

A wide-angle photograph of a riverine landscape at dusk or dawn. The sky is a pale, hazy blue-grey, filled with numerous Whooping cranes in flight. The middle ground shows a large, flat, muddy or sandy area, likely a roost site, where hundreds of cranes are gathered. Some are standing in small pools of water, while others are on the dry ground. In the foreground, a few cranes are walking across the wet, reflective surface. The background features a line of trees and distant hills under the same hazy sky.

Whooping Crane Riverine Roost Site Selection Update

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2024 Science Plan Reporting Session

Highly Suitable Roosting Habitat - Criteria

[Howlin and Nasman \(2017\)](#)

[Whooping Crane Habitat Synthesis Chapters \(2017\)](#)

[Baasch et al. \(2019\)](#)



UOCW = Unobstructed Channel Width
UFCW = Unforested Corridor Width

Highly Suitable Roosting Habitat - Management



Objective

- Provide additional information for defining suitable roosting habitat.
 - Five more years of roost locations
- Results will guide Program management to:
 - **Continue** current land and water management
 - **Adjust** criteria for existing characteristics and/or include new characteristics

Aerial Surveys



In-Channel Characteristics

- Unobstructed Channel Width (UOCW)
- Nearest Forest (NF)

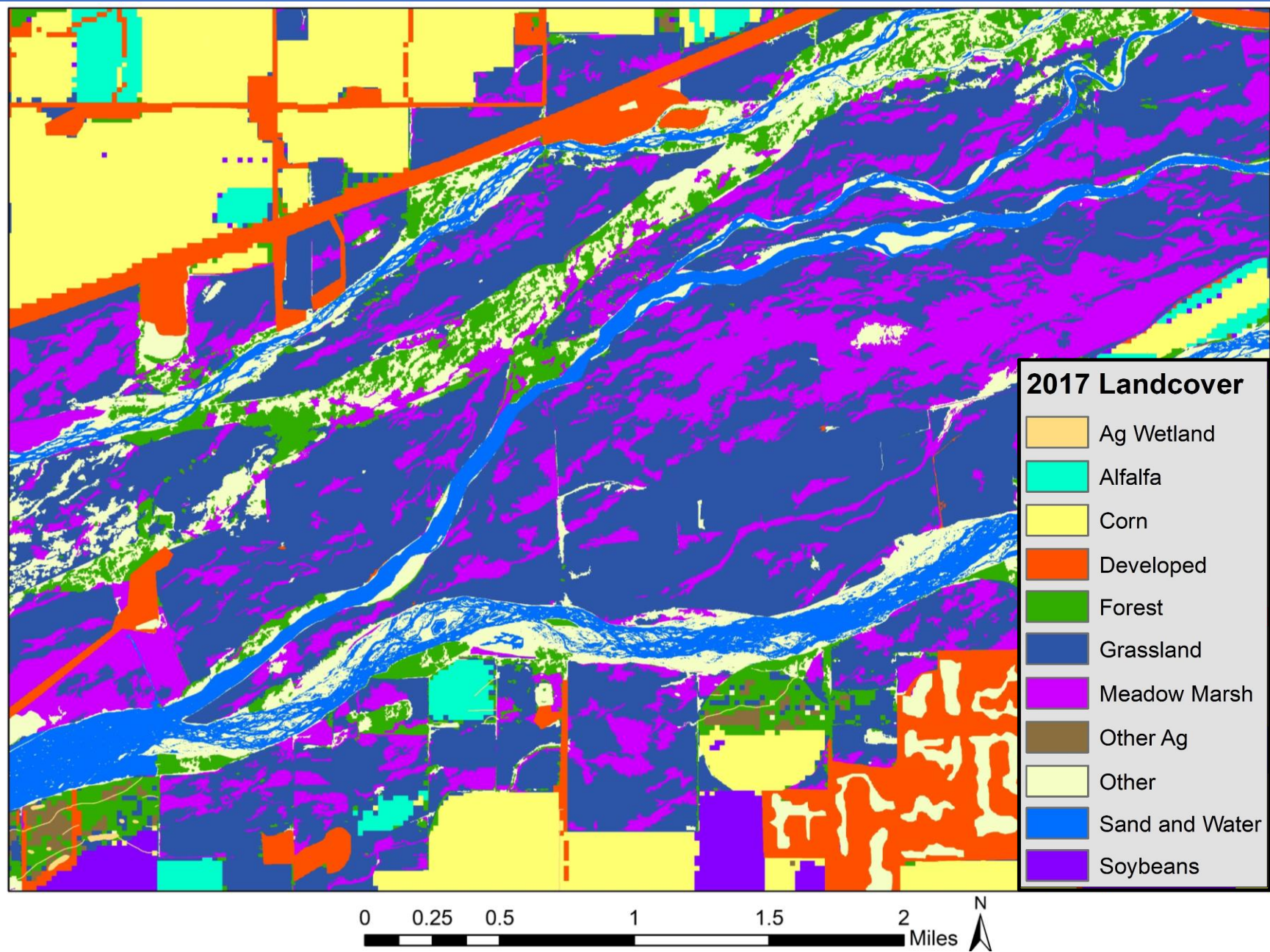


Off-Channel Characteristics

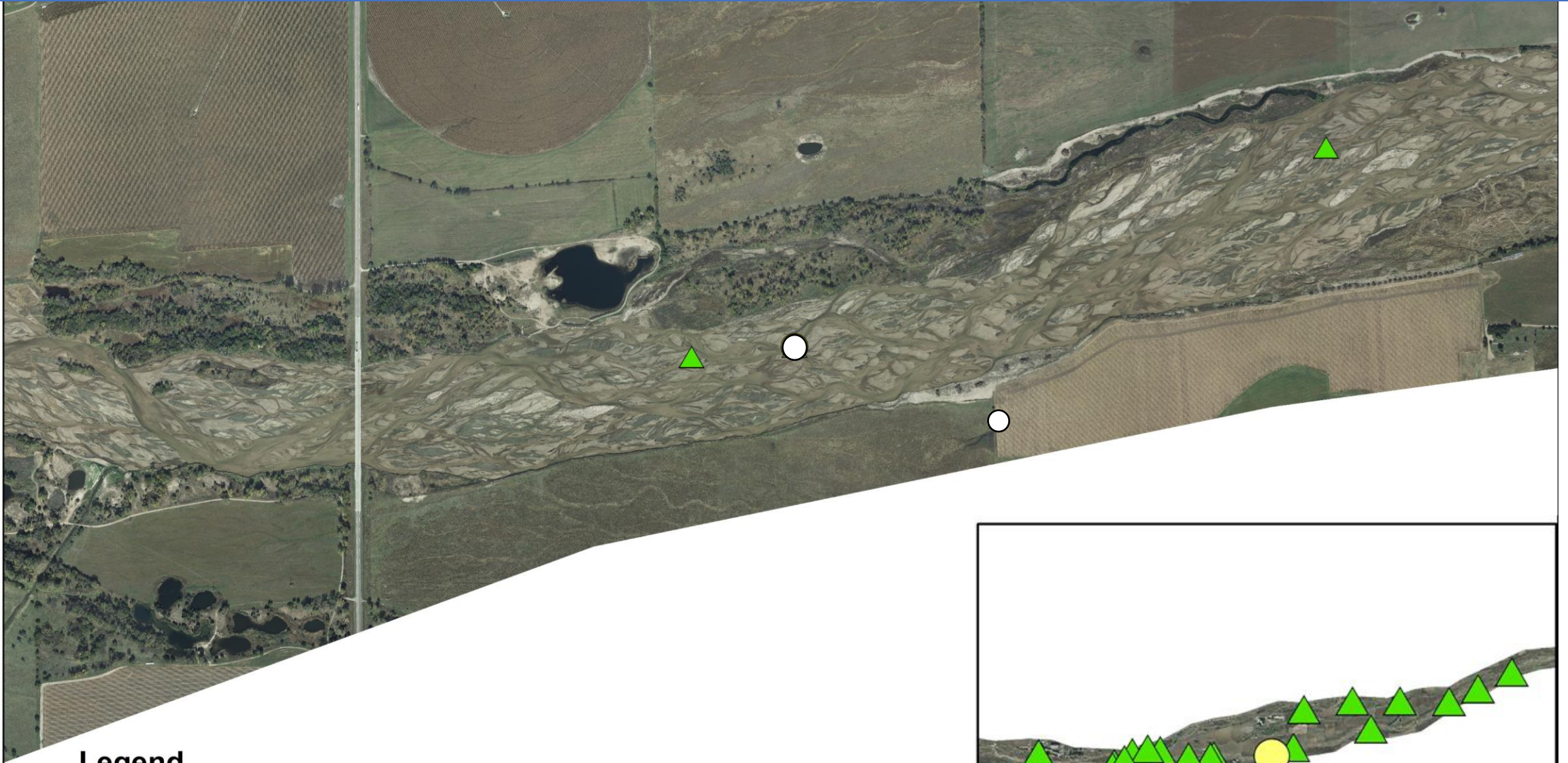
- Development (DE)
- Meadow Marsh (MM)




Landcover



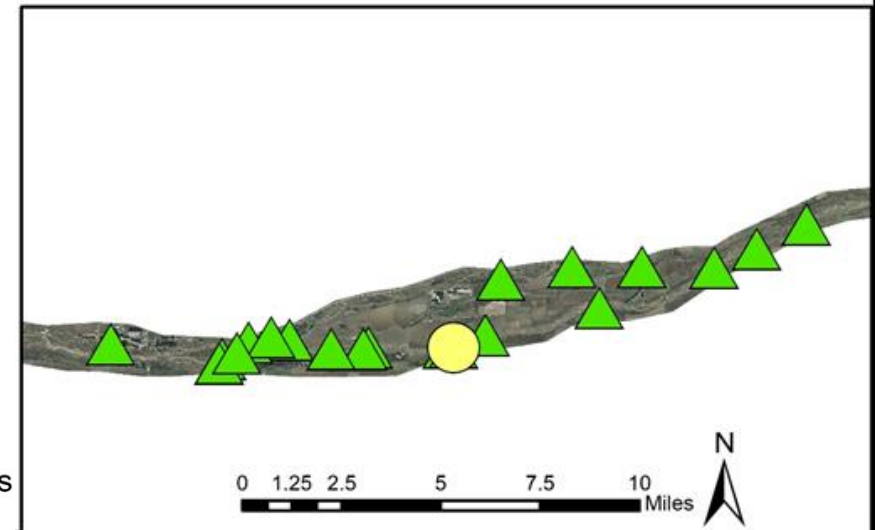
Available Locations



Legend

-  Fall 2017 Use Location (ID = 2041)
-  Available Locations (ID = 2041)

