



Preliminary Study into how Adjacent Cover Type Affects Drumming Patterns in Ruffed Grouse in Northern Wisconsin



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INTRODUCTION

- Ruffed Grouse (*Bonasa umbellus*) are distributed across the Midwest and Eastern U.S.
- These game birds select for dense, early successional timber stands.
- Male Ruffed Grouse have an auditory courtship ritual known as drumming that is often performed atop fallen logs called drumming logs
- Drumming is typically more prolonged and occurs more frequently in the months of April and May
- Drumming can be an energy consumptive and time consuming portion of a male Ruffed Grouse's life
- Drumming log selection and the direction in which a male chooses to drum in has the potential to impact mating success
- Understanding drumming direction of a Ruffed Grouse may help identify land cover targeted by drumming activity

Objective: Determine if Ruffed Grouse are selecting for certain cover types when choosing a drumming direction.

METHODS

Study Area

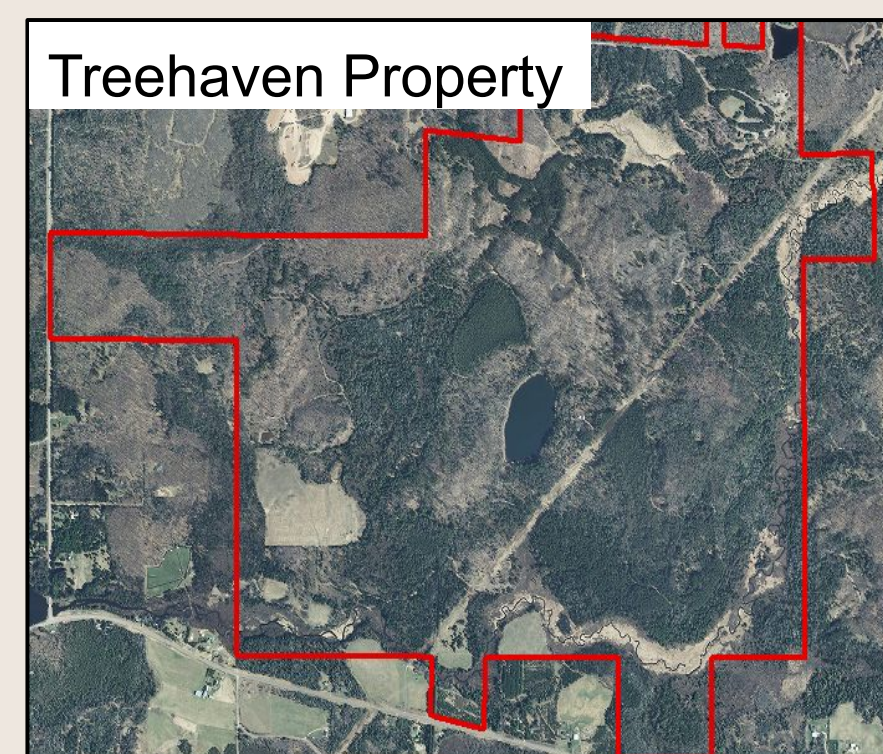
- Treehaven – Northern Wisconsin (1,400 ac)
- Owned by University of Wisconsin-Stevens Point
- Actively managed for timber production and Grouse habitat

Data Collection

- Land cover data were collected by Treehaven property staff in 2010
- Drumming logs were located via auditory drumming surveys and later plotted in ArcMap
- Drumming direction was identified by taking an azimuth perpendicular to the log from the side with fewer Grouse droppings

Analysis

- ArcMap 10.7.1 was used to identify cover types directly in front of the Grouse as it drummed
- Each cover type in front of the drumming Grouse was estimated to the nearest ten percent to determine composition of the focused area
- One sample t-tests were used to analyze the relationship between habitat availability and drumming focus



RESULTS

ALD Alder	MR Red Maple
A Aspen	GS Grass/Shrub
BW White Birch	SB Black Spruce
C Cedar	H Hemlock
T Tamarack	PM Mixed Pine
FB Balsam Fir	PR Red Pine

Table 1. Abbreviations for cover types on the Treehaven property that are found in the direction of Ruffed Grouse drumming.

