

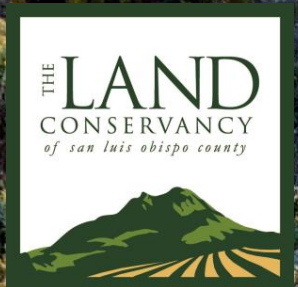
Dune Protected Area Network

An approach to recover listed species and protect rare coastal ecosystems



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Restoration Program Manger



The Land Conservancy of San Luis Obispo County



Nonprofit land trust

Established in 1984

67,000+ acres permanently protected

- Fee Property Ownership & Management (4,700 acres, 17 properties)
- Conservation Easements w/ Private Landowners (63,000 acres, 50 easements)

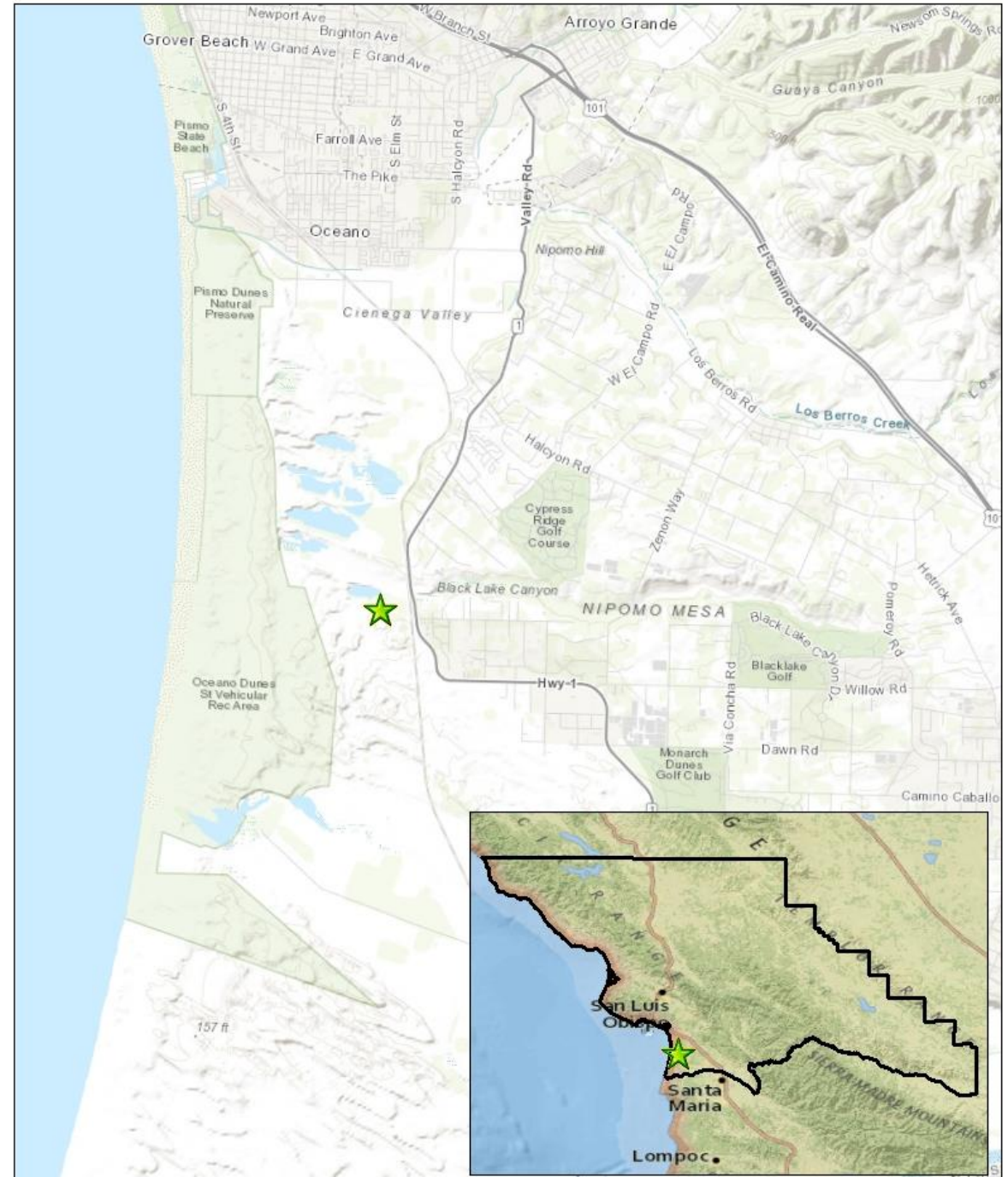
Guadalupe-Nipomo Dunes Complex

- San Luis Obispo & Santa Barbara County
- 11 miles of coastline
- 18,000 acres



Black Lake Ecological Area

- 160 acres purchased in 2000.
- Owned and managed by The Land Conservancy for wildlife habitat and rare species preservation.
- Deep, perennial freshwater lake approx. 1 mile from Pacific Ocean
- Rare habitat types and species