0 0.15 0.3 0.45 0.6 Miles



0 1.25 2.5 5 7.5 10 Miles



Suite of Models – Table 2

Model	Models	Interpretation
1	NULL	Habitat selection is random
2	In-Channel	
3		
4		
5		
6		
7		
8		
9	Off-Channel	
10		
11		
12		
13		
14		
15		
16		
17		
18		
19	In-channel and Off-Channel	
20		
21		
22		
23		
24		
25		
26		
27		
28		

$$AIC = 2K - 2(\log\text{-likelihood})$$

*K = number of parameters

Top Model = model with fewest parameters
where $\Delta AIC \leq 2.0$

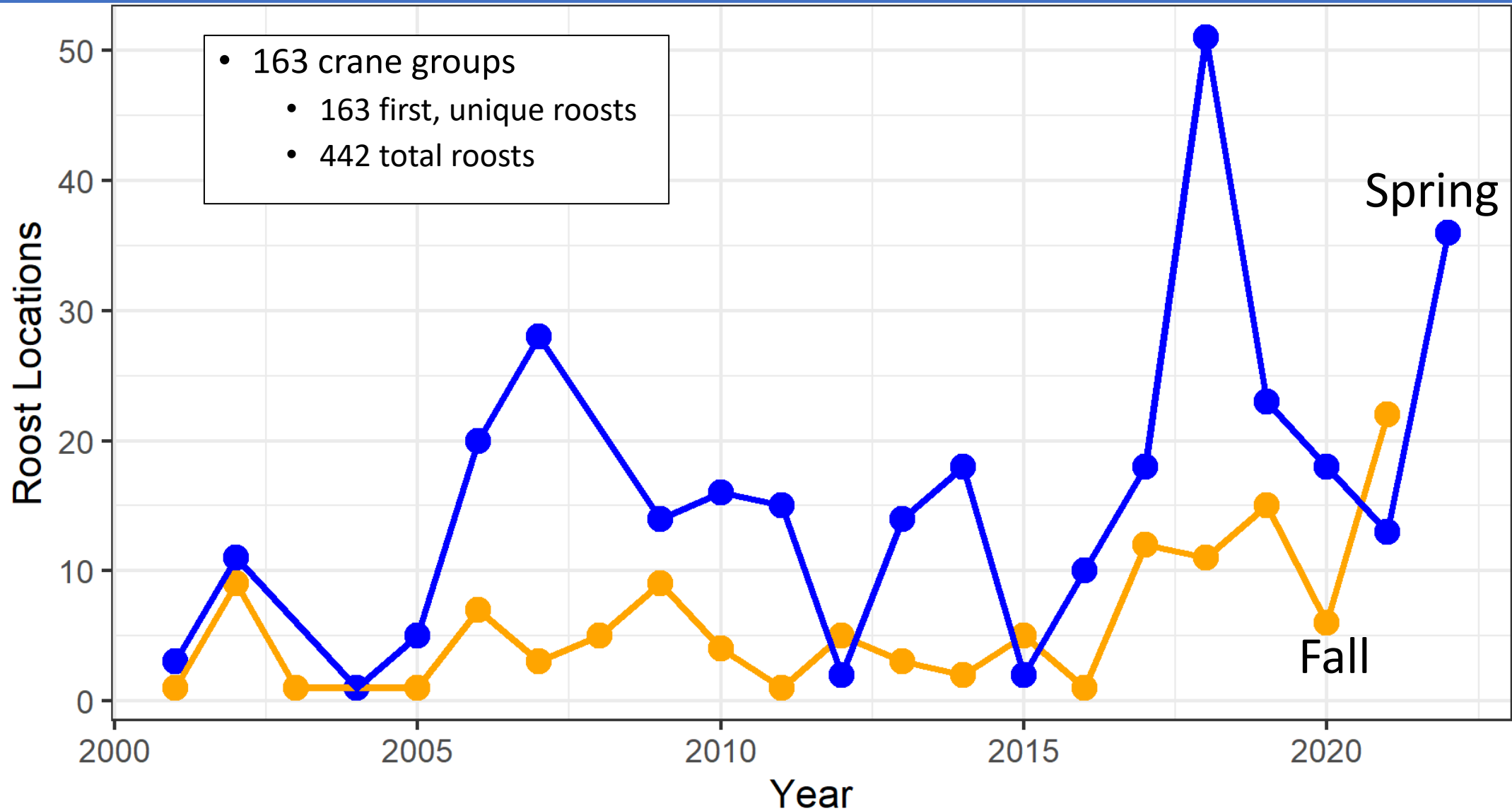
Telemetry Roosts



Aerial Monitoring Roosts



Riverine Roost Data

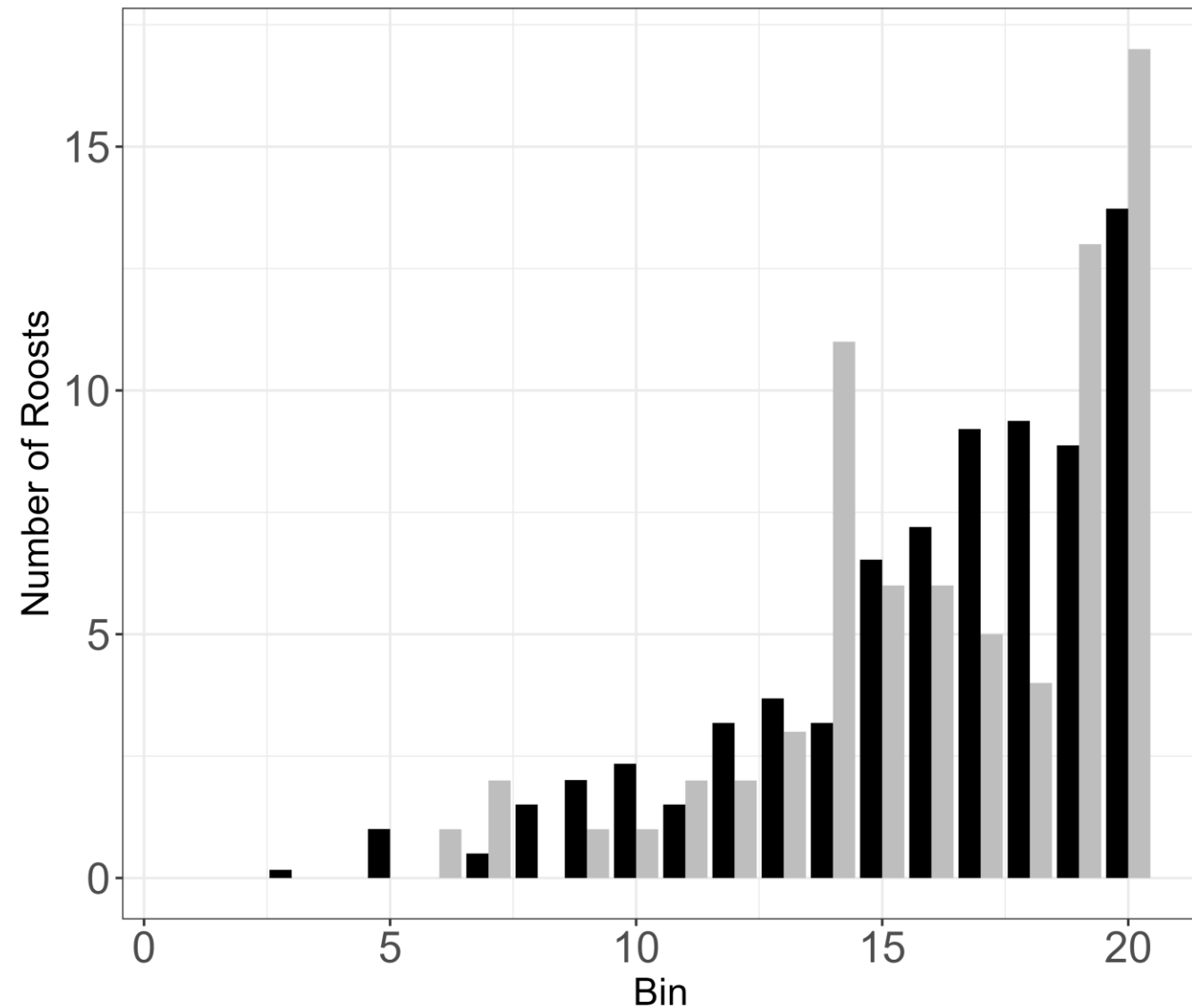


