

# Conservation Grazing

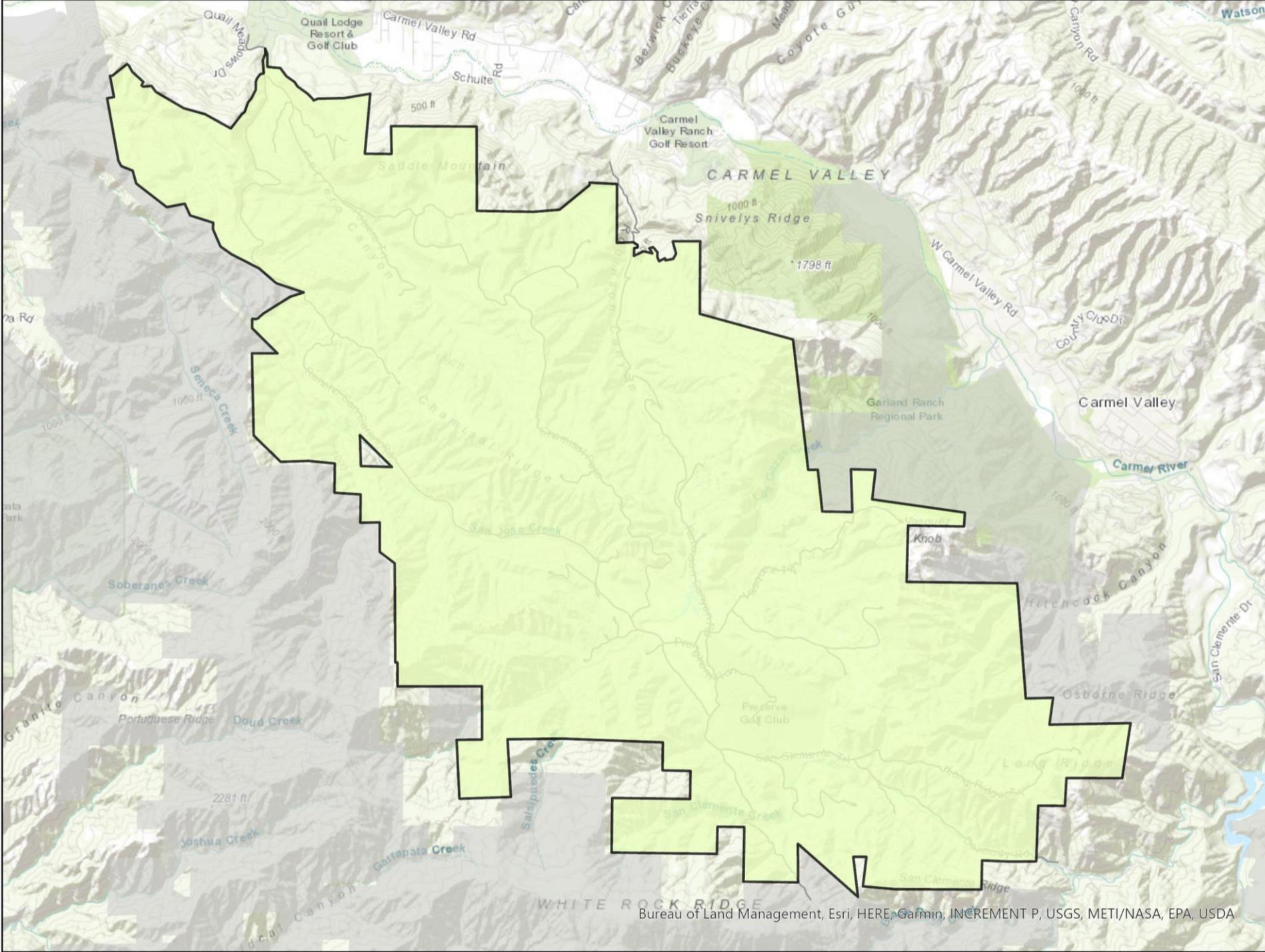


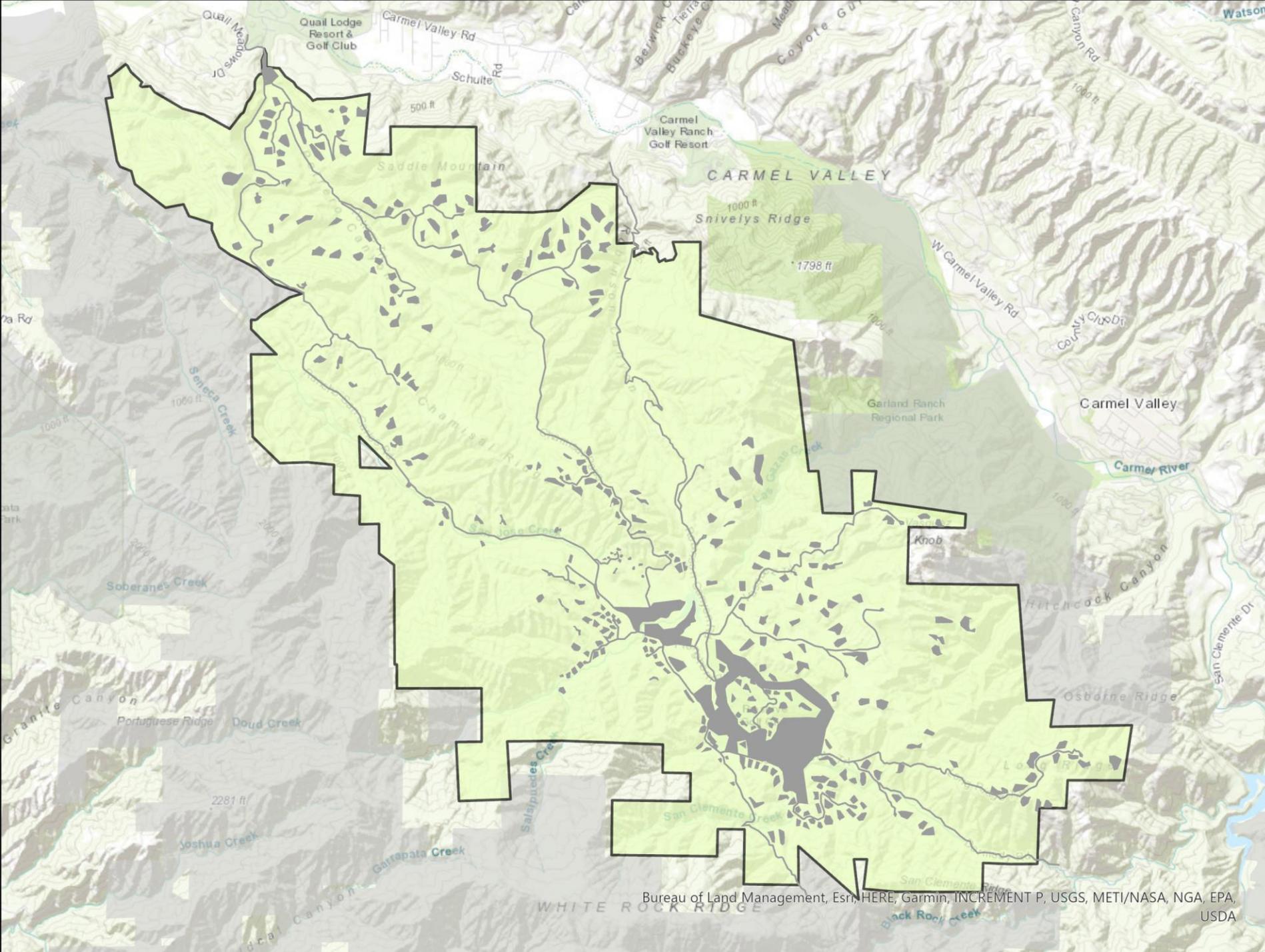
Dr. Rodrigo Sierra Corona / Director of Stewardship

