Evaluating Roadside Grass Restoration Success After Multiple Decades

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Background

30 roadsides planted with native species between 1993 and 2001 across Yolo County

4 core species used, but mixes varied by site

- ***Stipa pulchra***
- ***Elymus glaucus***
- ***Elymus triticoides***
- ***Hordeum brachyantherum***

9 sites surveyed in 2006 (O'dell et al. 2007), found native grasses to be persisting

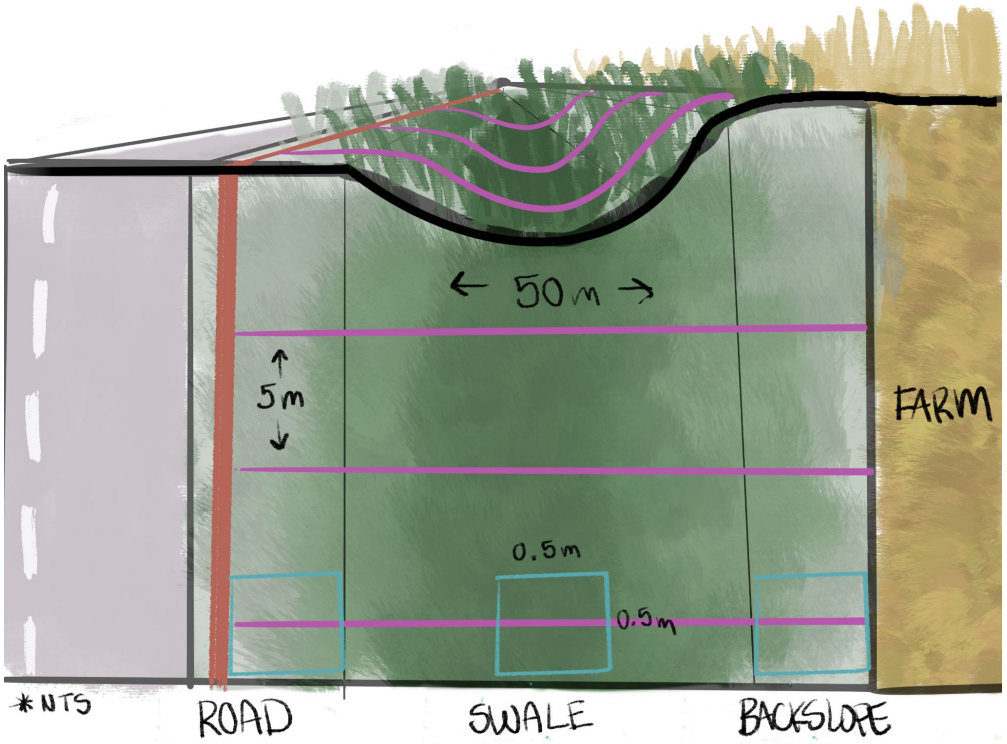
Methods

Vegetation Surveys
6 sites surveyed in spring 2023

60 0.5 Sq Meter quadrats established per site, 3 lengthwise every 5m across two 50m transects.

Identified all plant species in quadrats and evaluated percent cover

Management Interviews
We conducted semi-structured interviews with individuals involved with planting, maintenance, or research(IRB 23-084).



Results

Nonnative cover (mean = 39.8 StDev = 5.4) **was higher than native cover** (mean = 24.9 StDev = 2.7) but comparable with remnant grasslands

Results

Detected **60** species, 14 native and 46 non-native. **2** native grass species remained common -
Stipa pulchra(Mean cover = 8.44%)
Elymus triticoides (=10.26%)

