

The Prairie Quality Monitoring Project: Measuring Restoration Success

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South Puget Sound Prairie Restoration

- On-going for nearly twenty years
 - **1990s:** Mowing and pulling broom
 - **Early 2000s:** Herbicide trials
 - **Mid 2000s:** Combinations of targeted herbicide and burning
 - **Mid 2000s:** Seeding with limited # species
 - **2010 – Present:** Expansion of seeding and burning



How do we quantify progress?

- Photo-monitoring
- Visual vegetative cover assessments
- Species richness
- Assessing species responses
- Survival of seeds and plugs

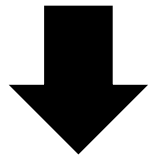


The big picture



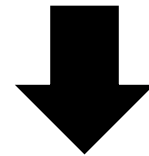
Restoration Goals

- 50% increase in areas with low Scotch broom and tall oatgrass cover (<6%).
- Increase high-quality native prairie by 15 acres and native grassland by 150 acres.



High quality native prairie

- $\geq 30\%$ native cover
- <25% shrub cover
- <5% tree cover

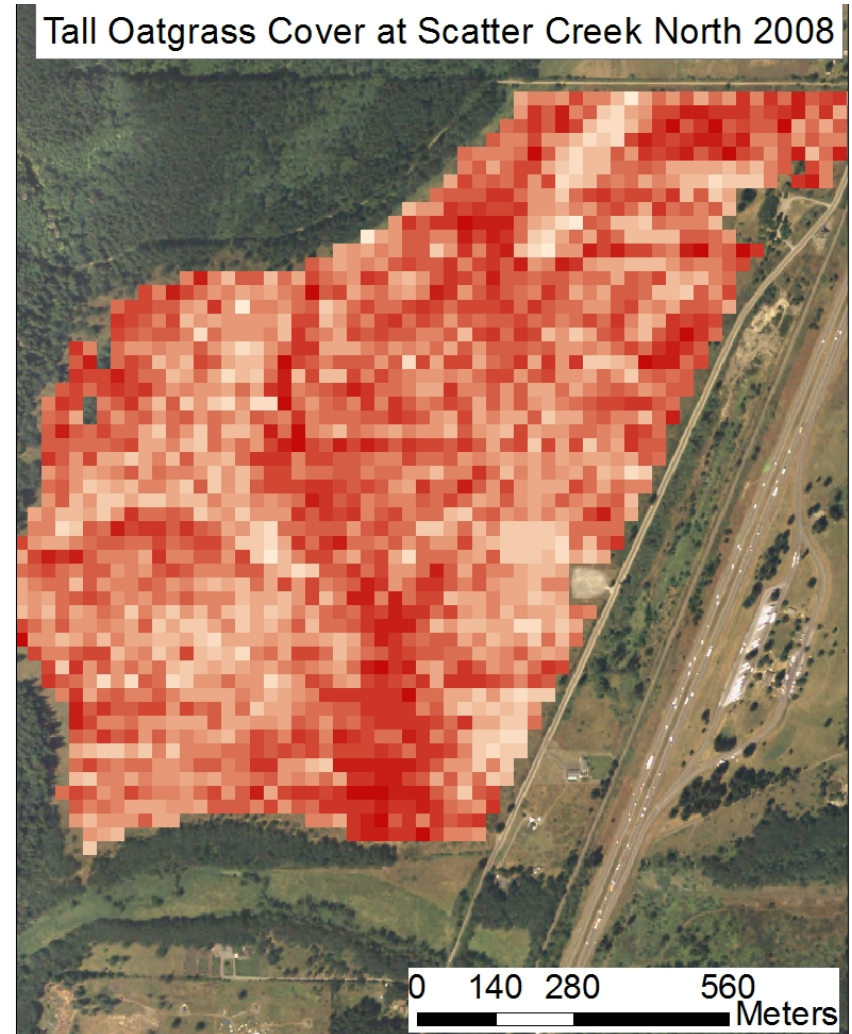


Native Grassland

- 10 - 30% native cover
- <50% shrub cover
- <5% tree cover

The Prairie Quality Monitoring Project

- Wall-to-wall grid survey by WDFW
- 2007 – 2009
- 7 sites
- 25x25m plots - % cover
- 1x1m plots – species richness



PQM Resample in 2015

- Divided sites into management units
- Power analysis
- Re-evaluation of most important attributes
- 2,764 plots monitored over six sites



