

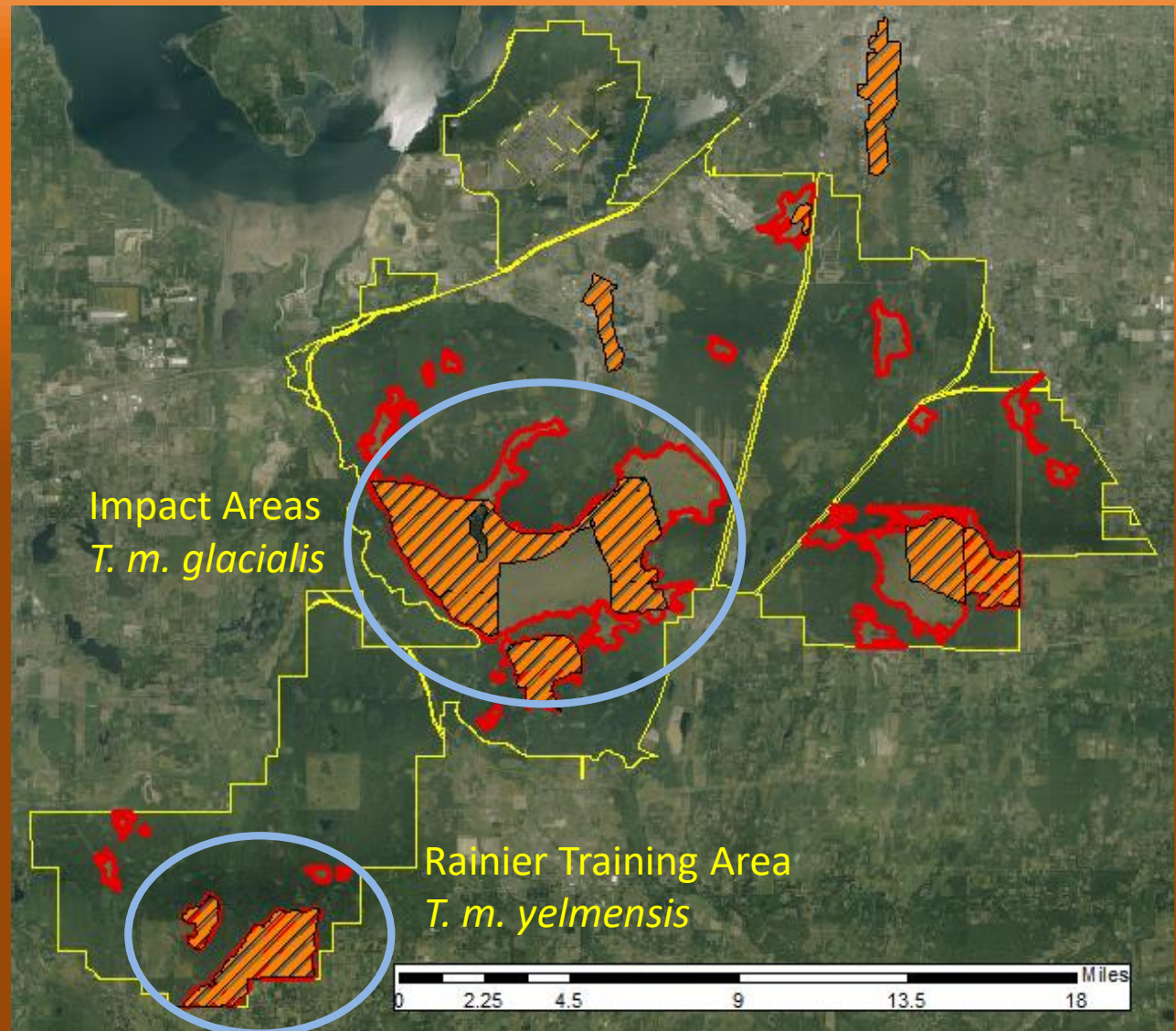
Pocket Gopher Response to Prescribed Fire & Vegetation Cover



Center for Natural Lands Management

JBLM – Mazama Pocket Gopher

- > 11,000 Acres of Prairie
- 4 Federal-listed Species
- Highest-quality Prairie Around
- Other Rare Species
- Multi-use Landscape



Fire – Vital Management Tool

*~33% of occupied area (407 acres) burned annually
3 – 4 Year burn interval*

- Cost Effective
- Maintains Prairie Structure
 - Consumes thatch & moss
 - Controls woody-plant invasion



Goals & Objectives



Goal:

Quantify impact of prescribed fire on distribution of Mazama pocket gopher through time

Objectives:

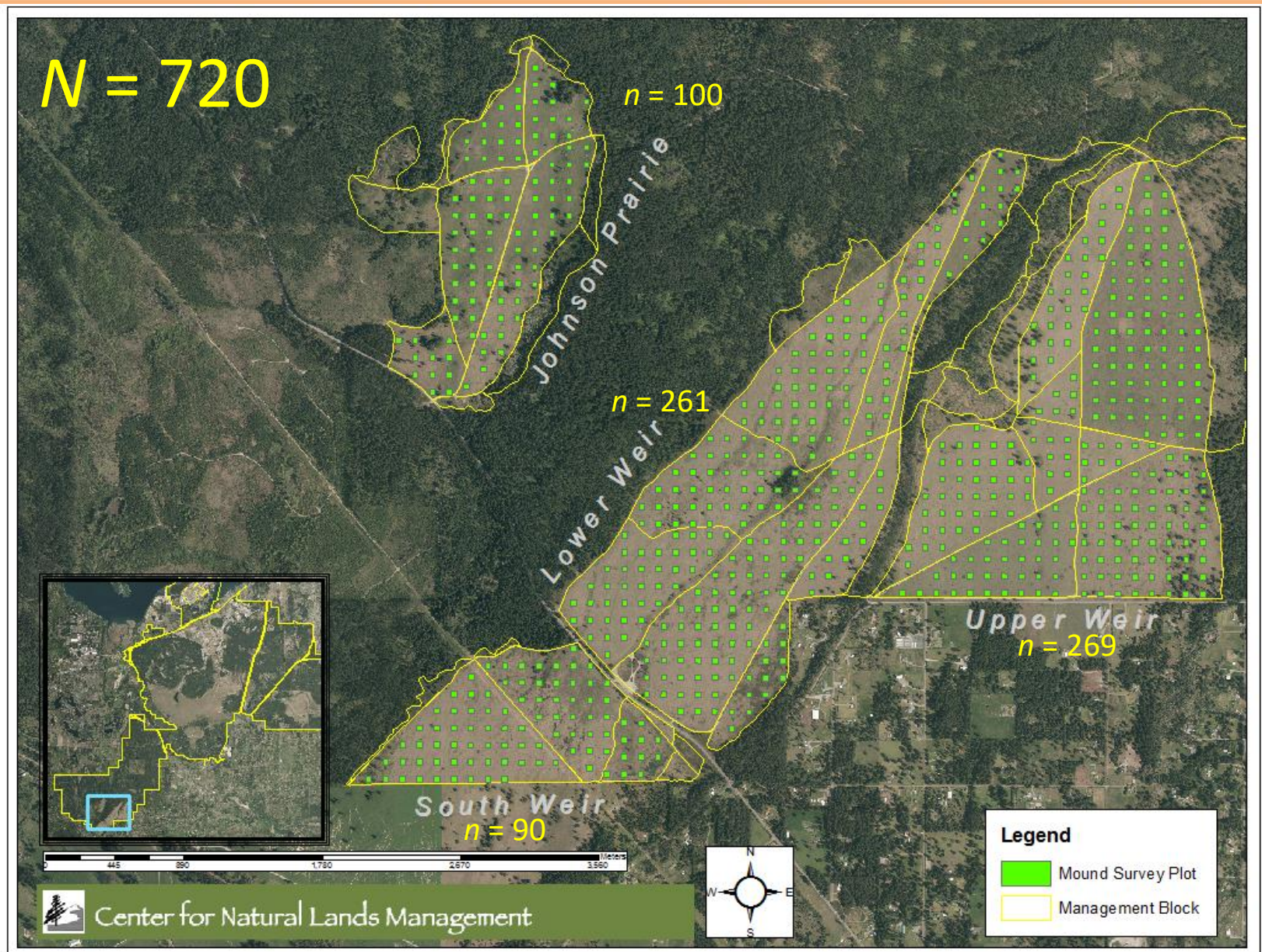
- Estimate patch-occupancy
- Model detectability
- Burn history and vegetation cover