# Rancho San Carlos 20,000 acres/ Purchased on the 90'S

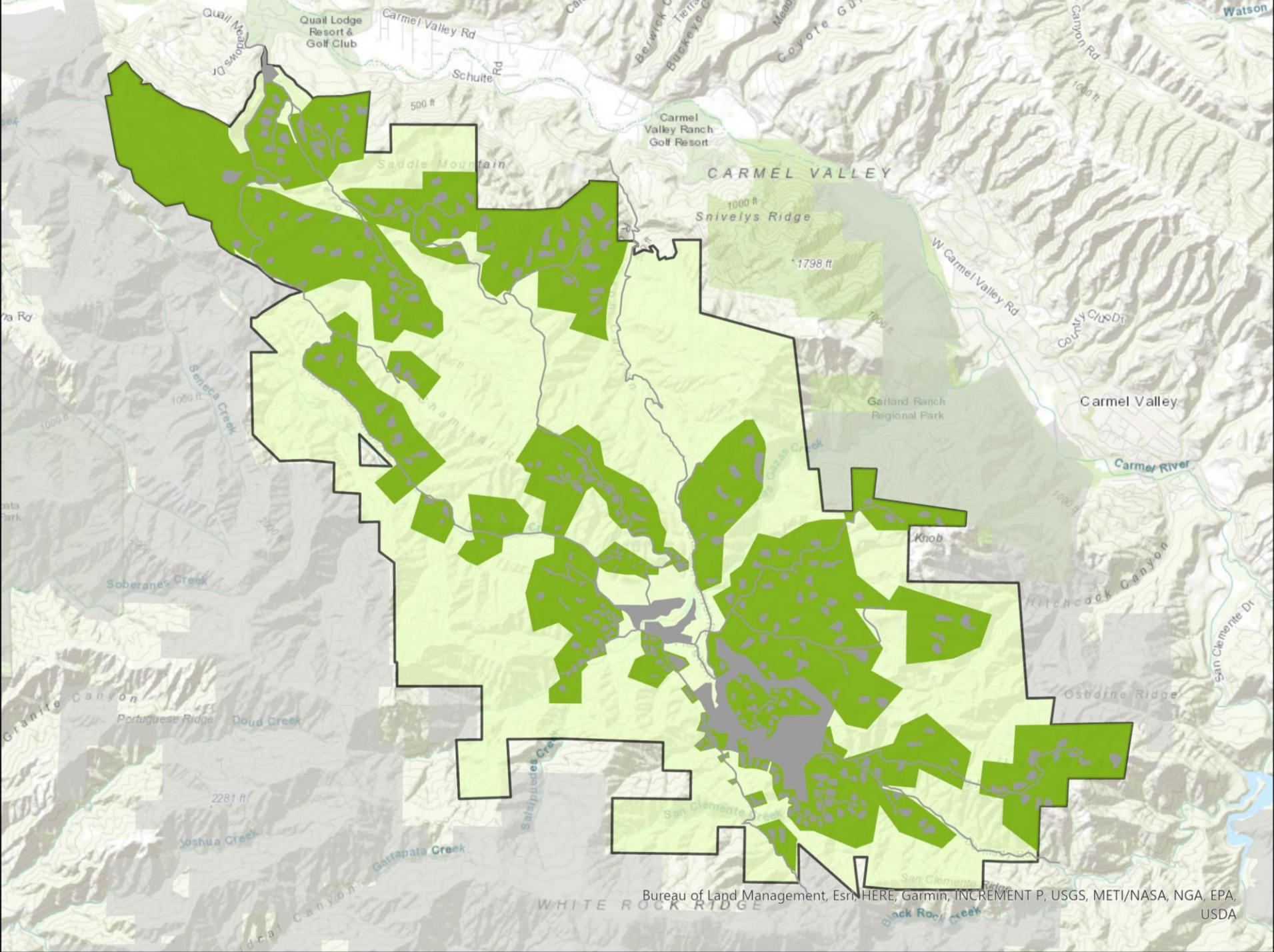


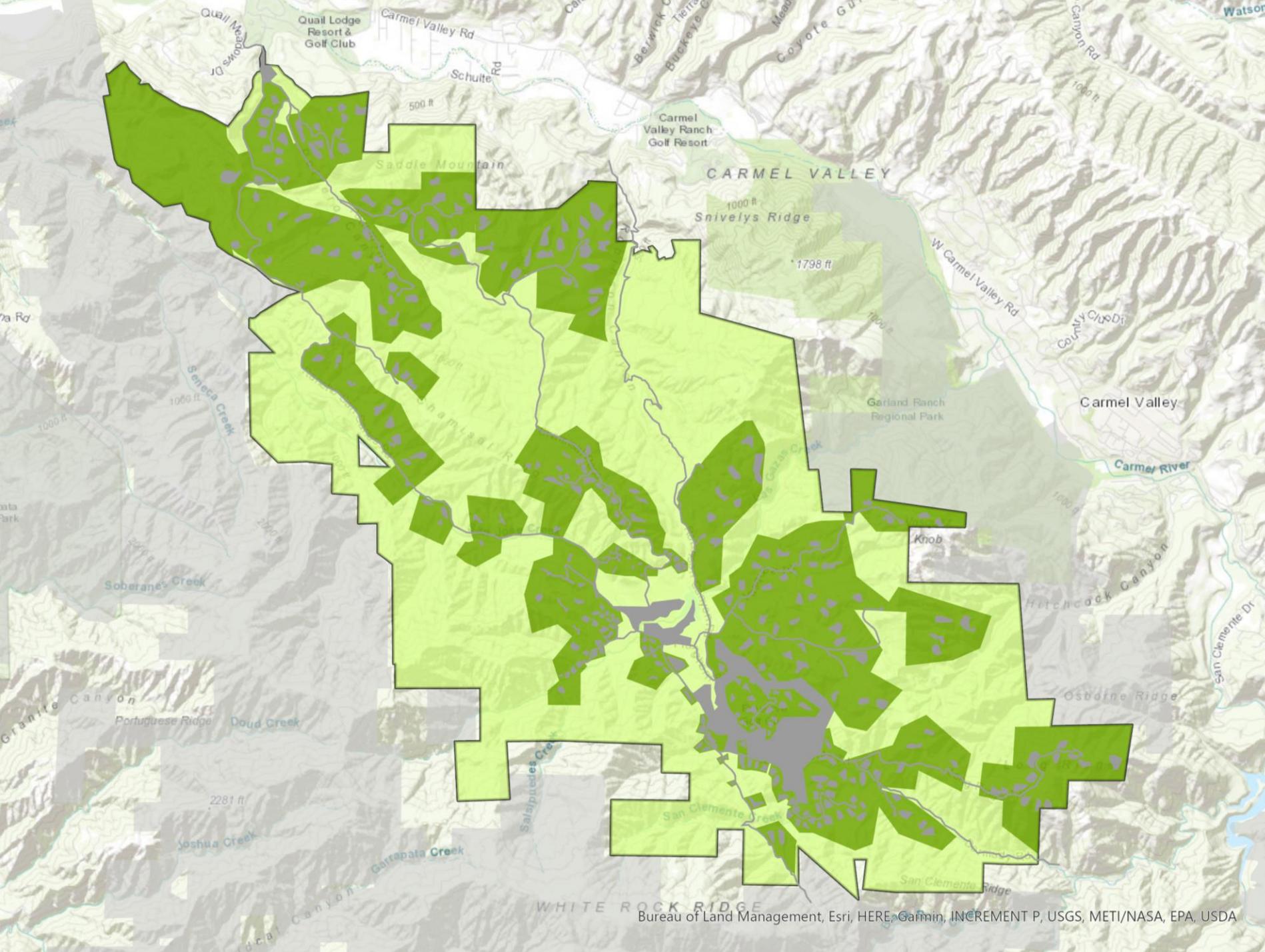