Repeat attributes

% Fescue cover



% Scotch broom cover



% Shrub cover



% Tall oatgrass cover

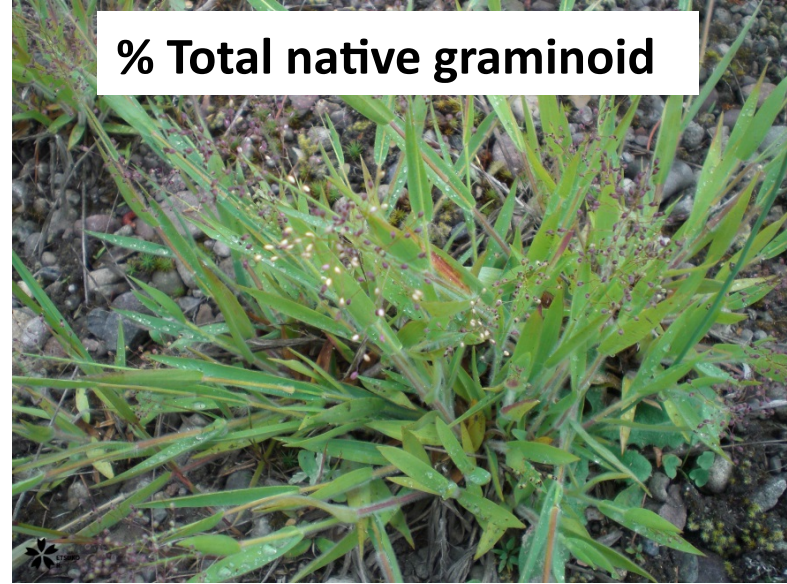


New attributes