Top Model – Table 4

Model	Variables	df	AIC	Δ AIC	Weight
27	UOCW + NF + MM + AW + DE	174.32	2784.93	0.00	0.28
28	UOCW + NF + MM + AW + DE + UOCW*DE	174.32	2784.93	0.00	0.28
22	UOCW + NF + DE + UOCW*DE	169.76	2785.19	0.26	0.25
21	UOCW + NF + DE	170.02	2785.73	0.80	0.19
24	UOCW + NF + MM + AW	173.56	2796.67	11.74	0.00

Model Validation

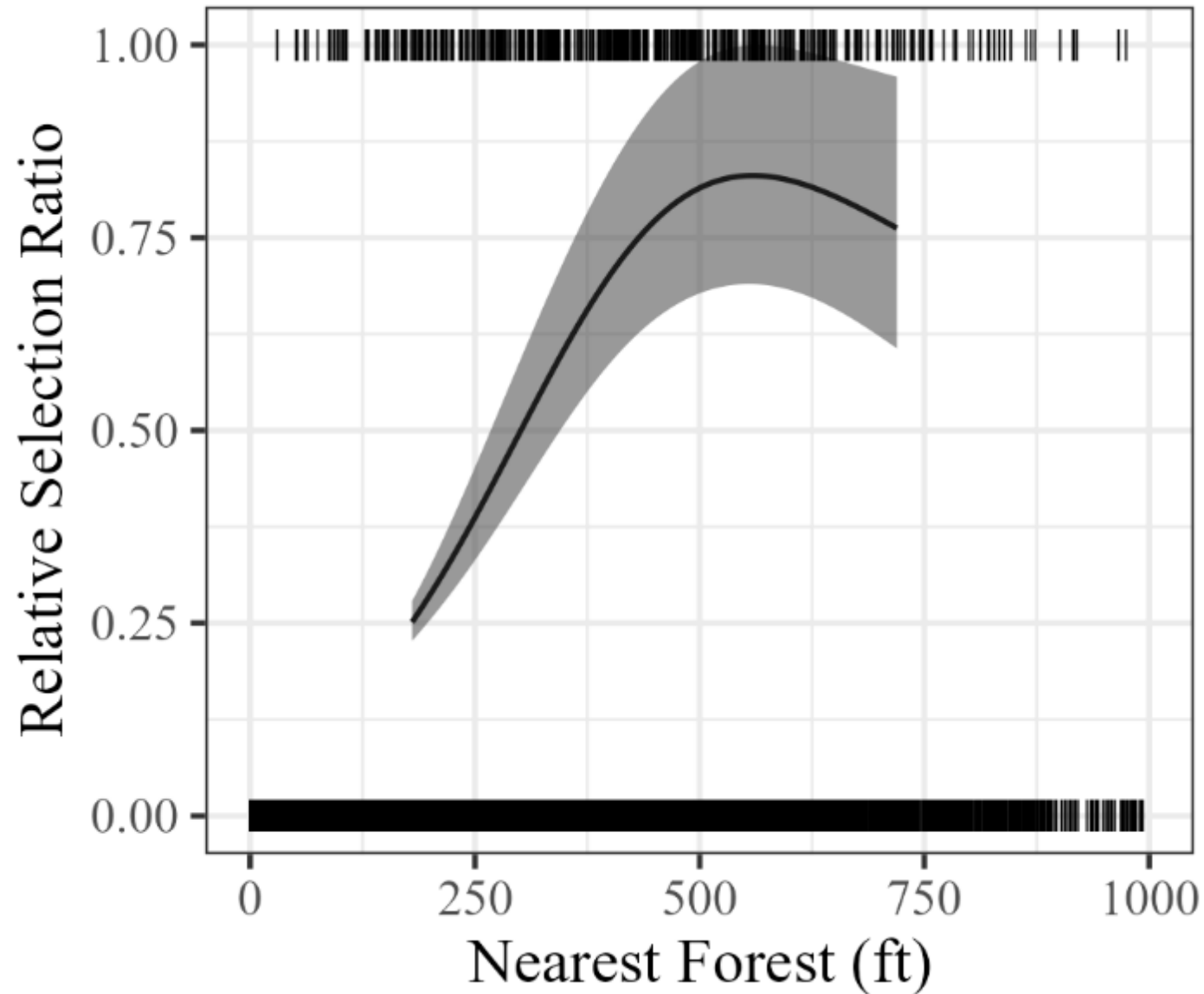
Bin	Aerial Monitoring	Telemetry
1	0	0
2	0	0
3	0.17	0
4	0.00	0
5	1.00	0
6	0	1
7	0.50	2
8	1.51	0
9	2.01	1
10	2.34	1
11	1.51	2
12	3.18	2
13	3.68	3
14	3.18	11
15	6.53	6
16	7.20	6
17	9.21	5
18	9.38	4
19	8.87	13
20	13.73	17
Total	74	74