Two centuries of cattle ranching-



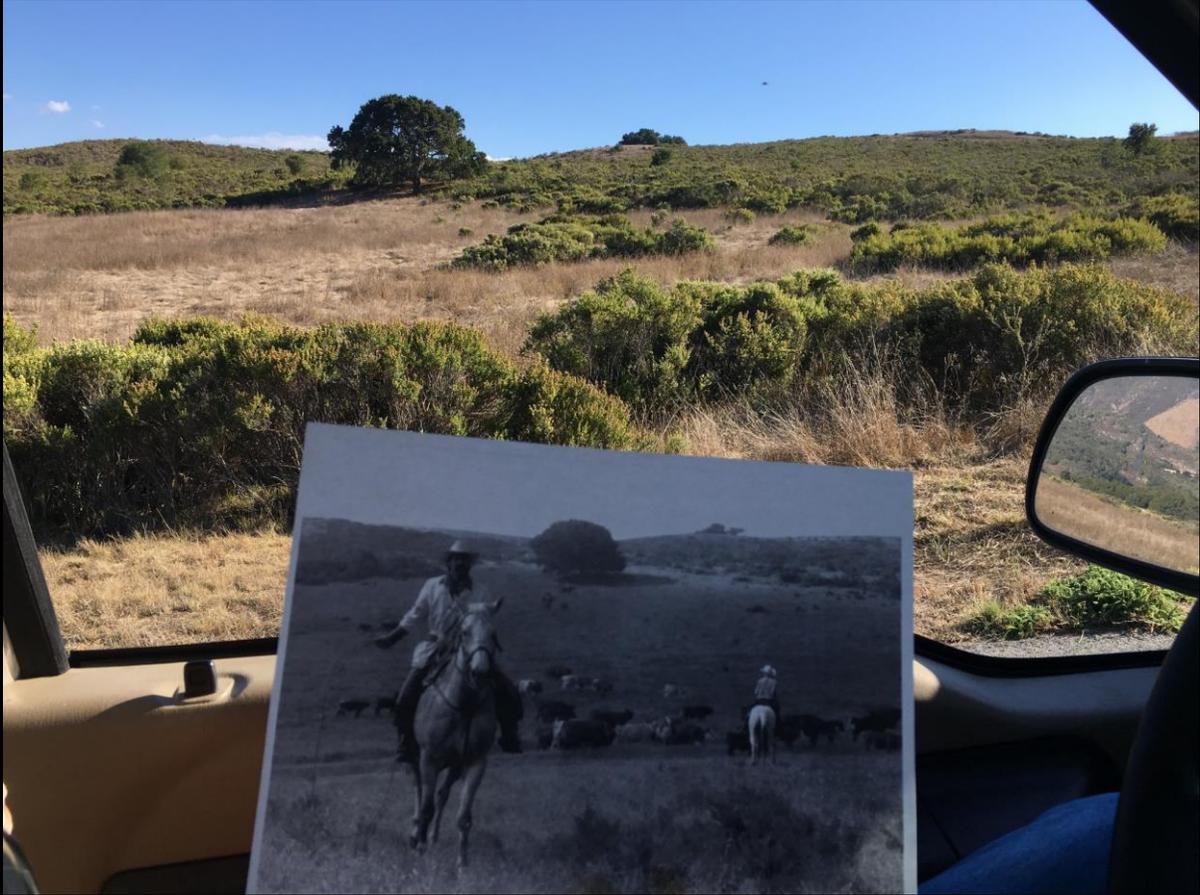
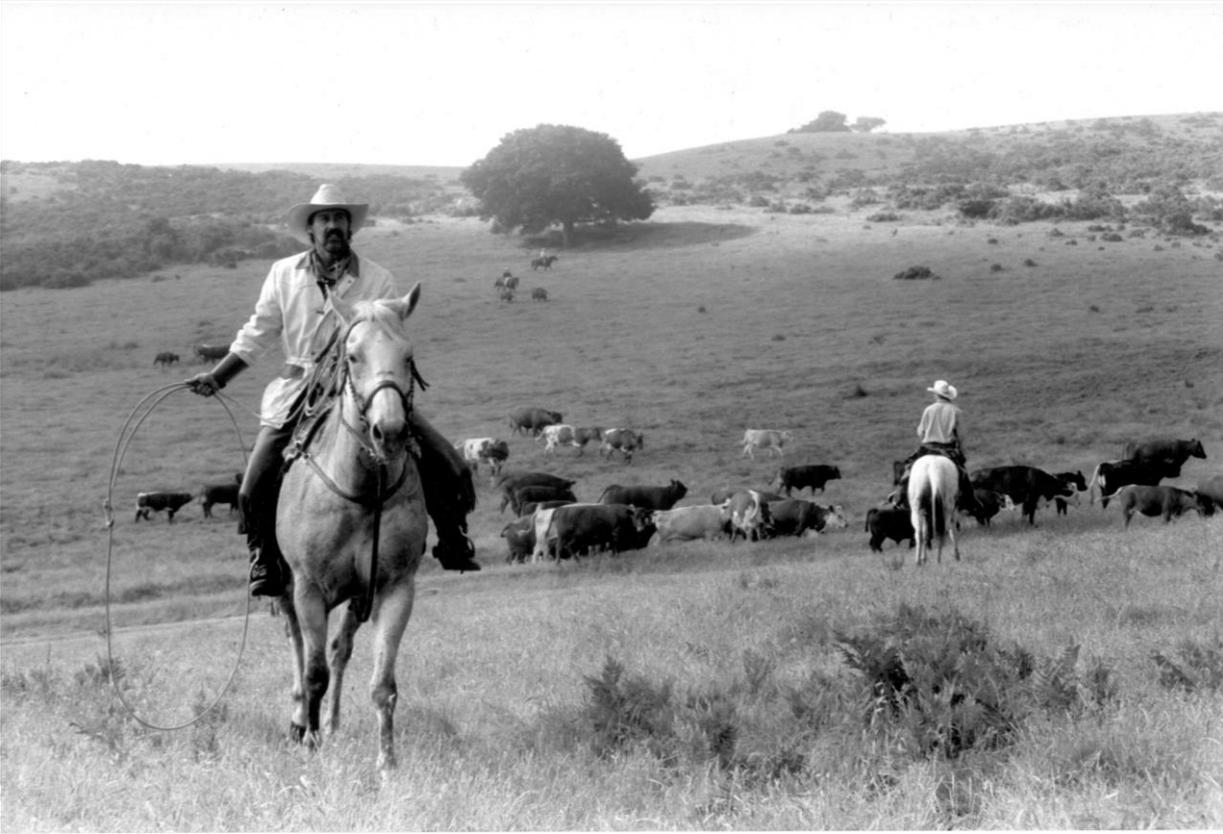


Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA





# Ecosystem changes



# Peñón Peak, February 2012



# Objectives

- Reintroduce the disturbance cycle
- Foster biodiversity
- Reduce thatch-Dead plant material
- Improving soil health
- Managing invasive species
- Managing shrub encroachment
- Reducing fuel loads



Goats!

1400 animals

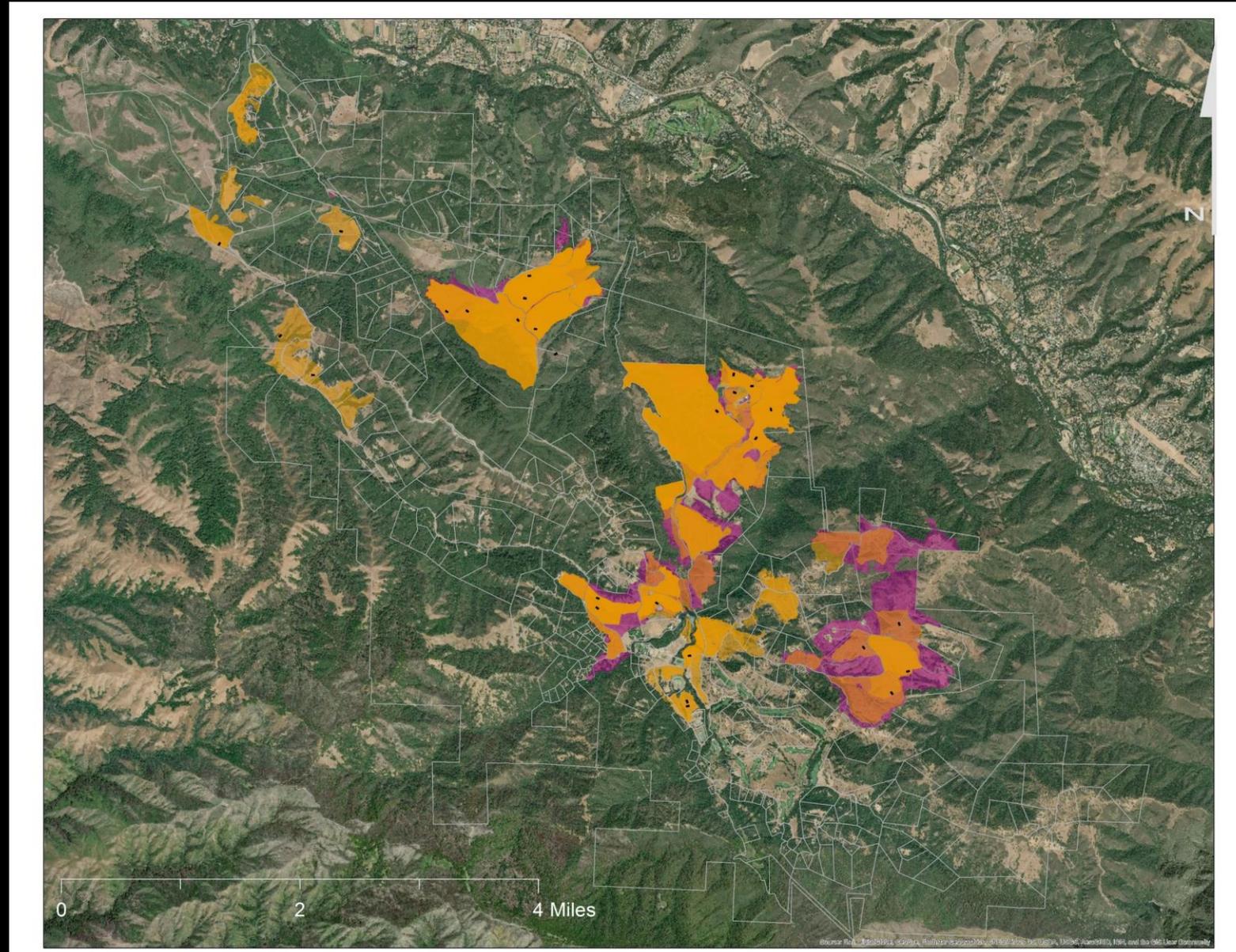
Heavy impact