% Total native cover



% Total native graminoid



% Open ground

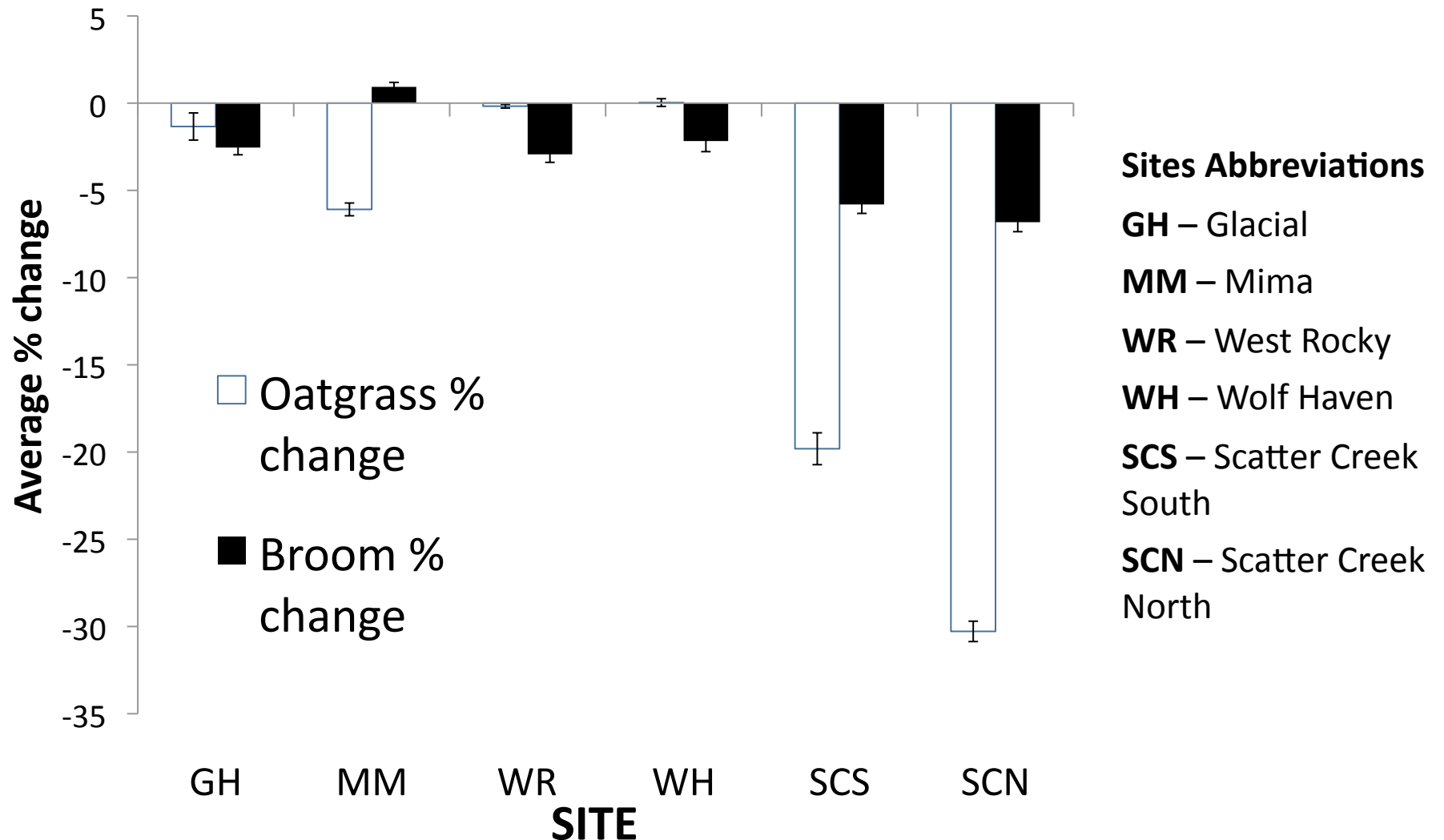


% Tree cover



