# South County Grasslands Project

## Otay Tarplant *(Deinandra conjugens)* Restoration Project

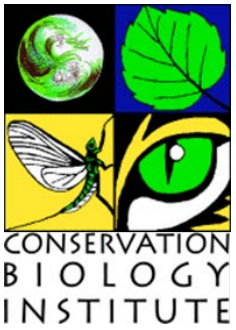


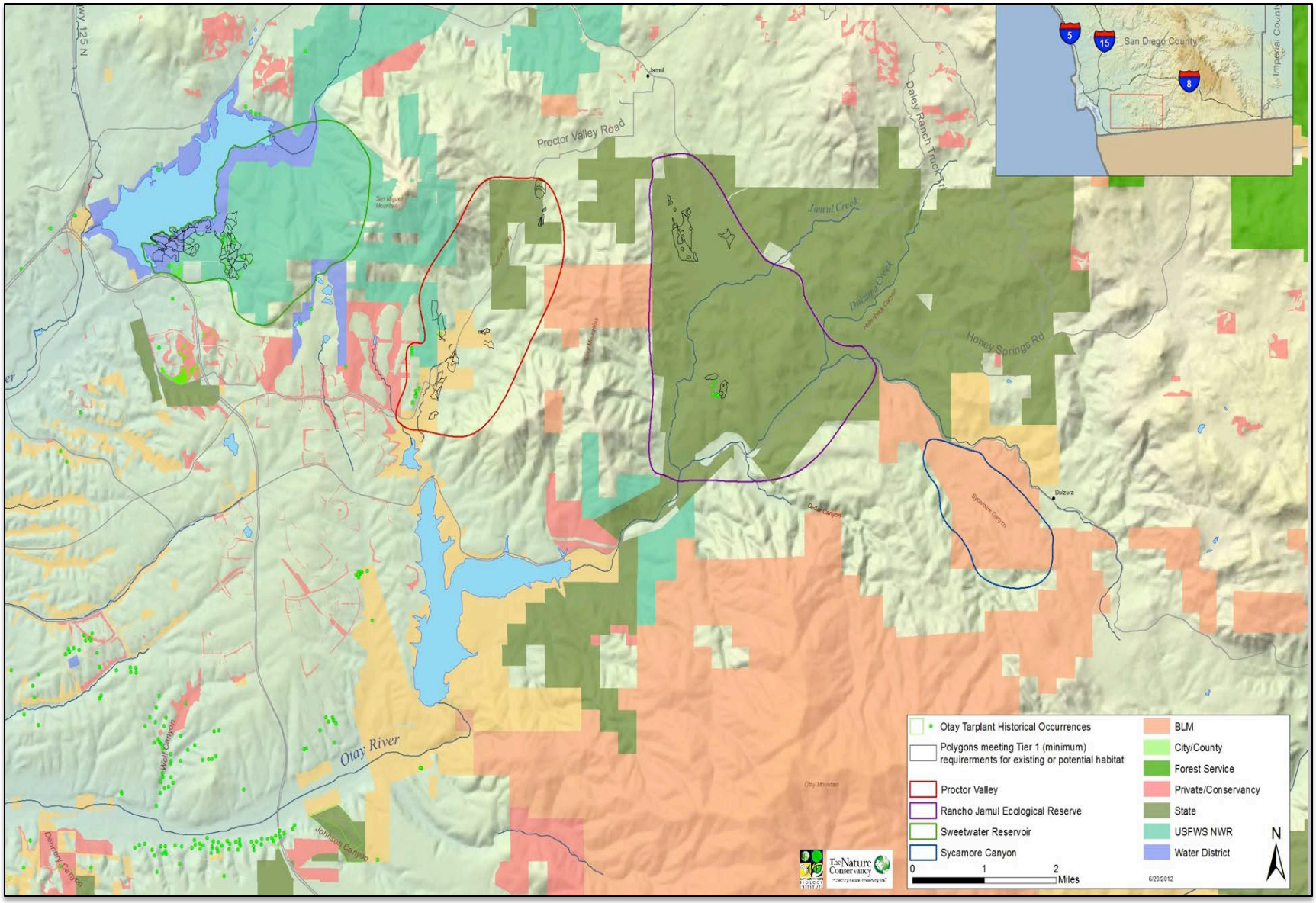











Otay Tarplant Historical Occurrences
Polygons meeting Tier 1 (minimum) requirements for existing or potential habitat
Proctor Valley
Rancho Jamul Ecological Reserve
Sweetwater Reservoir
Sycamore Canyon
BLM
City/County
Forest Service
Private/Conservancy
State
USFWS NWR
Water District
0 1 2 Miles
6/20/2012
N
San Diego County
Imperial County
Proctor Valley Road
Jamul
Jamul Creek
Dulzura Creek
Honey Springs Rd
Otay River
Otay Mountain
Dulzura
Sycamore Canyon
Johnson Canyon
Dennery Canyon
West Canyon
Hollenbeck Canyon
The Nature Conservancy

