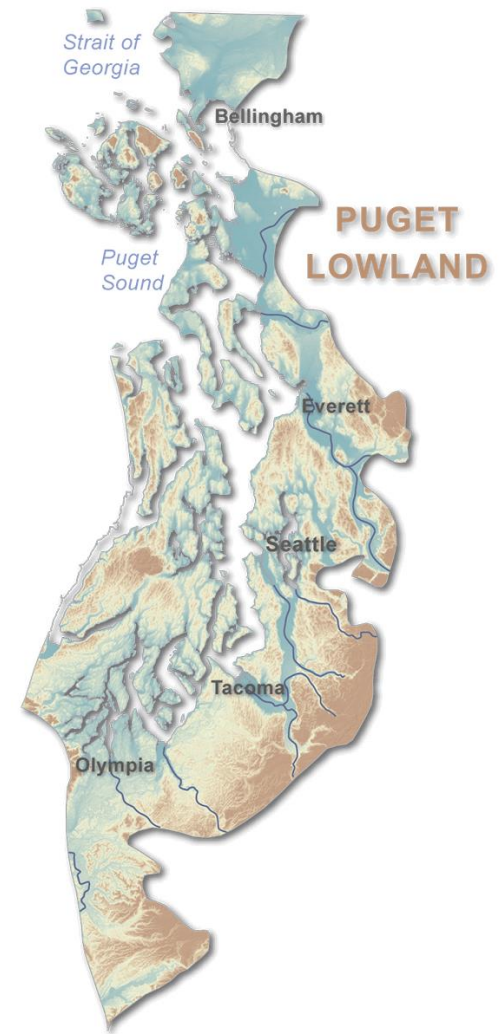


Prairie Bird Abundance and Vegetation Relationships at Joint Base Lewis-McChord Military Base, WA



Introduction

- >90% loss of native prairie in Puget Lowlands since Euro-American settlement
(Hall et al. 1995, Crawford and Hall 1997)
- Land use/development (Altman 2011)



Introduction

- 21 of 49 prairie-oak bird species have been extirpated, had range contractions, and/or regional population declines (Altman 2011)
- Streaked Horned Lark: <2,000
- Oregon Vesper Sparrow: <3,000
- Management of grasslands could be the answer

Objectives

- Gain information
- Calculate abundance
- Determine relationships between abundance and vegetation
- Relationships between fire and vegetation



Bird Species



- Chipping Sparrow (*Spizella passerina*)
- Common Yellowthroat (*Geothlypis trichas*)
- Oregon Vesper Sparrow (*Pooecetes gramineus affinis*)
- Savannah Sparrow (*Passerculus sandwichensis*)
- Streaked Horned Lark (*Eremophila alpestris strigata*)
- White-crowned Sparrow (*Zonotrichia leucophrys*)
- Western Meadowlark (*Sturnella neglecta*)

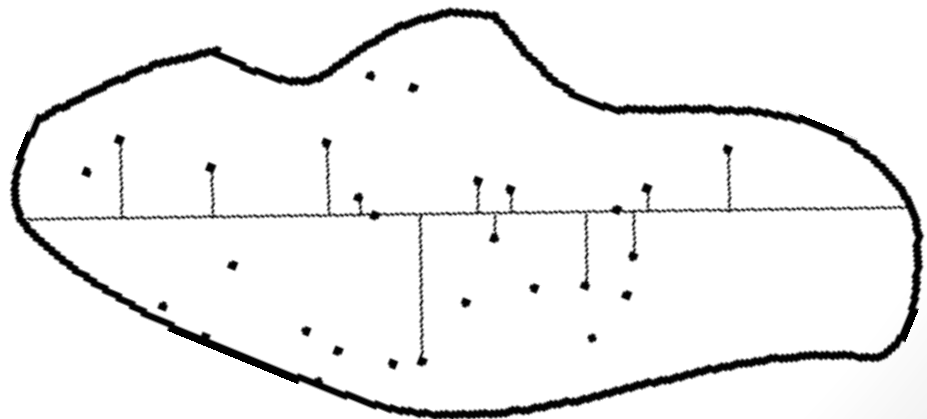
Vegetation Variables

- Number of trees
- Number of snags
- Number of shrubs
- % Grass
- % Forb
- % Scotch Broom
- % Bare
- Grass height
- Forb height
- Scotch Broom height



Data Collection

- Line transects for bird songs: 250m long
 - 2015-2017
 - Recorded all birds seen or heard
- 6 vegetation points