Repeat-visit Mound Surveys

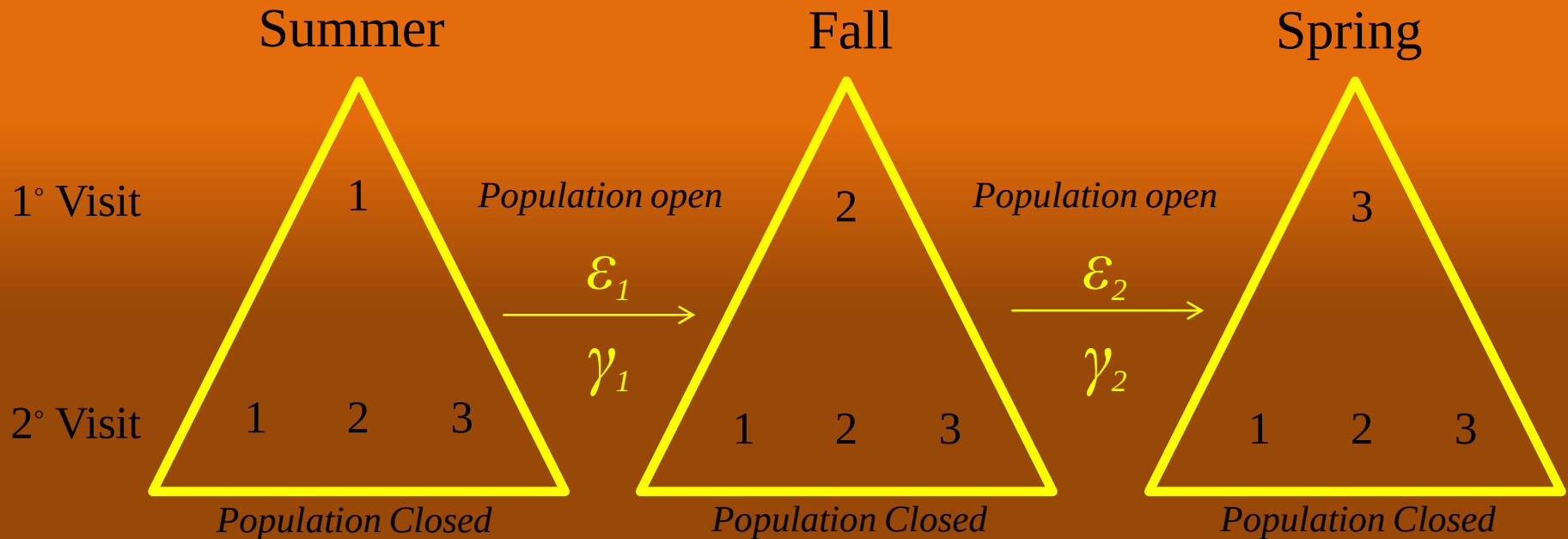
- **25 m X 25 m plots**
 - multiple home ranges per plot
 - 50-m spacing
- **Multi-season Design**
 - Summer
 - Fall
 - Spring
- **Repeat-visit Surveys**
 - 3 visits per season
 - 3-5 days between visits
- **Field Procedure**
 - Mound presence/absence
 - 2-minute maximum searches
 - Fresh mounds recorded



