

Project 467:
Restoring and Enhancing Native Plant
Diversity and the “Coefficient of
Beauty” at Edgewood Natural Preserve



Edgewood Natural Preserve



Saved from a golf course (Whew!)
Save Edgewood
Park morphed
into Friends of
Edgewood in
1993
Very high
capacity Friends
group



Project 467



Project 467: Protecting Every Acre

Bay Checkerspot Butterfly

Reintroduction



Drive-by extinction 2002
Reintroduction 2007-19:
Hanging in there,
population in low
hundreds

Drought, warming, small
habitat, and nitrogen
deposition make for an
uphill battle

Mowing passes the “O-test”



Acanthomintha duttoni: Thornmint



2009: 249 plants in 1 site

2019: 25,000 plants in 6 sites

2019: < 50 in original occupied habitat

Pentachaeta bellidiflora



OKO across 280
Feasibility study
underway to
expand at
Edgewood

Looking Beyond the Serpentine to Fertile Grasslands



Fertile Grasslands: Weed Management



Macroweeds are on the run: YST, Italian thistle, teasel, others reduced to EDRR across most of Preserve – tens of thousands of volunteer hours

Project 467

Green Grass Goals

- Reduce non-native annual grass and forb cover
- Increase native cover
- **OCCUPY SPACE WITH NATIVE PERENNIALS**
- Develop site-specific “recipes”
- Propagate key species by seed
- Long-term (decades)



“Micro-weeds”

Brachypodium distachylon



Other annual grasses, forbs

Mowing



Species-specific timing

Green Grass Mowing experiments

- Works well in serpentine grassland, implemented rotational mowing for Bay checkerspot habitat
- Target *Avena*, increase *Brachypodium*
- Target *Brachypodium*, increase non-native forbs (*Erodium*, *Hypochaeris*, etc.)
- Weed of the Month Club

Hydromechanical “Pulverization” (nee Obliteration)