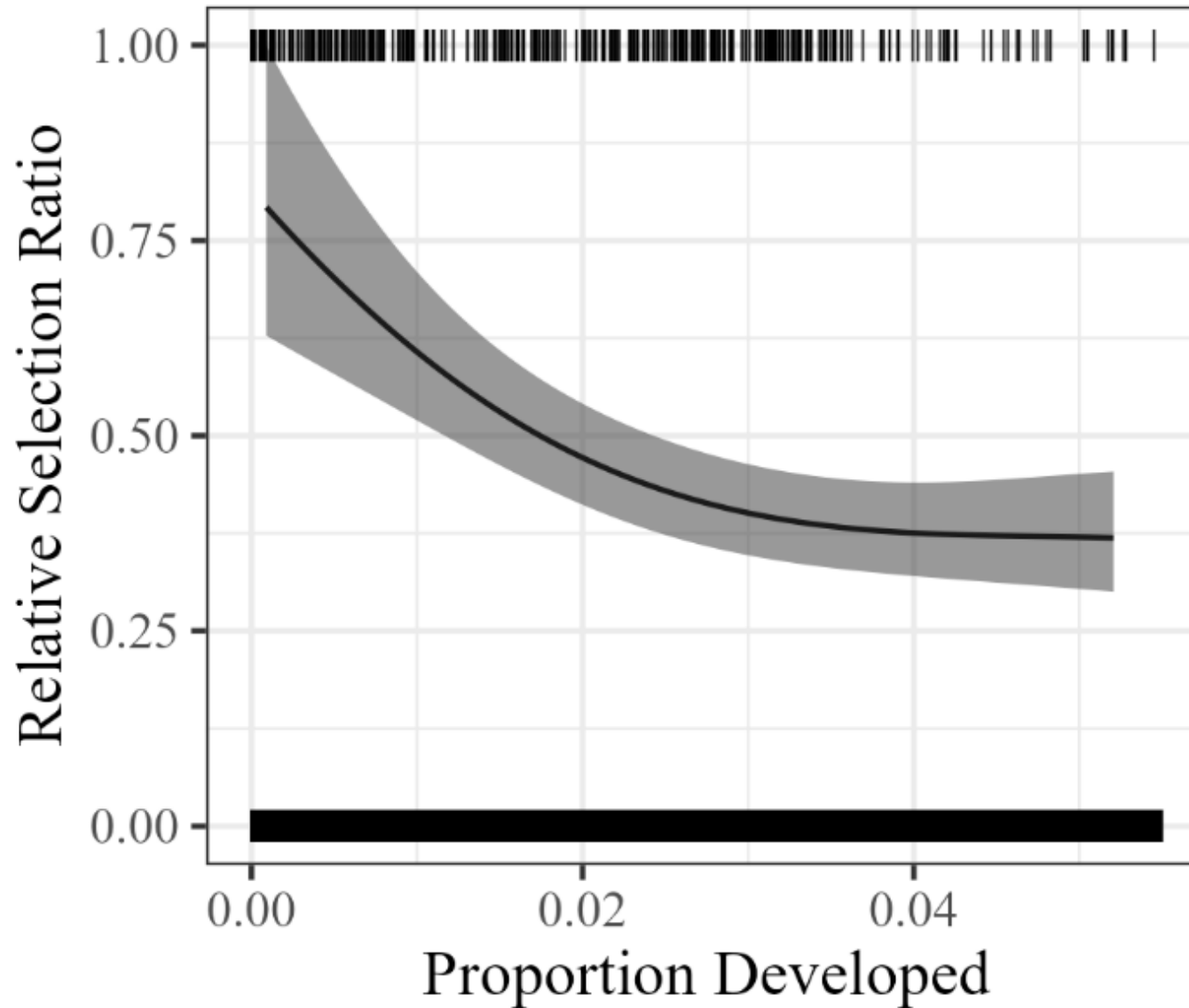
Variable Importance

Withheld Explanatory Variables	DV	Decrease in DV	% Decrease in DV
None (Full Top Model = UOCW + NF + DE)	0.195	-	-
NF, UOCW	0.042	0.153	78%
UOCW	0.153	0.042	22%
NF	0.154	0.023	21%
DE	0.185	0.010	5%

