

Interseeding Prairie Forbs into Native Grass Stands

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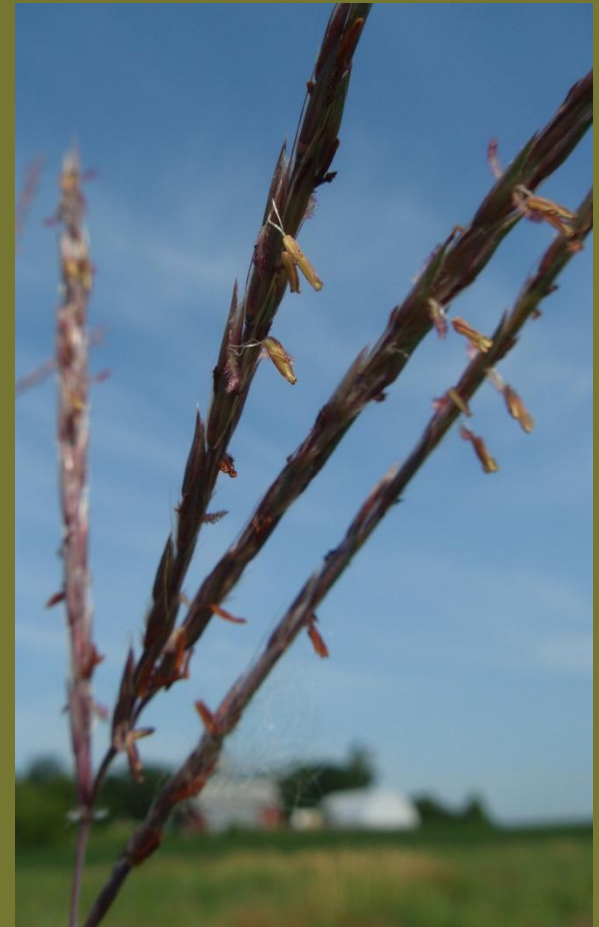


Justification

- Managers want more information about maintaining diversity in grasslands
- Forb rich grasslands provide food and structure for grassland birds
- Many older MNDNR grassland plantings didn't include forbs
- Techniques for effectively establishing forbs would be valuable to managers

Objectives

- Investigate effects of mowing and herbicide treatments on the establishment and persistence of forbs interseeded into established native grasslands
- Investigate effects of the various treatments on insect community abundance