Plot Locations



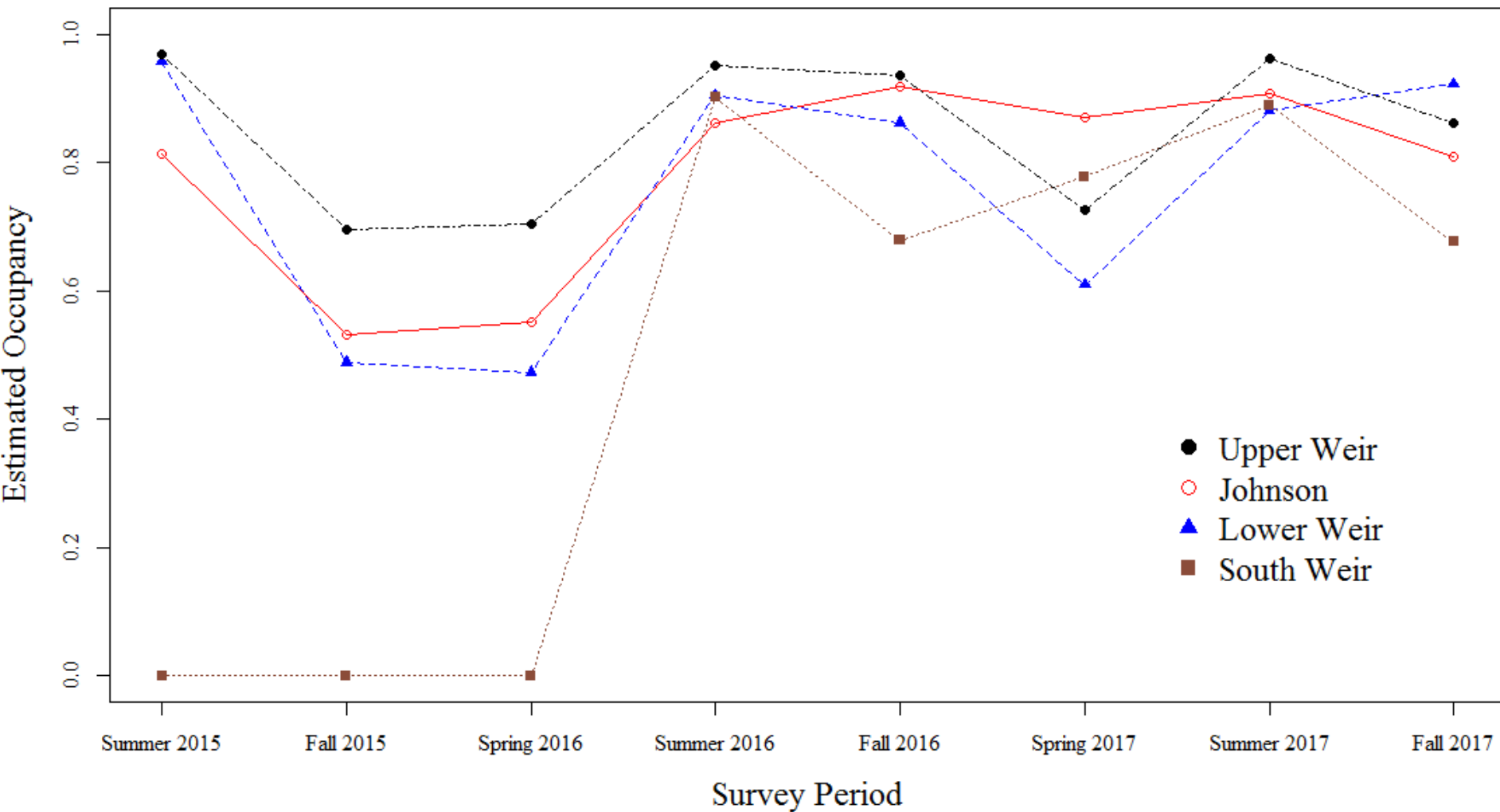
Robust Design - Occupancy



ϵ = Rate at which plots become unoccupied

γ = Rate at which plots become occupied

Seasonal Occupancy



Testing Occupancy

- Fire Response

- Burned vs Unburned effect