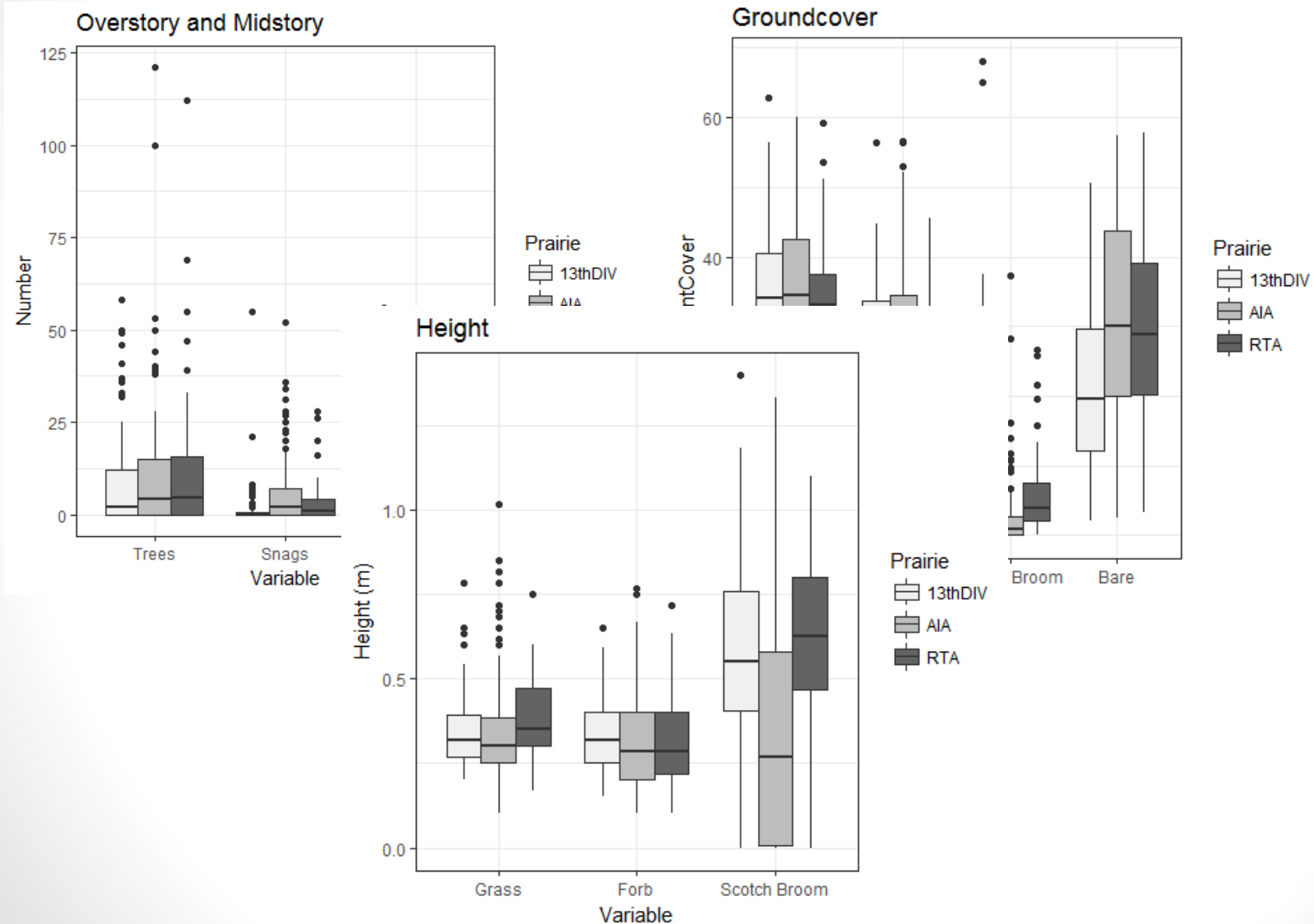


Methods

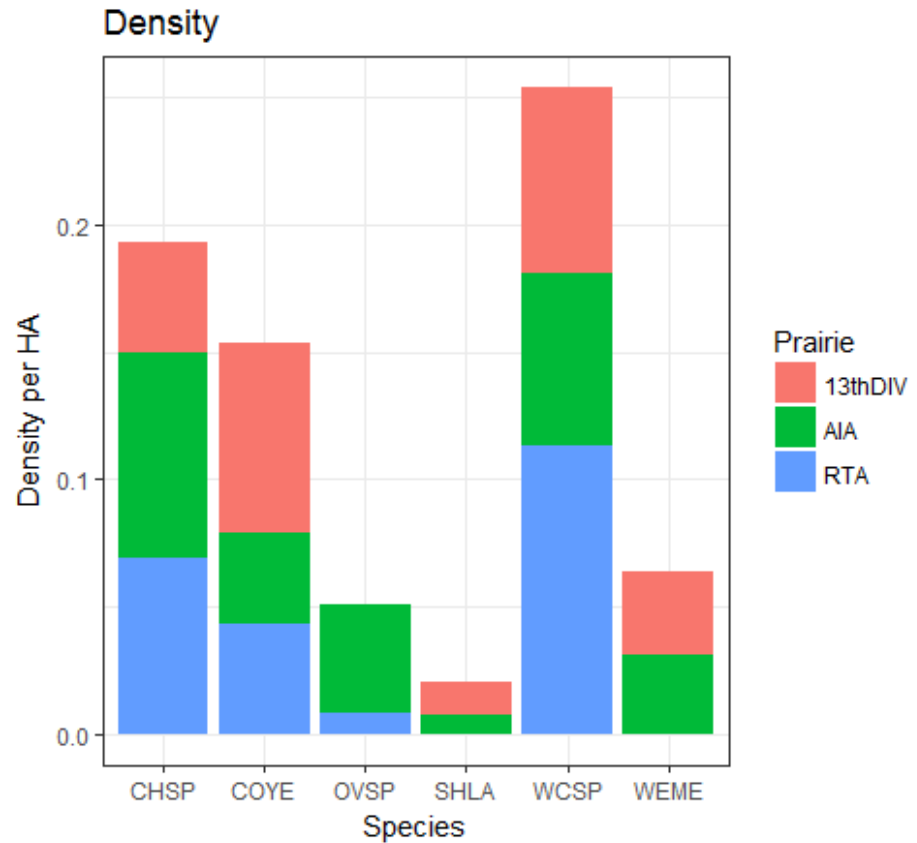
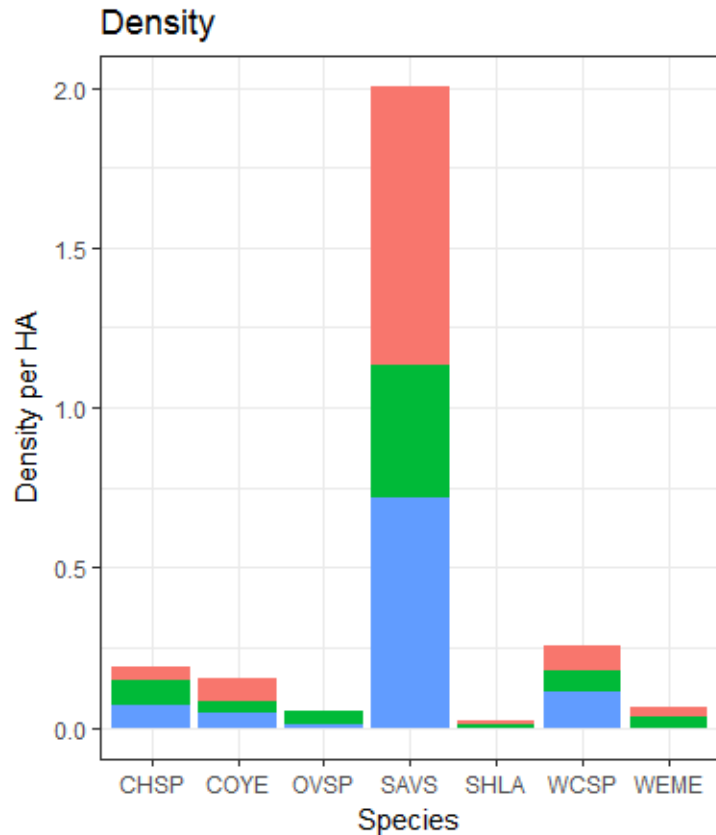


