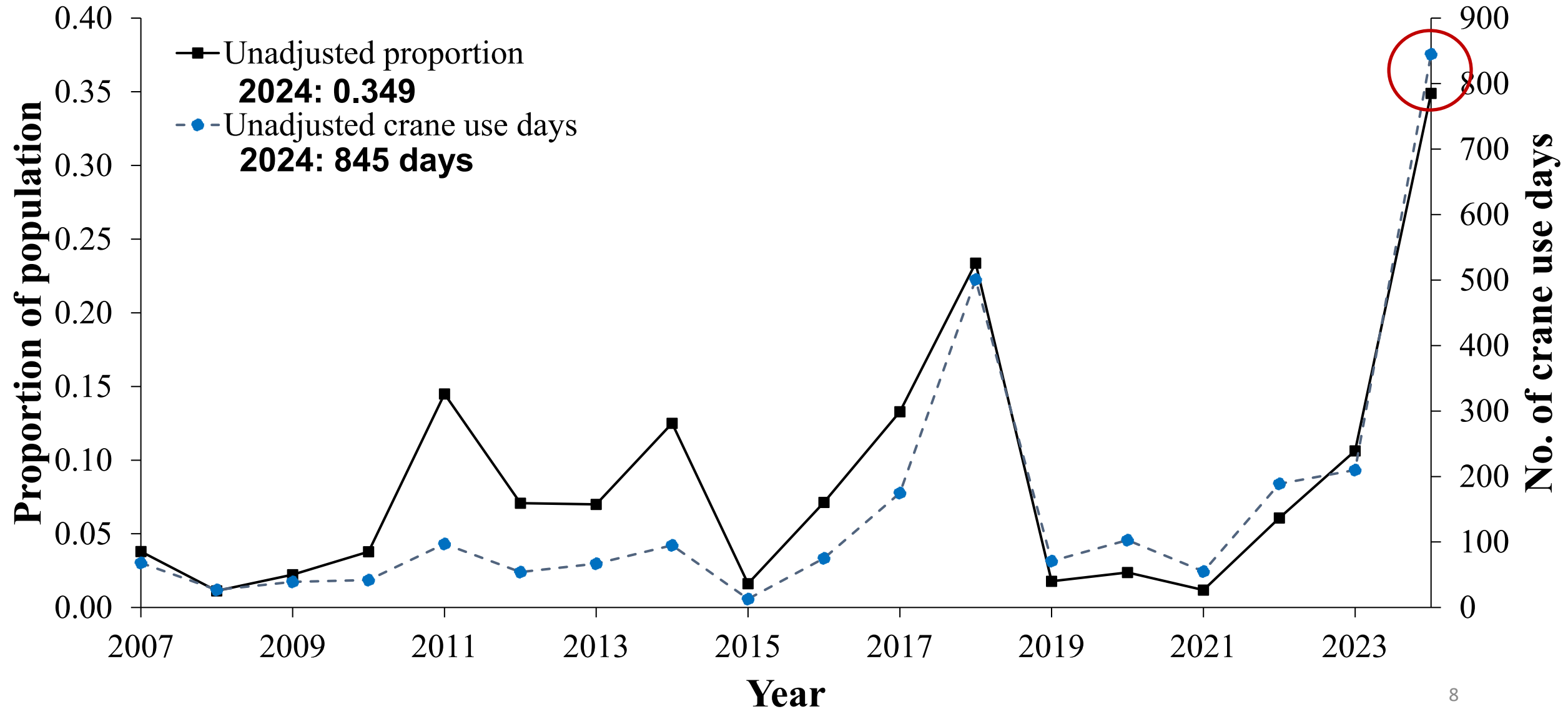
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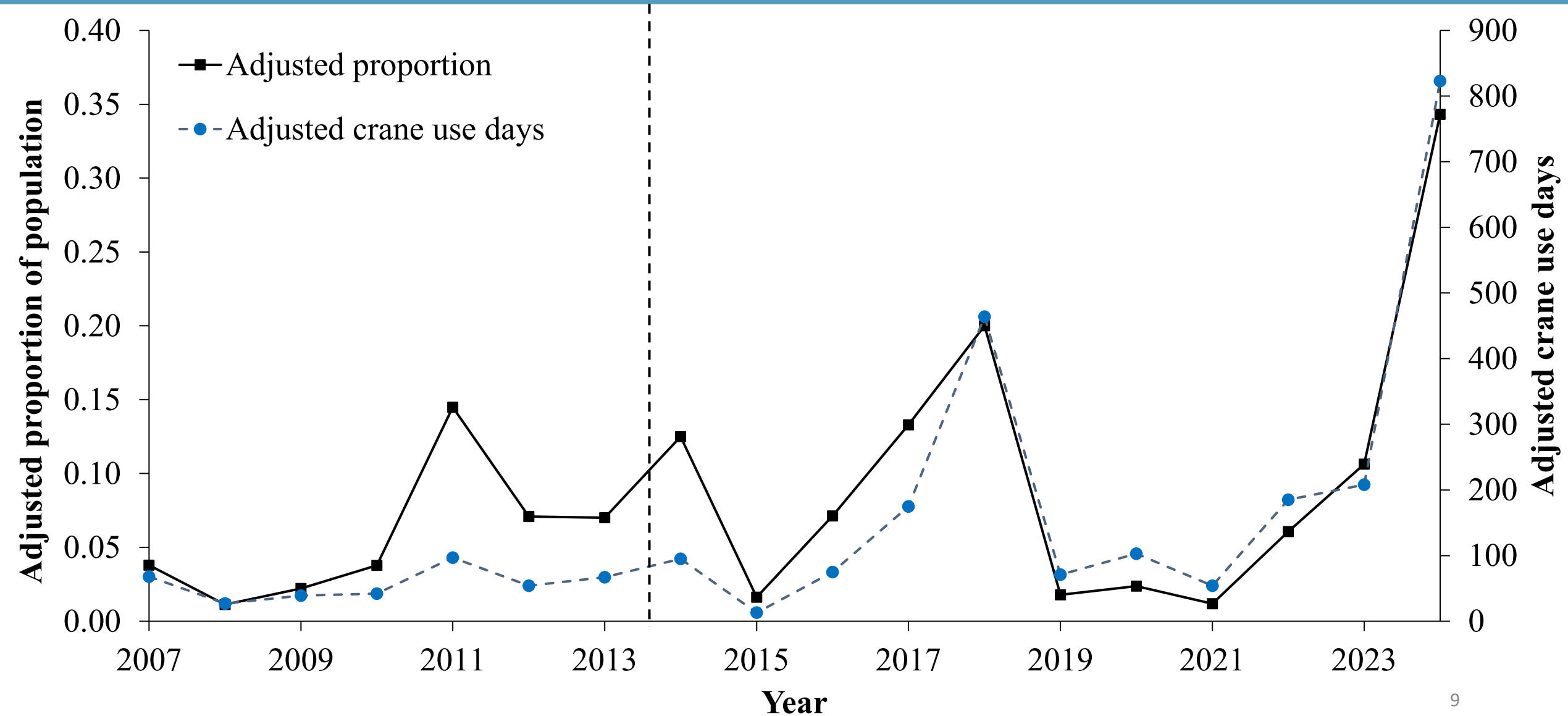
Spring Whooping Crane Metrics