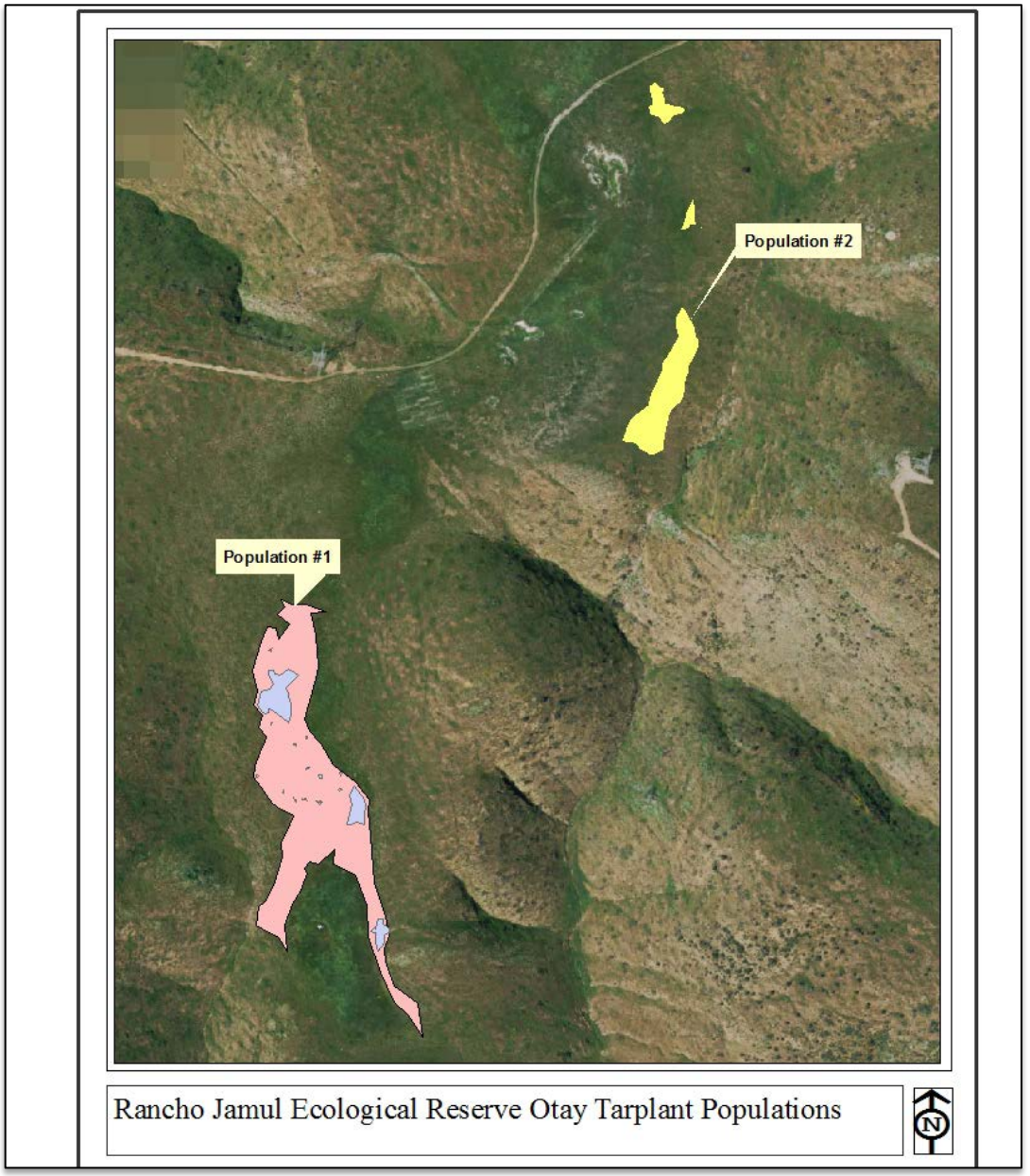
# Otay Tarplant

**Federally Threatened; State Endangered**

**San Diego County MSCP: Narrow Endemic/Covered Species**

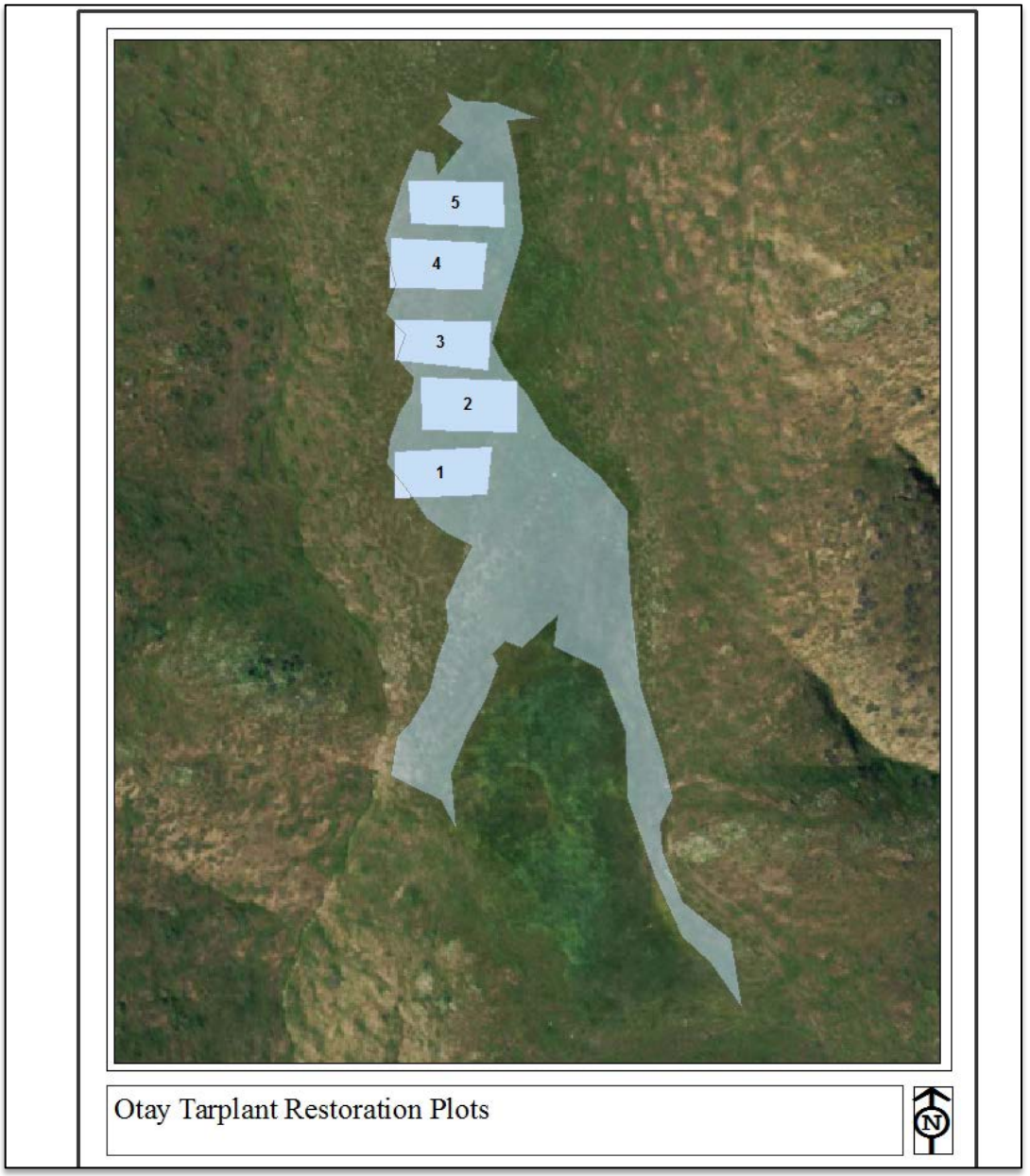
# Otay Tarplant Status and Project Goal

- 34 extant Otay tarplant occurrences.
- Rancho Jamul: Population history.
- Nonnative grasses are the primary threat.
- Project Goal: Otay tarplant seedbank response using various restoration techniques.



# Restoration Project Components

- Project is ~0.8 acre in size.
- October 2012 prescribed burn in half of population.
- 5 blocked experimental plots in burned portion.
- Restoration treatments and timing.
- Data collection.