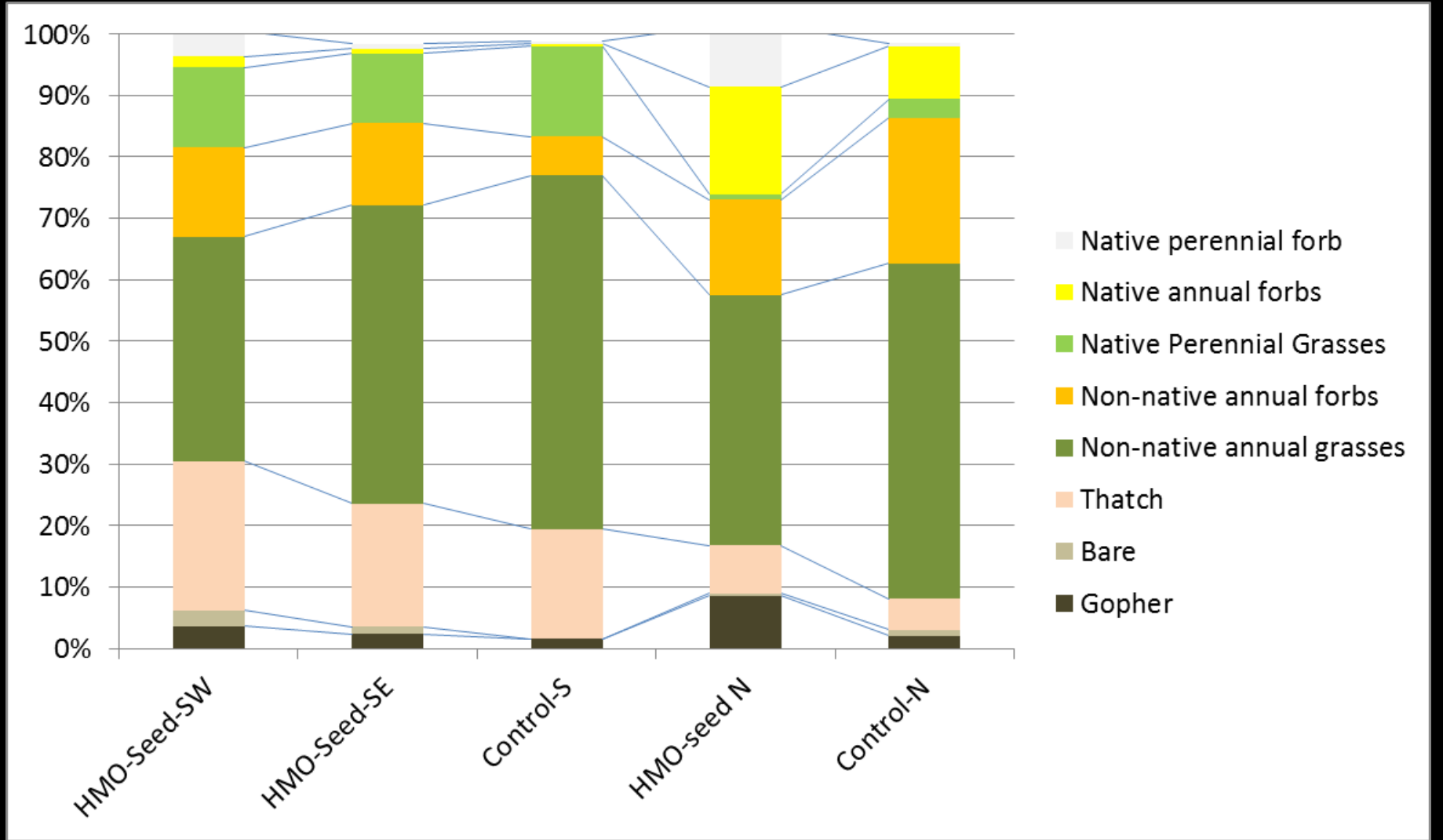


LAWNOUT.mov

HMP + Seed 2012 Results in 2018



HMP-Seed Results 5-years later



Green Grass

HMP-Seed Results Elsewhere

- Eliminate post-germination annuals in early growing season
- Existing native perennials expand in response to lack of competition
- Can see results from hundreds of yards away
- *Ranunculus* – *Sisyrinchium* – *Stipa* progression
- Creates good seed-bed for natives

Seed Collection and Amplification “Indigenous” approach

- Collect seeds
- Grow initial cohort *ex situ* to amplify
- Raised beds in Edgewood ~ 560 ft in 2019-2020
- Collect amplified seeds at end of season
- Plant seeds in treated plots in fall 2020
- Continue with raised beds and....
- Use restored areas as local seed source for expansion

212 volunteer hours!

Common	Scientific	# seeds	Wt (g)
Big Squirrel Tail Grass	<i>Elymus multisetus</i>	*	
Blue-eyed Grass	<i>Sisyrinchium bellum</i>	15,000	29
California Oatgrass	<i>Danthonia californica</i>	9,000	46
California Poppy	<i>Eschscholzia californica</i>	3,210	5
Clarkia, Ruby Chalice	<i>Clarkia rubicunda</i>	17,640	6
Common Madia	<i>Madia elegans</i>	3,400	
Cream Sacs	<i>Castilleja rubicundula</i> ssp. <i>lithospermoides</i>	1,900	18
Fringed Checkerbloom	<i>Sidalcea diploscypha</i>	3,000	+8
Golden aster	<i>Heterotheca sessiliflora</i> ssp. <i>echioides</i>	*	
Harvest Brodiaea	<i>Brodiaea elegans</i> ssp. <i>elegans</i>	4800	4
Lupine, Miniature/Bicolor	<i>Lupinus bicolor</i>	2790	18
Lupine, Summer	<i>Lupinus formosus</i> var. <i>formosus</i>	20	<1
Mariposa Lily, Clay	<i>Calochortus argillosus</i>	1600	2
Mariposa Lily, Yellow	<i>Calochortus luteus</i>	3700	3
Milkweed	<i>Asclepias fascicularis</i>	*	
Mule Ears, Narrow Leaf	<i>Wyethia angustifolia</i>	5040	55
Mule Ears, Smooth	<i>Wyethia glabra</i>	980	18
Soap Plant	<i>Chlorogalum pomeridianum</i>	3325	16
Yarrow	<i>Achillea millefolium</i>	119,067**	159)

Green Grass

Native Annuals

Clarkia rubicunda



Zeltnara muehlenbergii



Green Grass

Native Annuals

Plantago erecta



Plectritis sp.