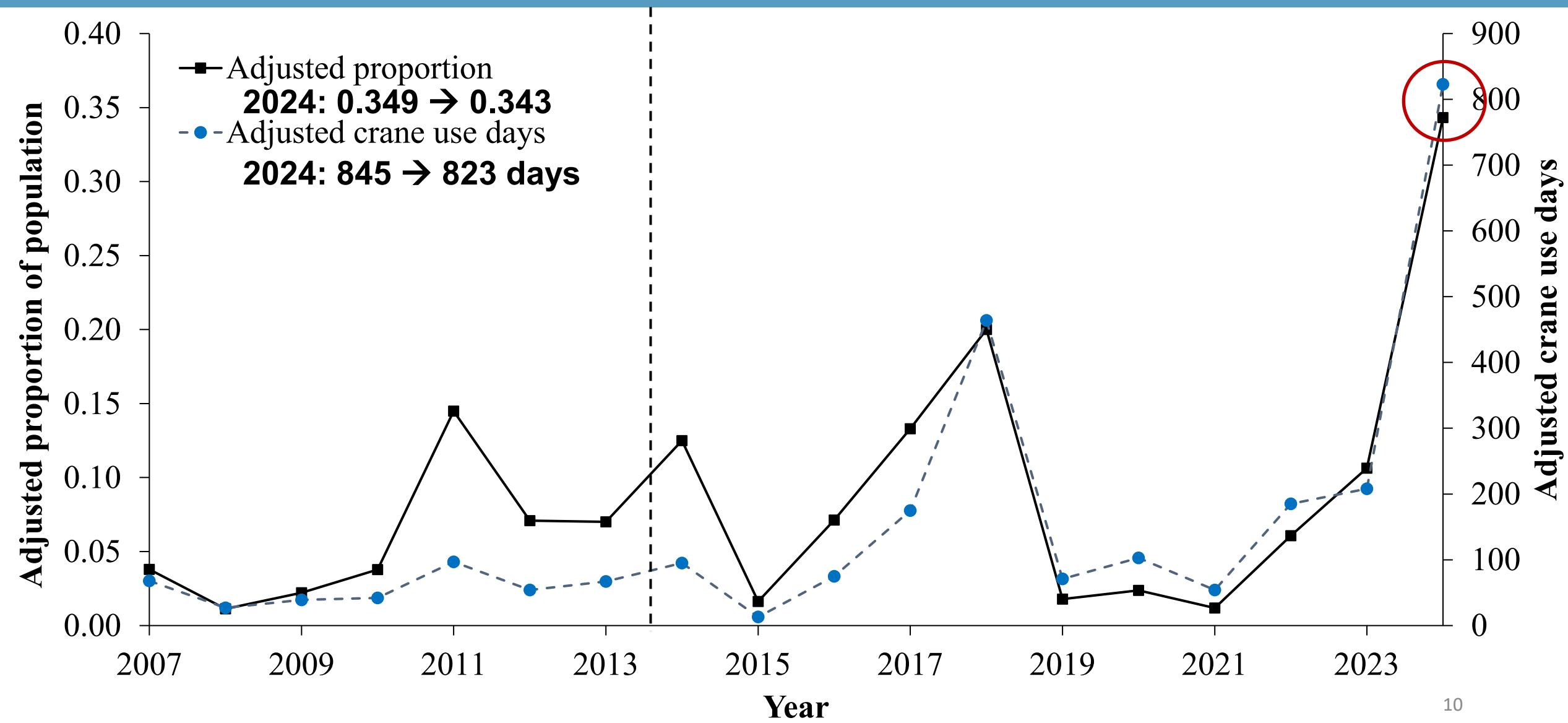
Spring Whooping Crane Metrics



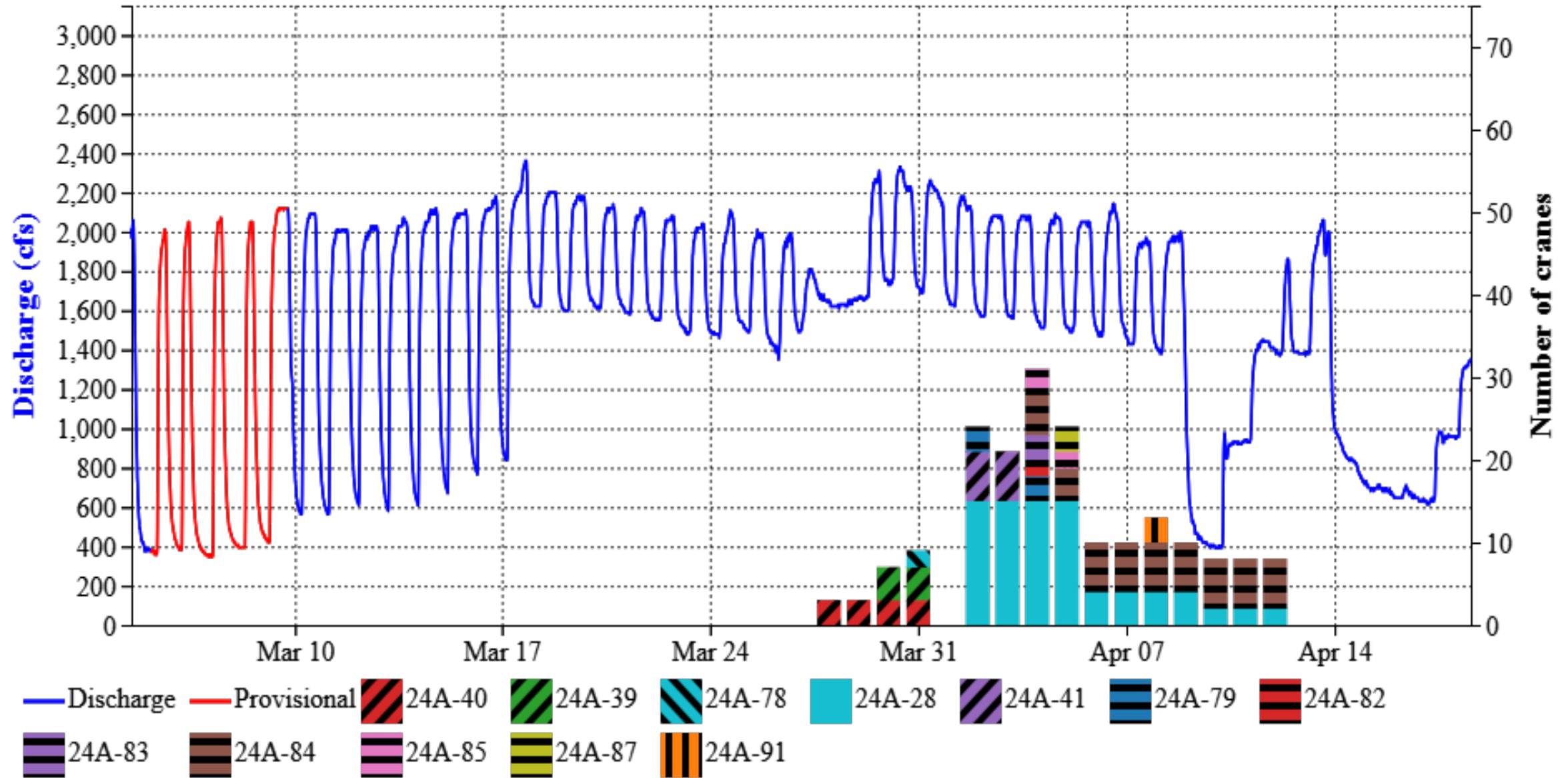
Adjusted Spring Whooping Crane Metrics



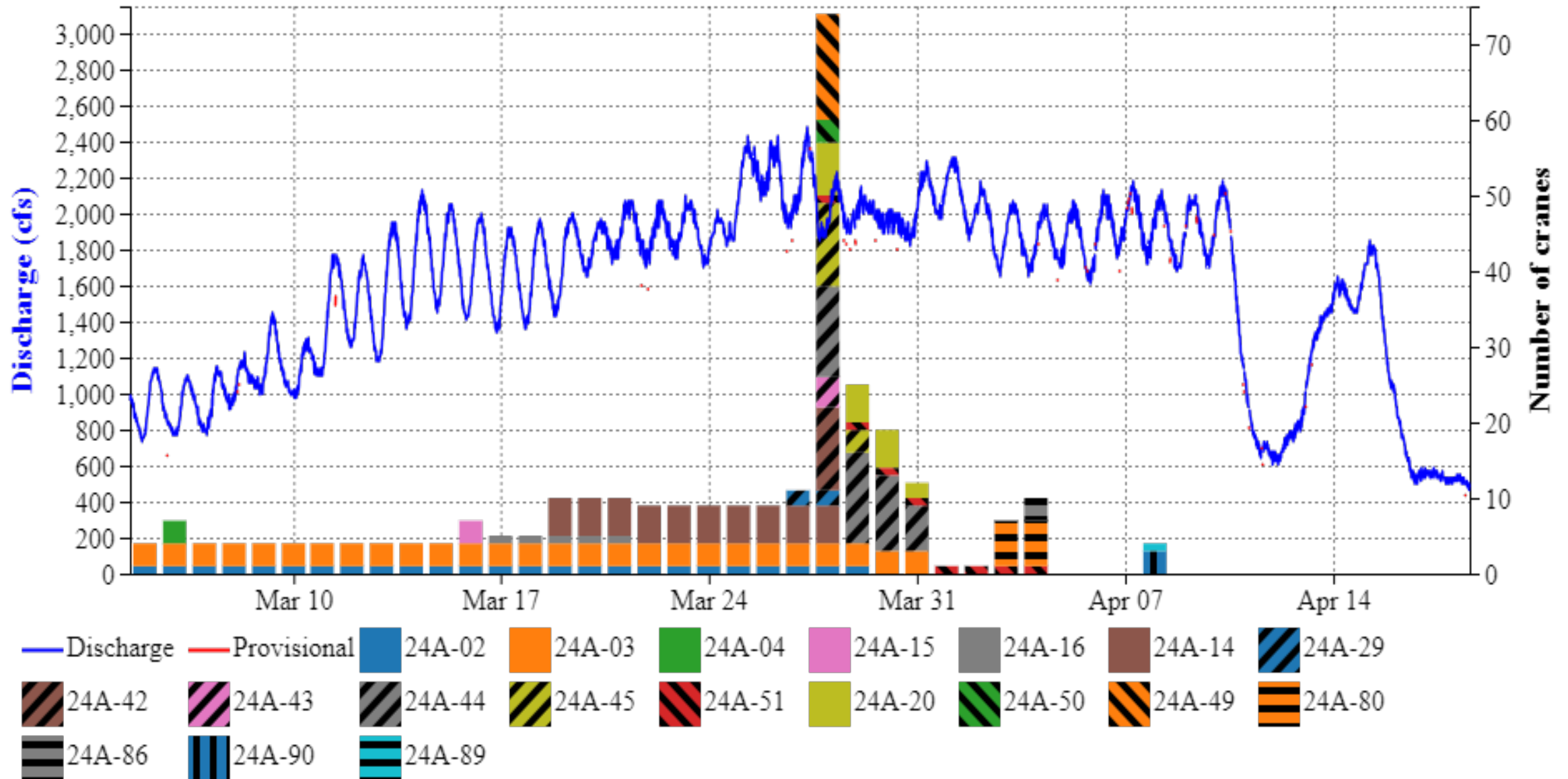
Adjusted Spring Whooping Crane Metrics



Platte River Discharge at Overton

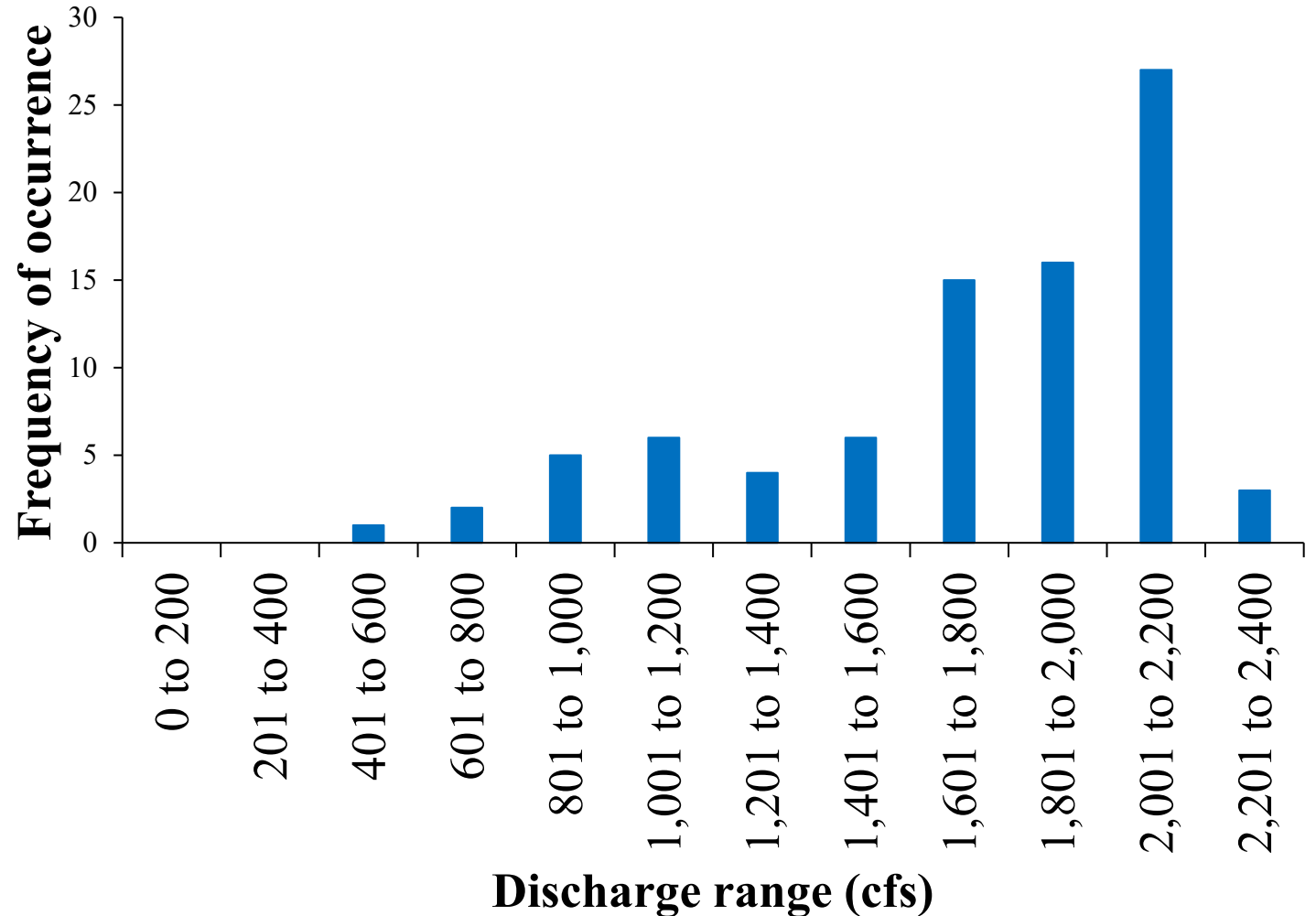


Platte River Discharge at Grand Island



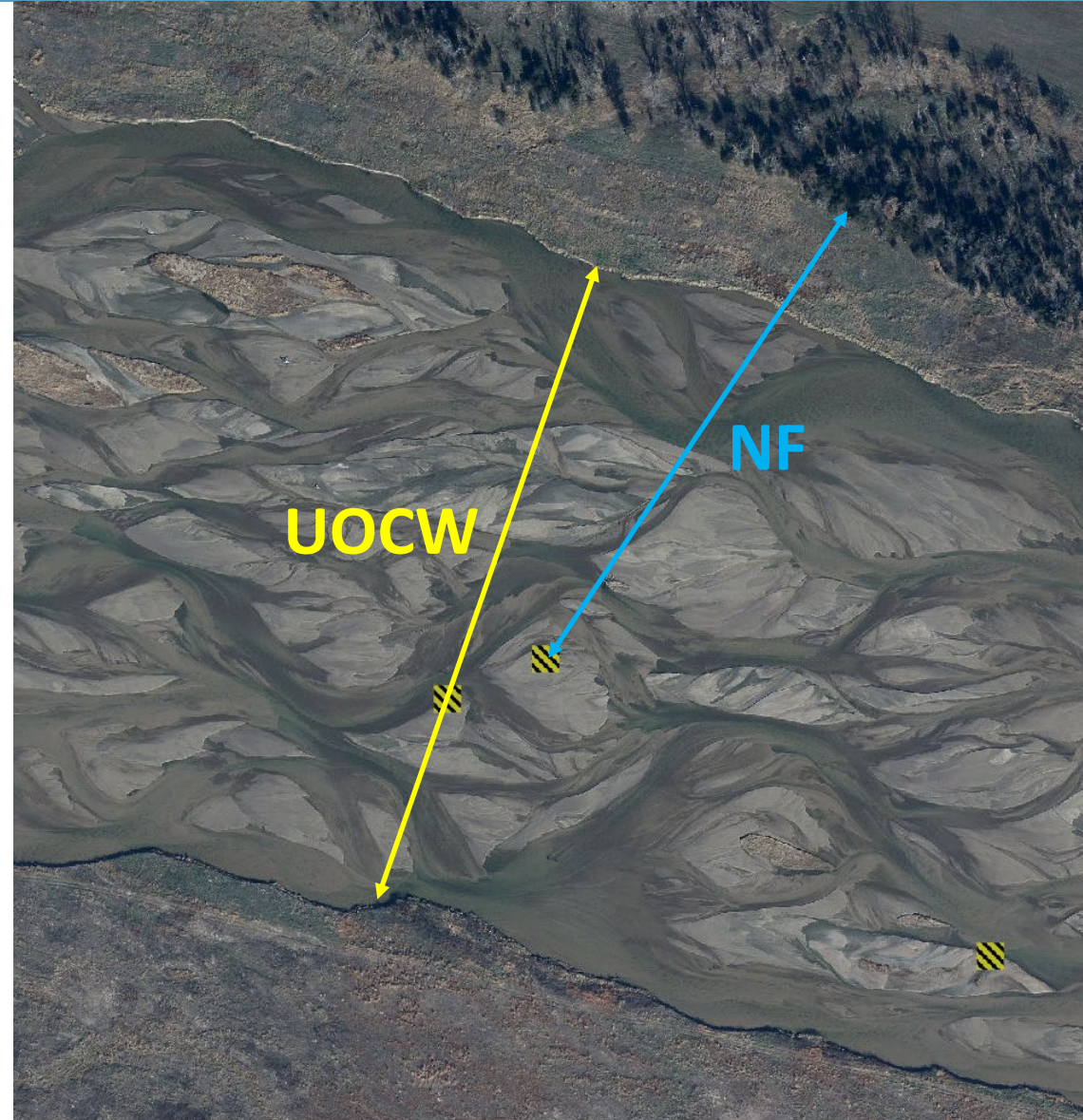
Platte River Discharge – Riverine Locations

- 85 riverine locations
 - 500 cfs to 2,230 cfs
 - Mean = 1,739 cfs
 - Median = 1,850 cfs



Habitat Metrics

- Unobstructed channel width
 - 229 ft to 1,457 ft
 - Mean = 777 ft
 - Median = 761 ft
- Nearest forest
 - 133 ft to 1,692 ft
 - Mean = 655 ft
 - Median = 522 ft



Spring 2024 Summary



- Record spring in many aspects
- Majority of groups located in the eastern half of AHR
- Stopovers during range of flows with peak between 2,001 cfs and 2,200 cfs