# Otay Tarplant Habitat Pre-Burn

# Otay Tarplant Habitat Post-Burn

## Treatment


## Photographs


# Control and Mow Plots

## Control Plot


## Mow Plot

# Herbicide and Line Trim Plots

## Herbicide Plot


## Line Trim Plot

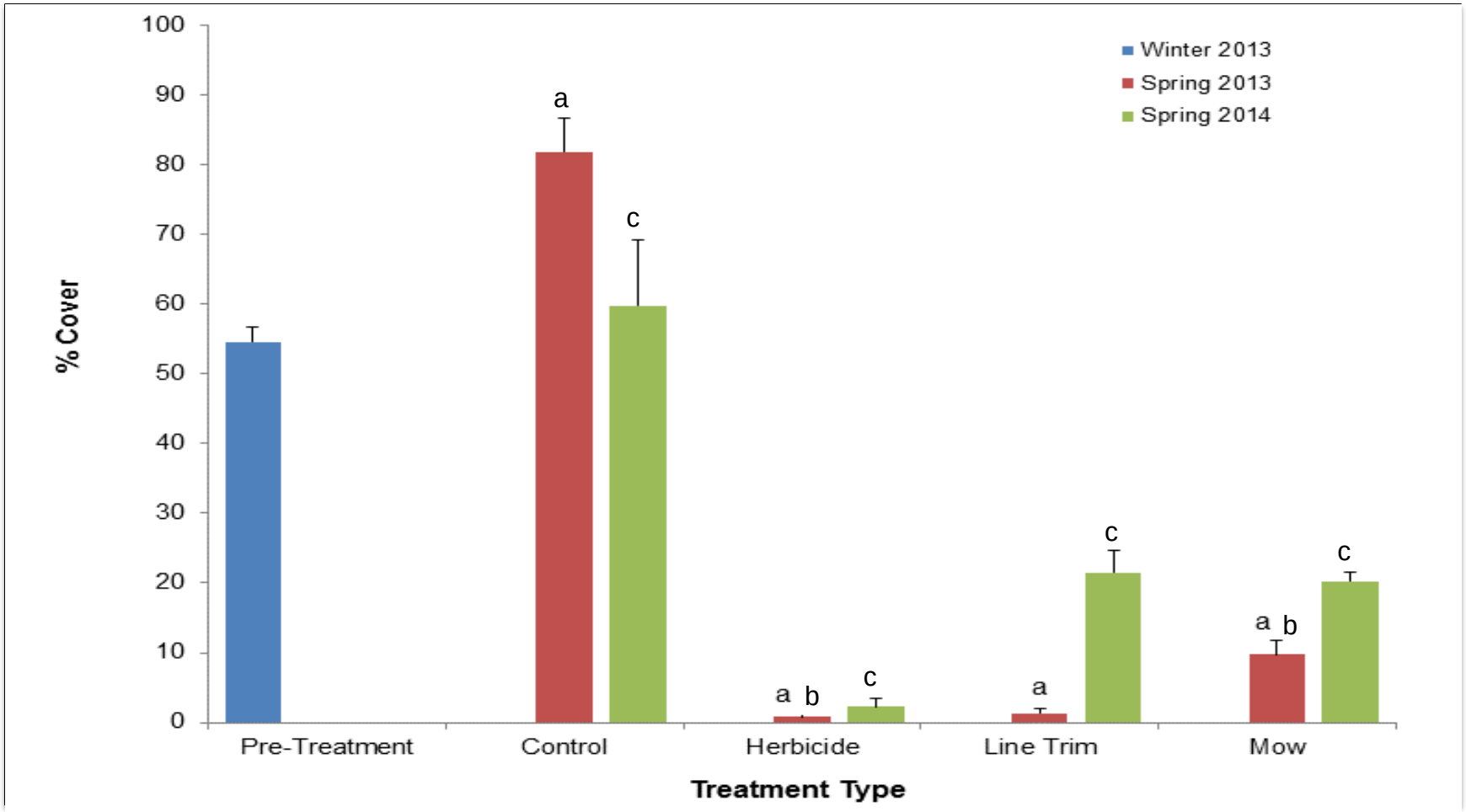
# Analytical Methods

1. Treatment Comparisons: Pre-treatment % cover block differences and post-treatment (2013 and 2014) % cover and species richness.
2. Statistical Analysis:
   - evaluated independent variables for normality (bell-shaped curve);
   - data were not normally distributed even with transformation (used non-parametric Kruskal-Wallis statistical test ~ANOVA);
   - conducted post-hoc pairwise multiple comparison analysis = not able to determine which pairwise comparisons are different.