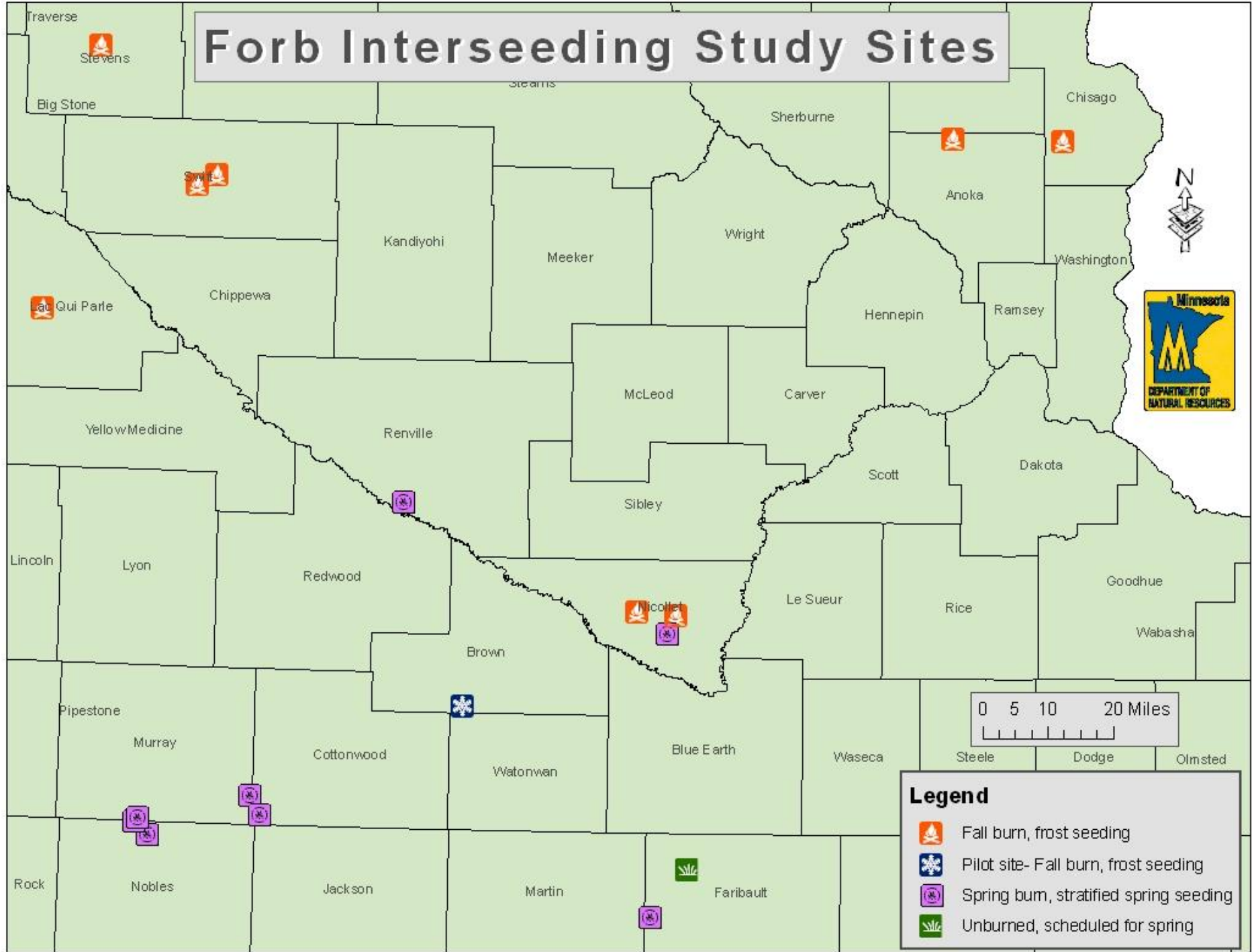


Study Design





- Uniform native grass stands with little or no forbs
- Excludes wetlands
- Must be >10 acres
- 1 pilot site in 1st yr
- 16 study sites in 2nd yr



Forb Interseeding Study Sites



Legend

-  Fall burn, frost seeding
-  Pilot site- Fall burn, frost seeding
-  Spring burn, stratified spring seeding
-  Unburned, scheduled for spring

Site Preparation

- Pilot season on 1 site began in Fall 2008.
- 8 sites were burned in Fall 2009
 - Broadcast frost seeded in Winter 09-10
- 8 sites were burned Spring 2010
 - Seed was cold/moist stratified and interseeded after burn
- Treatments began Summer 2010



Photo by J. B. Bright



Treatments

- Mow: 4-6 in. ONCE when veg. is 10-12 in. tall
- Mow: 4-6 in. TWICE when veg. is 10-12 in. tall
- Grass herbicide (Clethodim) @ 8 oz/acre in late May-early June
- Grass herbicide (Clethodim) @ 16 oz/acre in late May-early June



Study site design

Purple line =
WMA

Red line = site (or
block)

Black line = plots
(1 of 4
treatments or
control)

Yellow lines =
transects

Blue circles =
sampling frame



Study Sites

Control

Grass
Herbicide

Mow

- Each site received all treatments to account for variability between sites
- Each treatment was replicated twice at each site.