- Means of habitat metrics slightly higher than current Program management goals

Questions?



UOCW Corrections

2024SP110



UOCW Corrections

2024SP110

UOCW = 221 ft



UOCW Corrections

2024SP110
UOCW = 221 ft



UOCW Corrections

2024SP110

UOCW = 458 ft



UOCW Corrections

Previous Data

- Range: 30 – 1,266 ft
- Mean: 690 ft
- Median: 687 ft



Corrected Data

- Range: 229 – 1,457 ft
- Mean: 777 ft
- Median: 761 ft

26 measurements changed

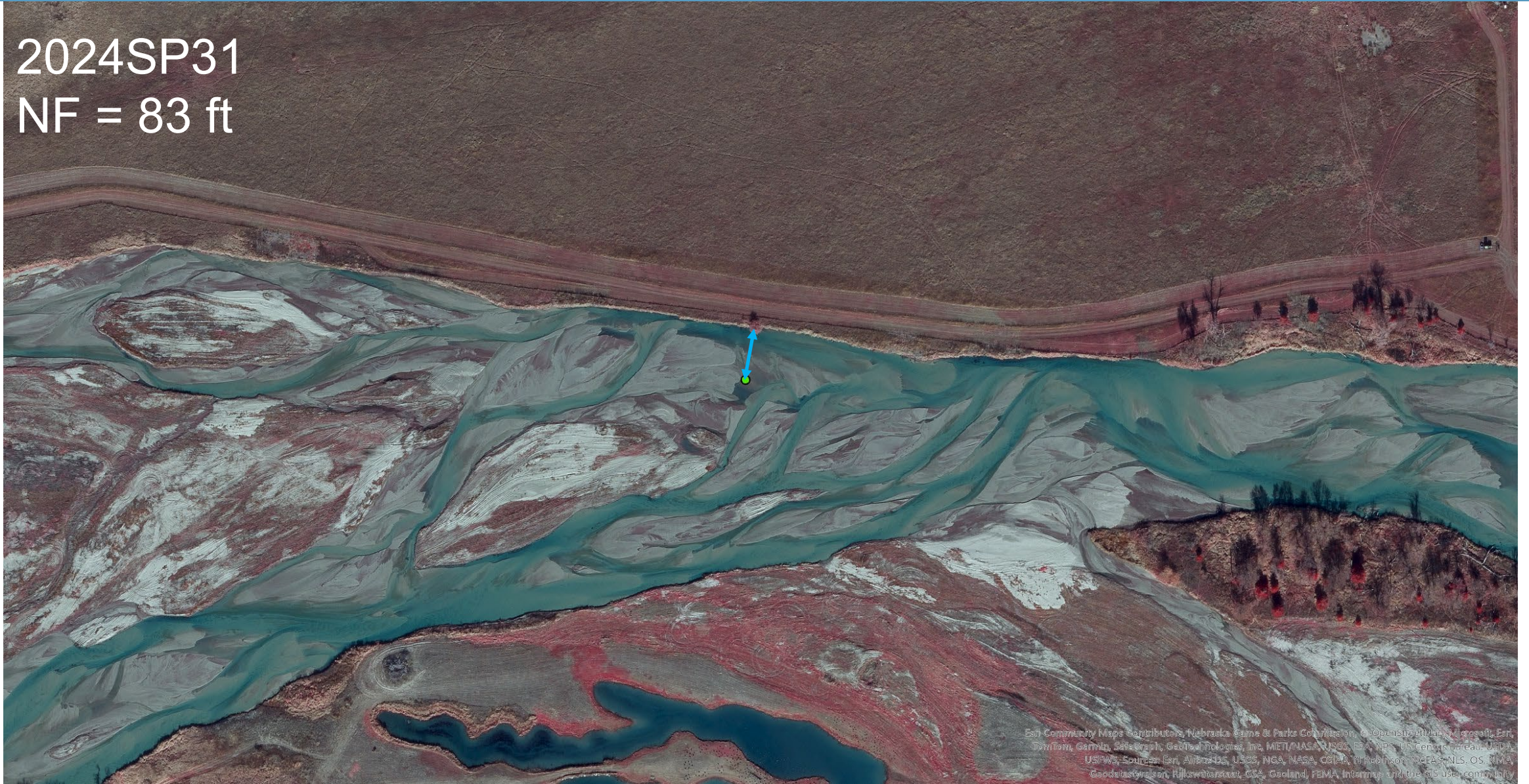


[illegible]

NF Corrections

2024SP31

NF = 83 ft



Esri Community Maps Contributors, Nebraska Game & Parks Commission, © OpenStreetMap contributors, Esri, TomTom, Garmin, Swatch, GeoTechnologies, Inc., METI/MASARUS, E.A., NPS, US Census Bureau, USDA, USFWS, Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, Robinson, NOAA, NLS, OS, NIMA, GeoInformation, Rijswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community