# Where the livestock roam

2000 acres  
120 Cows



# Monitoring

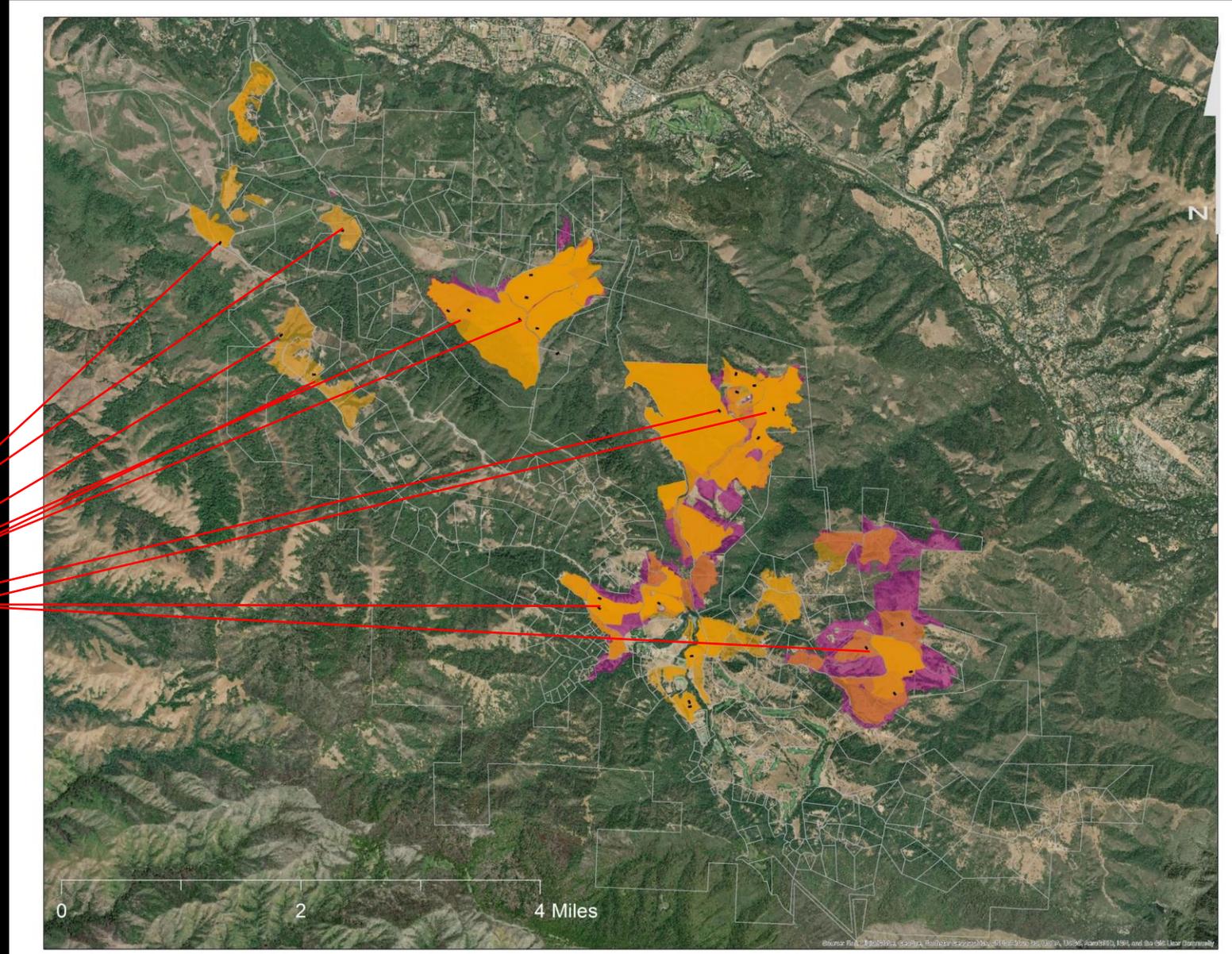
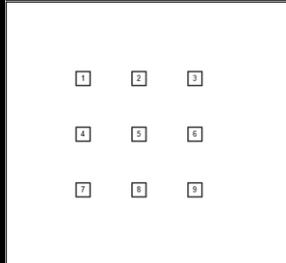
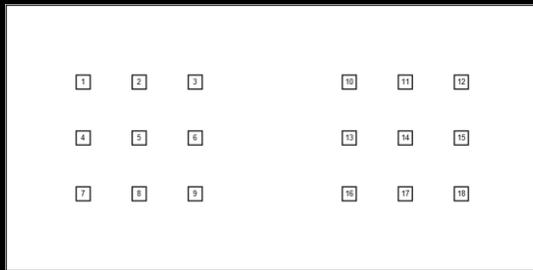
27 Grazing Exclosures

Floristic diversity-cover

Biomass – Thatch

Arthropod diversity

Bird diversity-richness





Me!



# Grazing Exclosure

3 Components

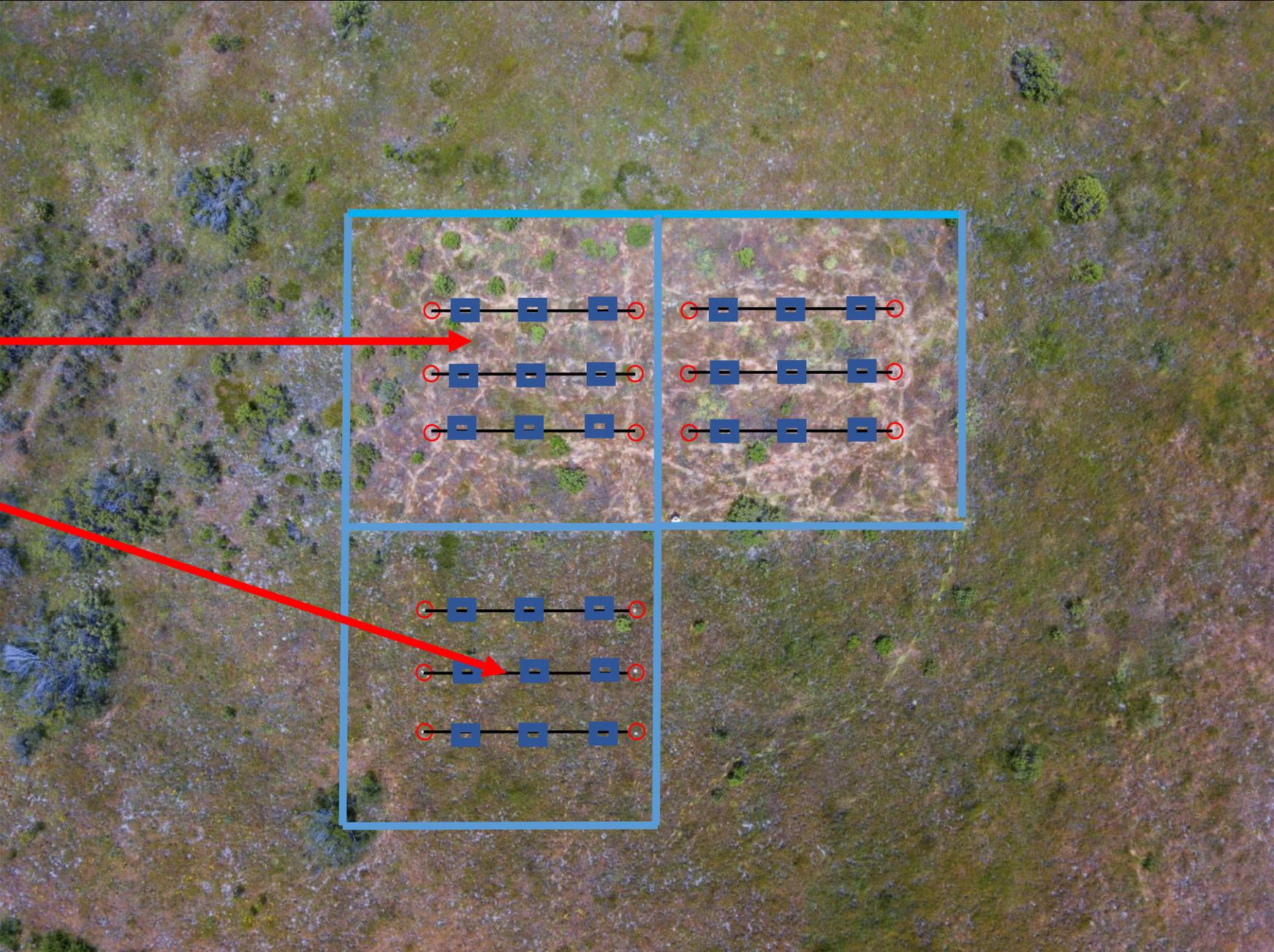
- No Grazing since 1990's
- Grazing 2019
- Grazing 2013