Native Grasses

Stipa lepida



Mellica californica



Native Geophytes

Calochortus argillosus

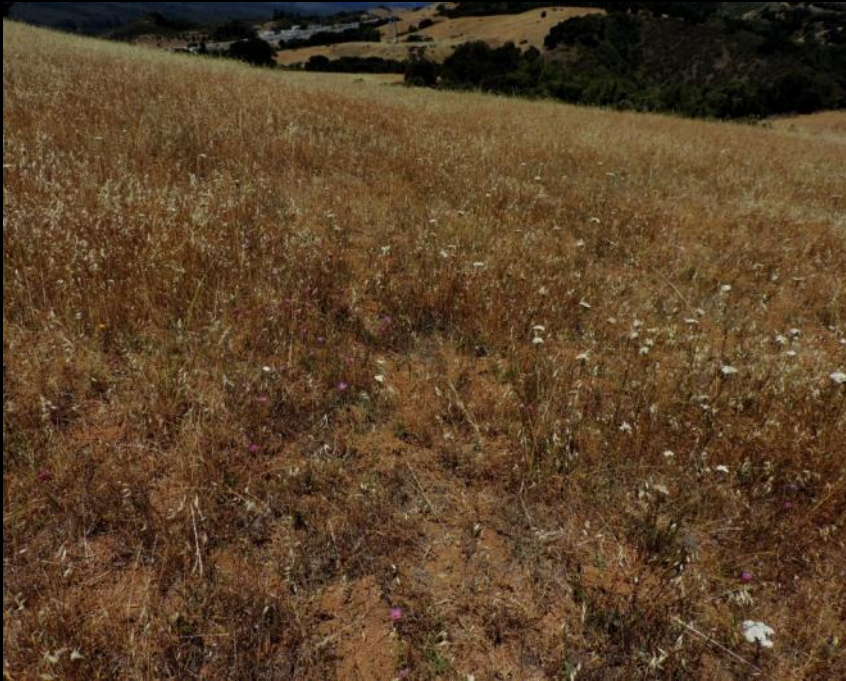


Calochortus luteus



Native Perennial Forbs

Achillea millefolium