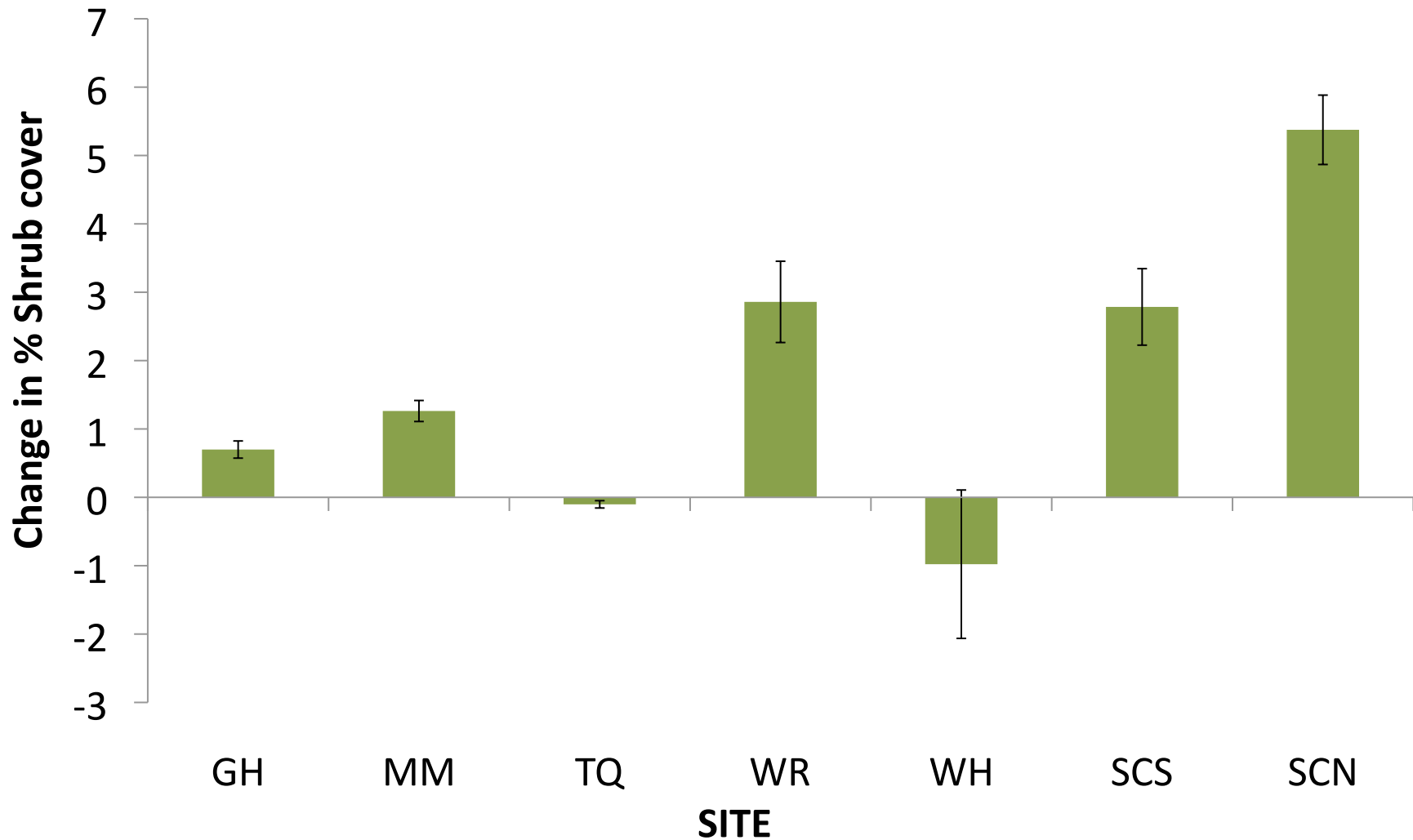
The Good News

- Decreases in oatgrass and scotch broom across sites



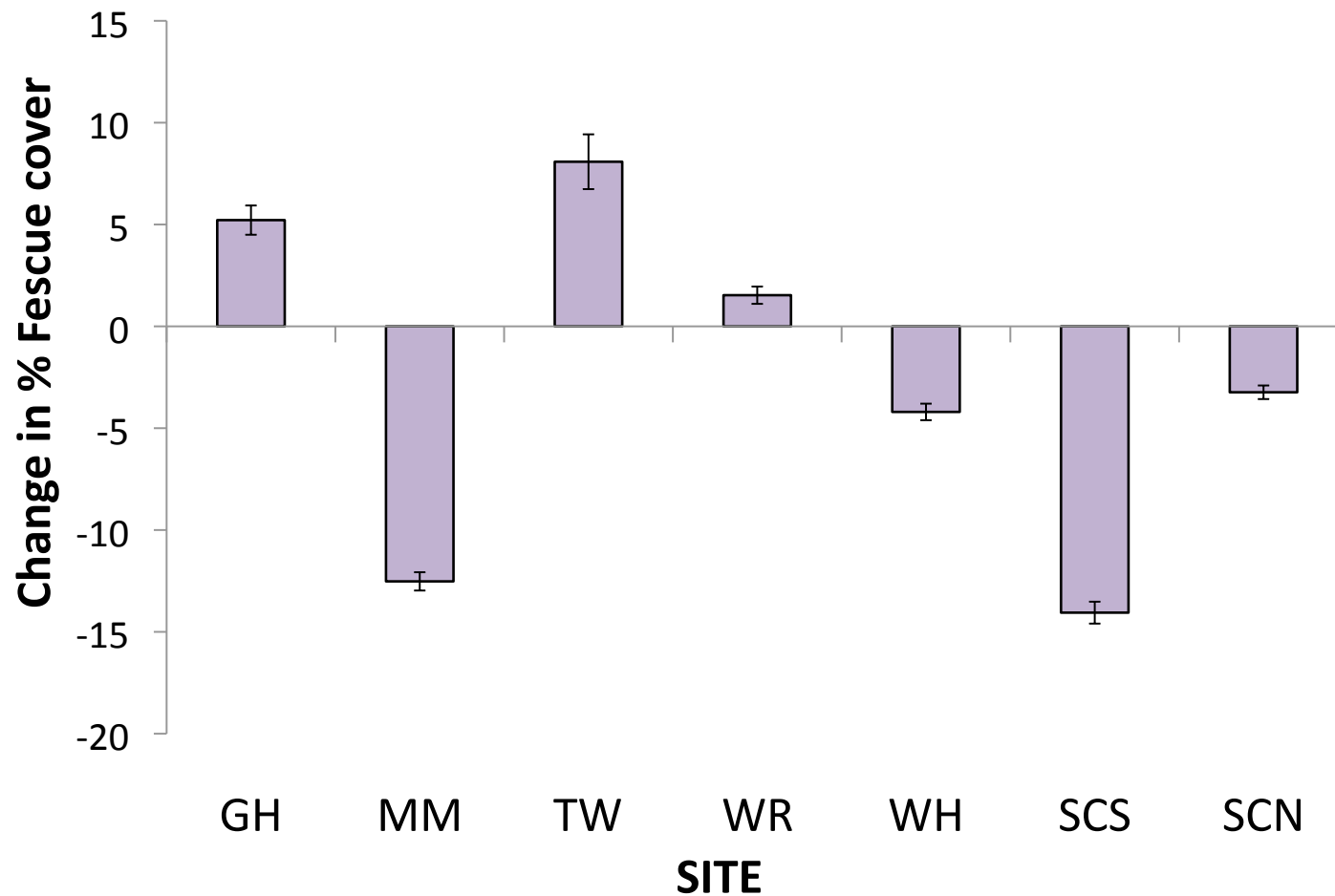
The Unexpected News