Table 2. Summary tables showing p-values from the respective land cover type's t-test for related samples.

Cover Type	A	ALD	BW	C	FB	GS
p-value	0.006	0.900	0.980	0.750	0.400	0.015
Cover Type	H	MR	PM	PR	SB	T
p-value	0.030	0.400	0.150	0.750	0.003	0.250

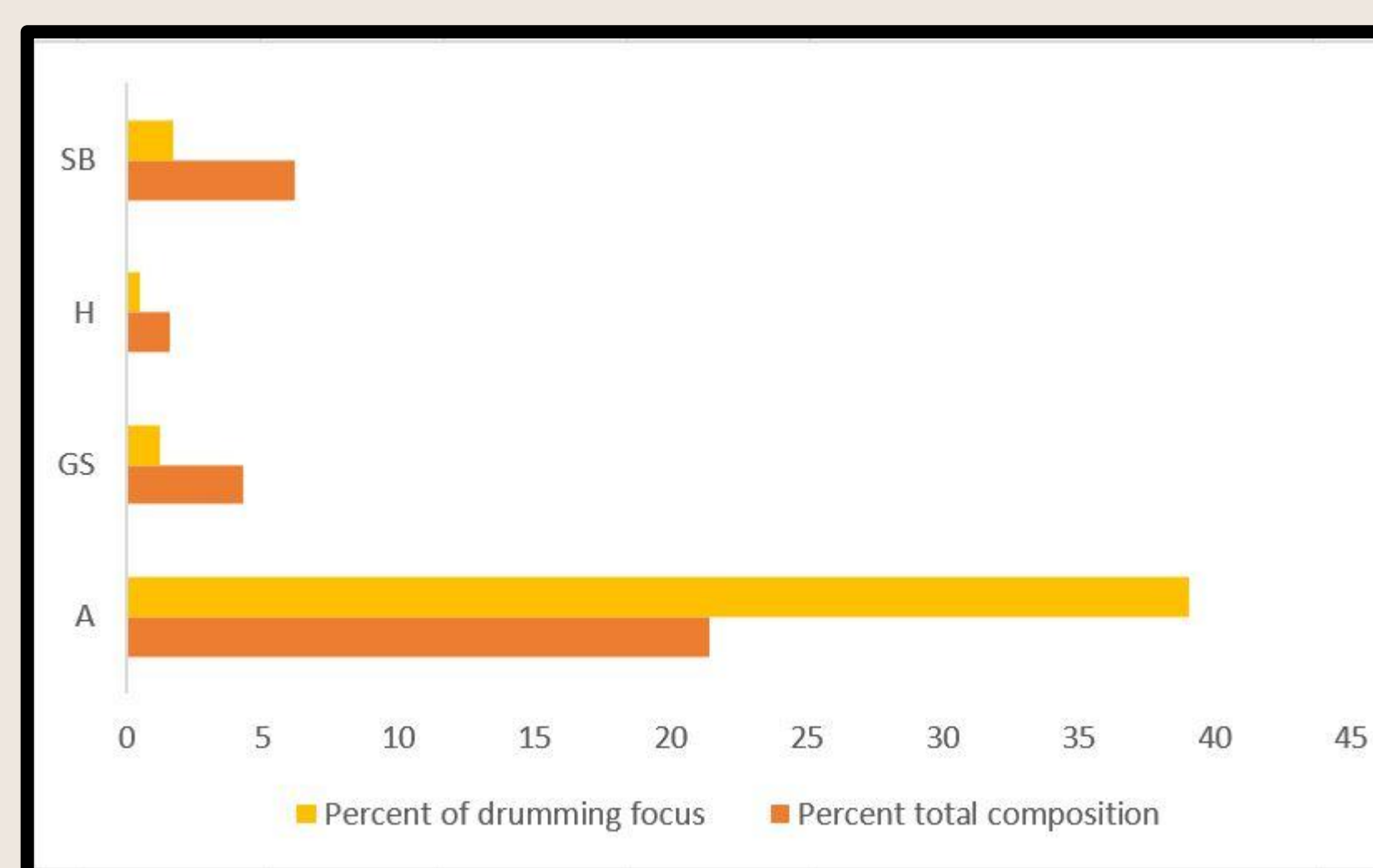


Figure 1. Bar chart depicting side by side relationship of cover type availability and drumming focus for the four statistically significant cover types.

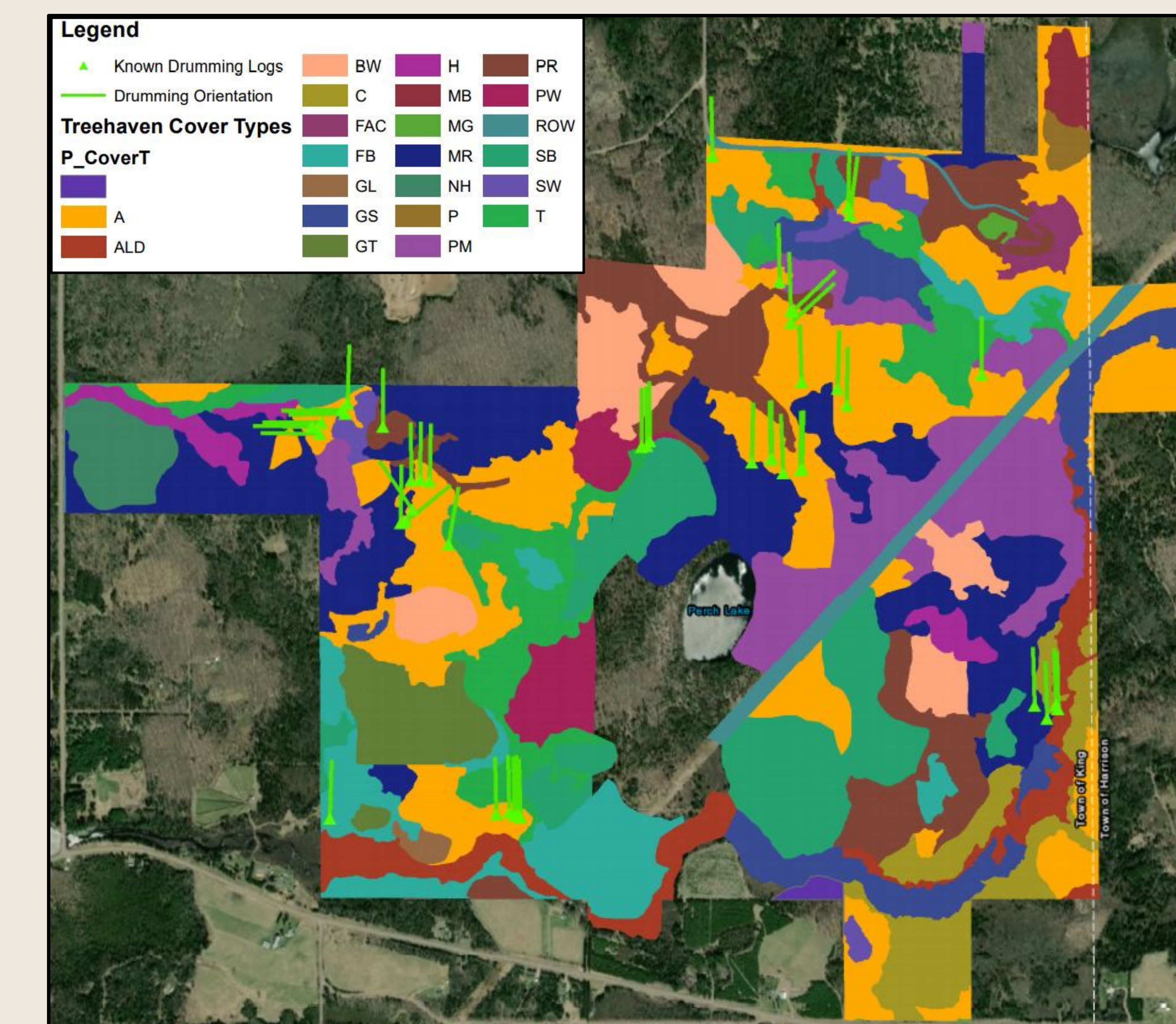
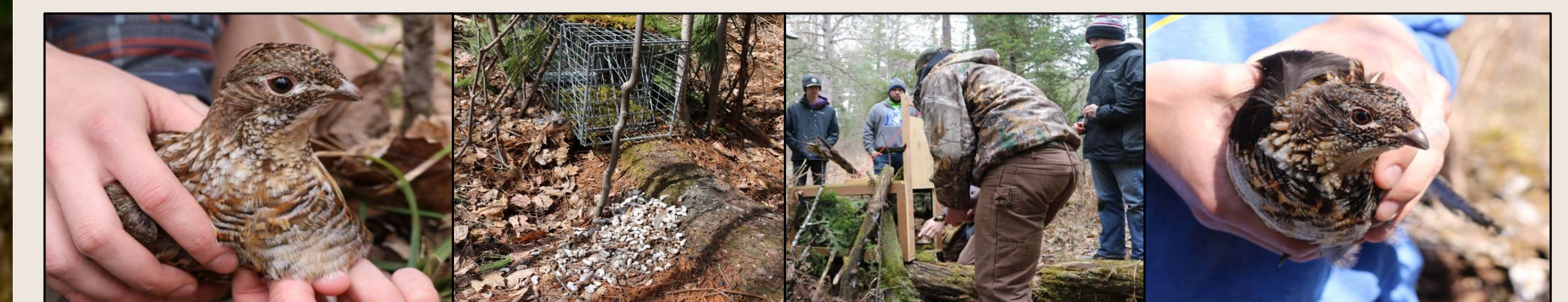