- Singing males; <150m
- Average counts between three visits
- Mixed modeling in R
 - Abundance $\sim x + (1 | \text{prairie})$
- Models based on habitat covariate differences between presence/absence

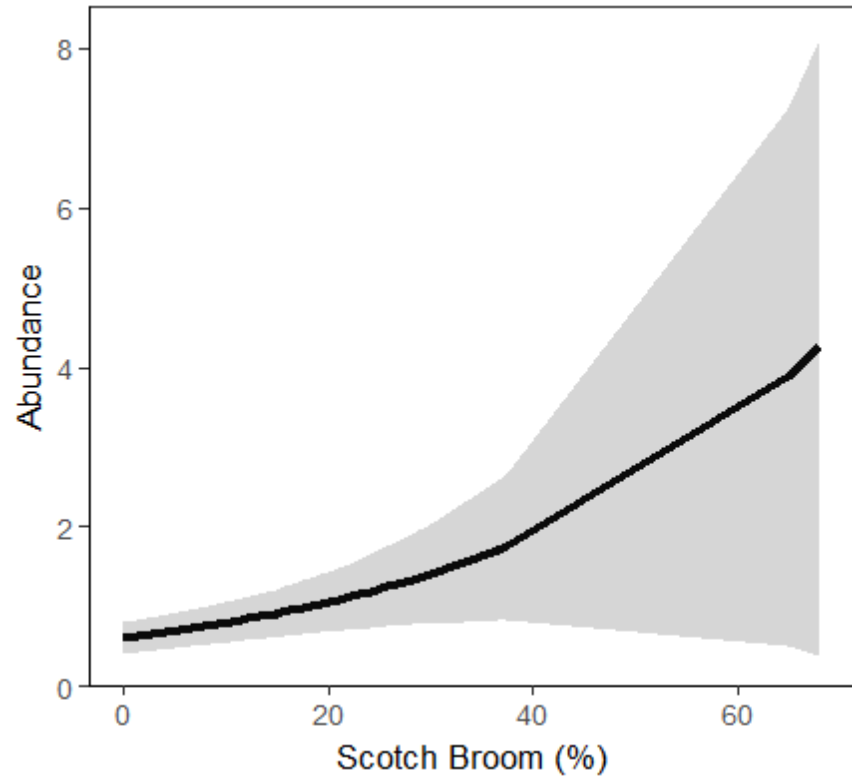
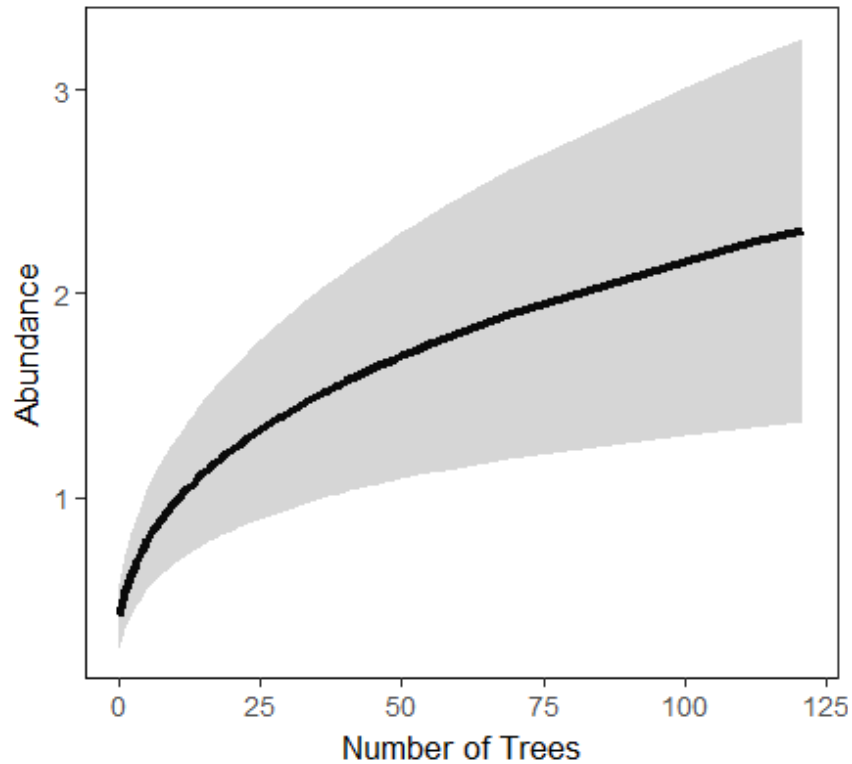
Prairie Summaries