Black Lake Ecological Area: Habitat Types



Coastal dune scrub



Coastal freshwater wetland



Coastal foredunes

Black Lake Ecological Area: Rare Species



Nipomo lupine (*Lupinus nipomensis*)



Western Monarch Butterfly (*Danaus plexippus plexippus*)
overwintering site

Species Recovery: Nipomo Lupine

- Small annual herb
- Fabaceae family
- found in 2 mile² extent along the Central California Coast in the Guadalupe-Nipomo Dune Complex
- prefers specific microsites within the range
- Listed in 2000 as Federally endangered



Species Recovery: Nipomo Lupine

- In 2015-2016, LCSLO partnered with Cheadle Center for Biodiversity and Ecological Restoration (CCBER of UCSB) and USFWS to establish Nipomo lupine at Black Lake
- CCBER monitored the site 2015-2023 to collect valuable data from 57 plots to advise future outplantings and management
- Ongoing monitoring and management completed by LCSLO
- CDFW 2081a permit necessary to management invasive species near listed species

Black Lake Nipomo Lupine Experimental Plots



Species Recovery: Nipomo Lupine

2015-2016 Plot Data

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Number of Individuals	118	343	81	89	194	166	89	21	88
Number of Reproductive Individuals	2	21	43	14	11	29	23	2	14
Reproductive Population	2%	6%	53%	16%	6%	17%	26%	10%	16%

- Preference for swales with no aspect
- Disturbance and seed scarification increase germination
- Competition decreasing germination
- Generally, plot decreased in germination over time
- Plots that are reproductive, seed set is increasing
- Once they find their microhabitat, they are able to reproduce effectively