# Grazing Exclosure

3 Components

- No Grazing since 1990's
- Grazing 2013





SANTA LUCIA CONSERVANCY - GRASSLAND FLORISTIC MONITORING

Project: A3 Observers: RSC/pN Date: 5/8/19  
 Location: A3 ♥  
 Exclosure: One Harding grass on T3  
 Comments:

Quadrat:	1	2	3	10	11	12	4	5	6	13	14	15	7	8	9	16	17	18
Grazing:	N	N	N	Y	Y	Y	N	N	N	Y	Y	N	N	N	N	Y	Y	Y
Spacing:	1-2	5-6	9-10	20-21	24-25	28-29	1-2	5-6	9-10	20-21	24-25	28-29	1-2	5-6	9-10	20-21	24-25	28-29
bare ground	2	3	1	4	2	3	1	3	0	2	3	3	3	2	2	4	2	3
litter cover	4	5	5	3	3	4	4	2	6	5	3	3	4	4	4	2	3	3
litter depth (cm)	1	1	.5	1	.5	.5	1	.5	1	1	1	1	1	2	1	.5	1	.5
herb height (cm)	100	40	35	40	40	40	50	40	45	40	45	40	35	35	45	40	50	35
cow manure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
rodents (g/s)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Bromus hordeaceus</i>	4	5	5	4	5	4	4	5	5	5	5	5	6	5	5	5	3	5
<i>Avena</i> sp.	2	2	1	3	3	2	2	3	3	3	3	3	2	3	1	1	3	3
<i>Stipa pulchra</i>	3	4	2	1	2	2	2	0	1	4	1	3	3	3	3	2	3	2
<i>Bromus diandrus</i>	2	0	0	2	3	2	2	0	3	2	2	2	3	3	3	3	5	0
<i>Baccharis pilularis</i>	5	0	0	0	0	0	6	0	5	0	0	0	0	0	0	0	0	0
<i>Rumex crispus</i>	3	3	3	2	0	0	3	4	0	0	0	3	2	3	2	4	3	3
<i>Oxalis pilosa</i>	2	0	0	1	0	1	0	2	0	2	1	3	0	0	0	0	0	2
<i>Sanicula crassicaulis</i>	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
<i>Lysimachia arvensis</i>	2	2	2	2	3	2	4	4	2	2	2	0	2	0	2	2	2	3
<i>Madia</i> sp.	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Hyperbaen's</i> sp.	3	3	2	3	2	2	0	4	3	3	3	3	3	3	4	3	3	3
<i>Aster canophyllea</i>	2	0	2	1	2	0	1	0	1	3	1	0	1	1	0	0	2	2
<i>Briza minor</i>	2	4	3	1	2	0	3	3	2	2	0	3	3	2	3	3	3	3
<i>Danthonia californica</i>	1	0	1	0	0	0	0	0	0	0	0	2	0	5	0	0	0	0
<i>Trifolium dubium</i>	0	3	3	0	0	0	0	3	2	1	1	0	0	0	0	1	0	0
<i>Erodium</i> sp.	0	2	0	1	3	3	0	2	2	1	3	3	4	3	2	3	3	0
<i>Chlorogalum pinnatifidum</i>	0	3	2	0	0	2	0	3	0	0	3	0	4	3	0	0	0	0
<i>Sidalcea maliflora</i>	0	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
<i>Acmispon parviflorus</i>	0	1	2	0	0	0	3	2	0	0	1	0	0	0	1	3	2	0
<i>Galium parisiense</i>	0	0	2	0	0	0	0	0	0	0	0	0	1	0	3	0	0	4
<i>Brauneria</i>	0	0	3	4	5	5	0	2	4	4	4	3	0	0	4	2	4	3
<i>Pseudognaphalium</i> sp.	0	0	1	2	0	0	0	0	1	2	3	0	0	2	3	0	0	2
<i>Vicia sativa</i> subsp.	0	0	2	2	3	2	2	0	3	3	3	0	2	0	0	3	4	3
<i>Trifolium hirtum</i>	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Festuca</i> sp. (annual)	0	0	0	3	0	0	0	3	0	1	0	0	2	0	1	0	0	0
<i>Intelopsis ixoides</i> subsp.	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
<i>Sonchus</i> sp.	0	0	0	0	1	2	0	0	0	0	0	2	0	0	0	0	0	0
<i>Fragaria vesca</i>	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
<i>Geranium</i> sp.				0	0	2	2	0	0	0	0	0	0	0	0	0	0	0
<i>Cerastium glomeratum</i>				0	0	0	1	0	0	0	0	0	1	1	0	0	0	0
<i>Logfia gallica</i>				0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
<i>Festuca perennis</i>				0	0	0	0	2	0	0	0	2	2	0	2	0	2	0
<i>Gnaphalium vstilata</i>				0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
<i>Trifolium micranthum</i>				0	0	0	0	0	0	0	0	1	0	0	2	1	0	0
<i>Trifolium bitidum</i>							0	0	0	0	0	1	0	0	0	0	0	0