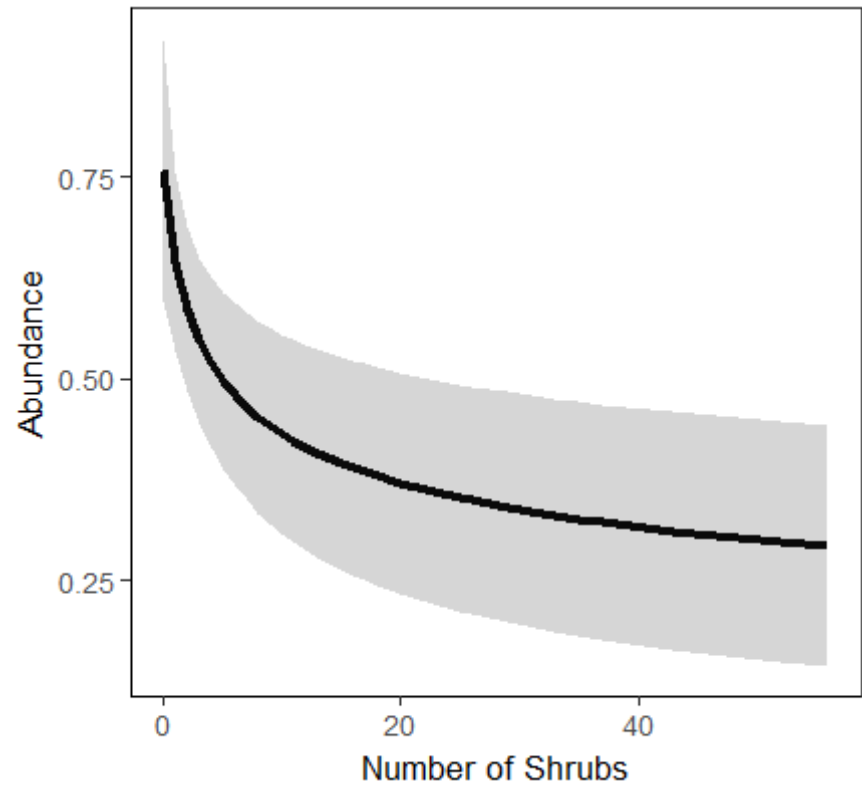
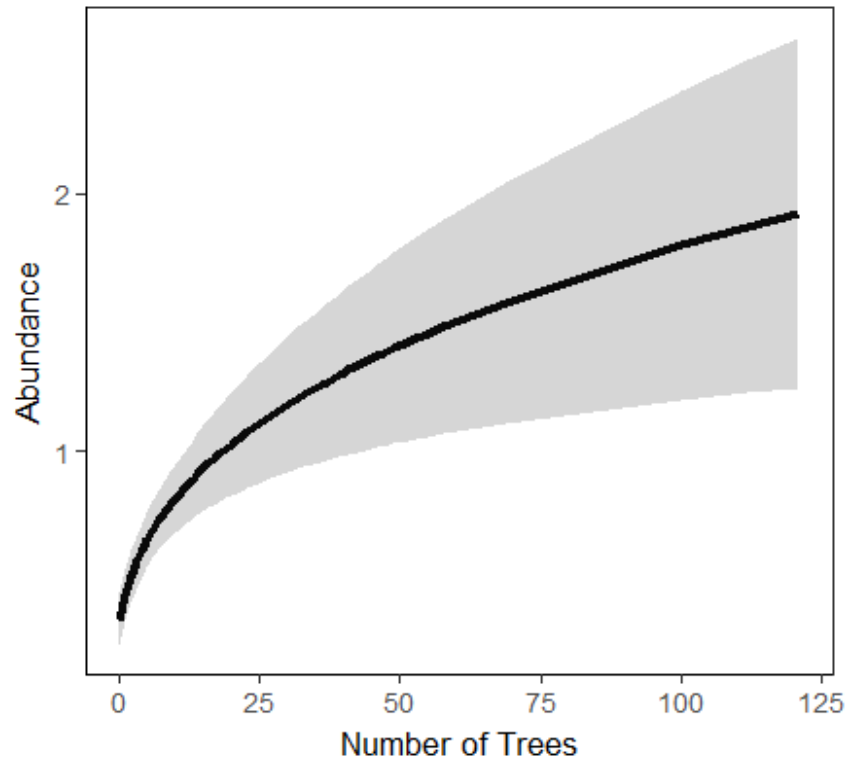
Density by Prairie