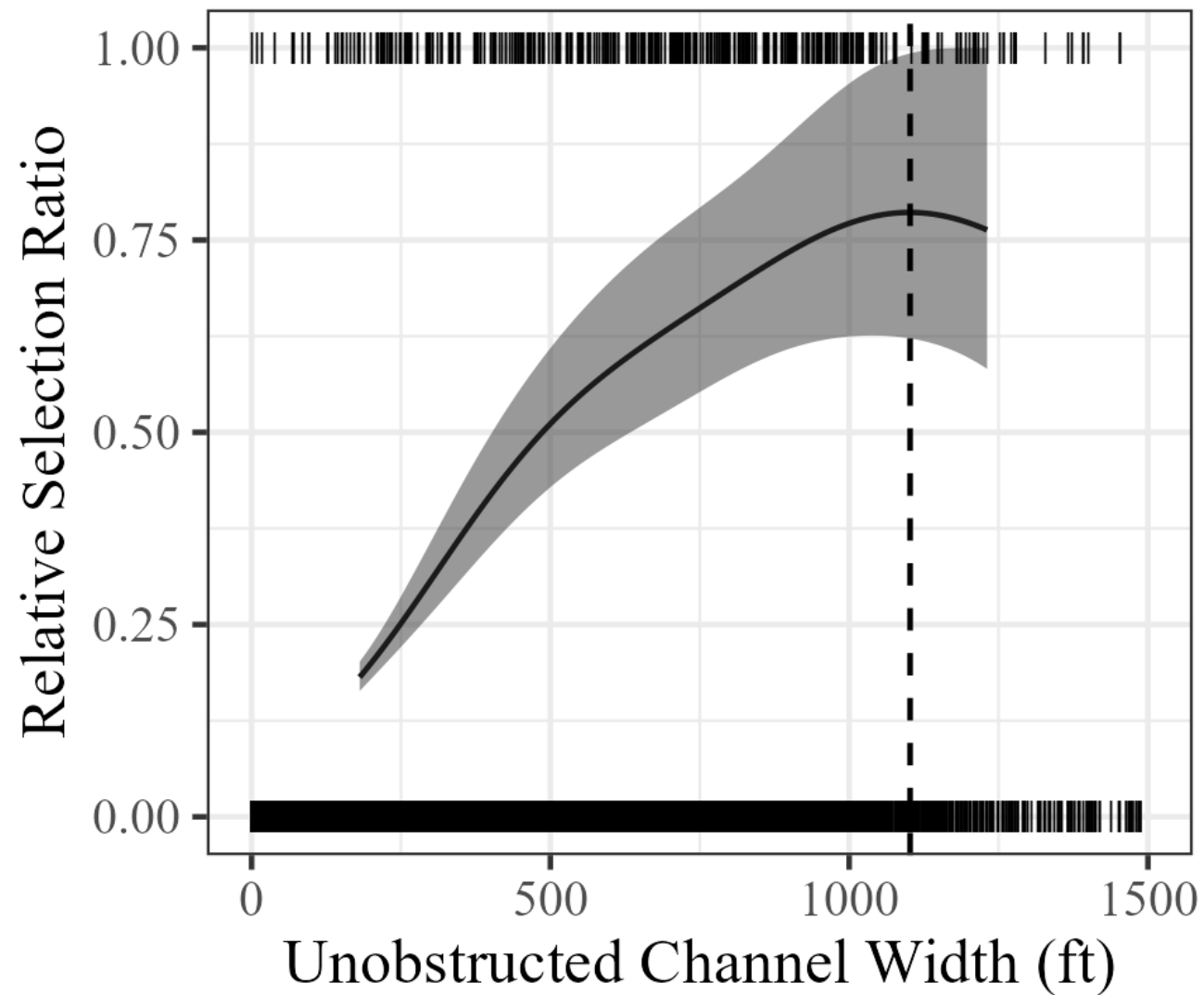
Results: Nearest Forest



Results: Development

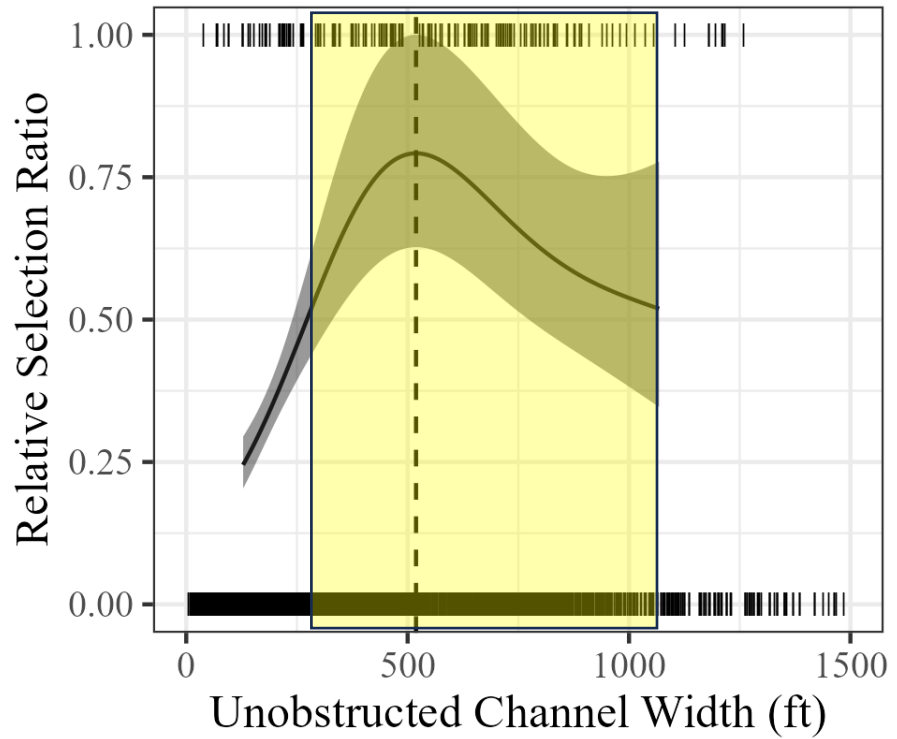


Results: Unobstructed Channel Width

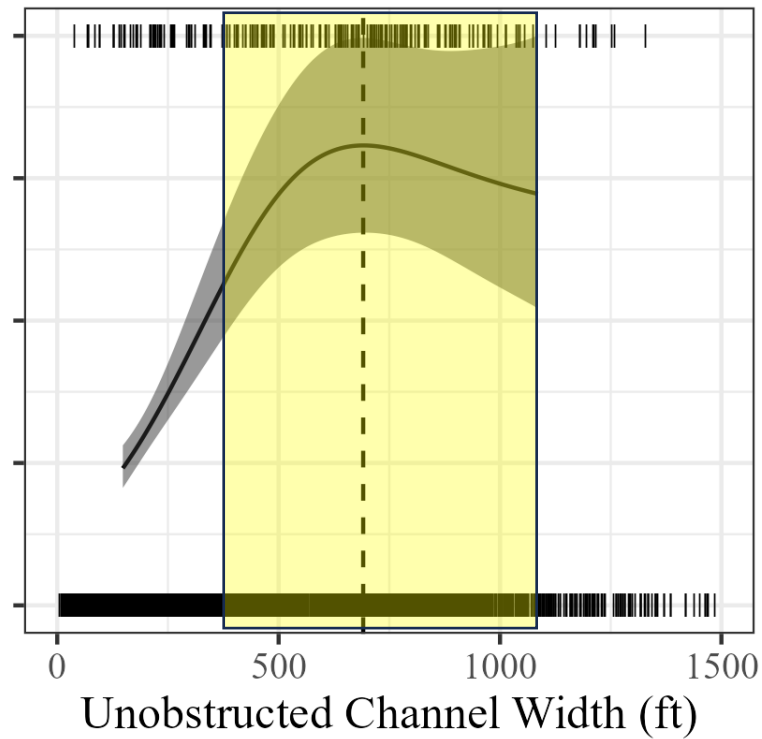


Results: Unobstructed Channel Width

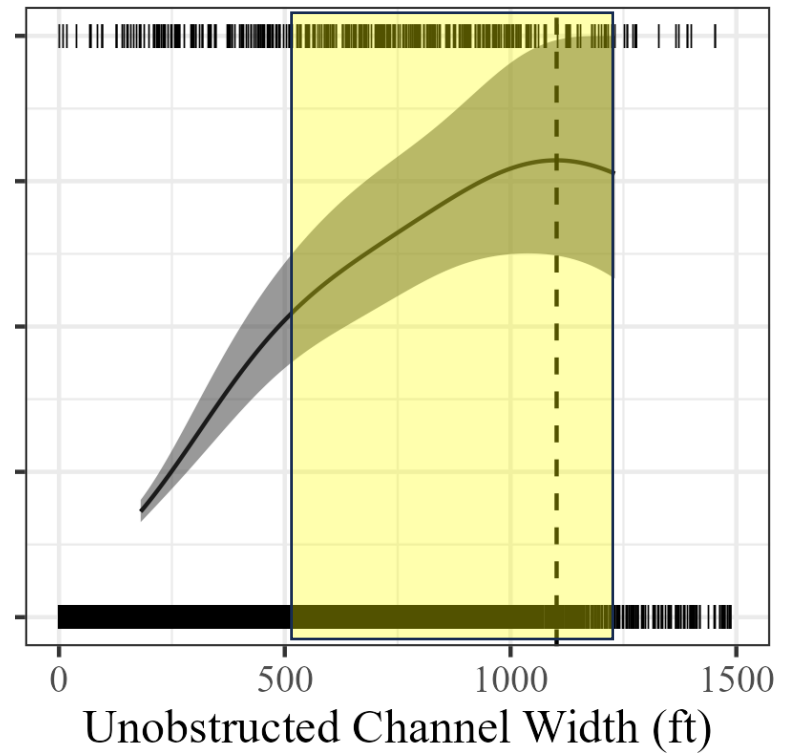