- Increase in % shrub cover at most sites



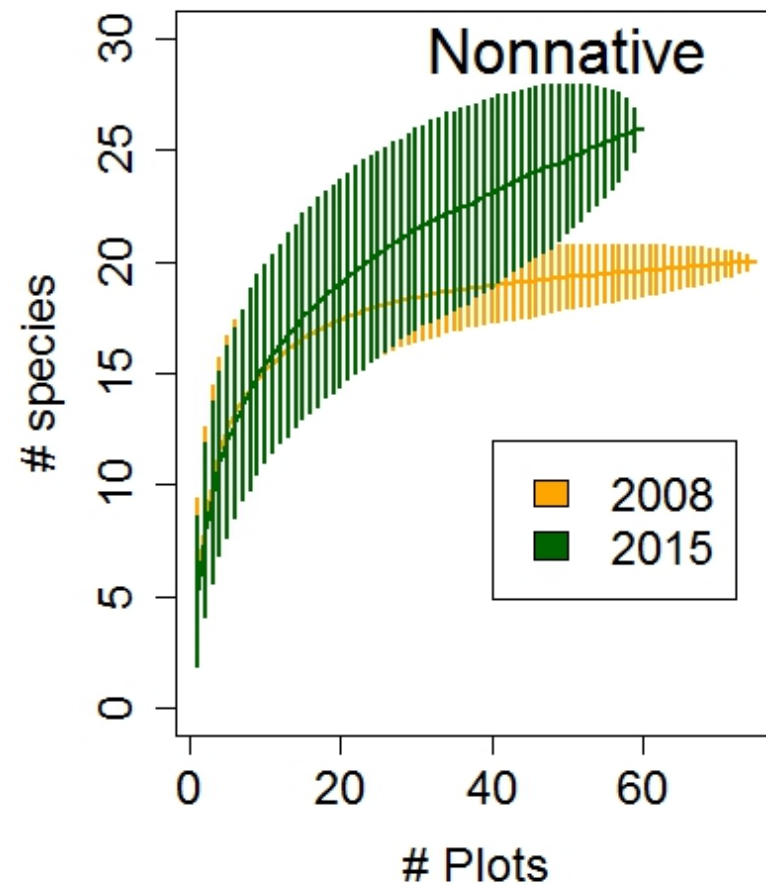
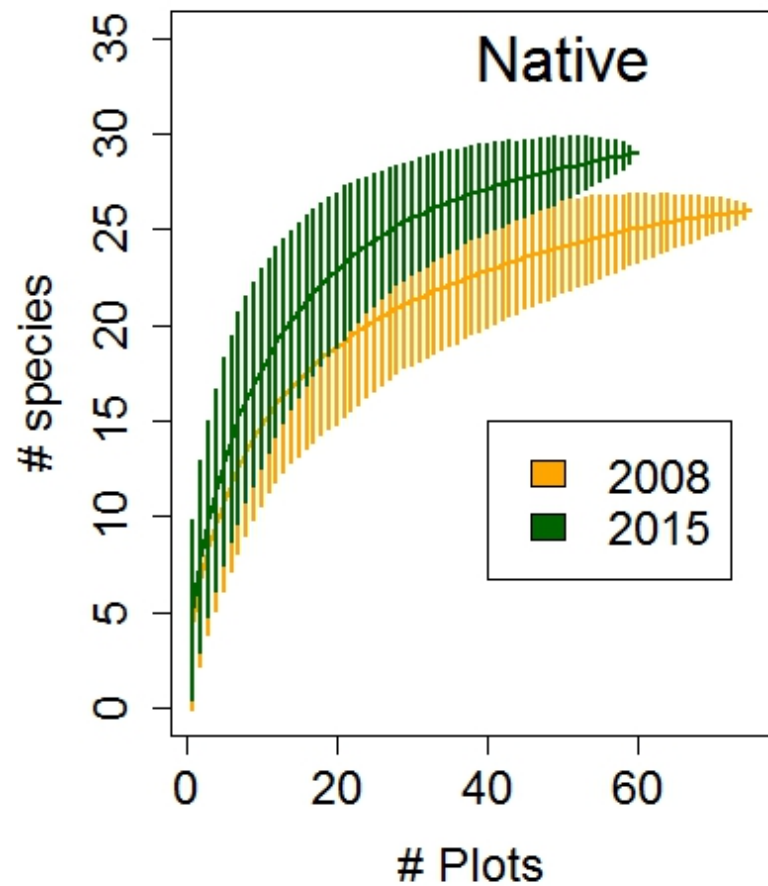
The Not So Good News