# Otay Tarplant Results

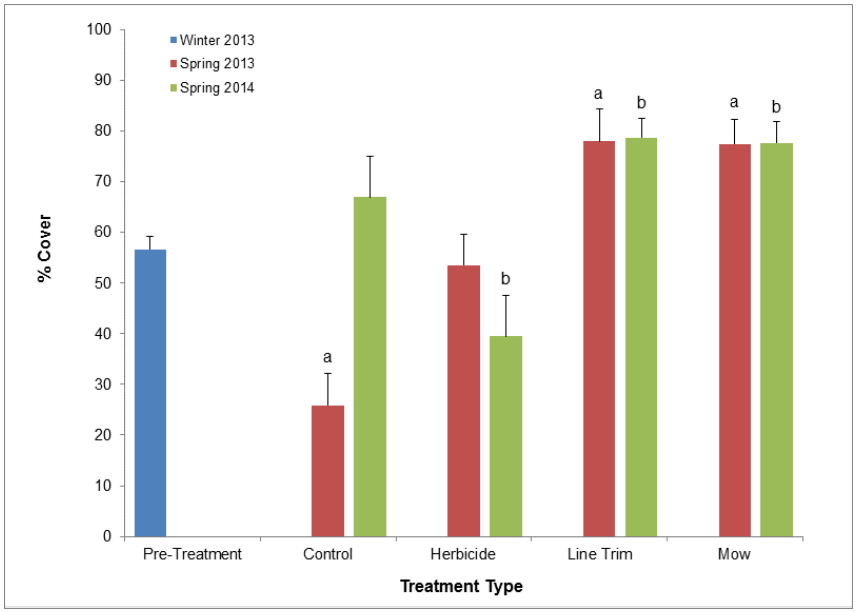
- No Otay tarplant detected in 2013.
- Eleven (11) Otay tarplant detected in 2014.
- 1 year lapse in germination post-treatment.
- Otay tarplant found in herbicide and line trim treatments (4 plants in total), rest found outside of the plots, but within treated areas. No Otay tarplant found in the control plots.