 - ‘Days Since Burned’ impact
-

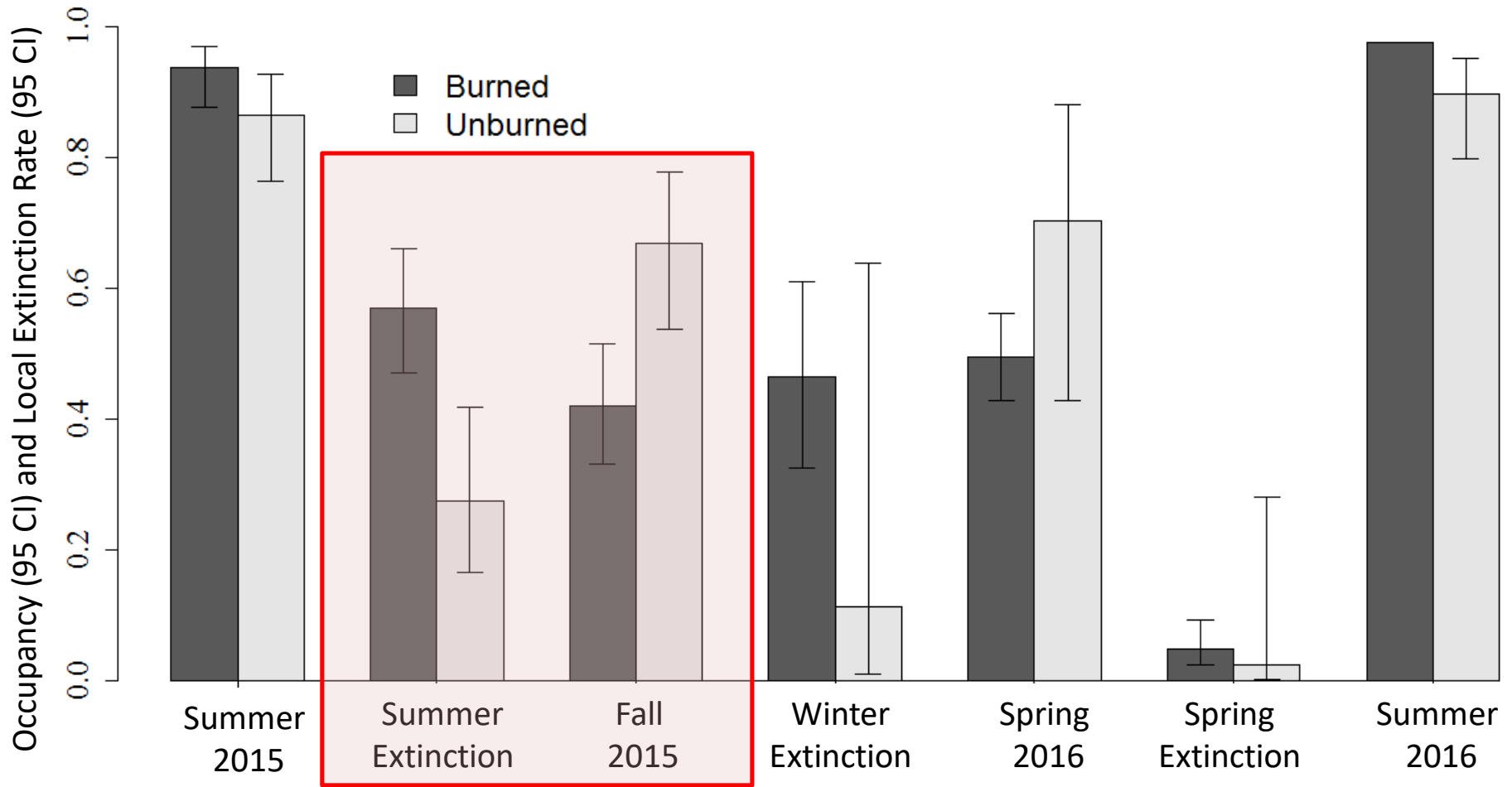


- Vegetation Response

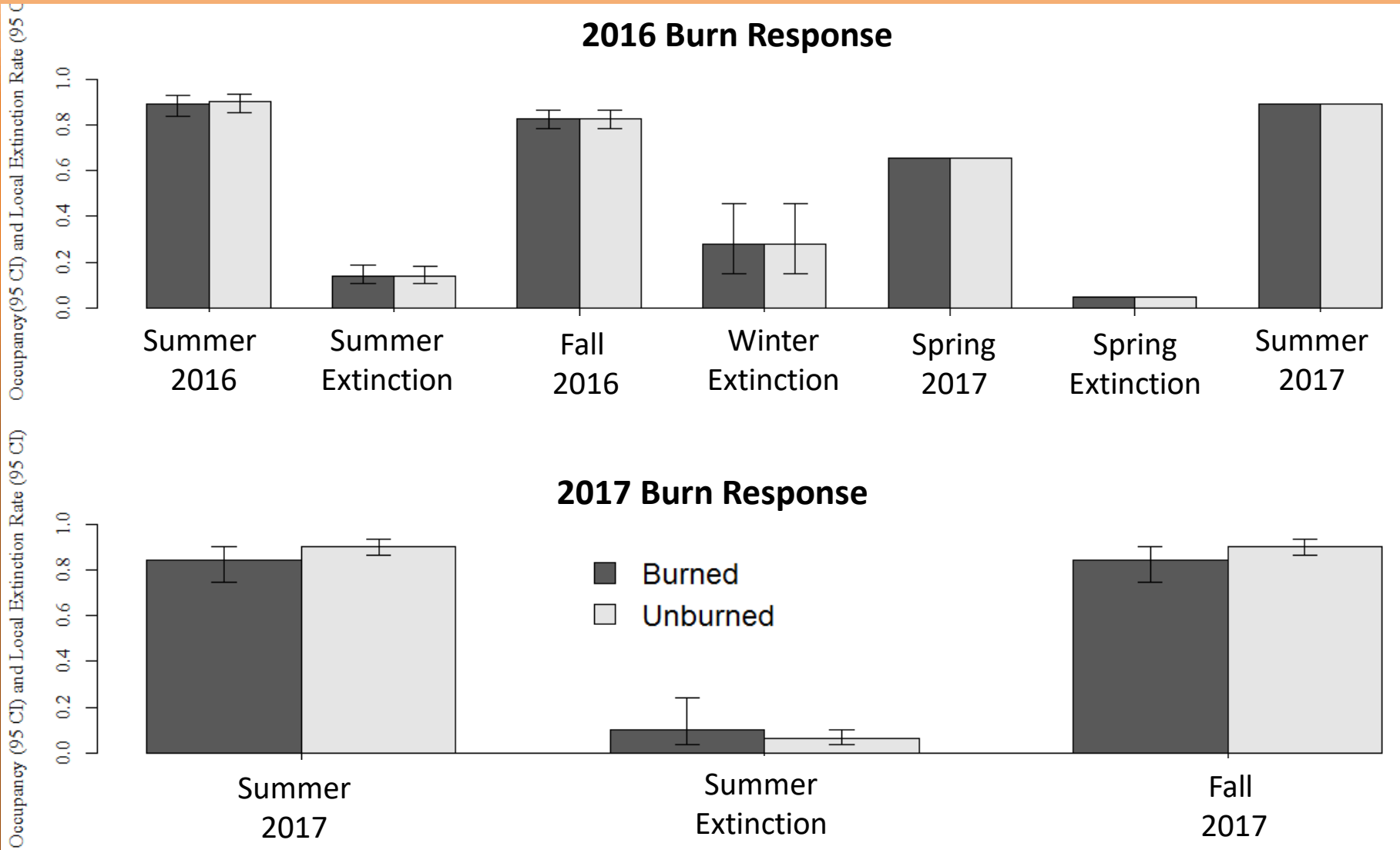
- Root-type Functional Groups
 - *Tap, Fibrous, Rhizomatous, Bulb*
- Vegetation vs ‘Days Since Burn’