Figure 2. Map of Treehaven property with ruffed grouse drumming direction from known drumming logs and land cover overlay.

DISCUSSION

- Outward facing drumming could help male Ruffed Grouse to attract new females and increase their probability of attracting a mate
- Drumming into certain cover types could also increase probability of attracting a mate
- Cover types of drumming focus may be important for understand female habitat in the spring.
- Small dataset size may have contributed to these results, so expanding the dataset could improve understanding and identify these trends in drumming focus



FUTURE RESEARCH

- Analyze variations in seasonal home range size and cover type usage
- Calculate average stand density, height and diameter at breast height (DBH) within home ranges
- Determine effects of adjacent cover types on home range size
- Determine grouse use of varying timber age classifications and restored timber harvest landing areas
- Determine effectiveness of small scale, clear cut timber harvests as a grouse habitat improvement strategy that can be implemented on private lands
- Identify changes in body condition over time and consider the effect of habitat differences on male grouse fitness



ACKNOWLEDGEMENTS

We would like to thank Dr. Jason Riddle for his guidance and advice throughout the project. Dr. Cady Sartini, Dr. Shawn Crimmins and the students for helping collect the summer telemetry points for other aspects of this project. Thank you to all the Treehaven staff who helped coordinate and accommodate our field season. We would also like to thank the volunteers that helped us conduct telemetry and trap our grouse. Lastly, thank you to all of the past co-leaders for building the foundation of our project, specifically alumnus Joe Quehl for the framework of this year's research.