Aggressive Invader



Ehrharta calycina,
perennial veldt grass

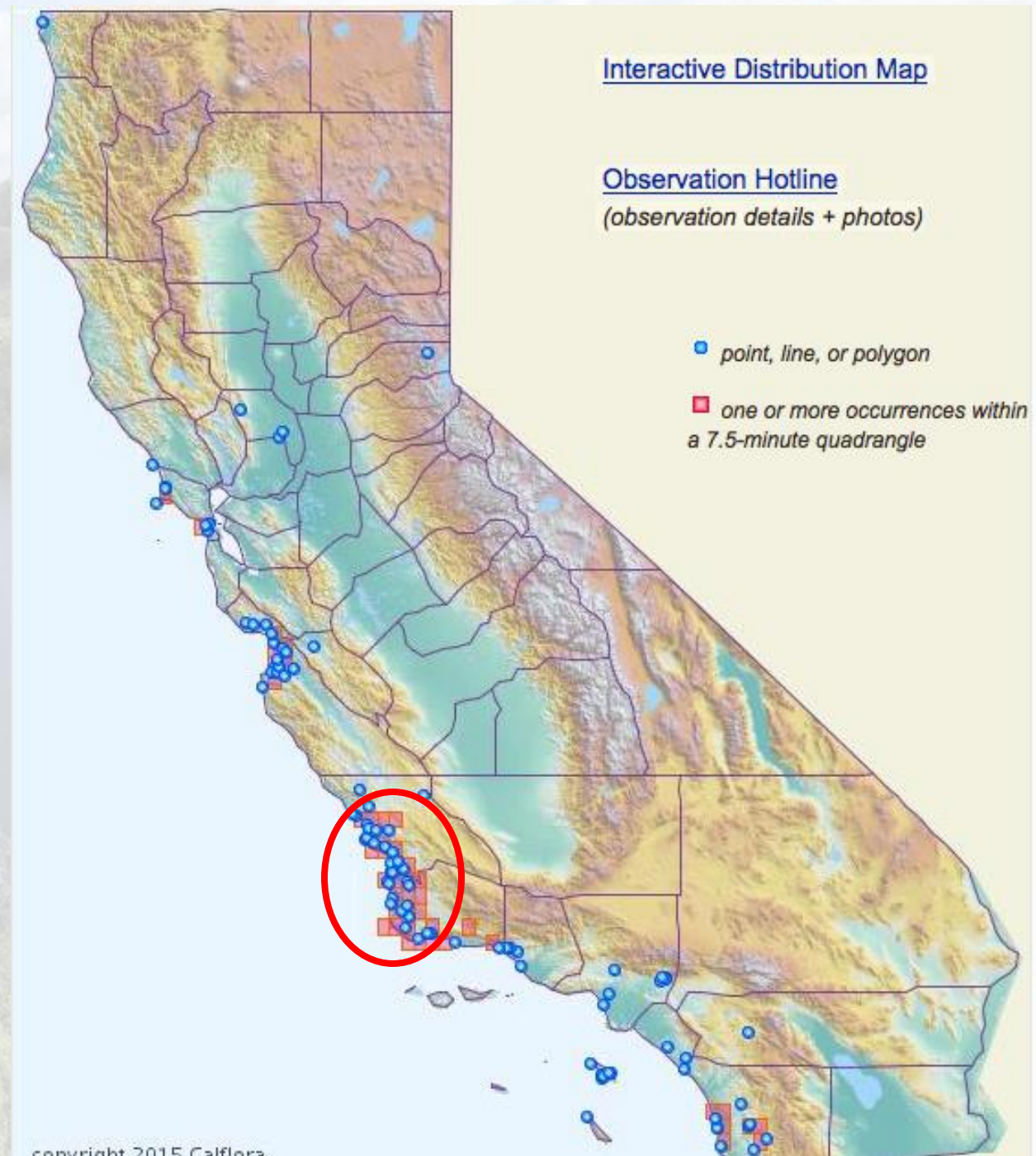
Susceptible Ecosystem



Coastal dune scrub

Veldt grass

- Native to South Africa
- Introduced to California from Australia
- Promoted for forage improvement and erosion control in 1950s and 1960s
- Extensively sown to stabilize sand dunes at Air Force bases



Ehrharta calycina Key Attributes

- Perennial grass
- Reproduces predominantly by seed
- Seed does not self-bury
- Seed dispersed by wind and human activity
- Seed bank viable 5-10 years
- Germinates after rains
- Flowers and set-seed year round but mostly in rainy season
- Builds up extensive seedbanks