- % Fescue cover declines at many sites

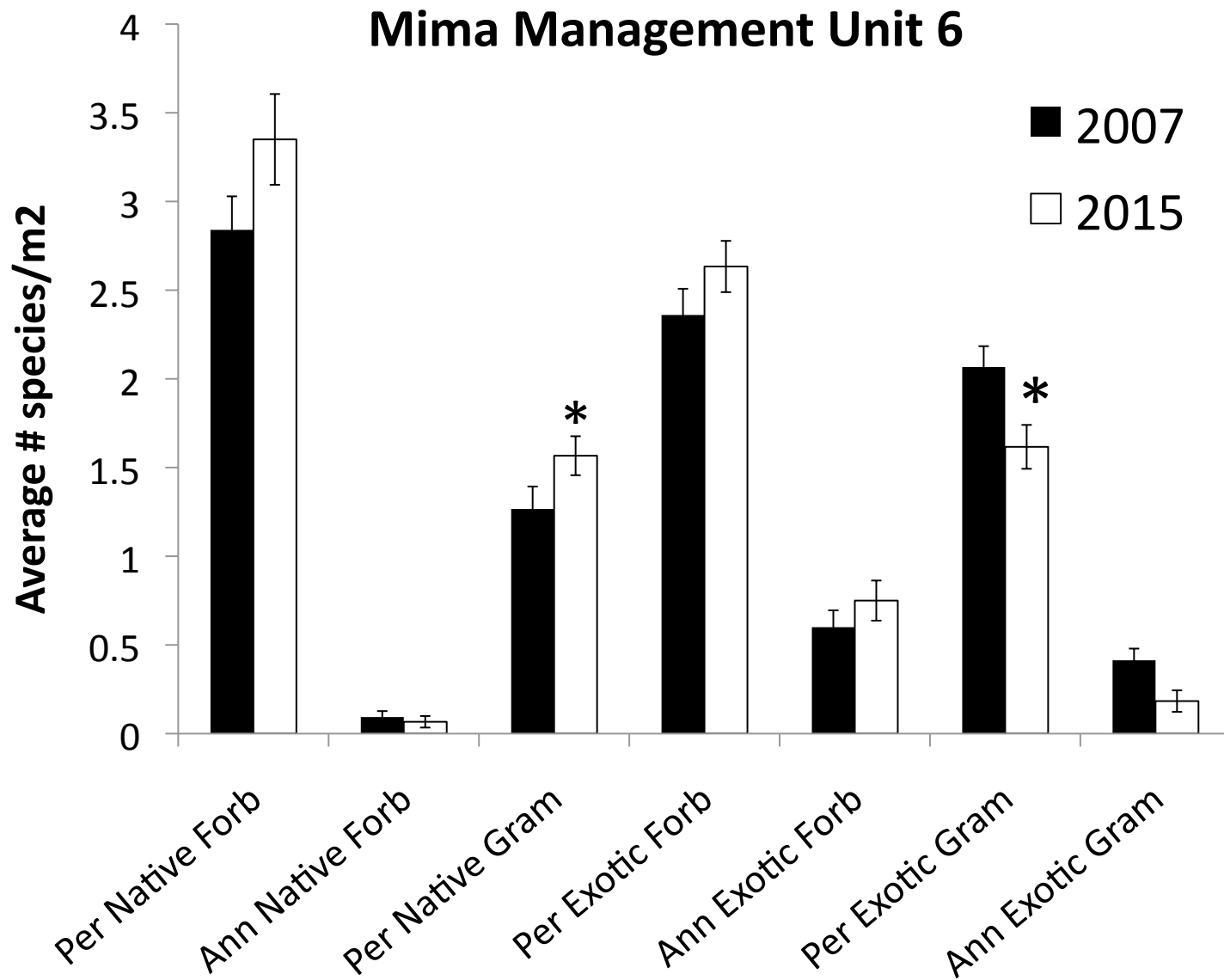


Is Fescue really the whole story?