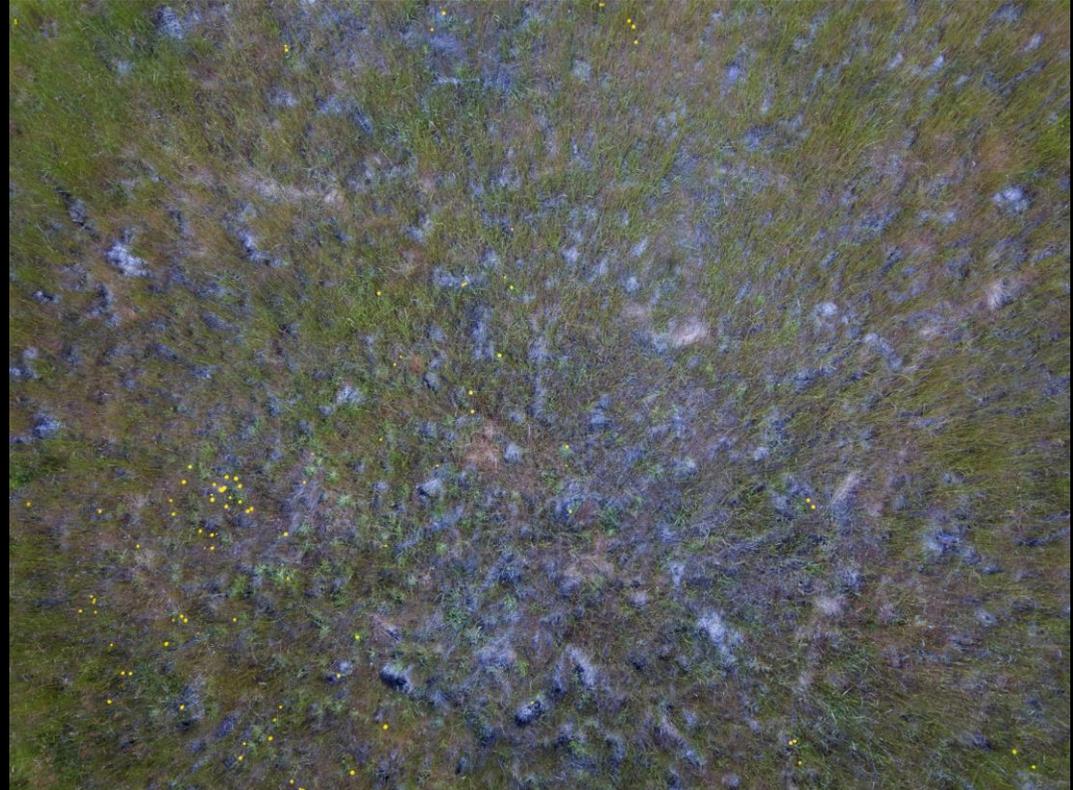
Classes: 0: 0% 1: 0-1% 2: 1-5% 3: 5-25% 4: 25-50% 5: 50-75% 6: 75-95% 7: 95-100%

No Grazing since 1990's



Dead plant material- Thatch  
Low diversity  
Weeds

Grazing since 2013



Fewer dead plant material- Thatch  
Higher diversity  
No weeds

# No Grazing

# Grazing

Thatch

Weeds

Dead standing  
vegetation



Minimal Thatch

No weeds

Minimal dead  
standing vegetation

Thatch

Weeds

Dead standing vegetation



Minimal Thatch

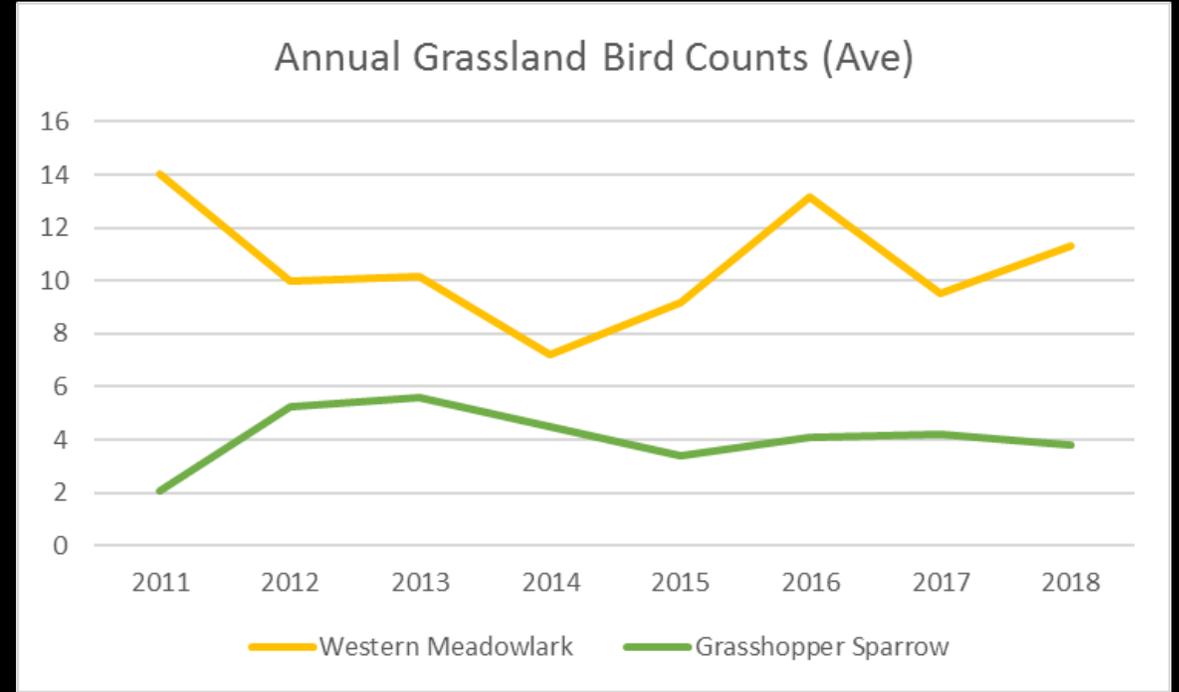
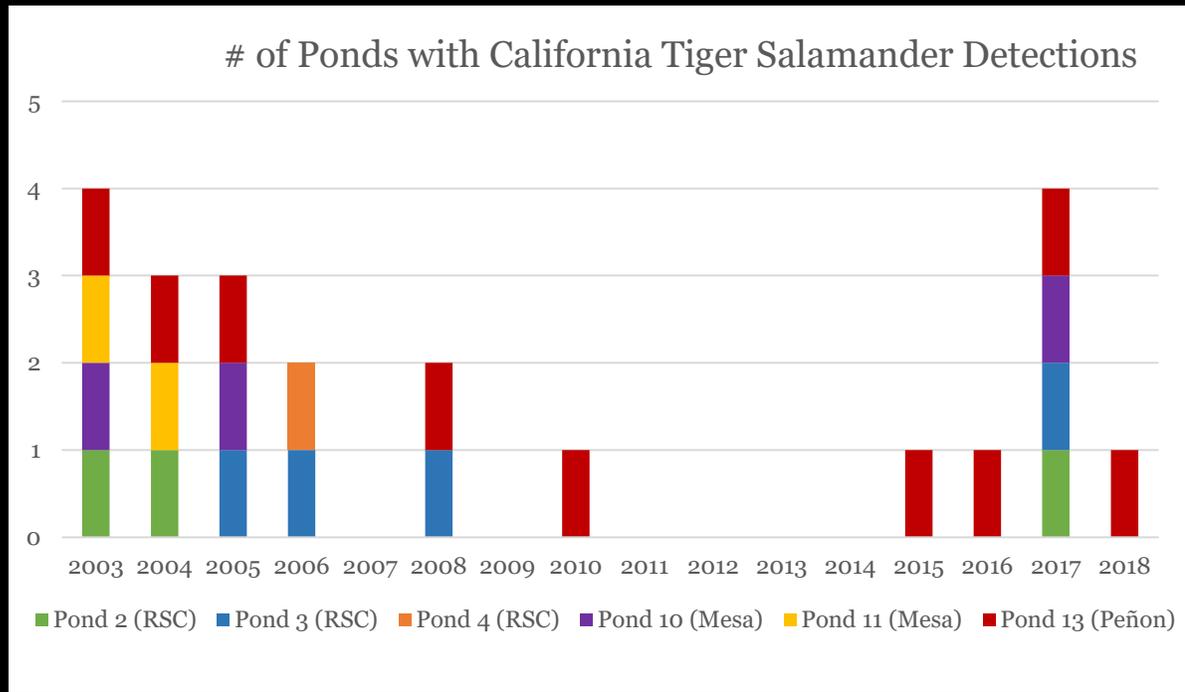
No weeds