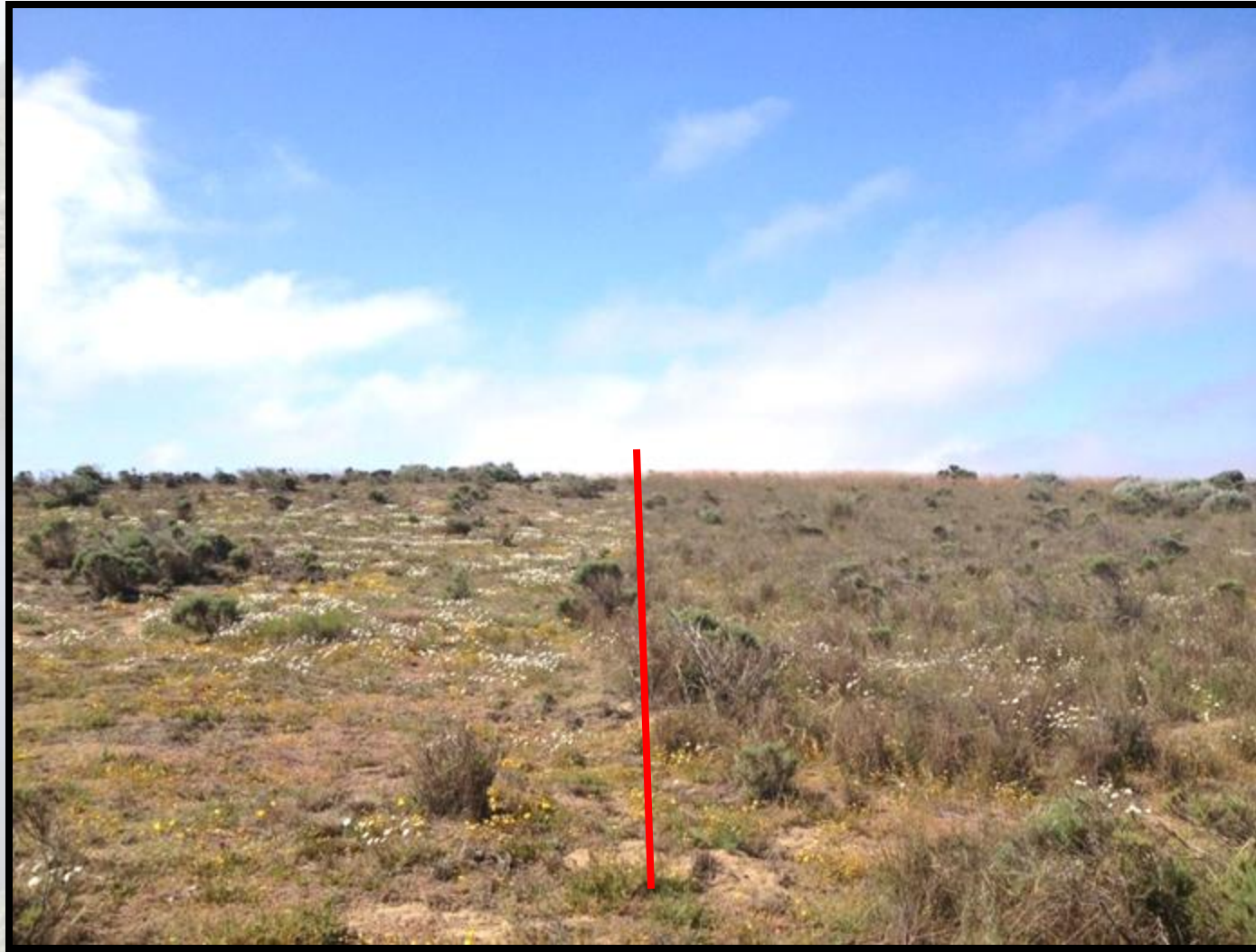


Veldt Grass Impacts

Veldt grass causes a rapid type conversion from shrubland to grassland. This provides direct competition for resources and reduces local biodiversity.



How do we create defensible spaces in coastal dune scrub habitat?