Asclepias fascicularis



Native Perennial Forbs

Lupinus formosus



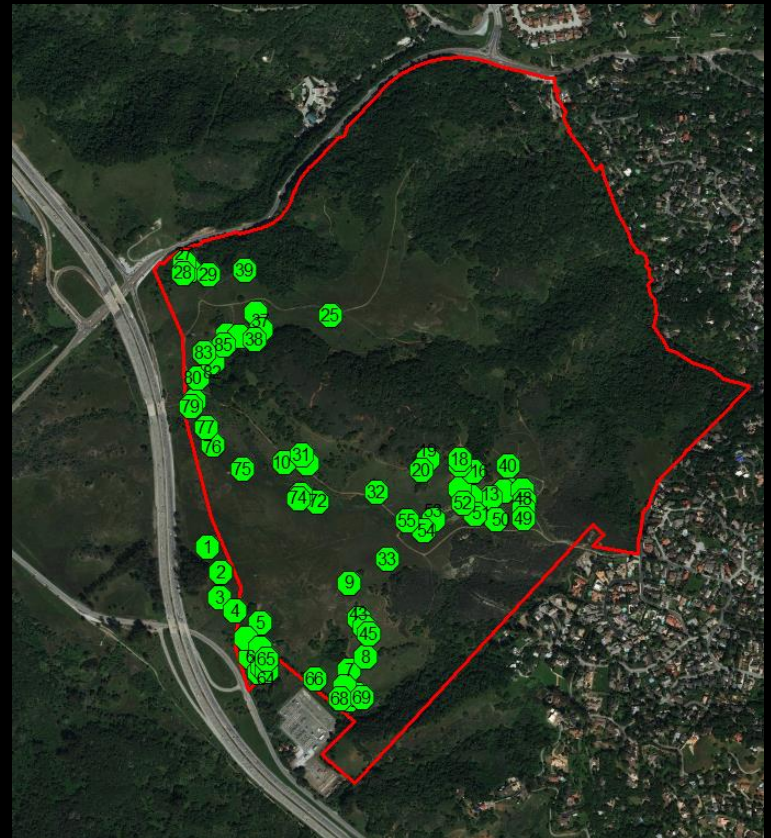
Wyethia angustifolia



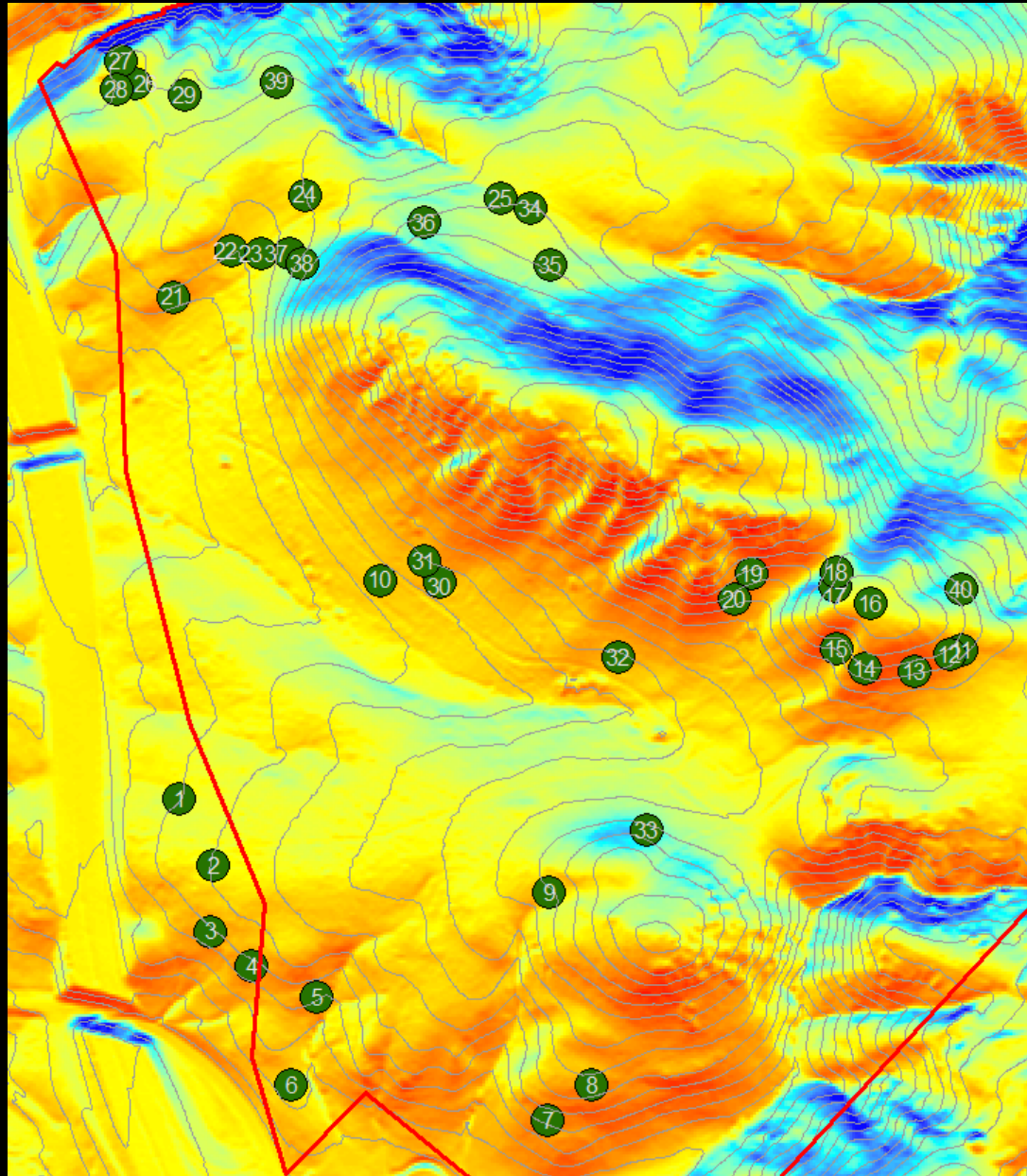
Rapid Assessment Plots

What is out there, and where?