NF Corrections

2024SP31
NF = 83 ft



NF Corrections

2024SP31

NF = 710 ft



NF Corrections

Previous Data

- Range: 83 – 1,692 ft
- Mean: 622 ft
- Median: 442 ft

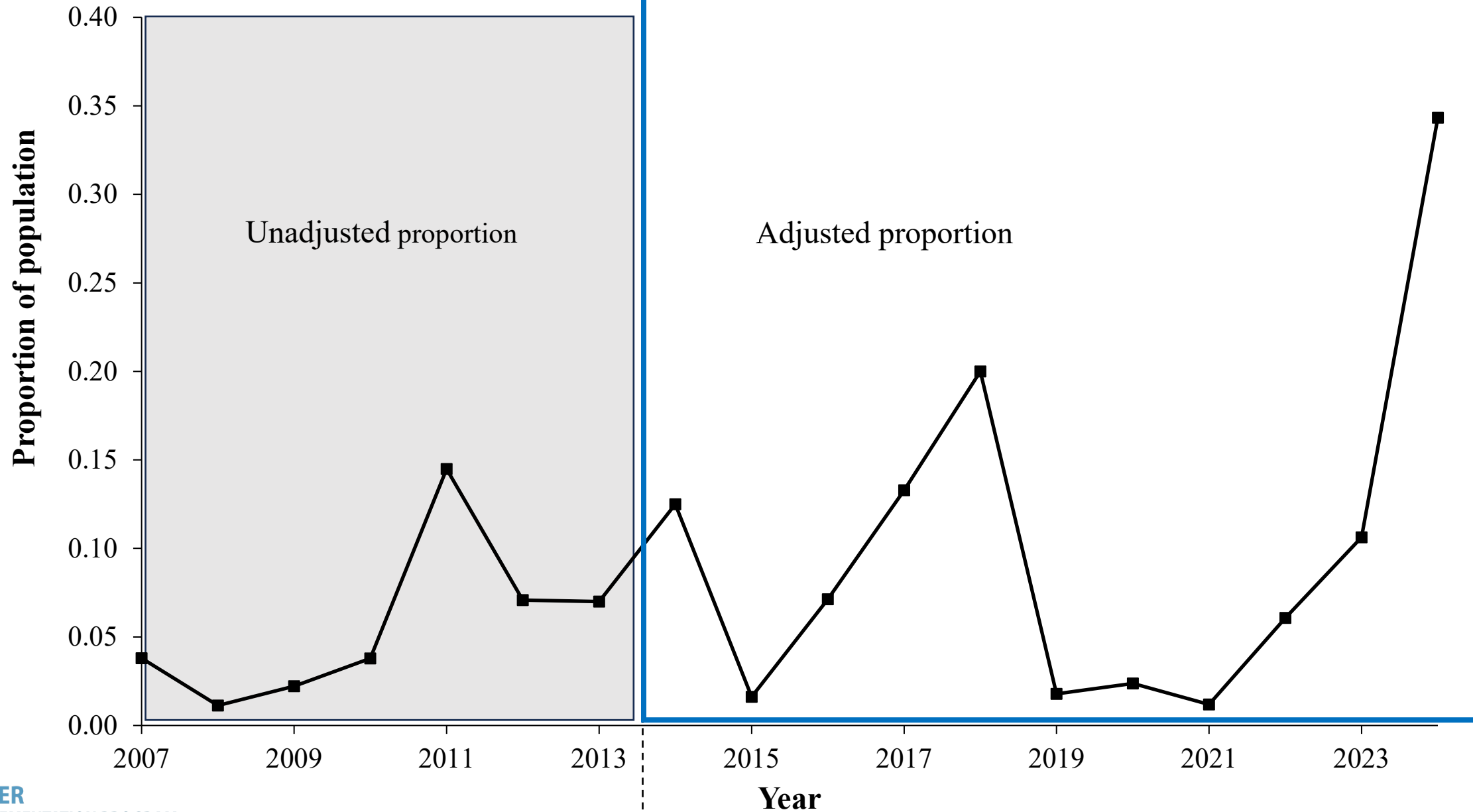


Corrected Data

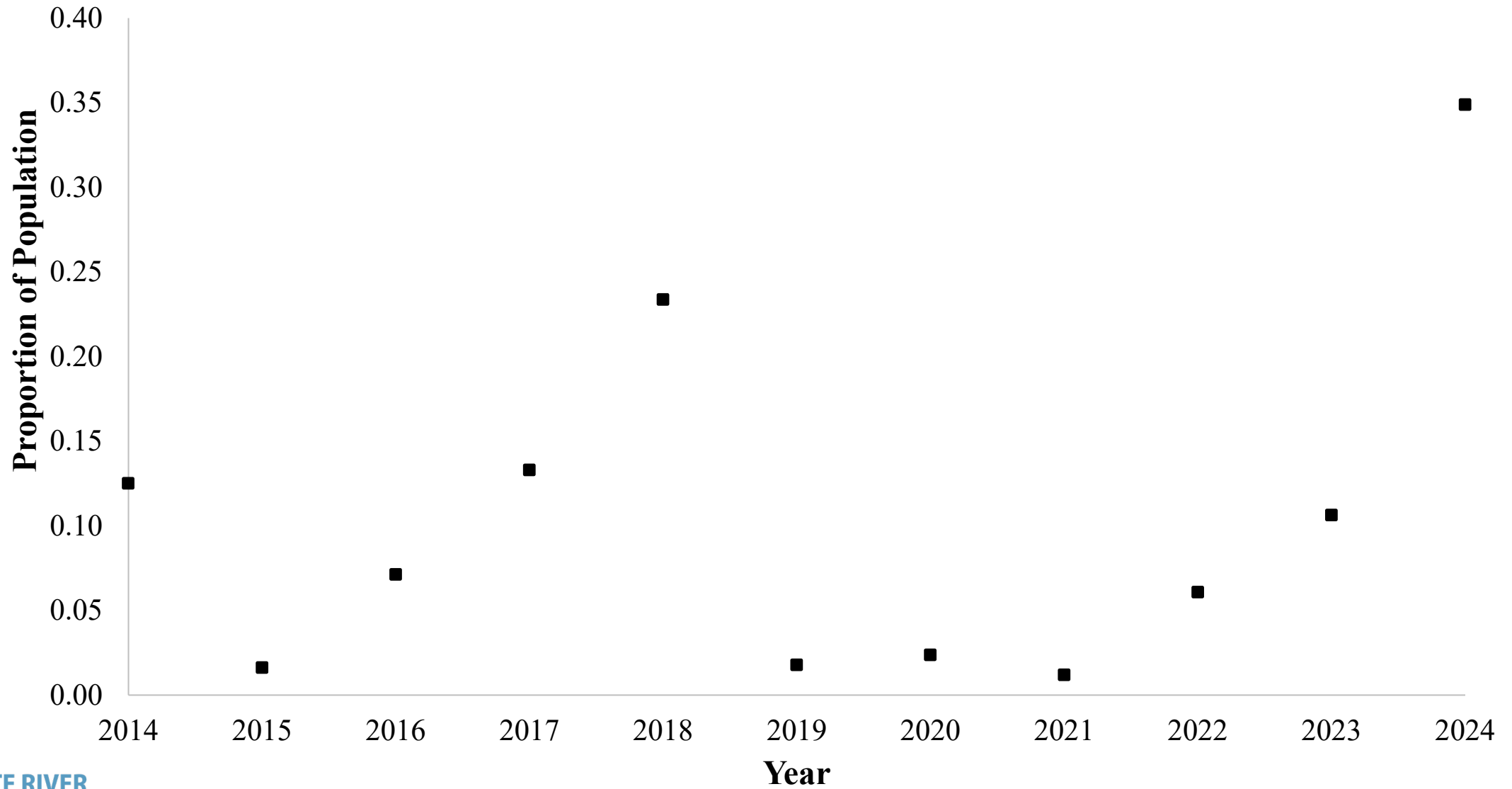
- Range: 133 – 1,692 ft
- Mean: 655 ft
- Median: 522 ft