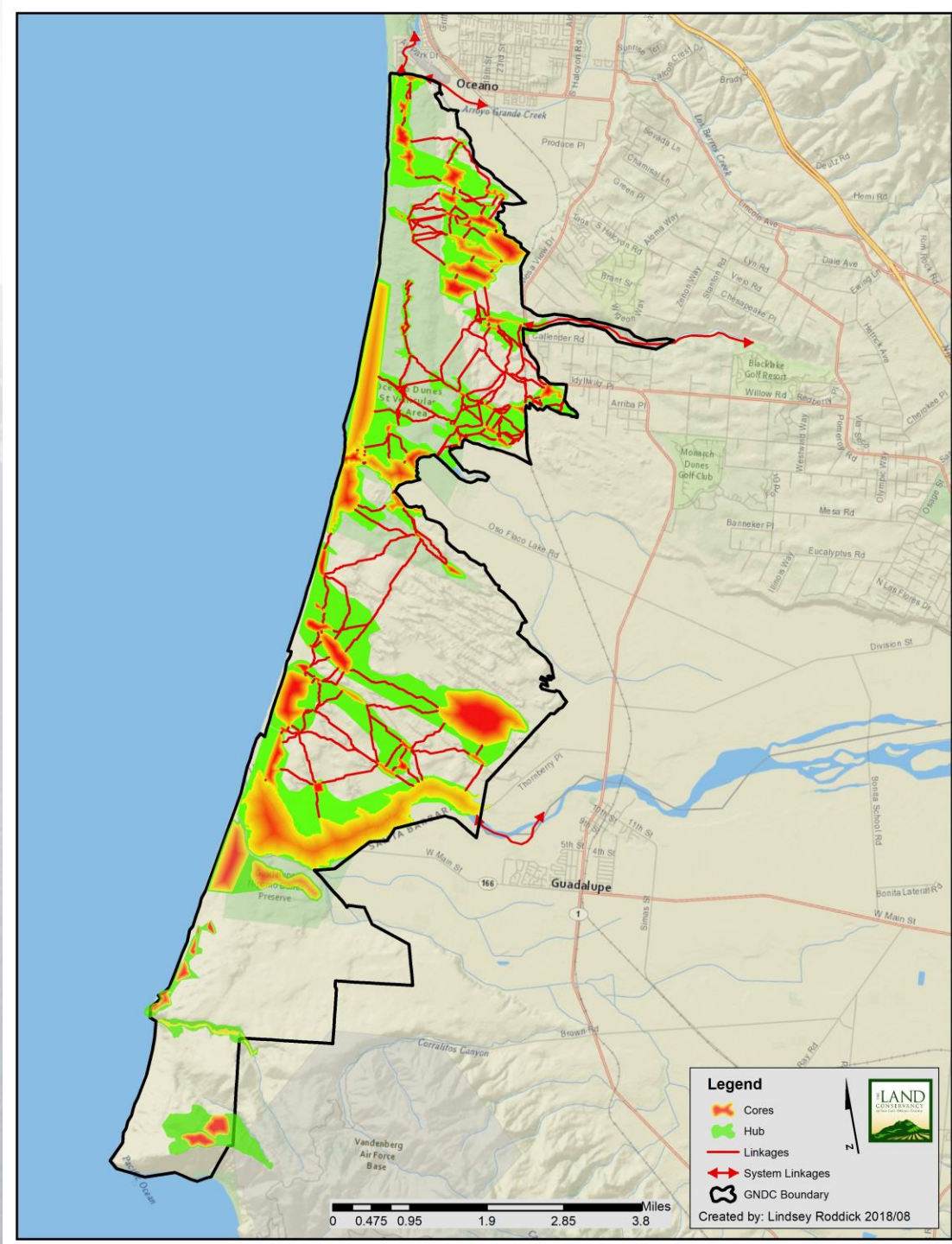


Treated vs. Not Treated

Dune Protected Area Network

Cores: pristine habitat with high concentration of rare species and habitat

Hubs: defensible space surrounding the cores providing a buffer for important areas