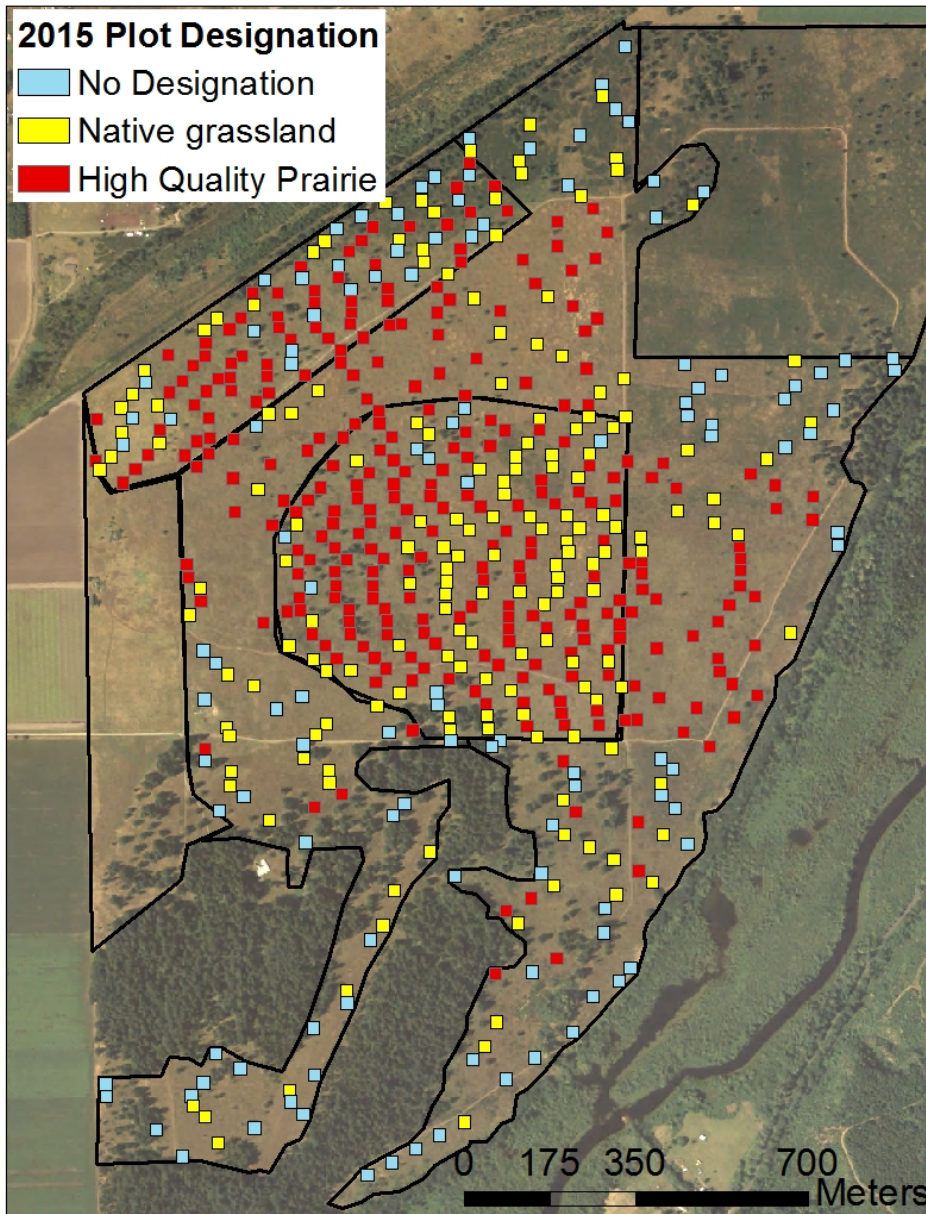
Mima Management Unit 6



Functional group richness



Current Status looks Encouraging



- 564 acres (34% of surveyed area) met native grassland criteria
- 363 acres (22% of surveyed area) met high quality prairie criteria

The Evolution of Monitoring



- Fescue
- Oatgrass
- Scotch broom
- Butterfly hosts abundance
- Bare ground
- Shrub



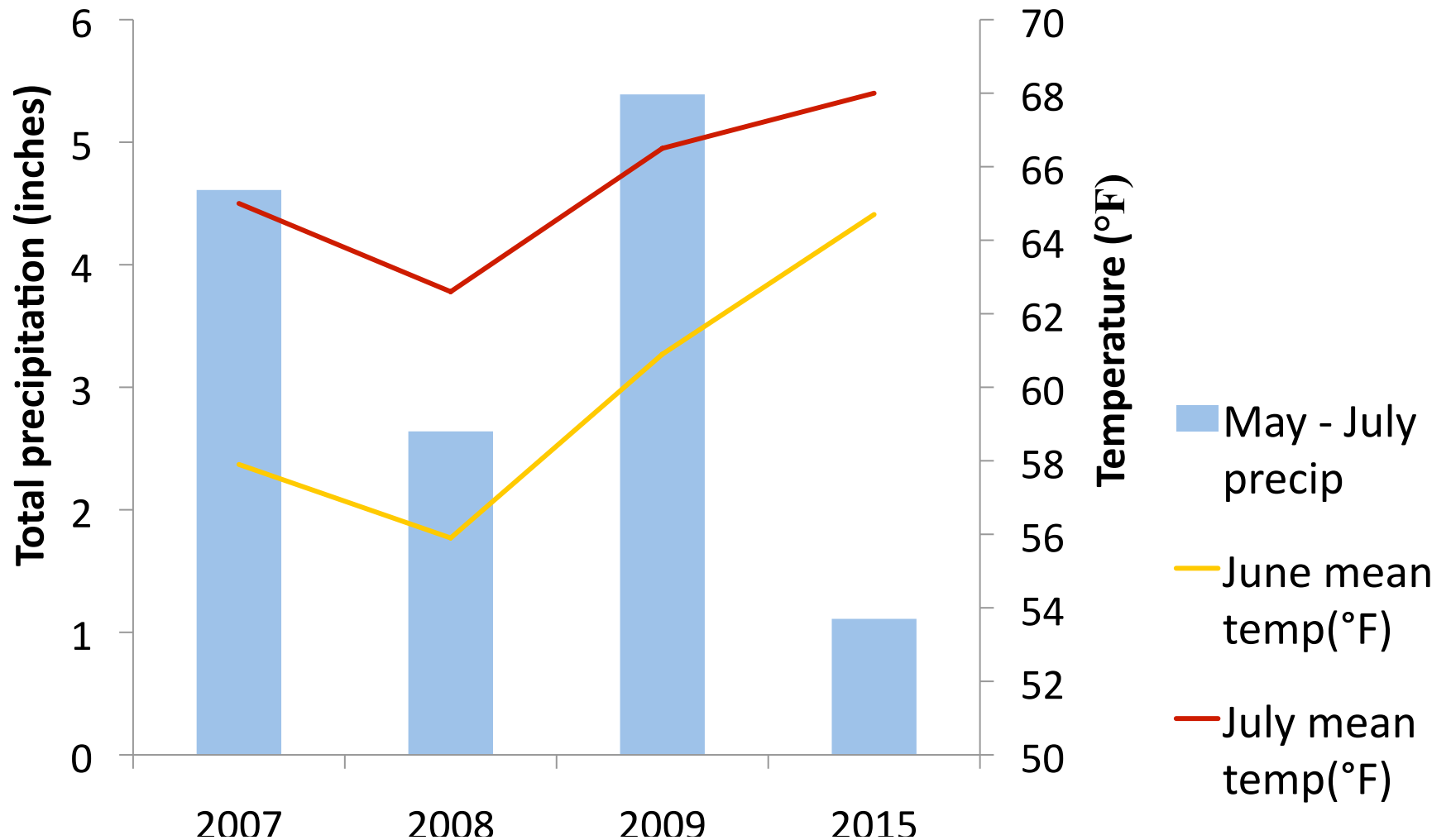
- Total native
- Total native graminoid
- Tree cover
- Open ground
- ~~- Butterfly hosts abundance~~



- Total native forb
- Total non-native graminoid
- What else?