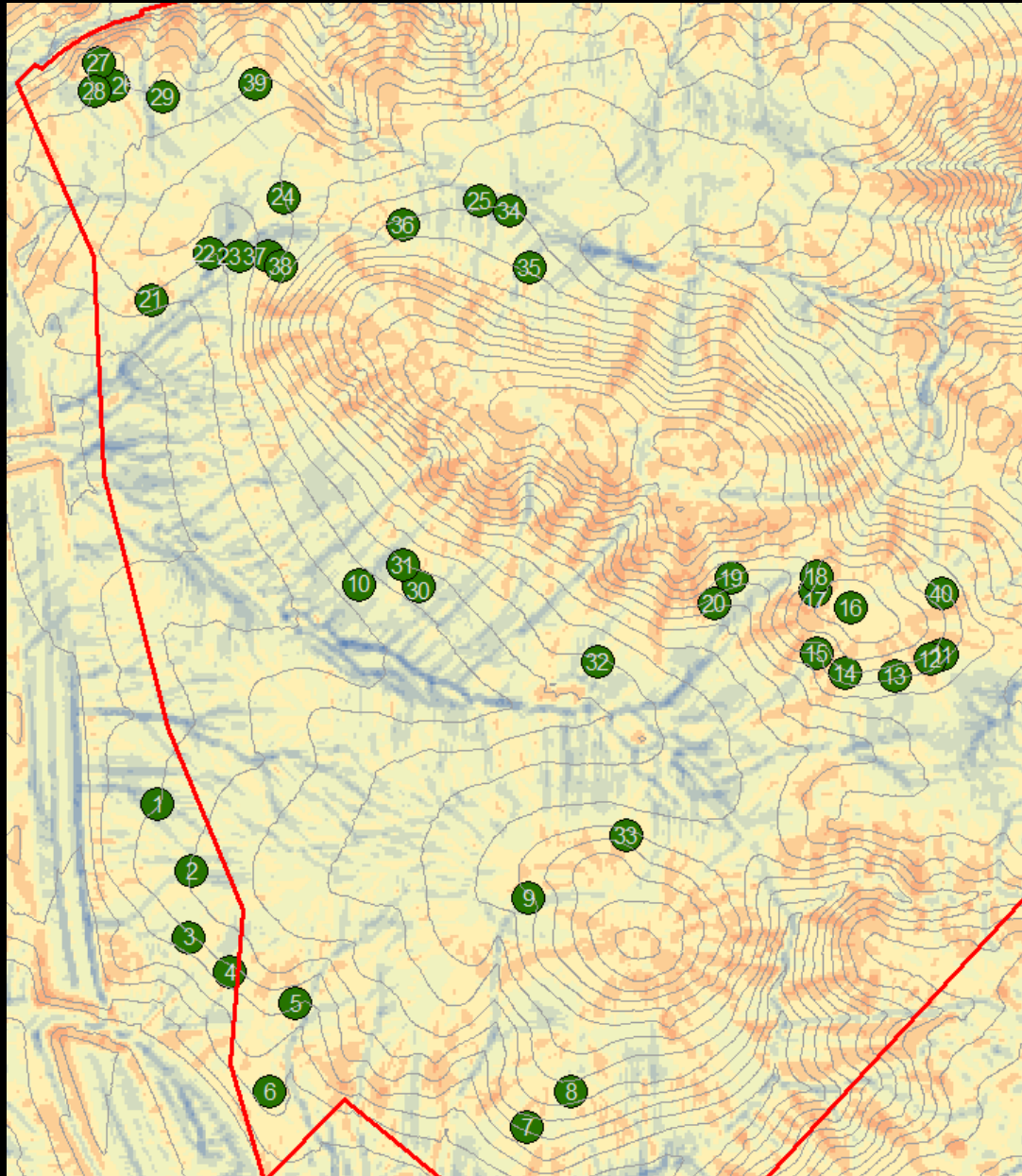
- CNPS RAP methodology (slightly modified)
- Sample across environmental gradients
 - Insolation (N-S slopes)
 - Topographic moisture
 - Edaphic
- Weiss with 2 volunteers
- 80+ plots 2018 and 2019
- **“Voyage of Discovery”**