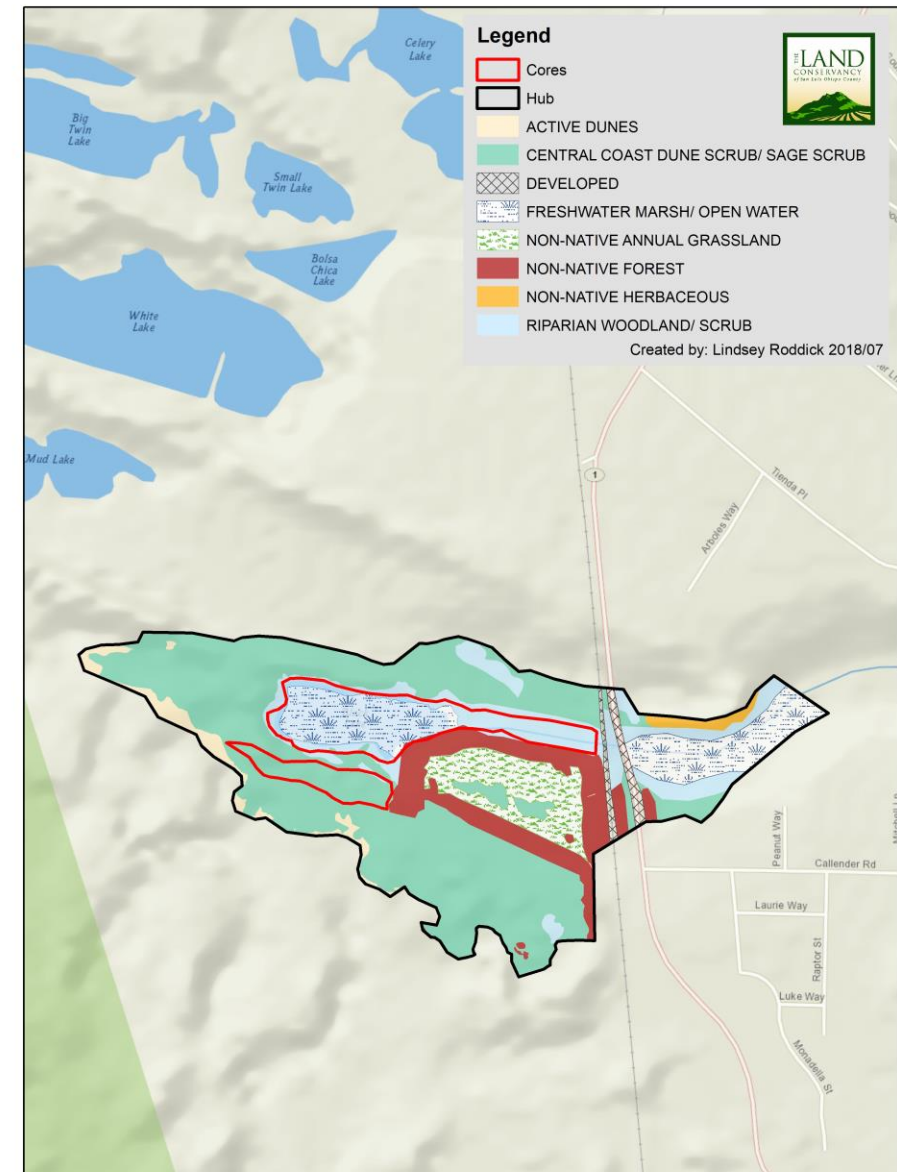
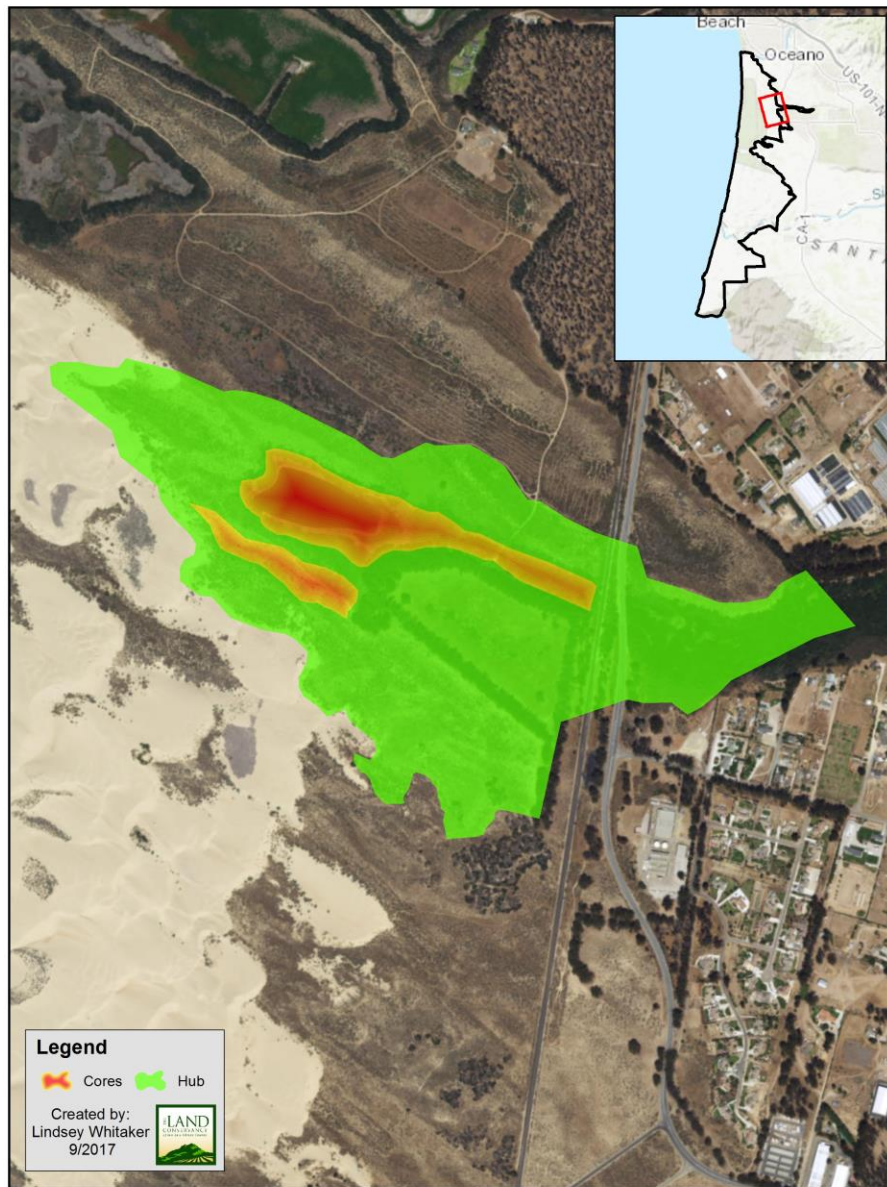
Dune Protected Area Network