# Mean (±SE) % *Avena* sp. Cover

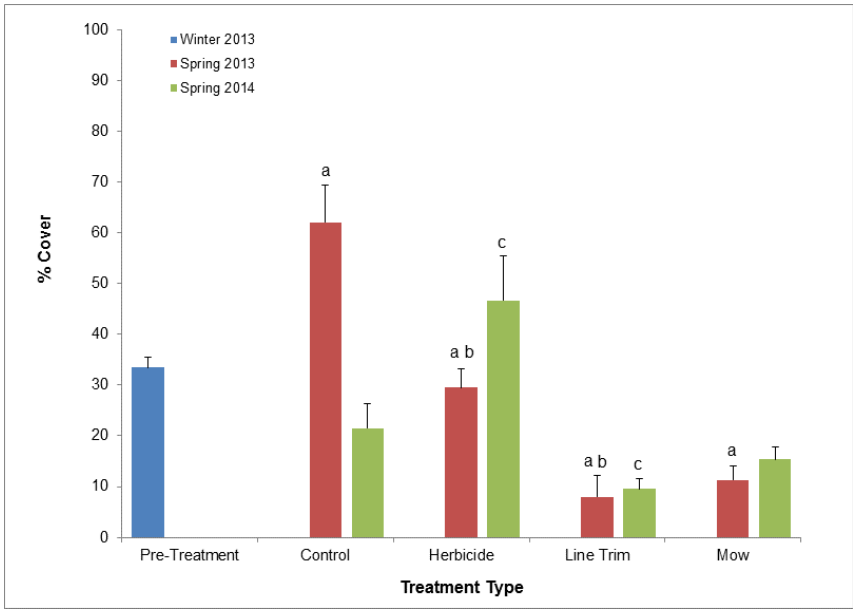


# Litter and Bare Ground

## Mean (±SE) % Cover Litter



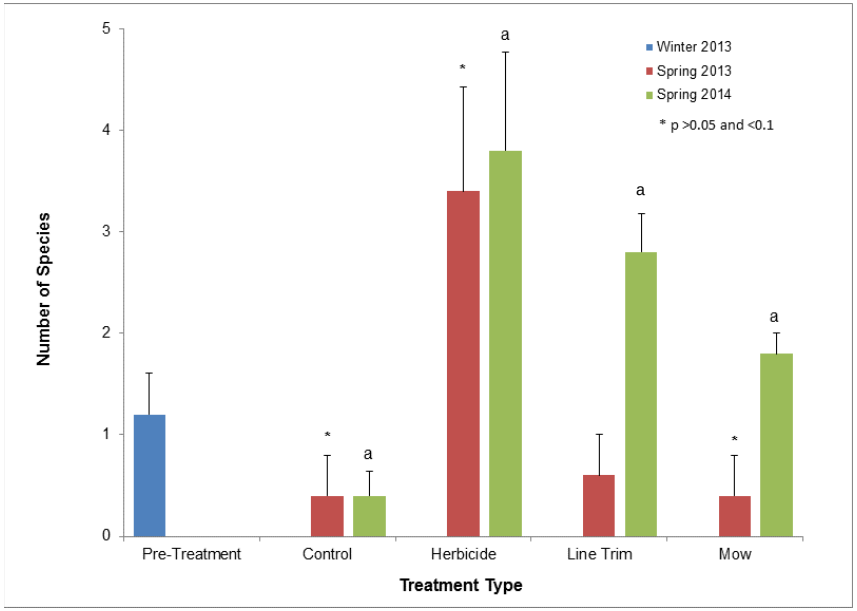

## Mean (±SE) % Cover Bare Ground



# Nonnative and Native Forbs

## Mean (±SE) Number of Nonnative Forbs

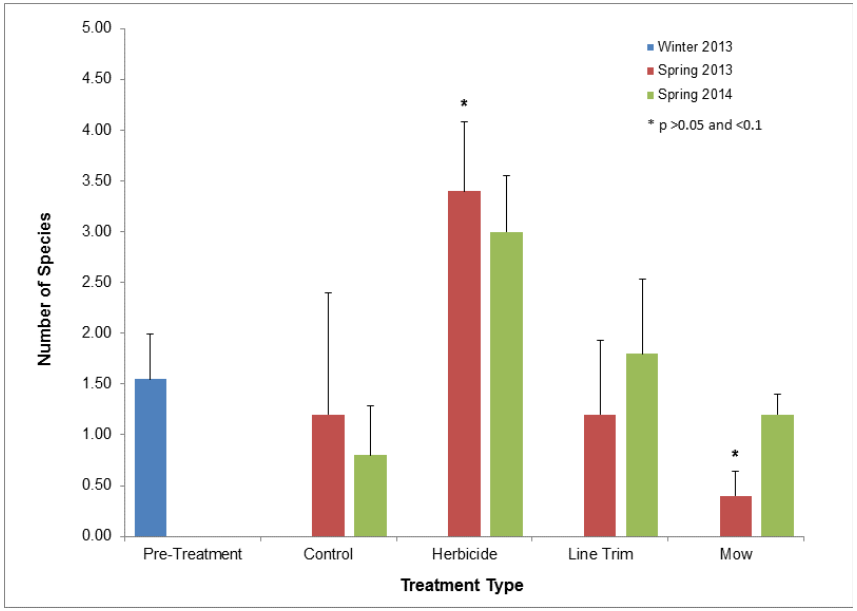
## Mean (±SE) Number of Native Forb Species



# Nonnative and Native Plants

## Mean (±SE) Number of Nonnative Plants (Grasses and Forbs)

## Mean (±SE) Number of Native Plants (Grasses and Forbs)



# Labor

| Method | Total Time (mins.)/Plot (.04-acre) | # Hours/Treat 1 Acre |
|---|---|---|
| Herbicide (Mule + Back Pack Applications) | 17.2 | 7.16 |
| Herbicide (Back Pack Only Applications) | 29 | 12 |
| Mow | 7 | 2.9 |
| Line Trim | 18 (2 people) | 7.5 (2 people) |

# Summary

- Post-fire in *Avena* sp. dominated habitat: it's better to do something rather than nothing if control of *Avena* sp. is the goal.
- Take advantage of the "clean slate" produced post-fire.
- Mowing is the quickest method.
- Application of herbicides using a Mule and spot treatments, applied with a back pack sprayer, is the second quickest method (barely).
- Herbicide method yields greatest control and other "Otay tarplant habitat benefits."

# Recommendations

1. Contingency funding allowing for two annual treatments (in the case of a late rainfall event).
2. 2013 and 2014 were dry years. Continue the treatments for at least 1-2 more years to determine the effects in normal or above normal rainfall years, to determine if the labor hours per treatment increase, and to monitor any additional Otay tarplant response post-treatment.
3. Monitor the plots for at least 6-7 additional years (total of 10 years) to determine the sustainability of the treatment effects.

# Questions?