10 measurements changed

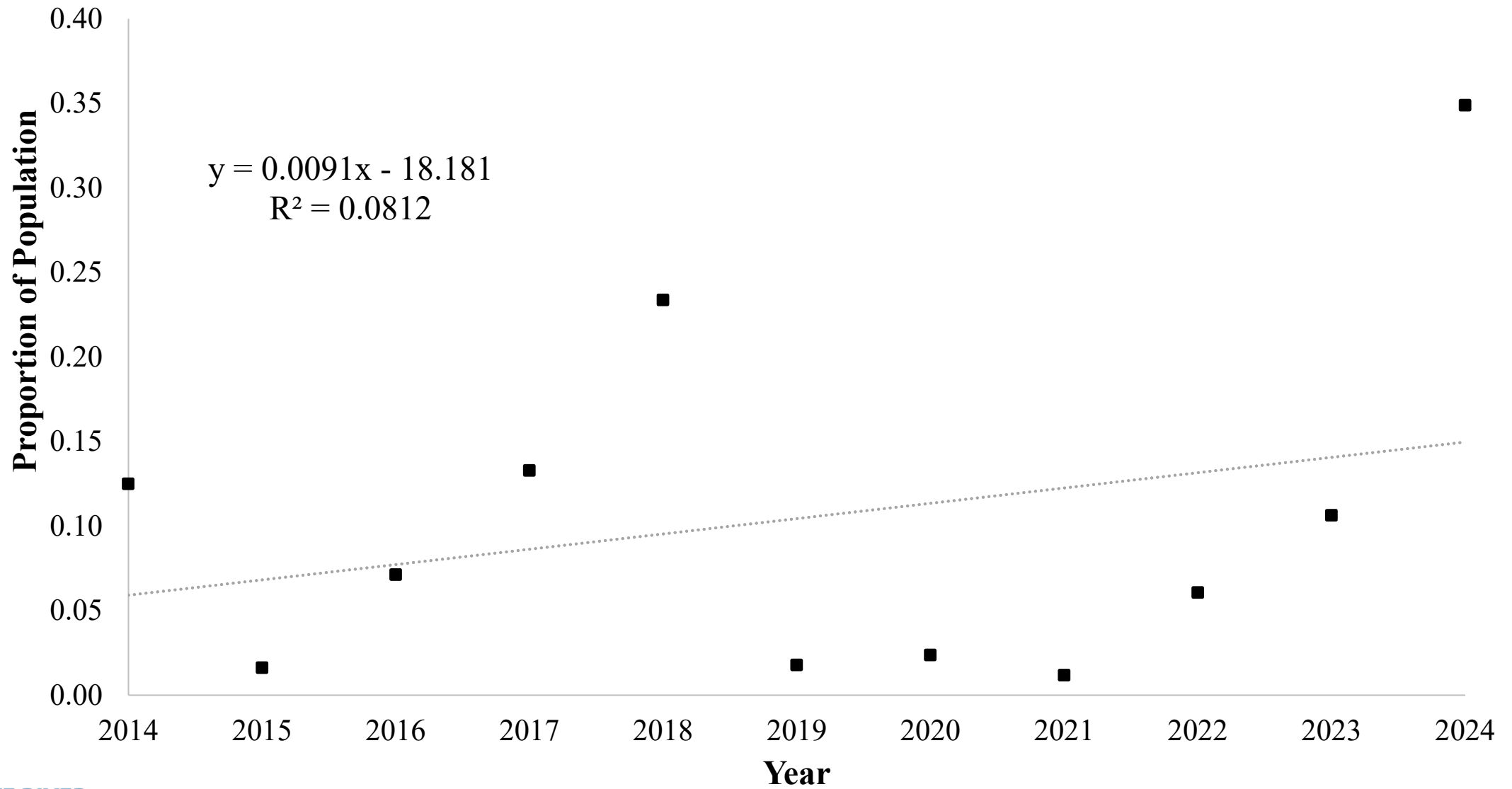




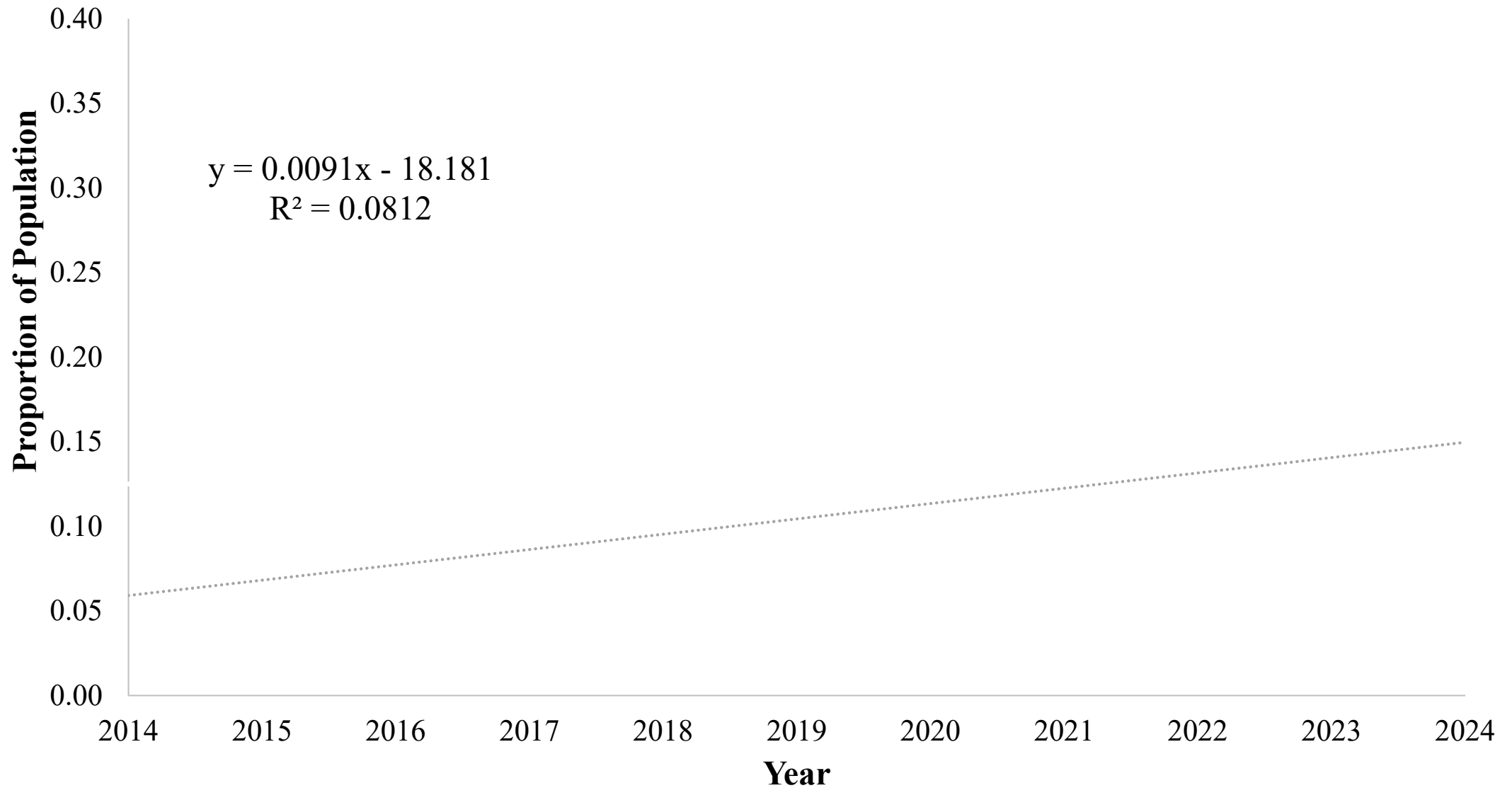
2014-2024 **Adjusted metrics** (in Report)
Mixed Model Linear Regression – non-significant slope ($p=0.55$)



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Mixed Model Linear Regression – non-significant slope (p=0.55)



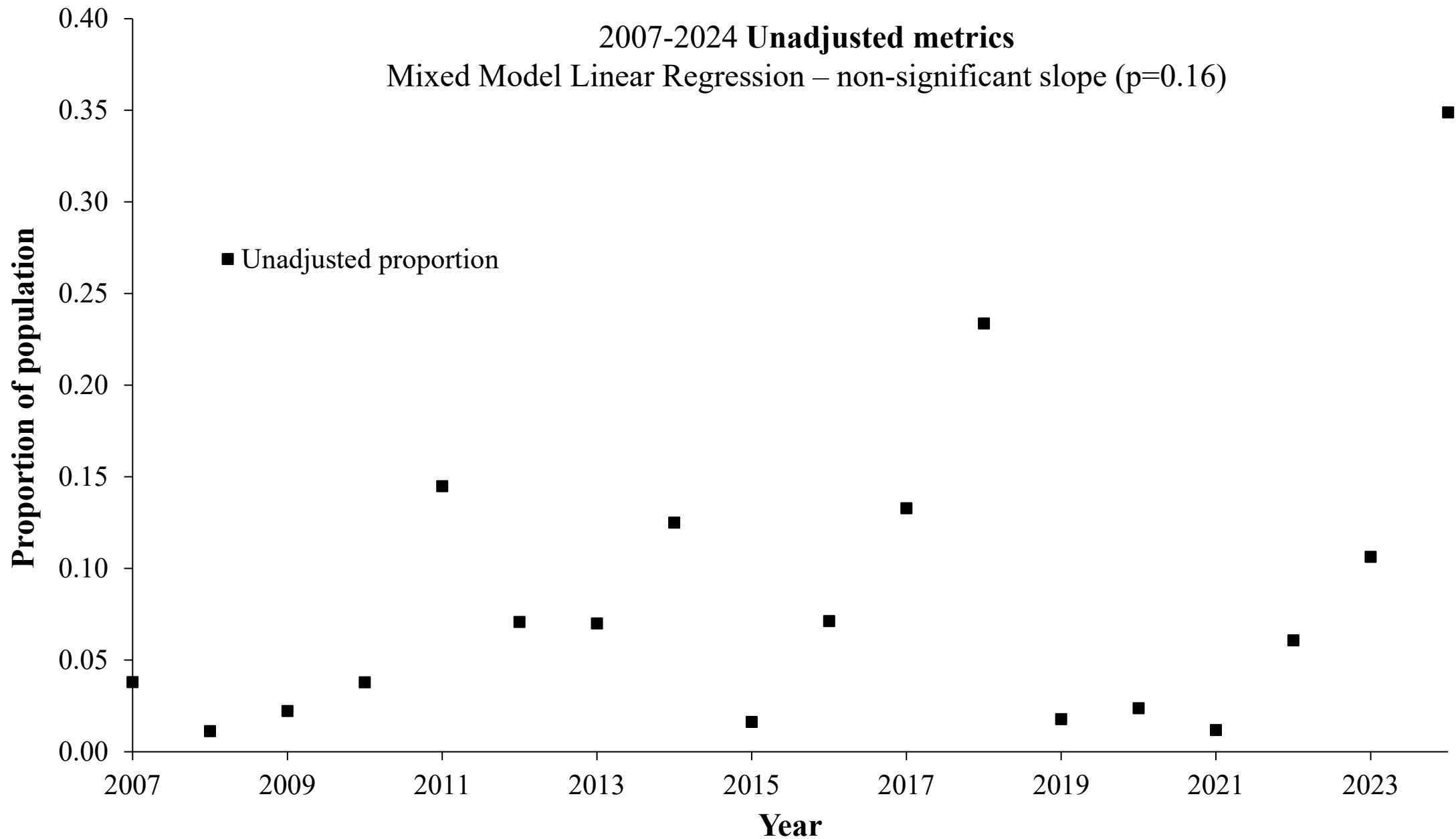
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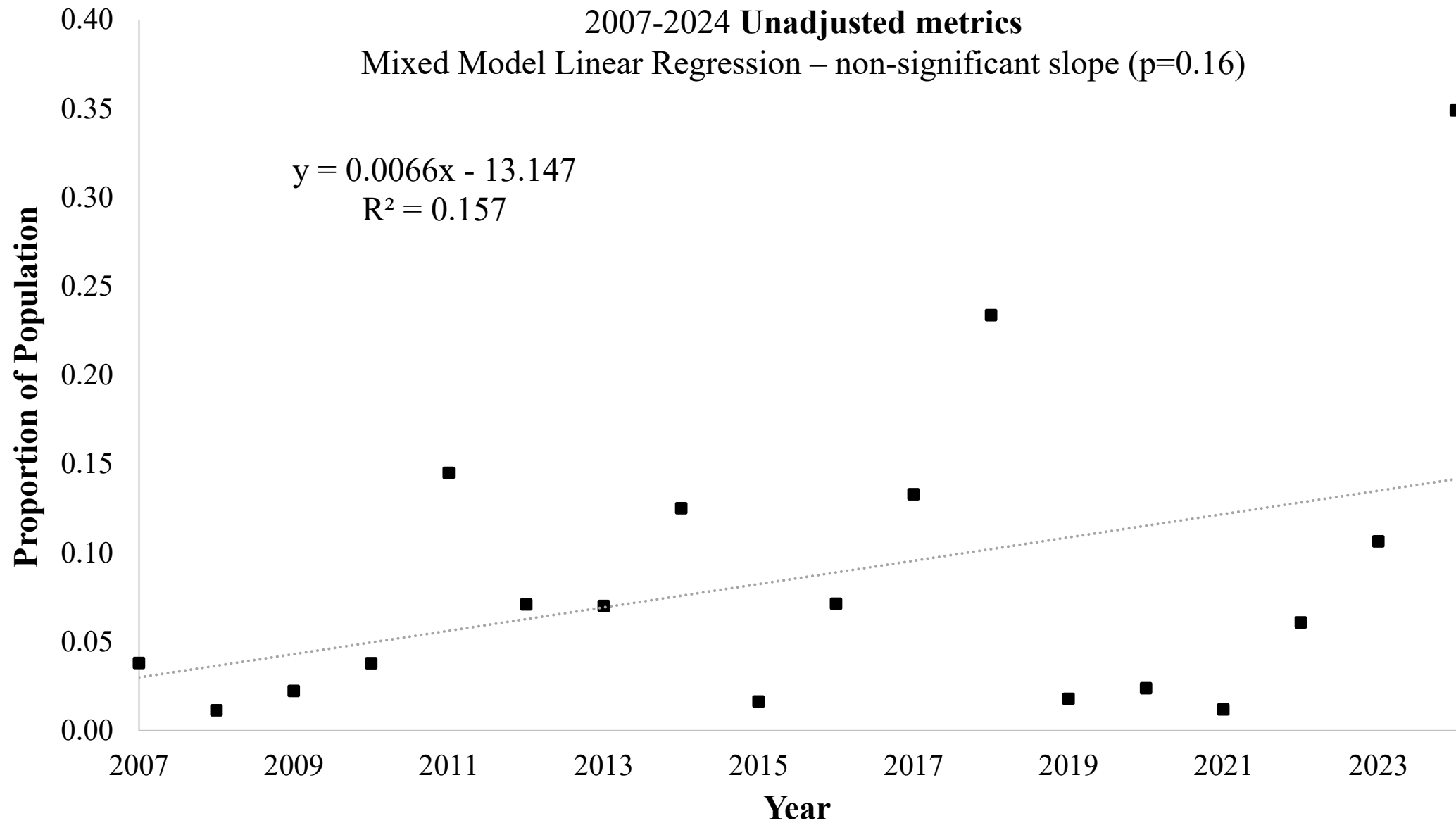