March 21 Potential Insolation



Topographic Moisture Index



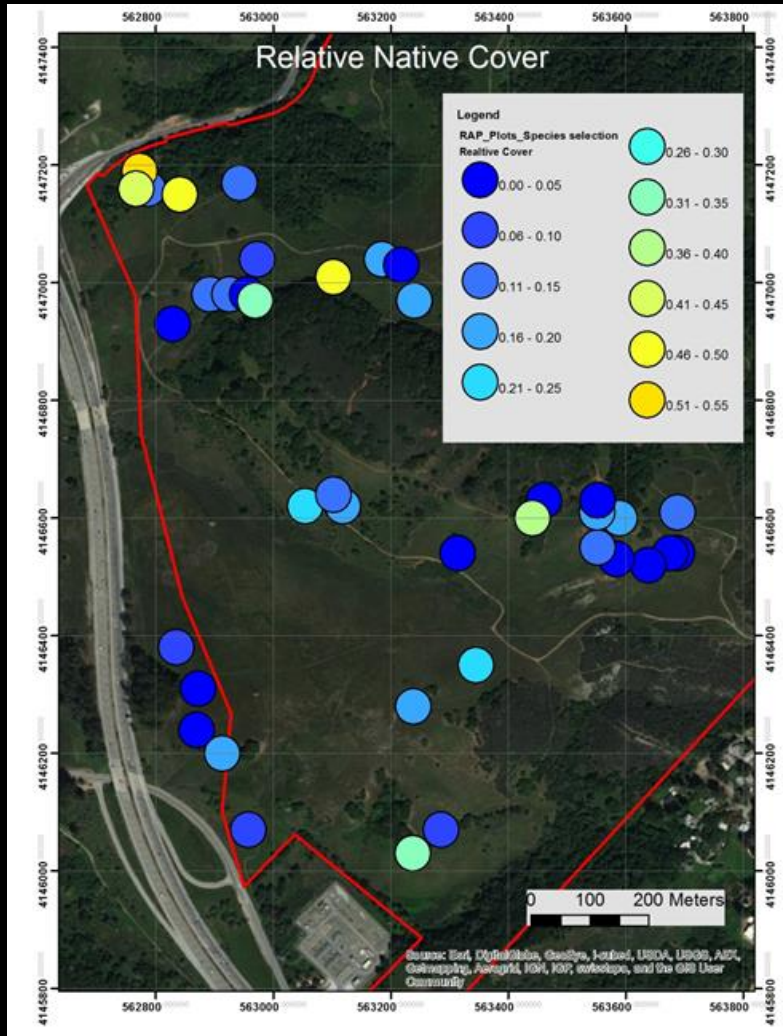
What we found

- 17 native perennial graminoids
- 30 native perennial forbs
- 39 native annual forbs
- 14 non-native annual grasses
- 30 non-native annual forbs

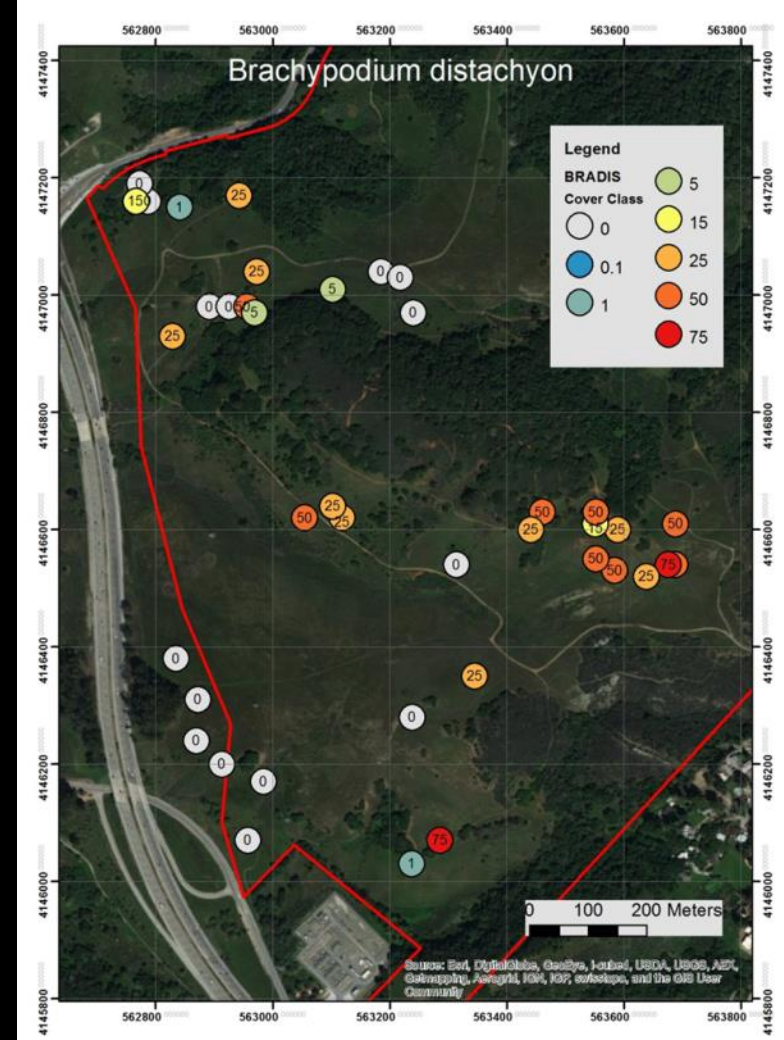
- There is a lot out there!