Seed Mix of 30 forb species

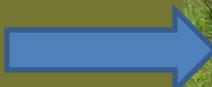



Common Name	Scientific Name
Leadplant	<i>Amorpha canescens</i>
Black eyed Susan	<i>Rudbeckia hirta</i>
Maximilian Sunflower	<i>Helianthus maximilianii</i>
Yellow Coneflower	<i>Ratibida pinnata</i>
Golden Alexanders	<i>Zizia aurea</i>
Sky Blue Aster	<i>Aster oolentangiensis</i>
Canada Milk Vetch	<i>Astragalus canadensis</i>
Prairie Cinquefoil	<i>Potentilla arguta</i>
White Prairie Clover	<i>Dalea candida</i>
Purple Prairie Clover	<i>Dalea purpurea</i>
False Sunflower	<i>Heliopsis helianthoides</i>
Alumroot	<i>Heuchera richardsonii</i>
N. L. Purple Coneflower	<i>Echinacea angustifolia</i>
Prairie Blazingstar	<i>Liatris pycnostachya</i>
Common Milkweed	<i>Asclepias syriaca</i>
Blue Vervain	<i>Verbena hastata</i>
Rough Blazingstar	<i>Liatris aspera</i>
New England Aster	<i>Aster novae-angliae</i>
Prairie Onion	<i>Allium stellatum</i>
Hoary Vervain	<i>Verbena stricta</i>
Heath Aster	<i>Aster ericoides</i>
Stiff Goldenrod	<i>Oligoneuron rigidum</i>
Culver's Root	<i>Veronicastrum virginicum</i>
Showy Tick Trefoil	<i>Desmodium canadense</i>
Wild Bergamot	<i>Monarda fistulosa</i>
Prairie Coreopsis	<i>Coreopsis palmata</i>
Partridge Pea	<i>Chamaechaerista fasciculata</i>
Closed Bottle Gentain	<i>Gentiana andrewsii</i>
Heart Leaf G. Alexander	<i>Zizia aptera</i>
Brown Fox sedge	<i>Carex vulpinoidea</i>

Vegetation Sampling

Baseline Data collected

Prior to treatments:

- V.O.R. (Robel et al. 1949) 
- Litter depth
- % cover (Daubenmire 1959)
- Presence/absence 