- Areas of high diversity, low % cover invasive species
- Provide important resources fauna and rare flora
- Successional habitats, representing the entire complex

www.lcslo.org/dunesconservationplan

Dune Protected Area: Black Lake Ecological Area



Invasive Species Management

Mechanical Removal

- w/in 25ft of sensitive resources/ Nipomo lupine

Ground Herbicide Application

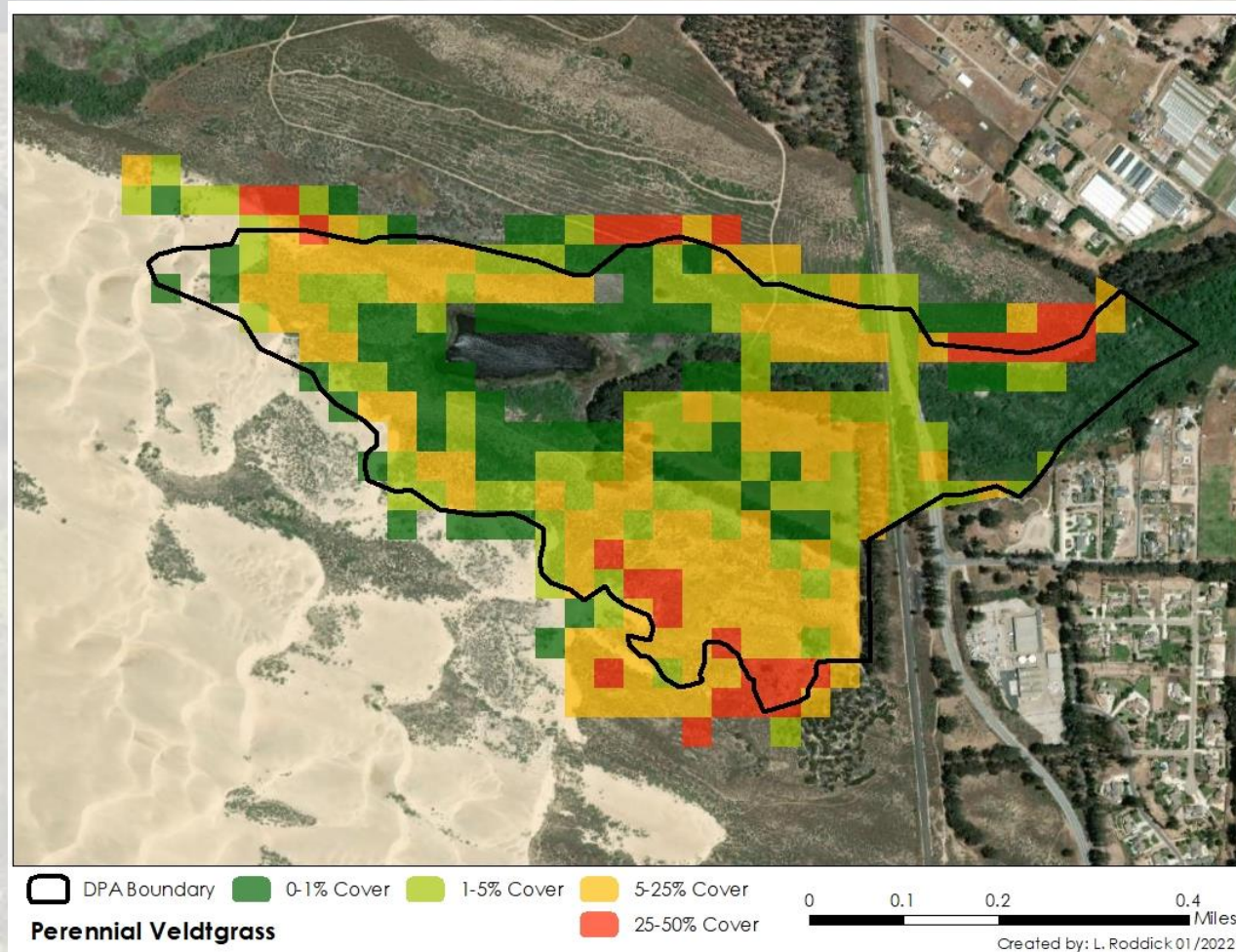
- Truck & Backpack Sprayers 25ft-100ft
- High density areas- Vaquero (Clethodim)
- Low density areas- Roundup Custom (Glyphosate)