40 Rapid Assessment Plots

Relative Native Cover

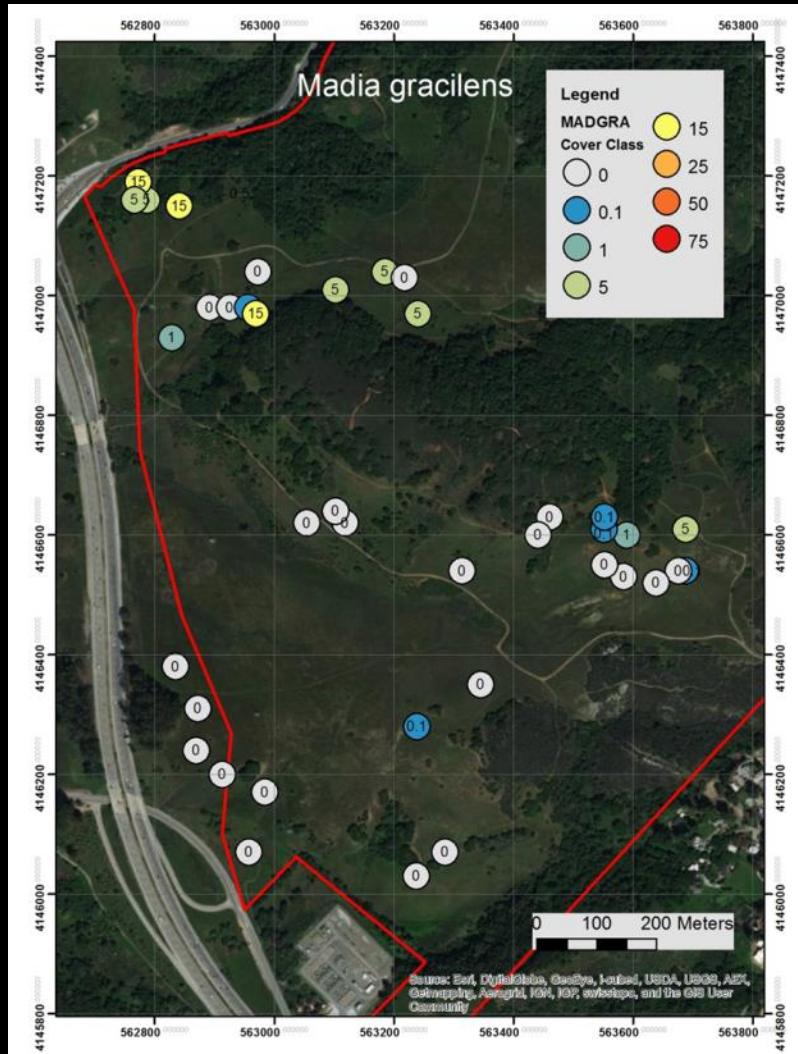


Brachypodium distachyon

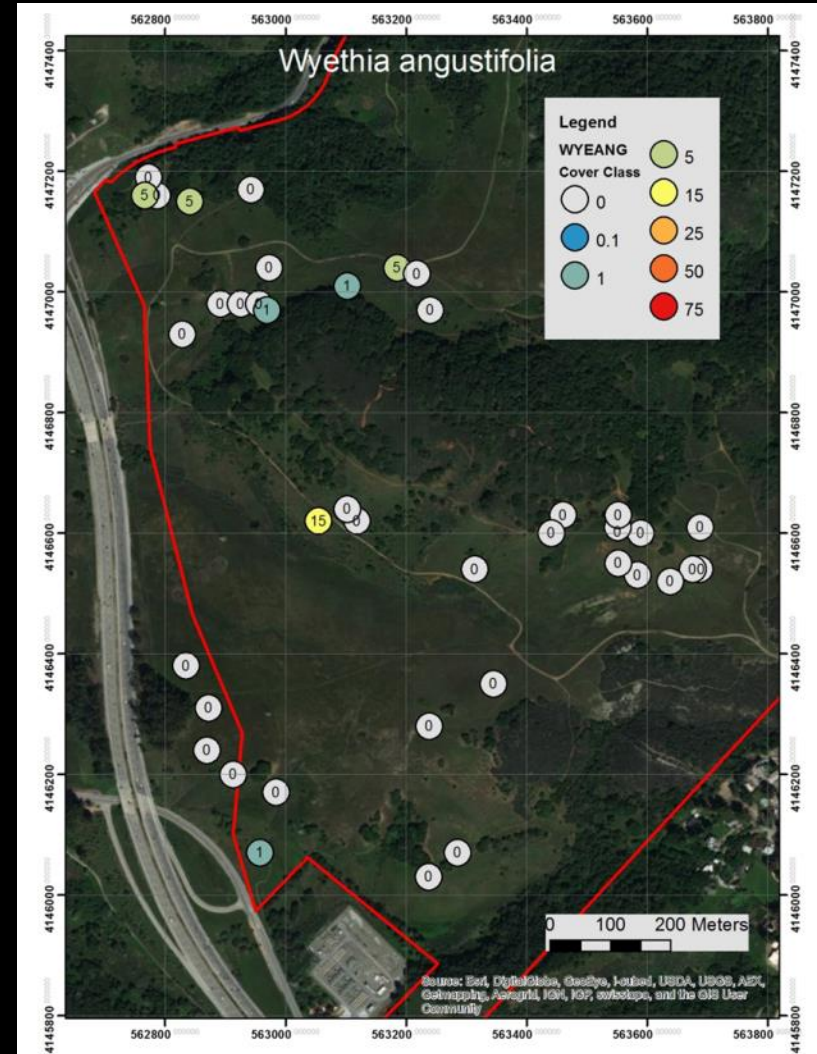


Rapid Assessment Plots

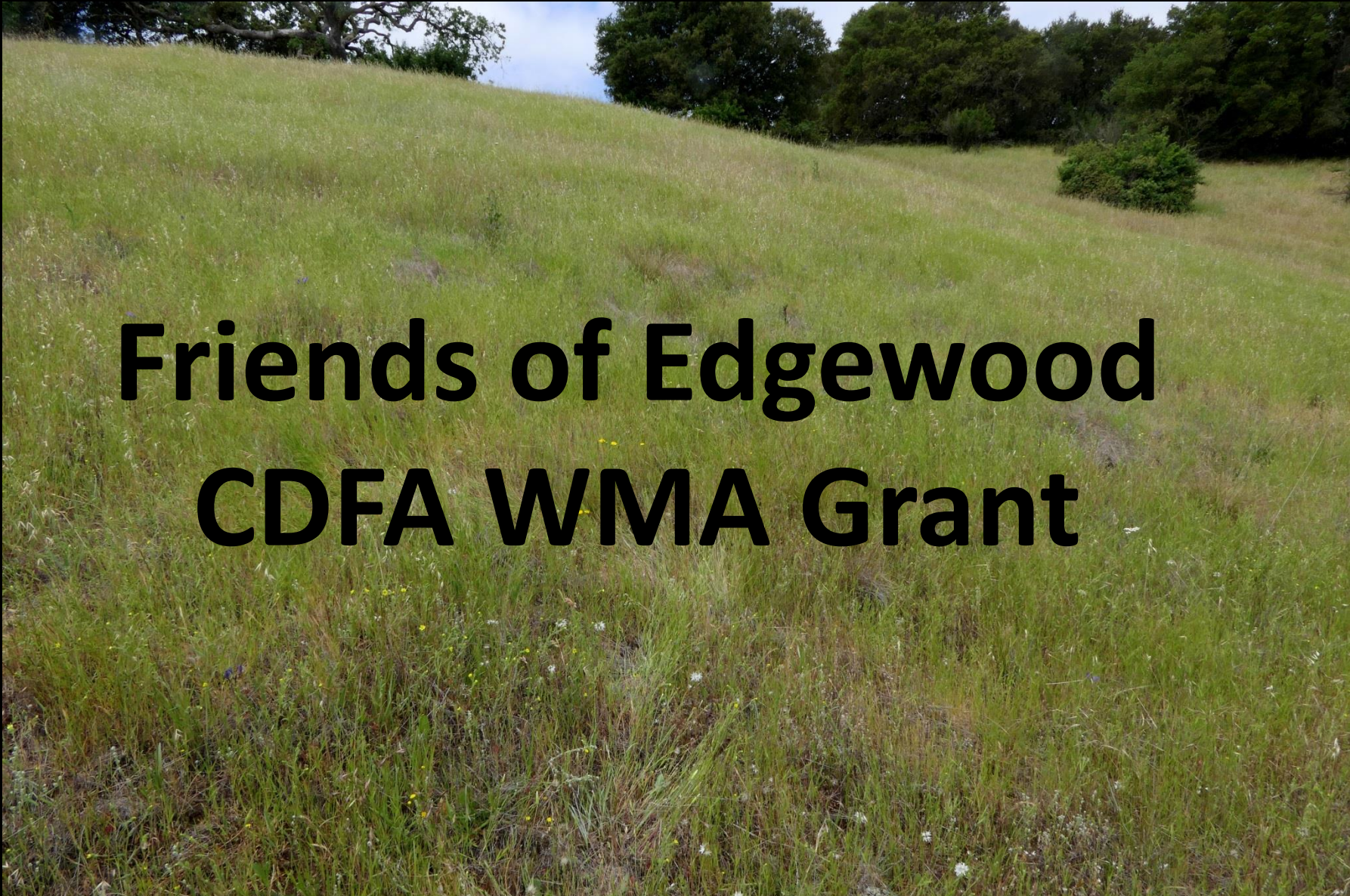
Madia gracilens



Wyethia angustifolia



More to Come: Thank You!

A photograph of a grassy field with trees in the background. The field is filled with tall, green grass and some small yellow and white flowers. In the background, there is a line of trees under a blue sky with some clouds. The text is overlaid on the center of the image.

**Friends of Edgewood
CDFA WMA Grant**