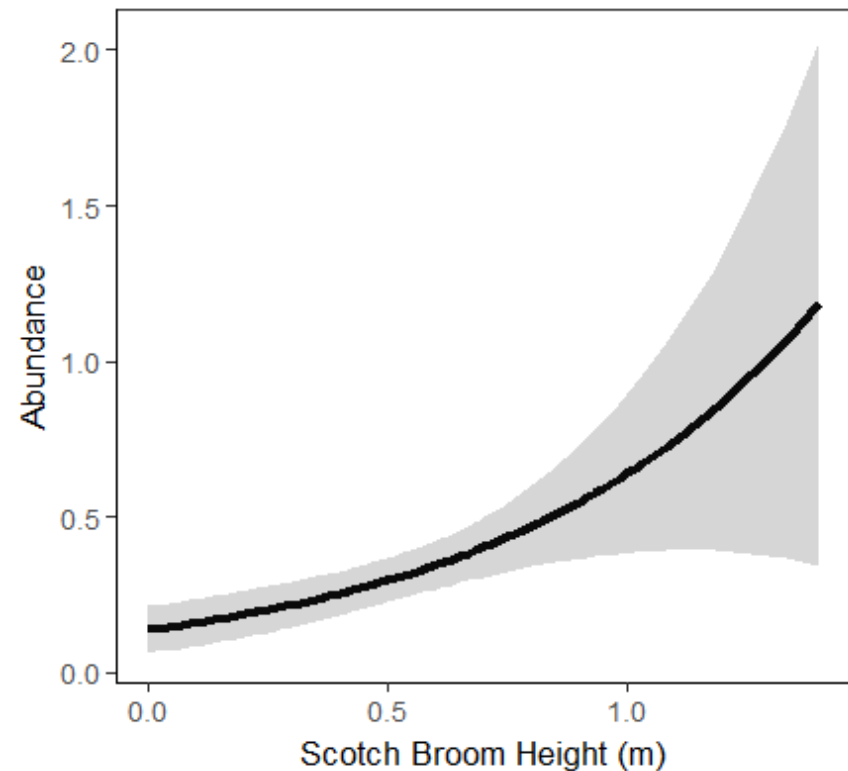
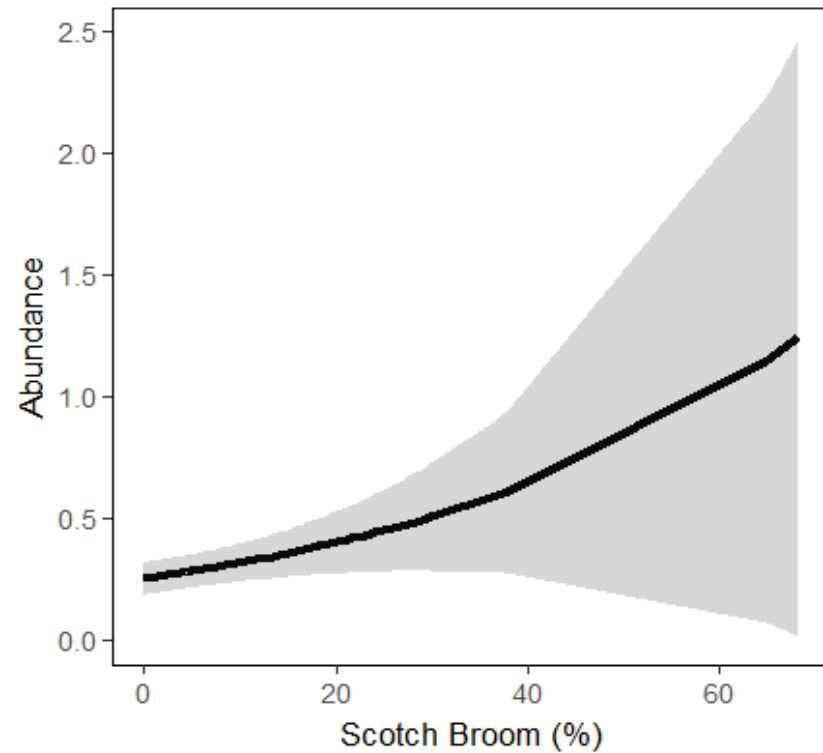
White-crowned Sparrow



Chipping Sparrow



Common Yellowthroat



Oregon Vesper Sparrow

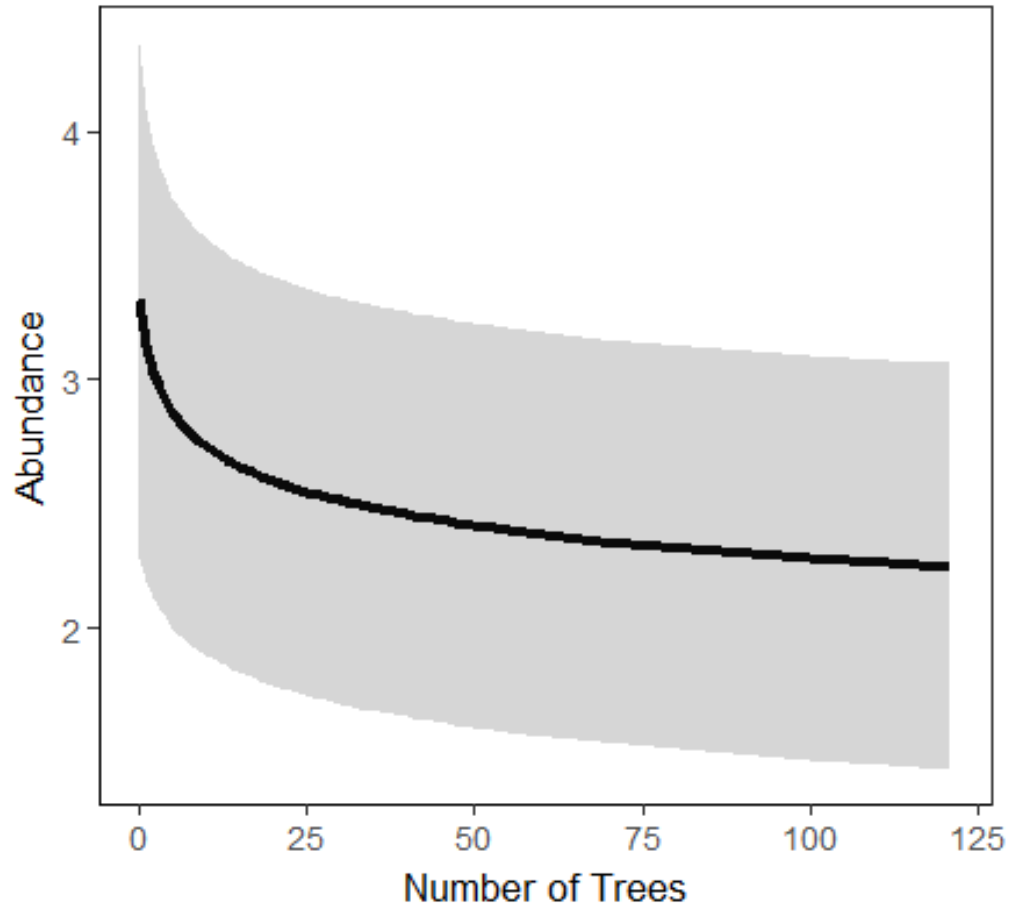


- Slight positive impact of snags and bare ground
- Not present at 13th Division prairie