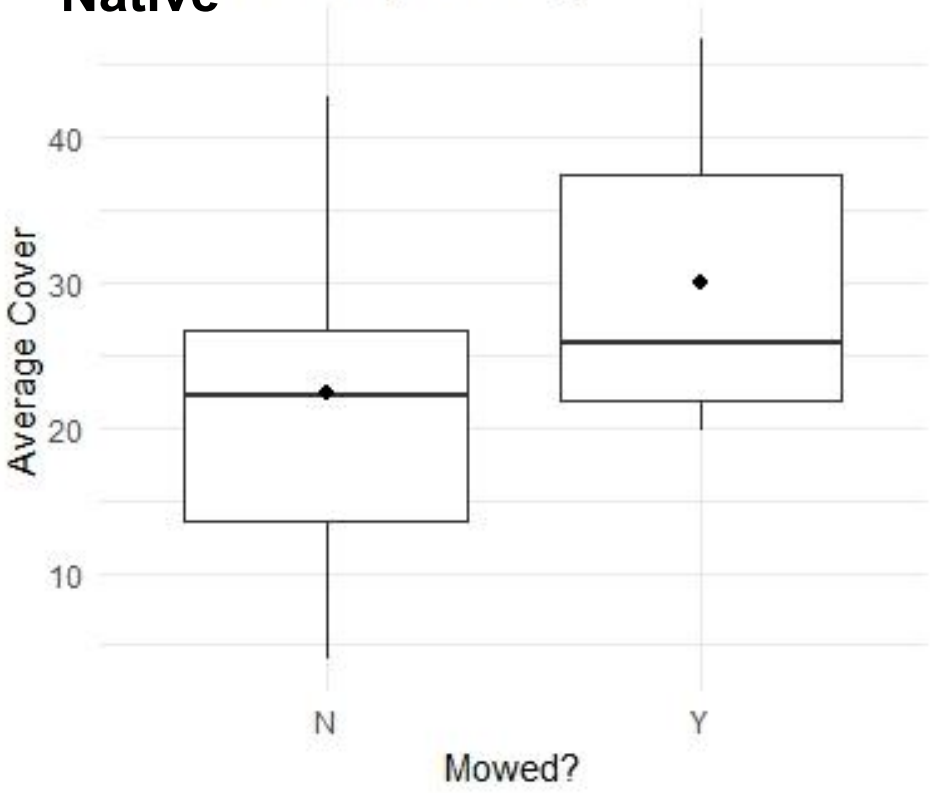
Nonnative flora was dominated by common grassland invaders like
Avena fatua(Mean cover = 4.43%)
Festuca perennis (=3.36%)
Erodium moschatum (=3.52%)

Results

Native cover was highly site dependent($p = 0.01$) while nonnative cover showed no relationship with site($p = 0.1$)

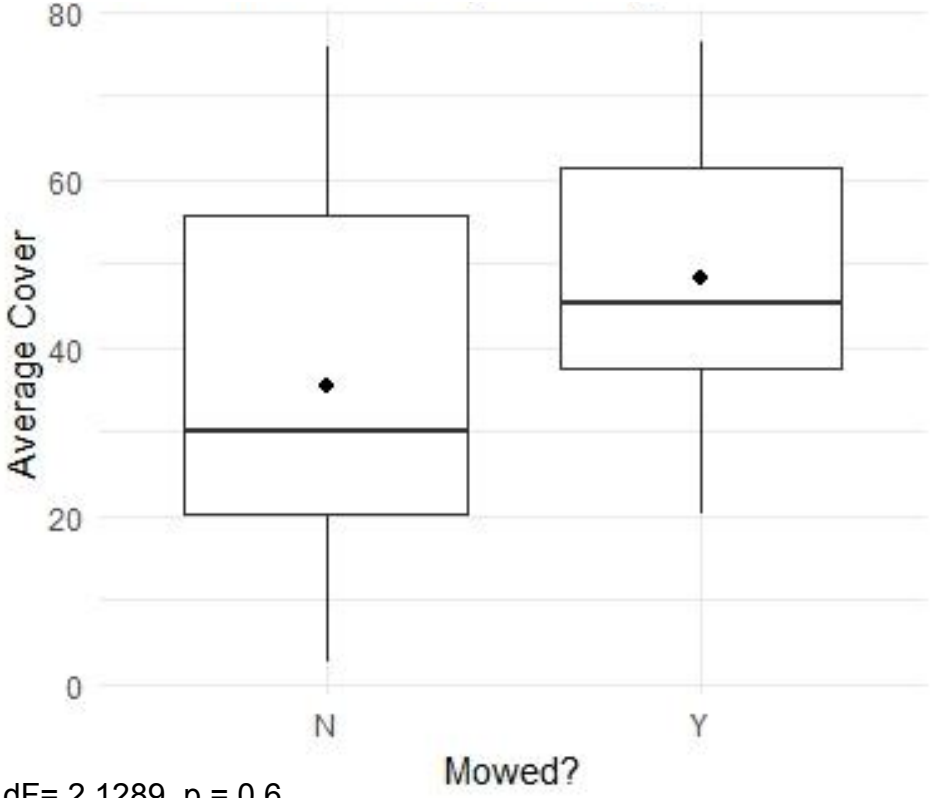
Native cover was higher in mowed quadrats, but nonnative cover showed no significant difference