2015 Burn Year Response



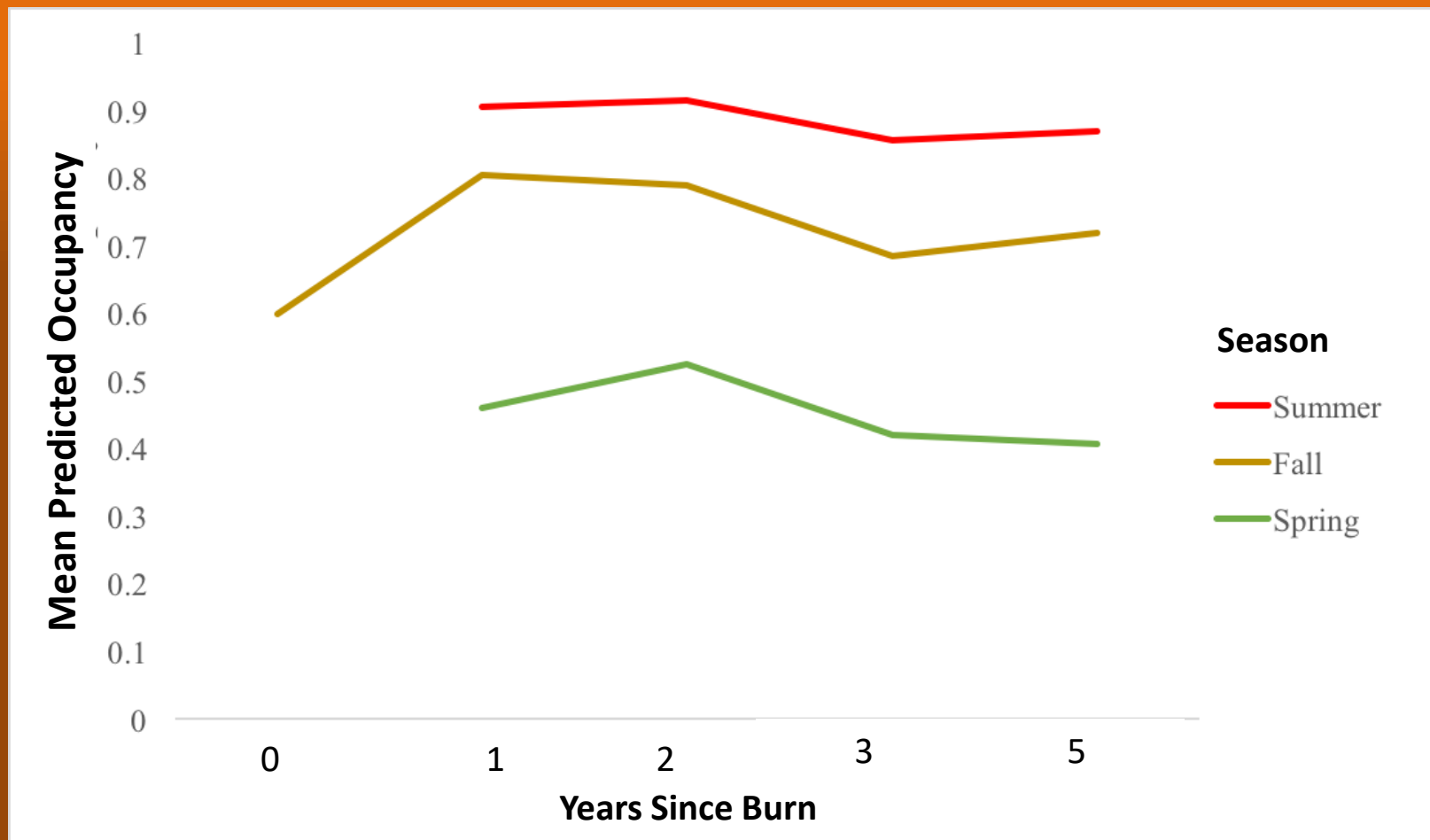
2016 & 2017 Burn Response



‘Days Since Burn’ Response

Impacts on occupancy differ, depending on season

- Fall: Positive relationship with ‘Days Since Burn’
- Spring + Summer: Negative response to ‘Days Since Burn’



Rhizomatous Cover

- Candidate sets of 64 models; top model sets considered ($w_i > 0.9$)
- **Effects only observed on Fall occupancy**