Minimal dead standing  
vegetation

Increased Diversity



# Grasslands birds and Tiger salamander



# Arthropods!

Using Cattle to Revitalize Grasslands

Investigating the Effects of Conservation Grazing on Arthropod Biodiversity

Edgar Wiggin Francisco V

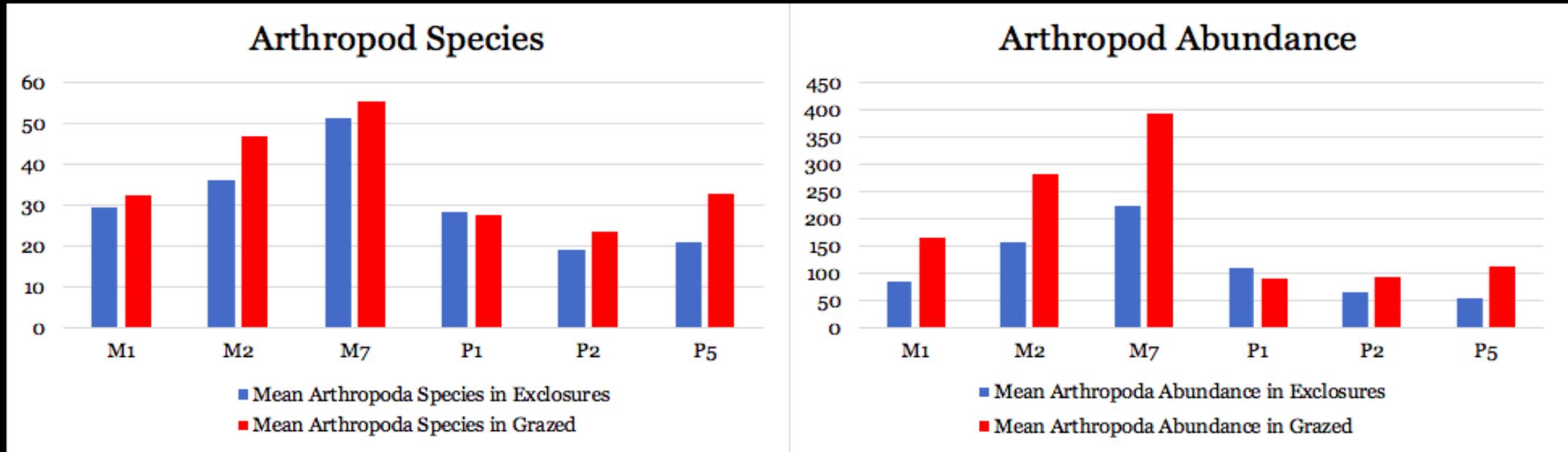


Figure 1: Stark contrast in site M1 between the Ungrazed Exclosure (left) and the annually Grazed area (right). The Exclosure is overrun with non-native thistle.

Figure 2: Sorting and Identifying sample from M7G.

# Results Overview

- Native biodiversity Increase- Wildlife & Vegetation
- Thatch- Fuel Reduction
- Weeds reduction
- Improvement on Ecological Health and Aesthetics of the Santa Lucia Preserve Grasslands

But...





# Invasive Species Priority Categories

Zero Tolerance Weeds – species targeted for eradication.

- Yellow Starthistle
- Fullers Teasel
- Jubata grass
- Stinkwort
- Panic grass
- Sweet Fennel

Zero Tolerance due to high invasiveness and abundance on the Preserve.

High Priority – these species are managed.

- Bull and Milk thistle
- Poison Hemlock
- French broom
- Periwinkle

Low Priority – these are managed only where they threaten high priority natural communities.

- Black and summer mustard
- Italian Thistle
- Harding grass



# Management Practices

Try to use all the tools

- Grazing -
- Hand removal – small invasions, sensitive habitats, and follow-up treatments
- Spot mowing – Use weed eaters to target individual species after they bolt. Do not mow once seeds are present.
- Spot Spray – Spray individual plants to minimize impact. Spray while plants are in the rosette stage to bolting.
- Cut and Daub – Treat cut surface with herbicide.

Its all about timing. Timing treatments with grazing and growth stage.

Use the method for the proper growth stage.



## Monitor

- Revisit treatment sites to see effectiveness of treatments.
- Monitor sites throughout the growing season. Late or early rains can effect plant emergence.
- Monitor high traffic areas – Trails, roadsides, cow trails
- Keep record of occurrences.



## Results

- Over time percent cover of weeds has decreased.
- Areas that took 3 weeks to spray in 2019 only took 1 week in 2020.
- Every year we increase our treatment areas.



Grasslands, Peñon Peak



Native diversity, Penon Peak



Perennial Grasslands, Trappers Loop



Melic grass, Black Mountain





Gracias!