Native



dF= 3.8851 p = 0.05

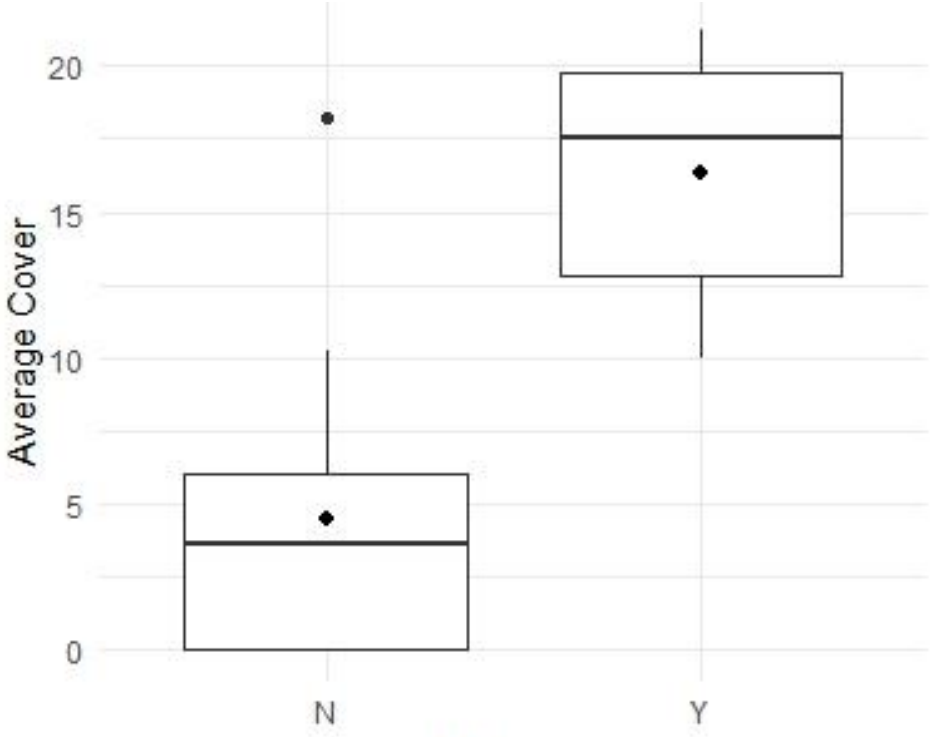
Nonnative



dF= 2.1289 p = 0.6

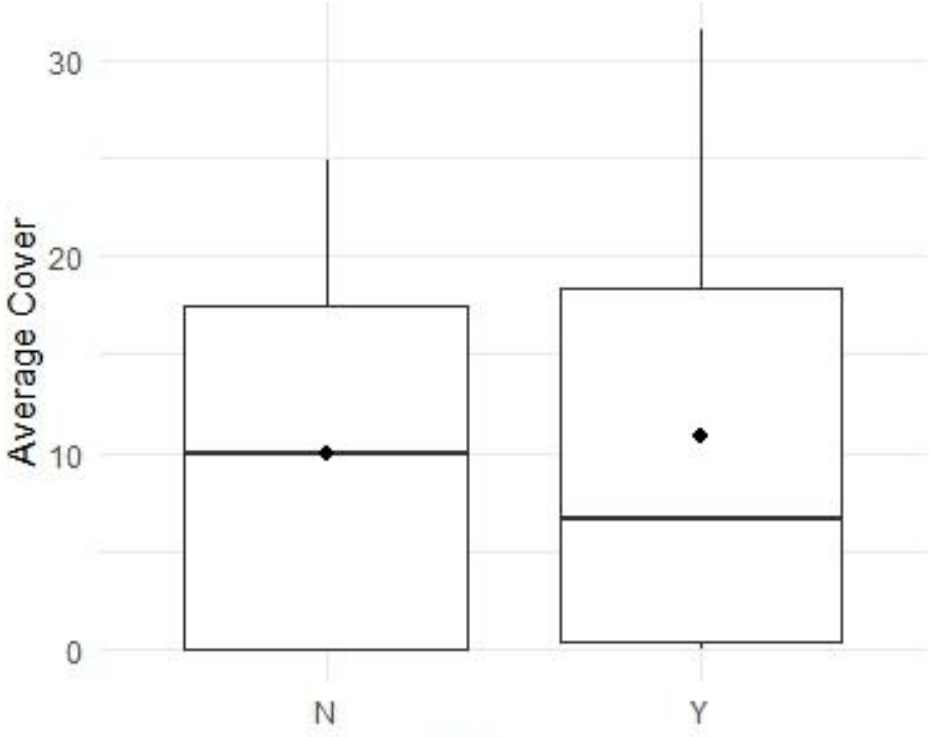
One planted species, S. pulchra, showed a strong positive relationship with mowing while E. triticoides was unaffected

Stipa pulchra



t = -4.7424, df = 11.818, p-value = 0.0002

Elymus triticoides



t = -0.15892, df = 7.9688, p-value = 0.4

Interviews

Interviewed 6 participants

Native cover was higher than majority of participants expected

Biggest challenges identified included

- Maintaining long term management
- Protecting sites from surrounding disturbances

Conclusions

Plantings retained native grass cover but did not keep out nonnative species

Ongoing management, specifically mowing, maintained native cover but did not reduce nonnative cover

Roadside restoration has unique challenges due to the inherently high disturbance landscape and requires coordination between many different stakeholders.