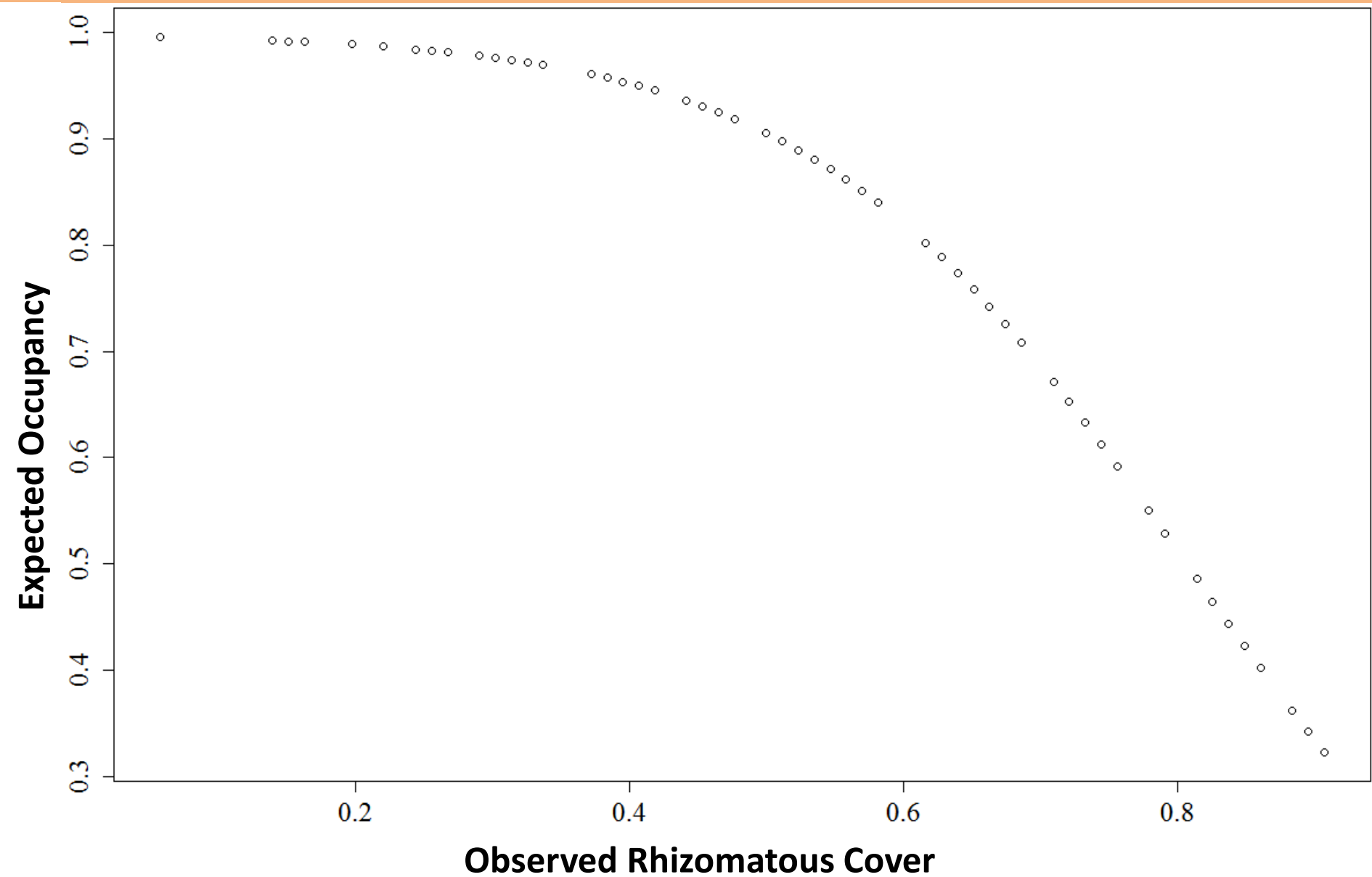
Variable	Relative Importance	Effect Size
Rhizomatous	0.9701	-7.37
Tap-root	0.4755	-2.38
Graminoid	0.4687	2.98
Fibrious	0.3057	-1.41
Forb	0.2947	-0.45
Bulb	0.2467	-0.22
Intercept	-	5.94

- *All but 1 top model contained 'Rhizomatous'*

- *No clear relative support...*
- *...but, veg covariates w/ much support over 'DSB'*

Variable	Relative Importance	Effect Size
Rhizomatous	0.6695	-3.49
Rhizomatous Forbs	0.4138	-1.56
Rhizomatous Graminoids	0.3837	-0.05
Days Since Burn	0.191	-8.2-E6
Intercept	-	4.02