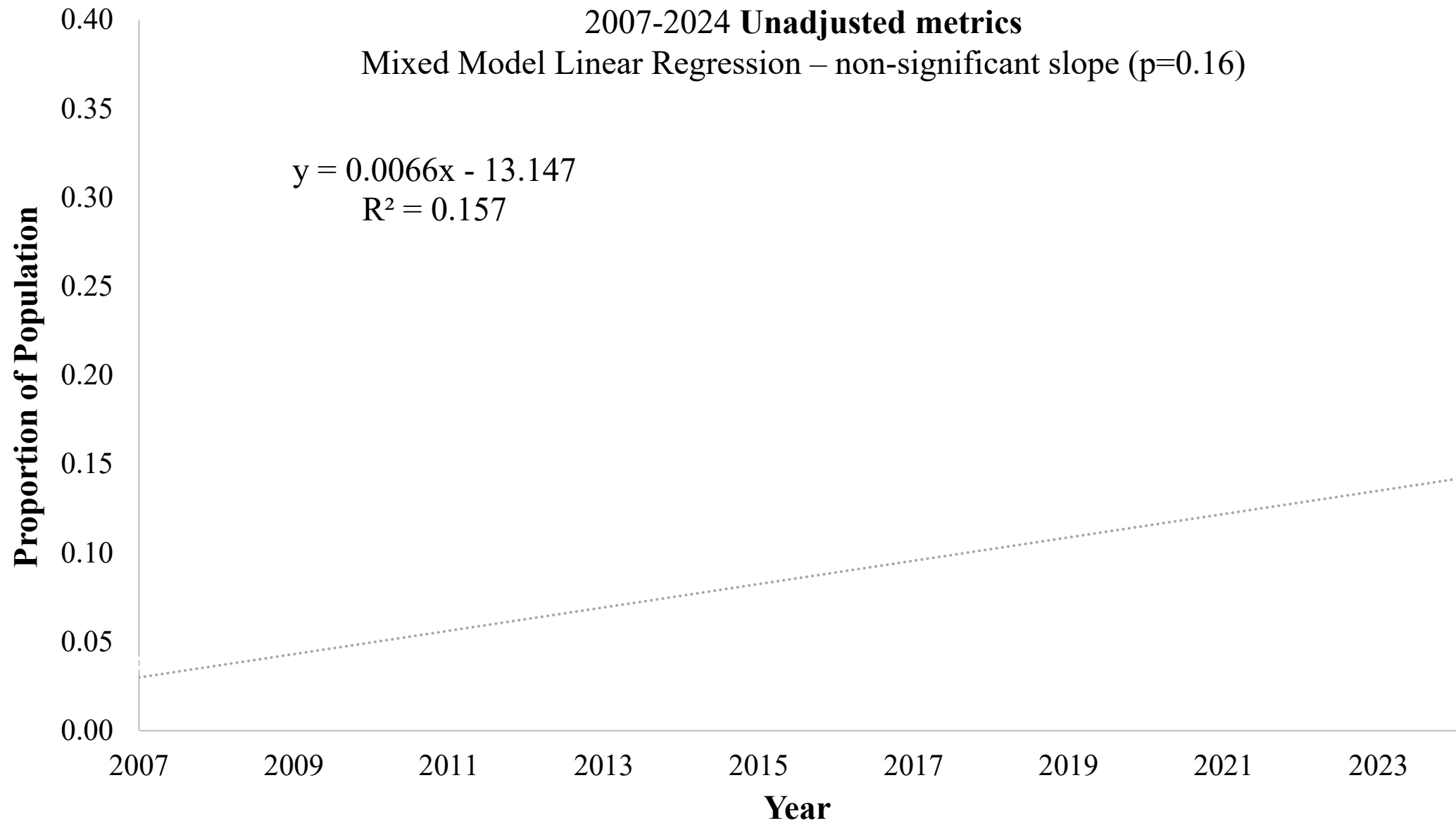
Spearman Rank Correlation – non-significant correlation (p=0.80)

Year	Spring WC Count	Spring Population Estimate	Spring Proportion	Rank
2014	38	304	12.50%	8
2015	5	308	1.62%	2
2016	33	463	7.13%	6
2017	65	489	13.29%	9
2018	118	505	23.37%	10
2019	9	504	1.79%	3
2020	12	506	2.37%	4
2021	6	506	1.19%	1
2022	33	543	6.08%	5
2023	57	536	10.63%	7
2024	187	536	34.89%	11