2001 - 2013



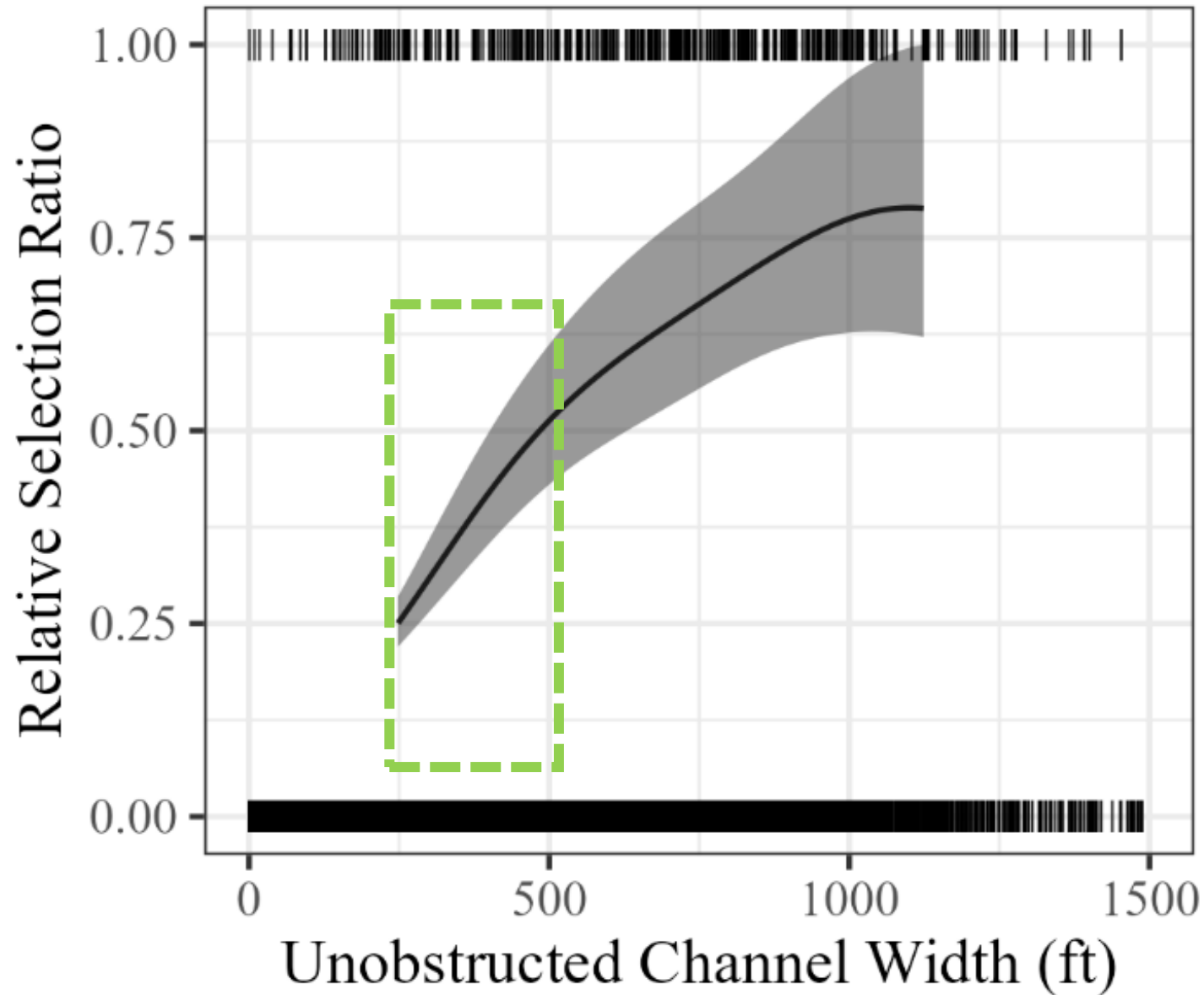
2001 - 2017



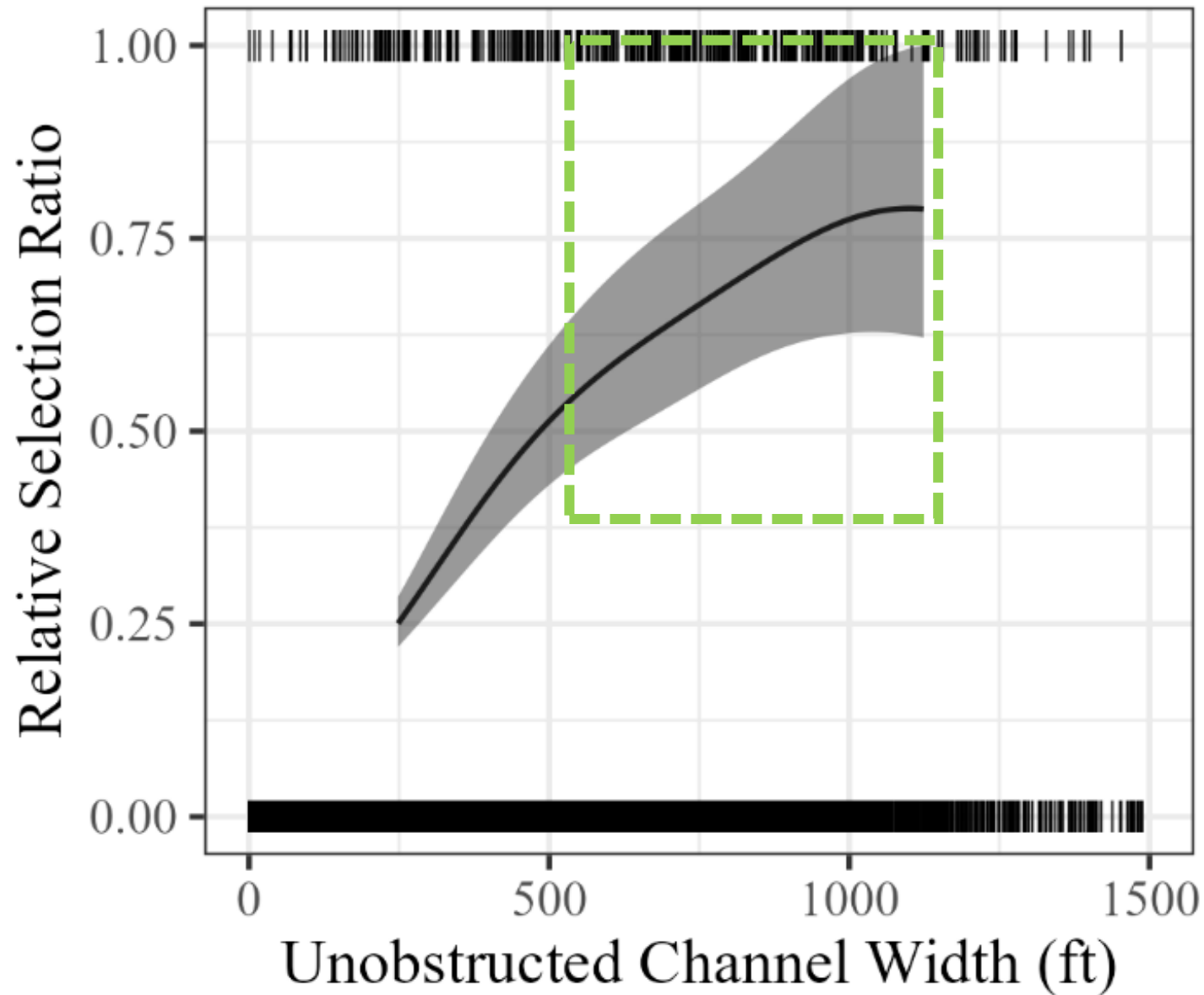
2001 - 2022



Results: Unobstructed Channel Width



Results: Unobstructed Channel Width



Conclusions

- Reinforced avoidance of nearby forest
- Small amount of development impacts selection
- Uncertain of added benefit of UOCW ≥ 650 ft

Program Management

- No TAC recommendation to change Habitat Criteria
- Identify opportunities or limitations to widen channels
- Consider proximity to development in habitat acquisitions