Expected Occupancy



Summary of Results

Occupancy

- Plasticity among seasons and prairies

Fire Impacts on Occupancy

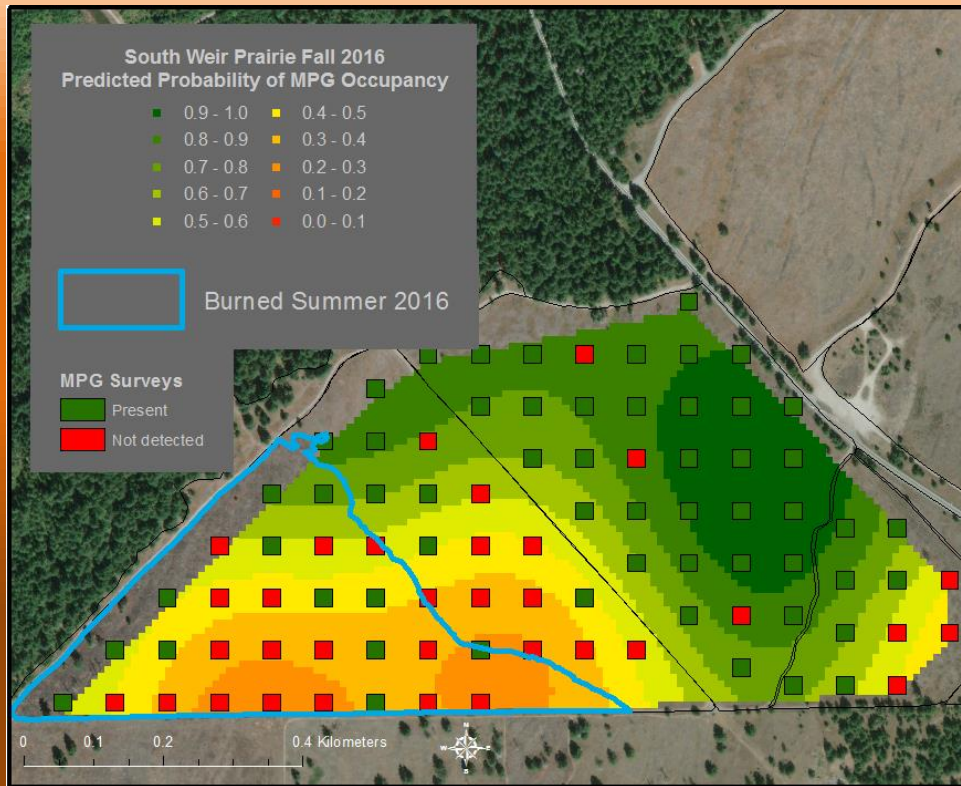
- Fall Impact
- Limited to Summer 2015 burns
- Likely interactive with Spring 2015 drought
- Very weakened effect possibly observed from Summer 2017 drought
- Upper burn-interval limit not observed



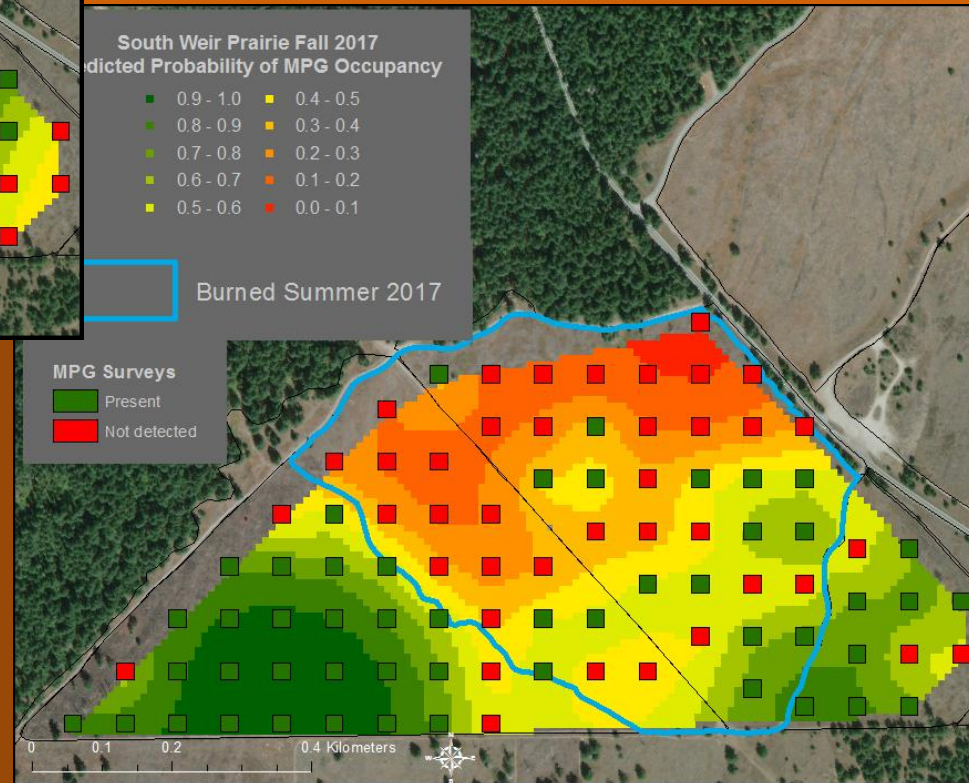
Vegetation Cover Impacts on Occupancy

- Fall Impact
- Negative response Spring rhizomatous cover

Questions Remain – South Weir



← Fall 2016



Fall 2017 →

THANK YOU!



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