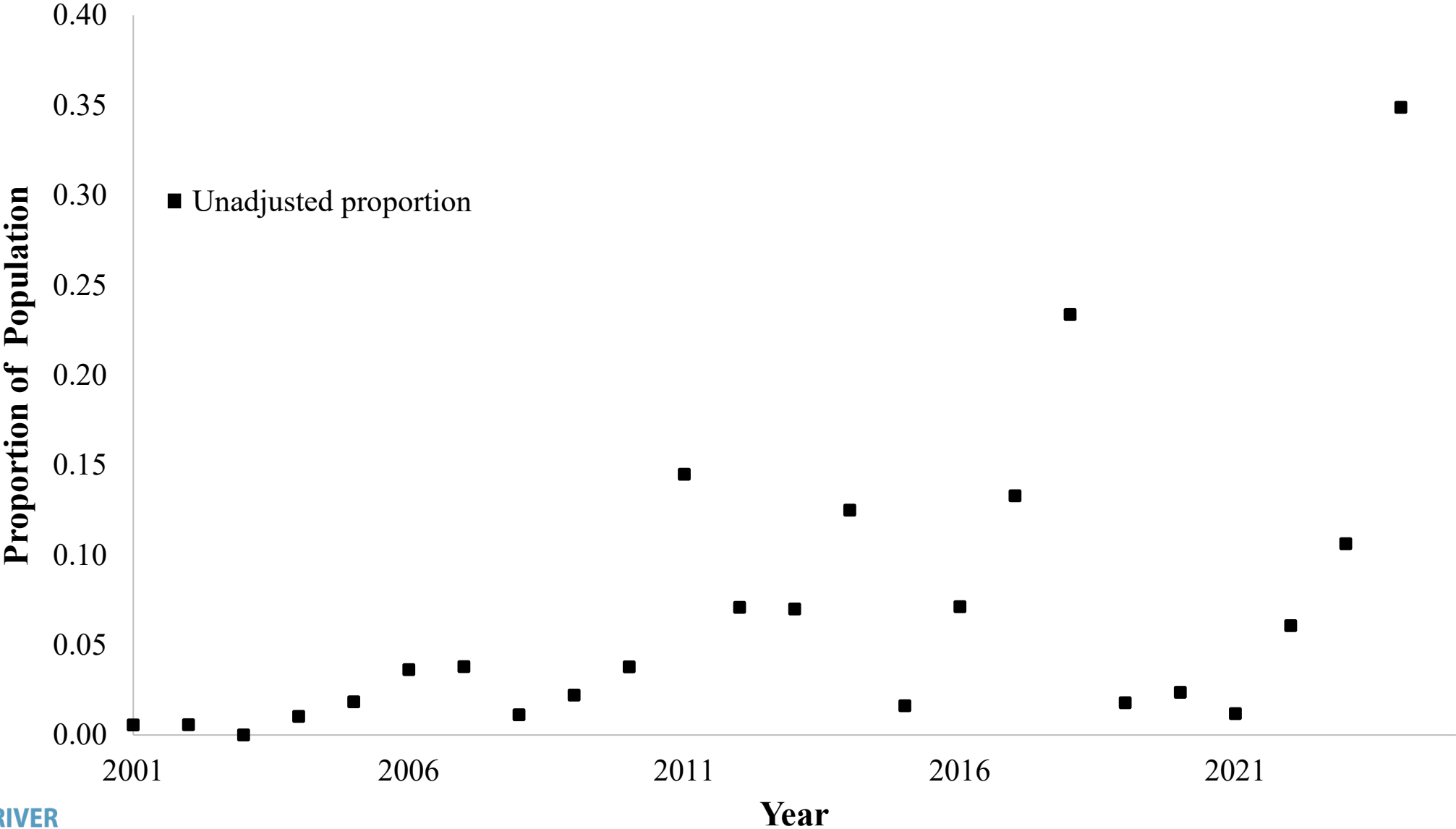




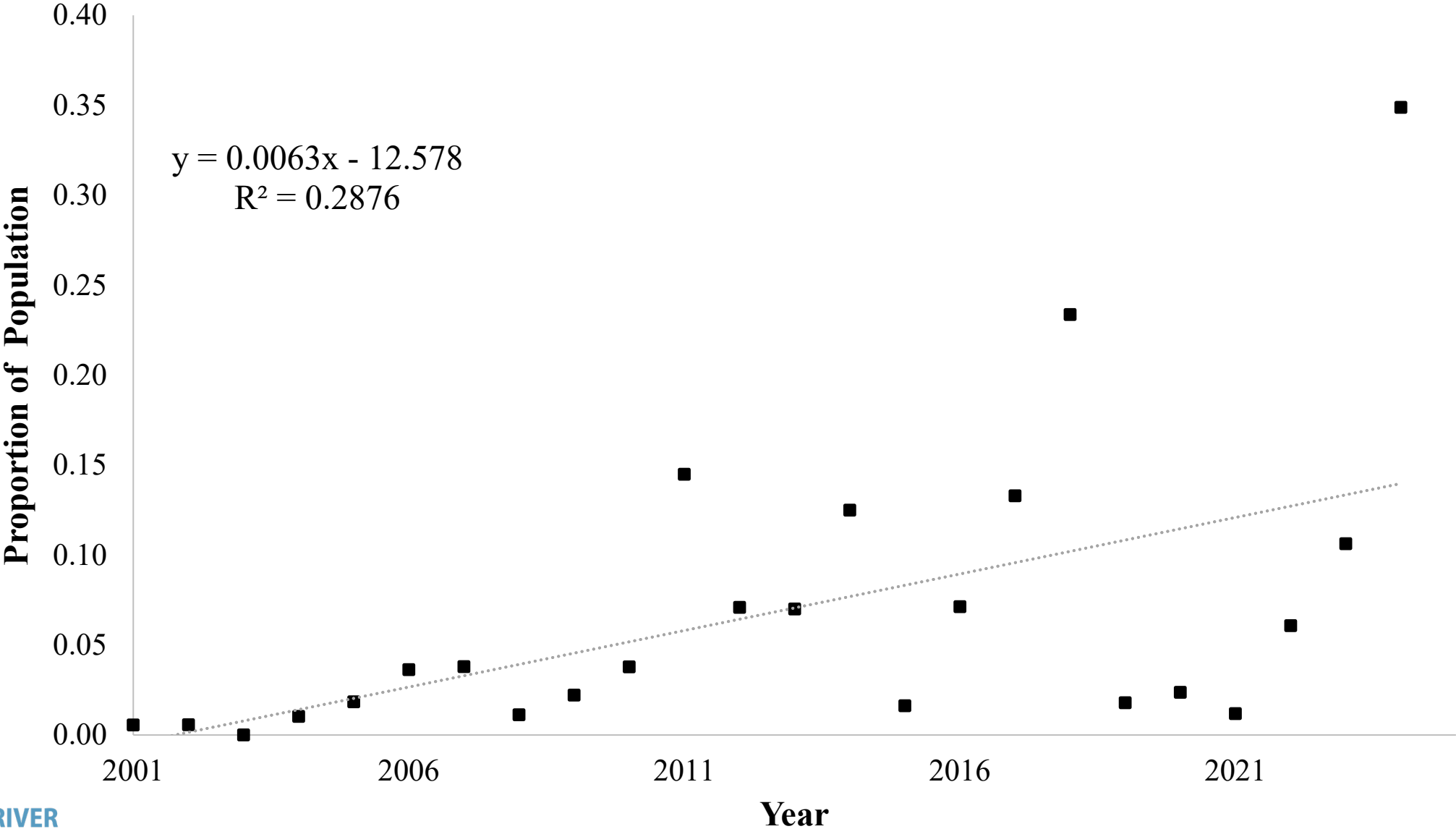
Spearman Rank Correlation – non-significant correlation ($p=0.29$)

Year	Spring WC Count	Spring Population Estimate	Spring Proportion	Rank
2007	9	237	3.80%	8
2008	3	266	1.13%	1
2009	6	270	2.22%	5
2010	10	264	3.79%	7
2011	41	283	14.49%	16
2012	18	254	7.09%	11
2013	18	257	7.00%	10
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2001-2024 **Unadjusted metrics**
Mixed Model Linear Regression – significant positive slope (p=0.0069)

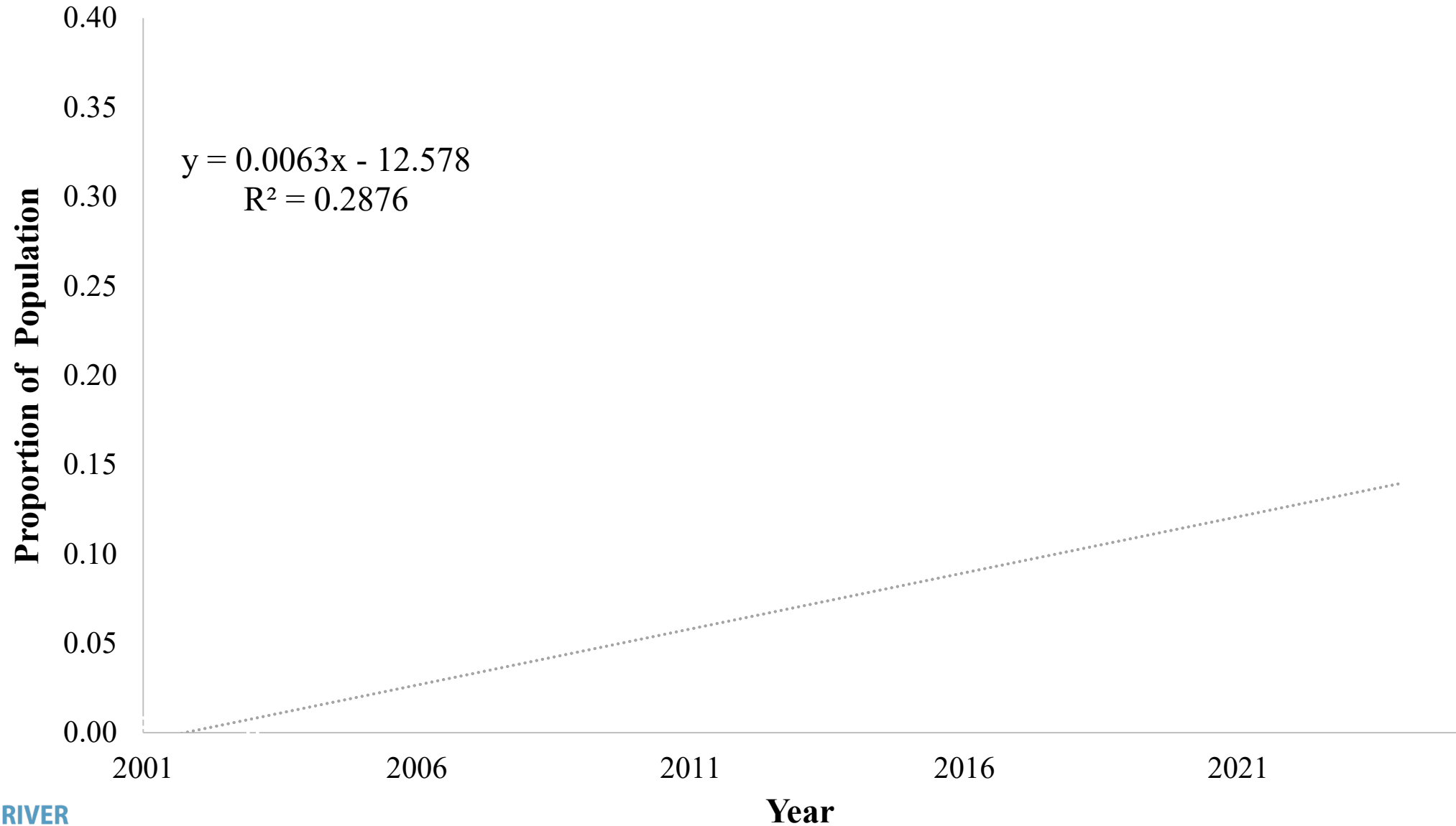


2001-2024 **Unadjusted metrics**
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2001-2024 Unadjusted metrics

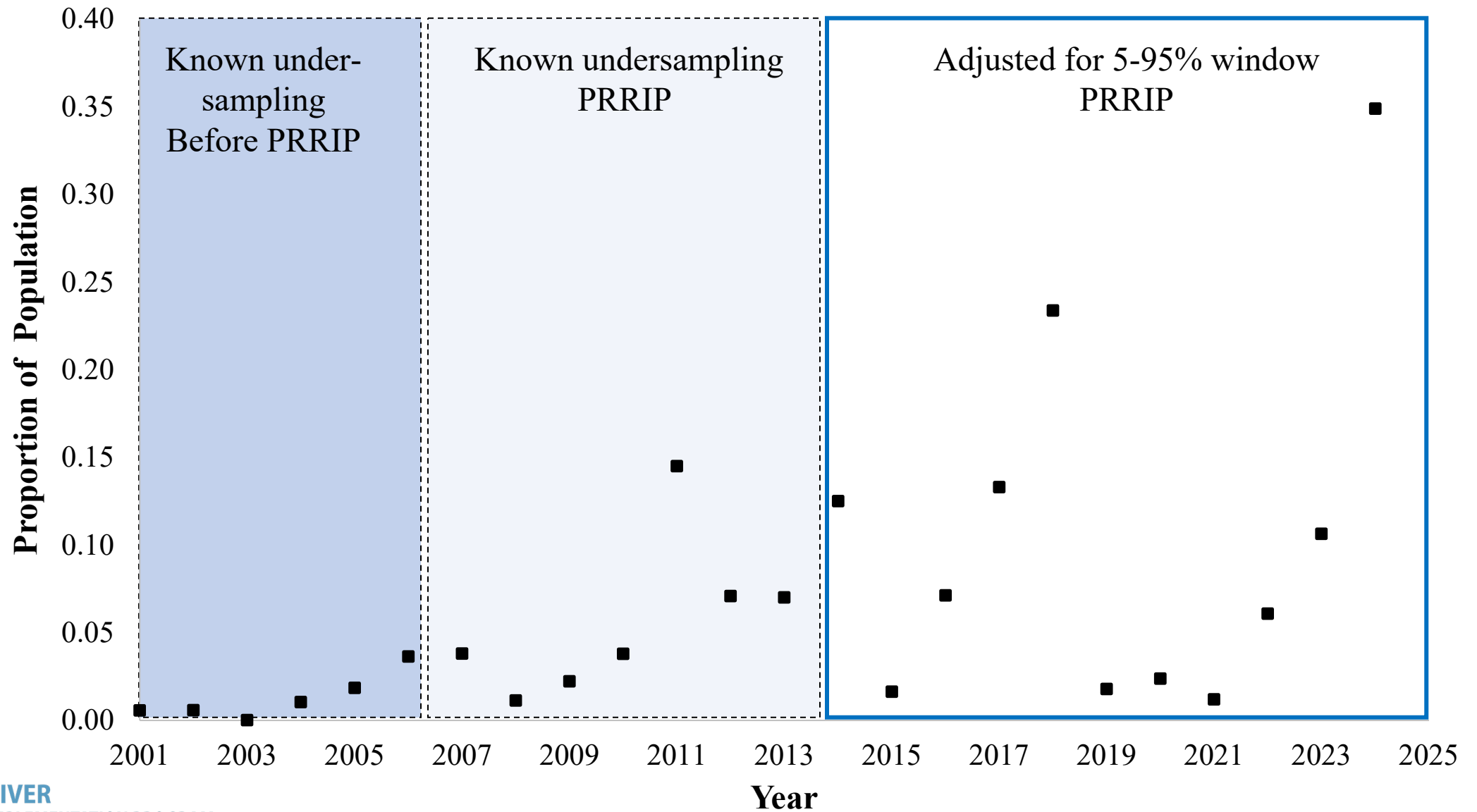
Mixed Model Linear Regression – significant positive slope ($p=0.0069$)