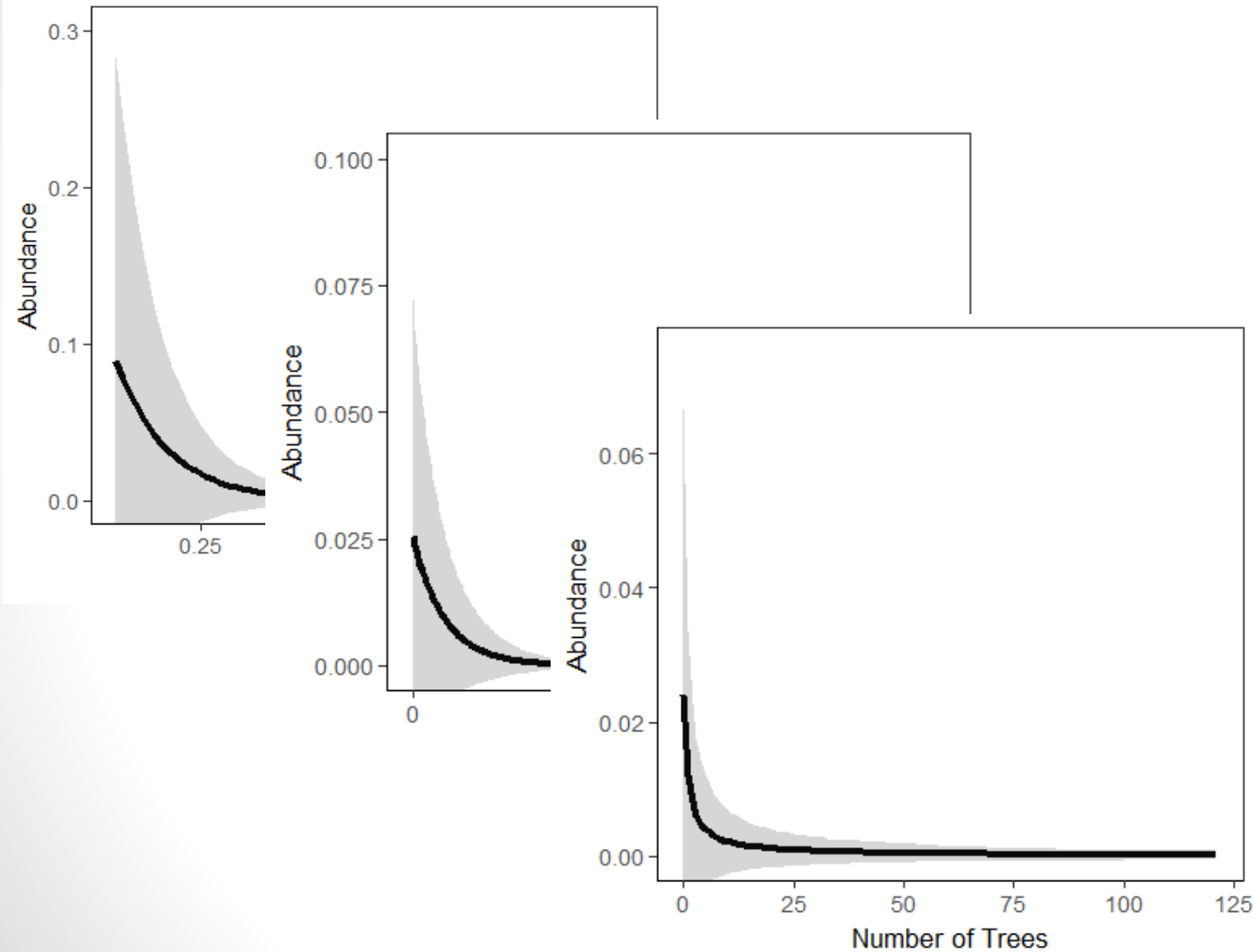
Prairie	No. surveys	No. detections	Density	95% CI
13th Division	89	0	0	0
AIA	139	119	0.043	0.033-0.056
RTA	82	15	0.008	0.004-0.015

Year	No. surveys	No. detections	Density	95% CI
2015	91	21	0.012	0.007-0.022
2016	110	51	0.021	0.014-0.032
2017	109	62	0.026	0.017-0.038