Preliminary Findings

Control
No
treatment



Herbicide
High rate

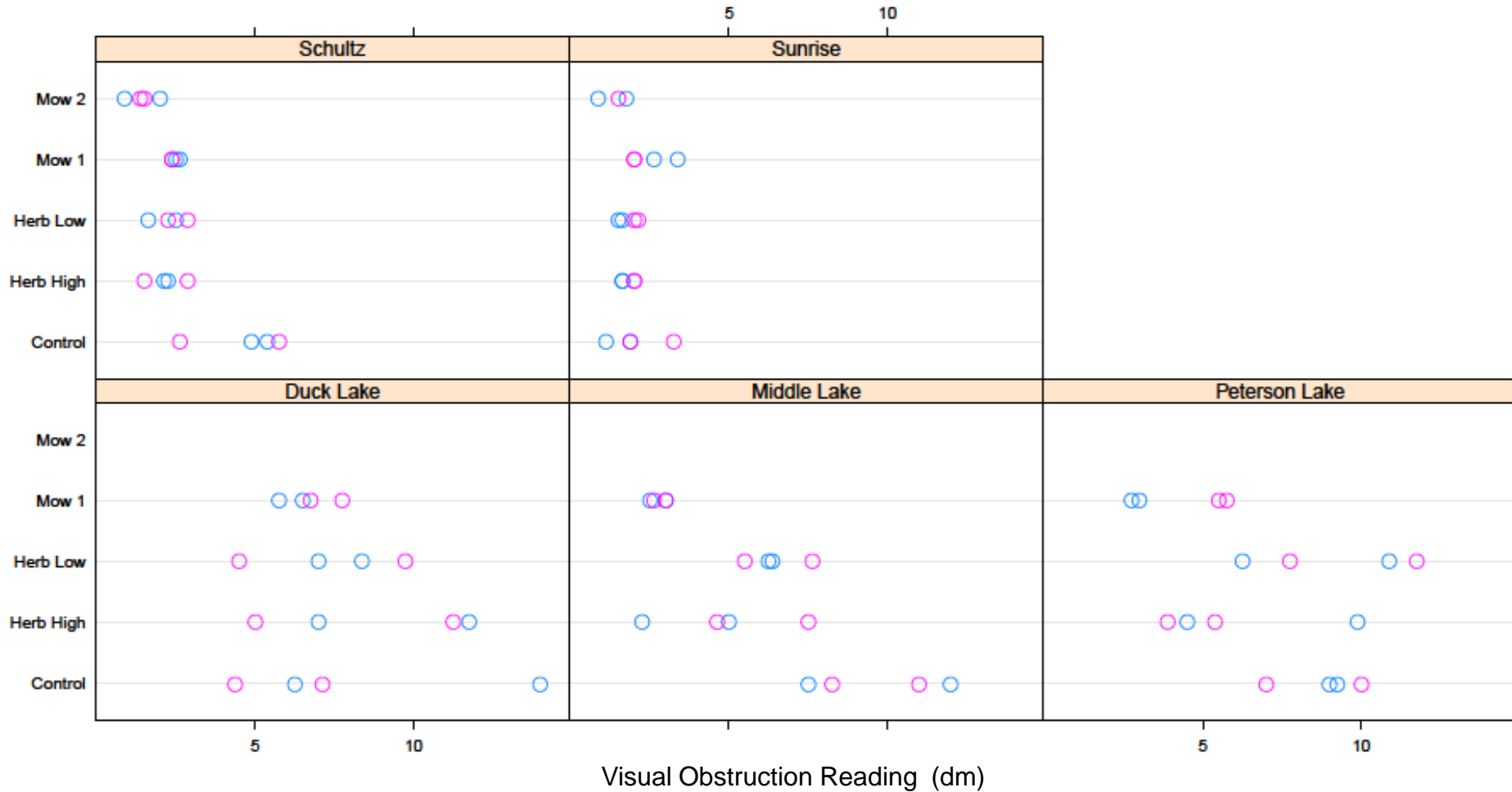
Preliminary Findings



Preliminary Findings

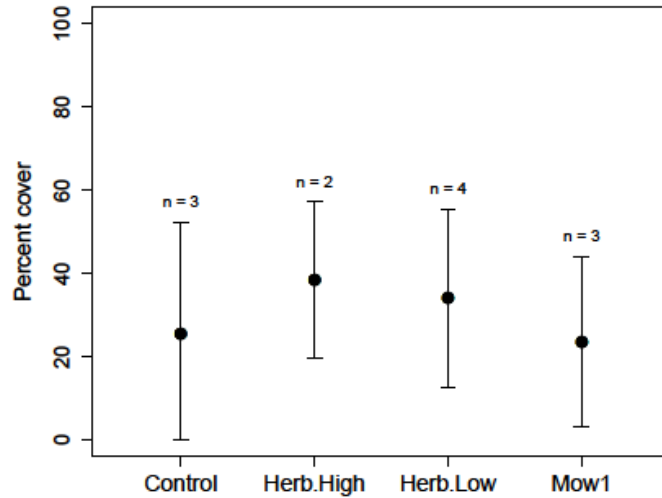
- Results vary by site.
- Herbicide rates did suppress grass at most sites, especially those with sandy/poor soils.
- Herbicide treatments did not appear to suppress grass at some sites.
- Could be related to soils or cultivars
- Higher rates may be needed with richer soils.