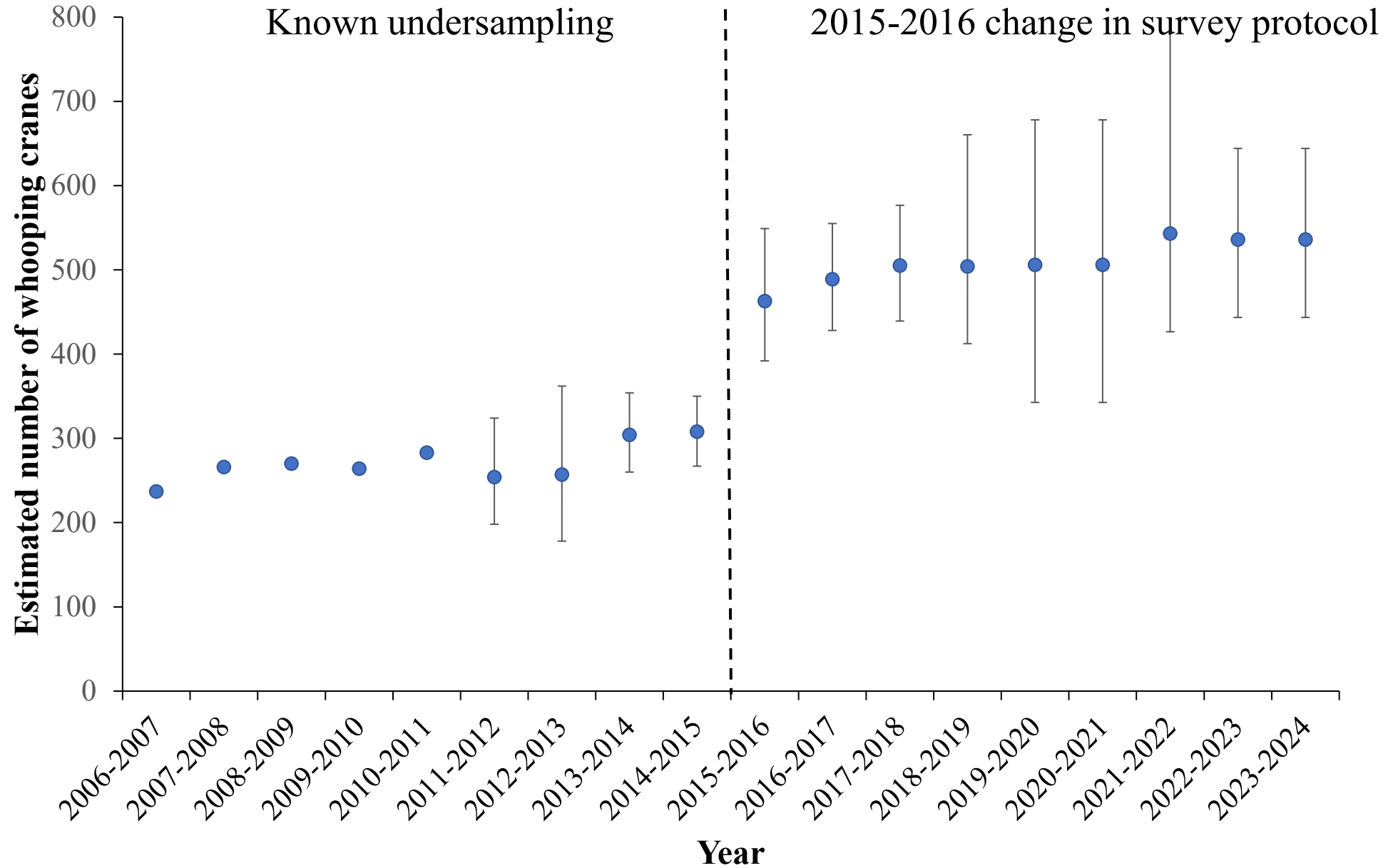
Spearman Rank Correlation - significant correlation (p=0.0017)

Year	Spring WC Count	Spring Population Estimate	Spring Proportion	Rank
2001	1	180	0.56%	2
2002	1	176	0.57%	3
2003	0	185	0.00%	1
2004	2	194	1.03%	4
2005	4	217	1.84%	9
2006	8	220	3.64%	12
2007	9	237	3.80%	14
2008	3	266	1.13%	5
2009	6	270	2.22%	10
2010	10	264	3.79%	13
2011	41	283	14.49%	22
2012	18	254	7.09%	17
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2014	38	304	12.50%	20
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2017	65	489	13.29%	21
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2019	9	504	1.79%	8
2020	12	506	2.37%	11
2021	6	506	1.19%	6
2022	33	543	6.08%	15
2023	57	536	10.63%	19
2024	187	536	34.89%	24

2001-2024 Unadjusted metrics
Changes in monitoring protocol and effort over time



Changes in monitoring protocol and effort over time



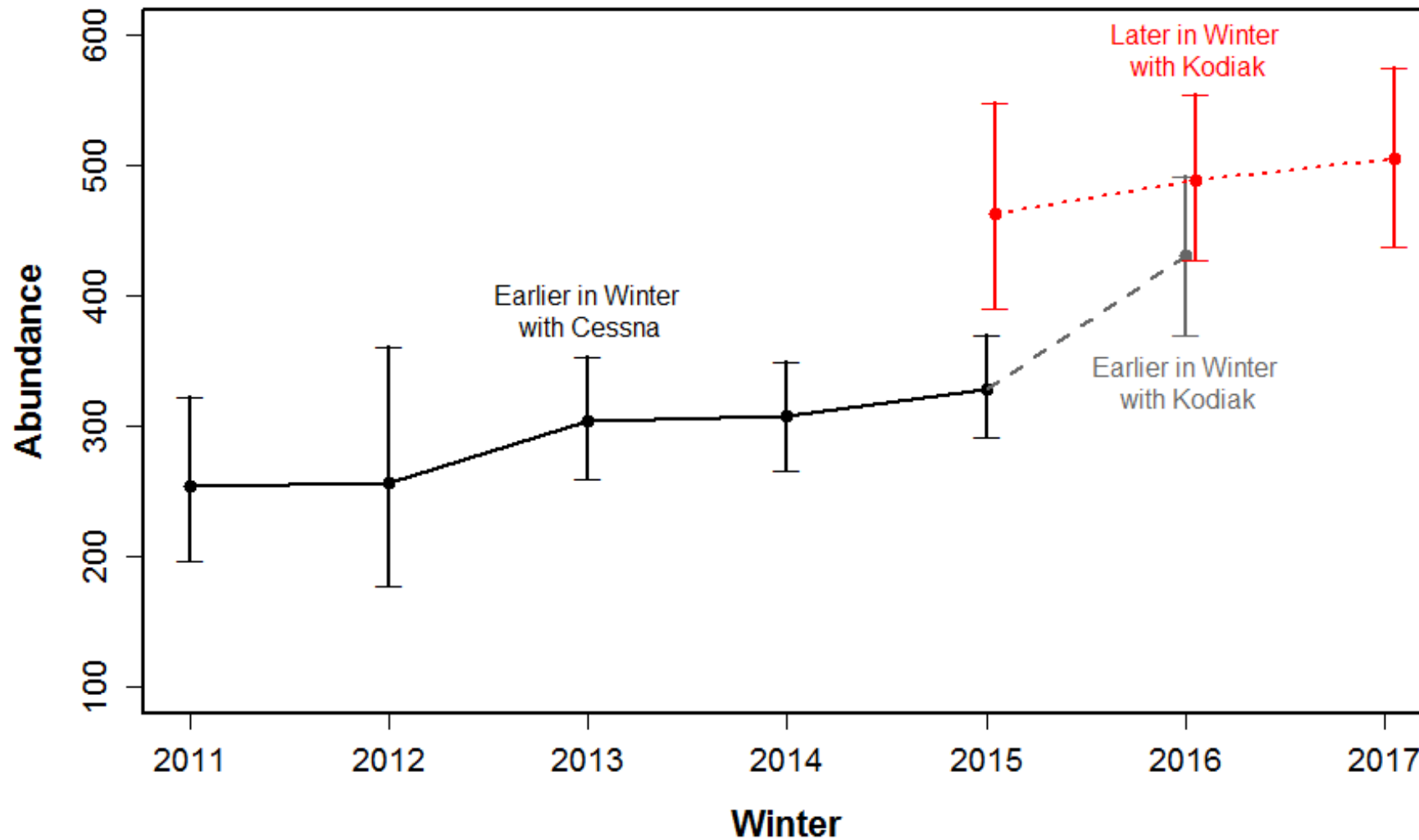


Figure 2. Surveys conducted by from the Cessna aircraft were likely biased low due to reduced visibility. The Kodiak provides for improved visibility and moving surveys later into the overwintering period allows for a greater proportion of the population to complete migration. *USFWS. 2018. Whooping crane survey results. Winter 2017-2018.*

Questions

- How do you want to put seasonal WC use metrics into context over time?
 - Over what time scale?
 - Which methods are most appropriate?
- Is the seasonal monitoring report the appropriate place for evaluating WC response to Program management?
 - If so, how?
 - If not, where?