Savannah Sparrow



Streaked Horned Lark



Western Meadowlark

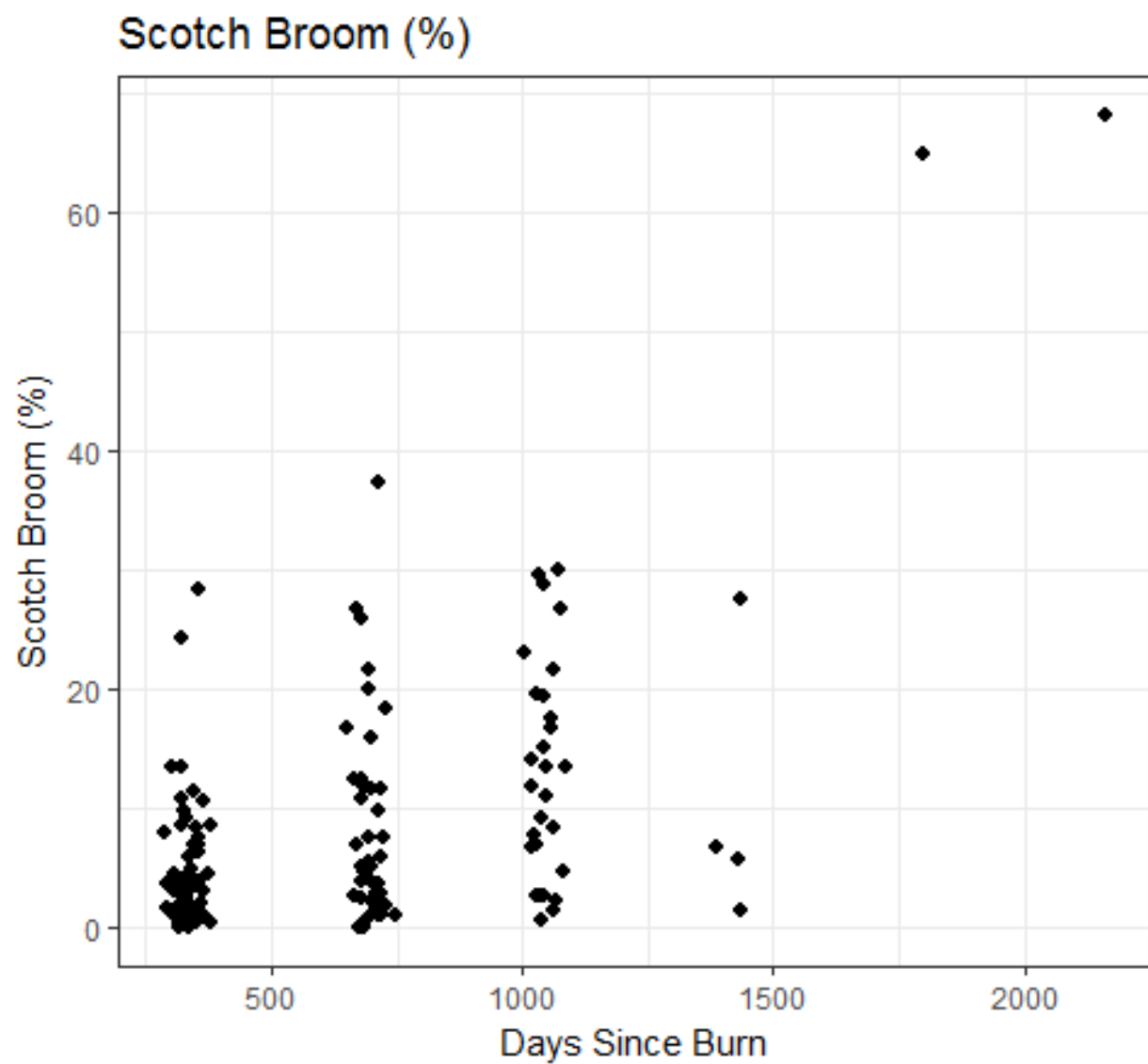


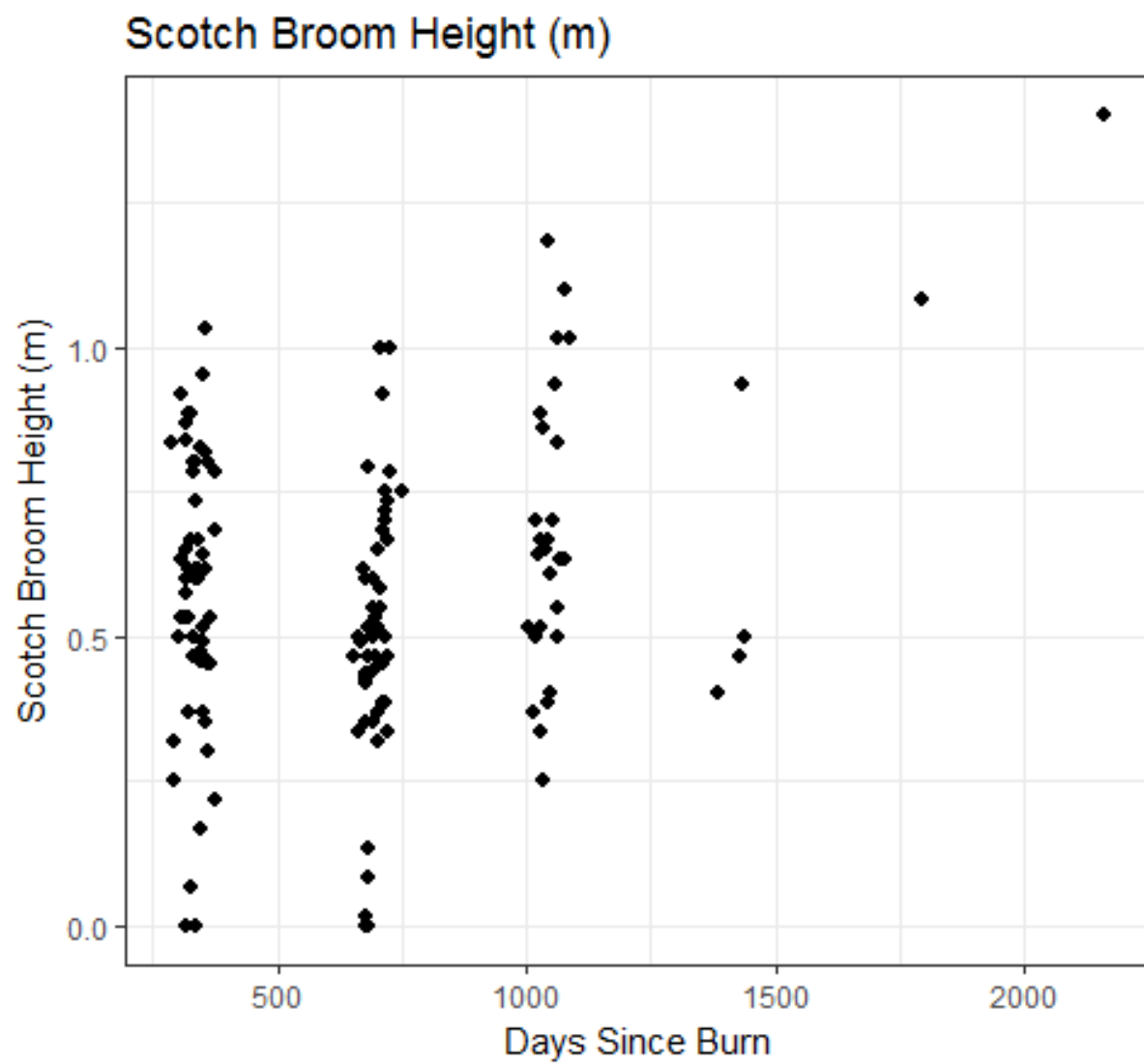
- No major vegetation relationships
- Not present at RTA's