Mean VOR - 5 Study Sites

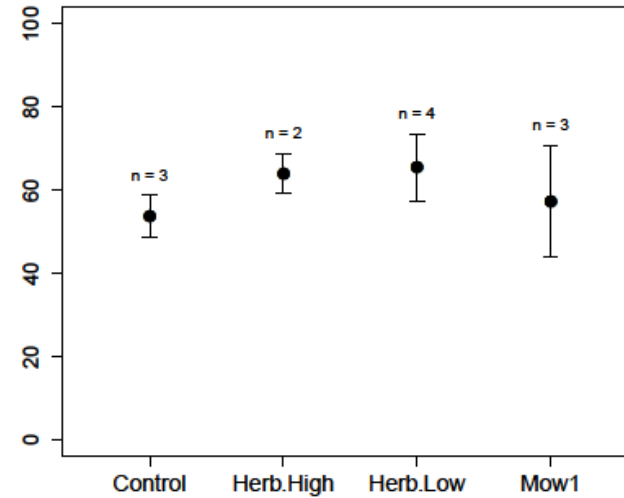


Pilot Site Early Data

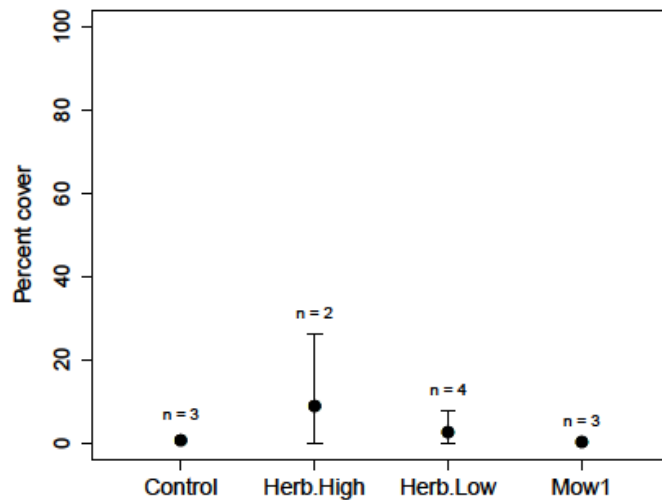
Forbs (all)



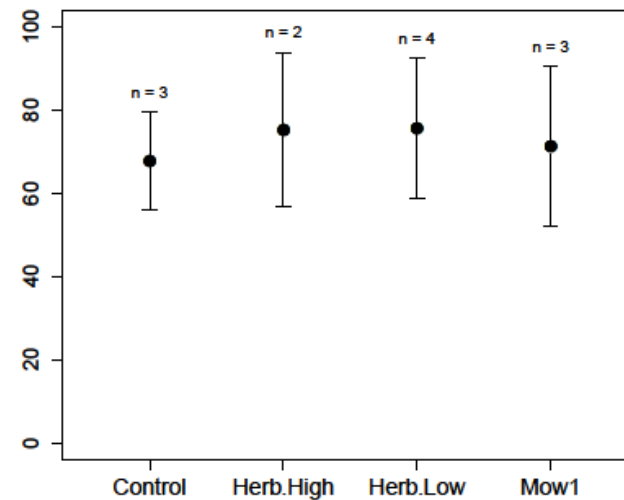
Grasses (all)