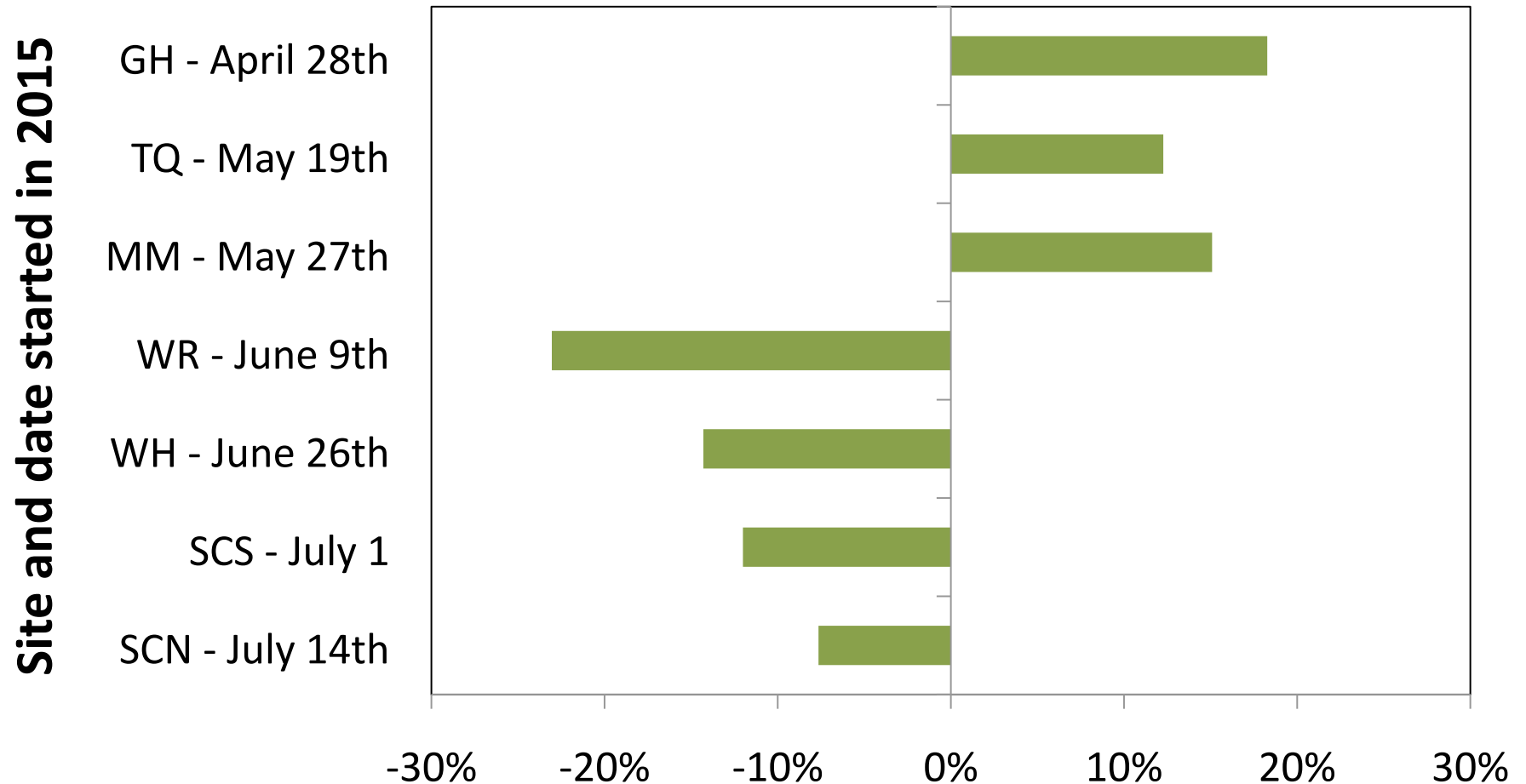
The Phenology Problem

Monitoring Season Precipitation and Temperature



Detectability and phenology

% Difference in species richness between PQM surveys



Take-away message

- Progress with invasive reduction
- Fescue cover and species richness increased at some sites
- Phenology effects detectability
- Monitoring over multiple years may help get a more stable picture of restoration changes.