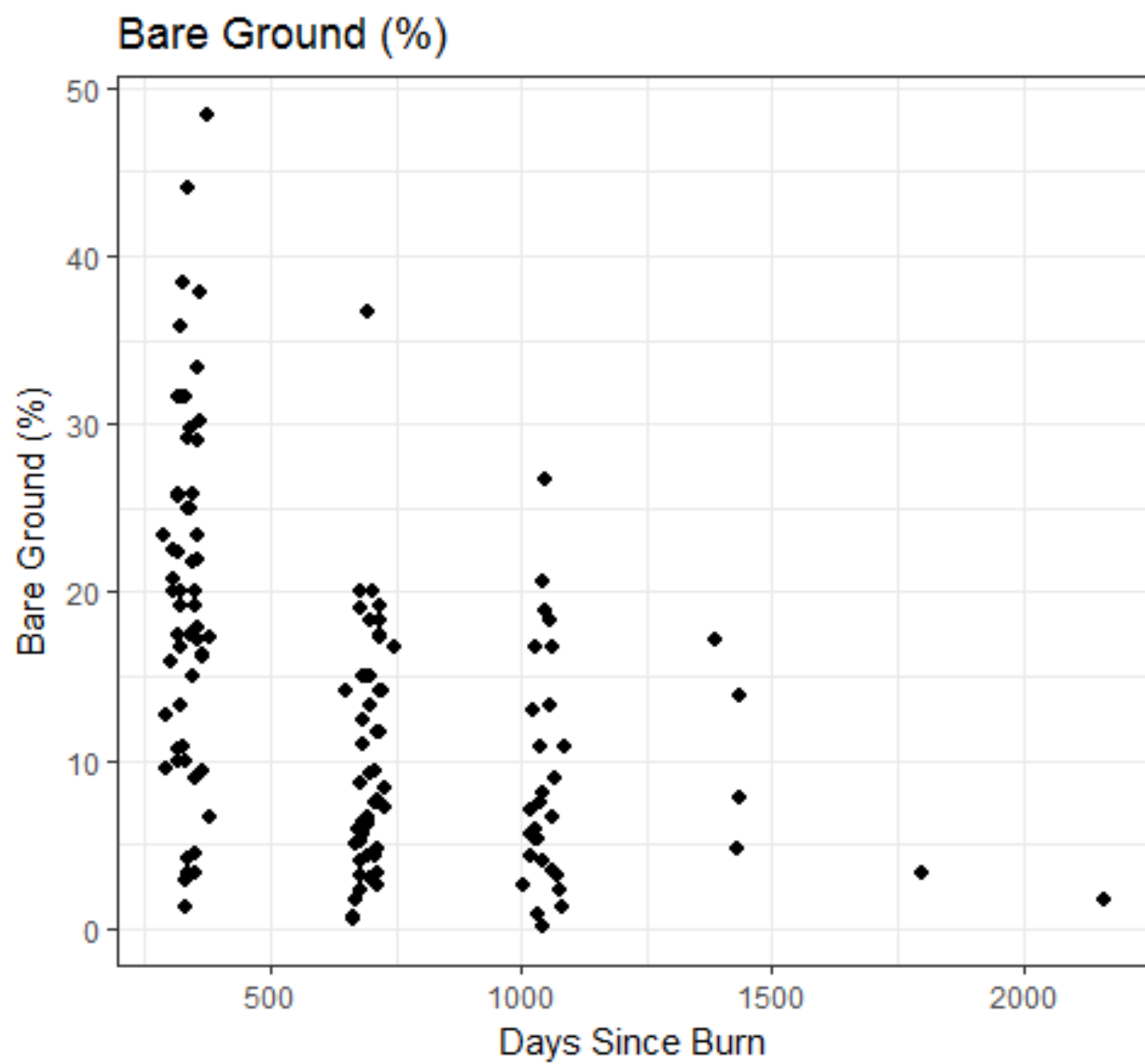
Fire and Vegetation

- Connection between fire and vegetation variables
- Days since last fire









Implications

- Steer management for declining species
- Information for JBLM
- Baseline for several common species
- Need more data for the rare species

References

- Altman, B. 2011. Historical and Current Distribution and Populations of Bird Species in Prairie-Oak Habitats in the Pacific Northwest. Northwest Science, 85(2):194-222.
- Crawford, R. C., and H. Hall. 1997. Changes in the South Puget prairie landscape. In P. Dunn and K. Ewing (editors), Ecology and Conservation of the South Puget Sound Prairie Landscape. The Nature Conservancy, Seattle. Pp. 11-16.
- Hall, H. L., R. C. Crawford, and B. Stephens. 1995. Regional inventory of prairies in the southern Puget Trough: Phase I. File report, Washington Department of Natural Resources, Natural Heritage Program, Olympia.

Questions?