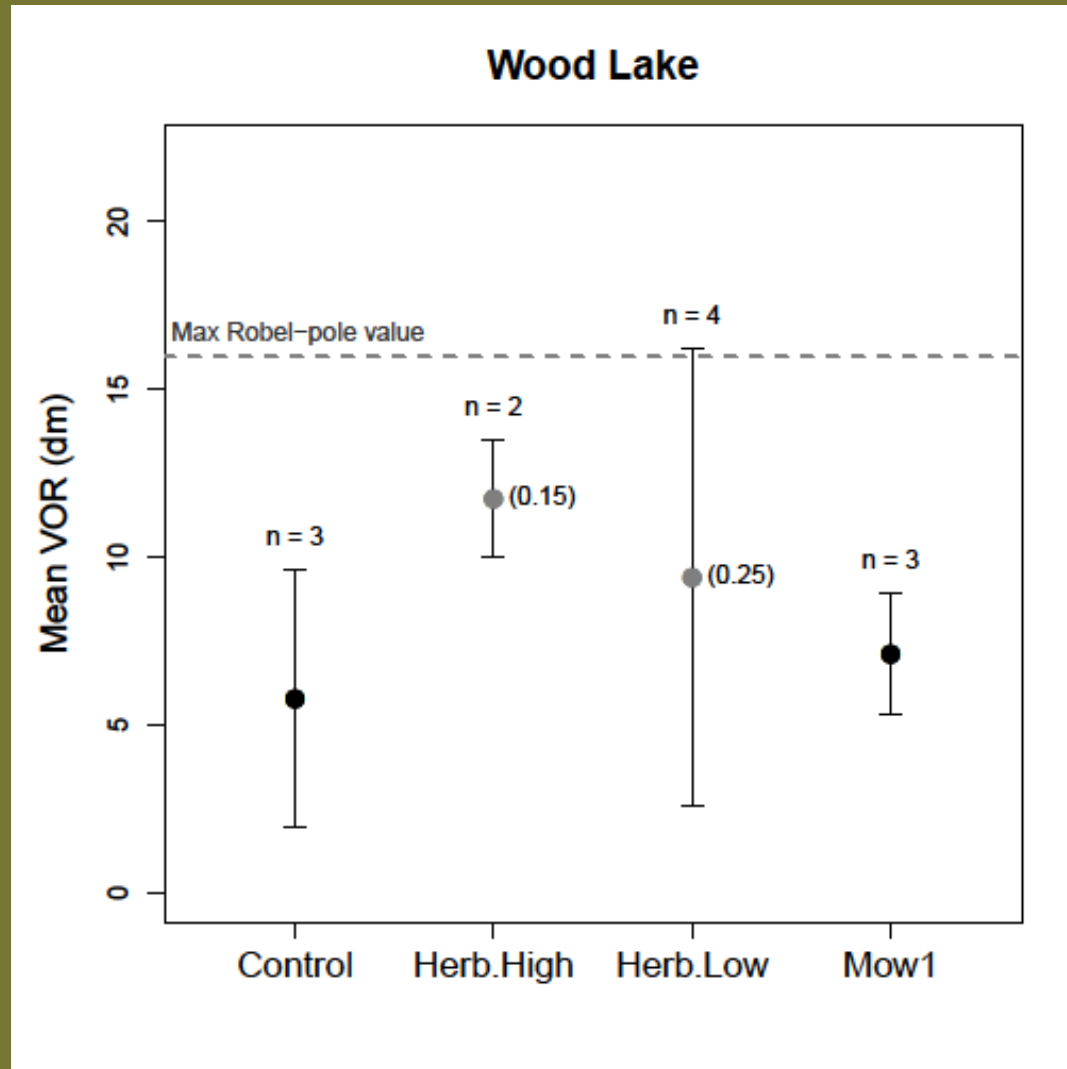
Other veg



Bare ground + duff



Mean VOR - Pilot Site



Lessons Learned

- Take care of your weeds before you interseed!
- As vegetation gets taller, mean VORs get more variable.
 - Will add additional sample points next year.
- Lots of site to site variation- need to have all treatments replicated at all sites.
- Use of grass selective herbicide will set native grasses back but not kill them.
 - Applications in the control of RCG and use in seed production plots.
- The treatment plots created a mosaic of habitat for grassland nesting birds.

Beaver Falls Site Visit

- Vegetation survey was conducted Aug 2009
 - Canada/Giant goldenrod present in 77.5% of plots
 - Switchgrass present 75% of plots
 - Sweet clover present in 72.5% of plots
 - Swamp aster present in 25% of plots
 - Smooth brome present in 52.5% of plots



Beaver Falls Site Visit



Spring 2010 prior to study



Post burn April 2010



Burned April 2010



Broadcast seeding April 2010

Special Thanks

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Questions?