Aerial Herbicide Application

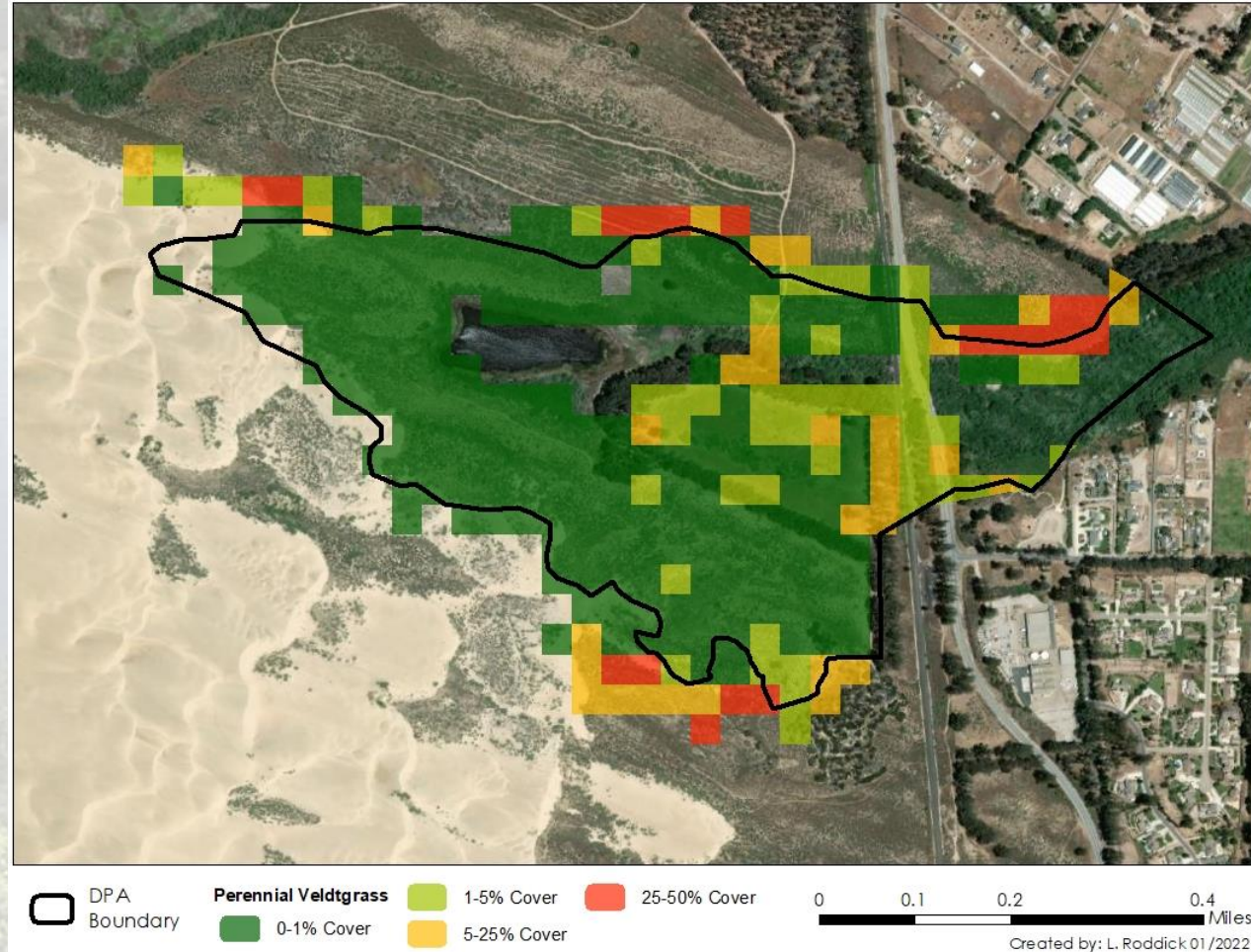
- Outside 100ft of wetlands/listed species occurrence
- Grass-specific herbicide, Vaquero (Clethodim)
- Drift Control (Crosshair)



Monitoring Success



POST YEAR 1



POST YEAR 3

Monitoring Success



POST YEAR 1



POST YEAR 4

Monitoring Success



POST YEAR 1



POST YEAR 4

Take Aways

- Overall management strategy just as important as actual control methods.
- Invasive management is site/habitat specific and must pay close attention to seasonality year-to-year.
- Creative management is necessary when in rare species habitat
- Consider all tools to meet goals
- Monitoring is critical to identify when something isn't working and you need to change approaches.