

# Oak Woodland Restoration in the East Bay Parks

Natural and Cultural Resources Committee Meeting

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A photograph of a massive, ancient tree with a thick, gnarled trunk and sprawling, twisted branches. The tree is covered in moss and lichen, indicating its age. The foliage is dense and green, filling the upper part of the frame. The ground is covered in brown leaves and forest floor debris. The text "Some of our oldest and most iconic trees" is overlaid in white at the bottom.

Some of our oldest and most iconic trees



# Oak woodlands are keystone ecosystems

- Thousands of species, from lichen to large mammals
- Over 300 terrestrial vertebrates
- Oak woodlands support other keystone species
- Dominant cover type throughout the Diablo Range
- Oak woodlands are a cultural as well as natural resource







Each oak is its own ecosystem of lichens, crevices, cavities and leaf litter (niches)

Older trees are of vast importance because they host the largest number and diversity of niches



Family groups of acorn woodpeckers use granary trees to store their food source and use multiple trees within a complex as granary trees

Only large, old trees provide this niche





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# Challenges and threats

- Decline over past 200 years
- Lack of recruitment
- Grazed areas
- Fire regimes
- Recruitment regimes
- Most oak species do not recruit well under other oaks





# Decline in oak cover over time

An aerial photograph showing a landscape with scattered oak trees and open fields. The trees are dark and dense, while the fields are lighter and more open. The overall scene suggests a natural or semi-natural environment.

- Santa Clara Valley Historical Ecology study (SFEI 2008)
- 95% of valley's oaks were lost by 1940
- 50% of those remaining were lost after 1940
- “Without active stewardship to recruit new trees ...valley oaks are likely to disappear from the valley floor in coming decades as older trees die”



- Like Santa Clara, much of the 680 corridor was oak woodland / savanna
- Valley oak → valley floors and riparian corridors
- Blue and coast live oak → hills, canyons and draws
- Development and agricultural land conversion



# The Park District is a big piece of the oak conservation puzzle

- Land acquisition protects dozens of acres per year
- Restoration to expand extirpated and existing populations
- Leaders in the Diablo Range conservation space
  - Research and restoration initiatives
  - Fine scale vegetation map







Restoration: the process of assisting an ecosystem that has been degraded, damaged, or destroyed

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May involve removing harmful species, erosion control, planting, seeding, or other interventions



# Why restore ecosystems?

- Parklands have experienced degradation from historic land uses
- Degradation impacts ecosystem function and biodiversity
- Biodiversity = ecosystem resilience
- Restoration supports climate and fire resilience







For oaks, this means planting the next generation of old trees.





# Oak Woodland Restoration Project

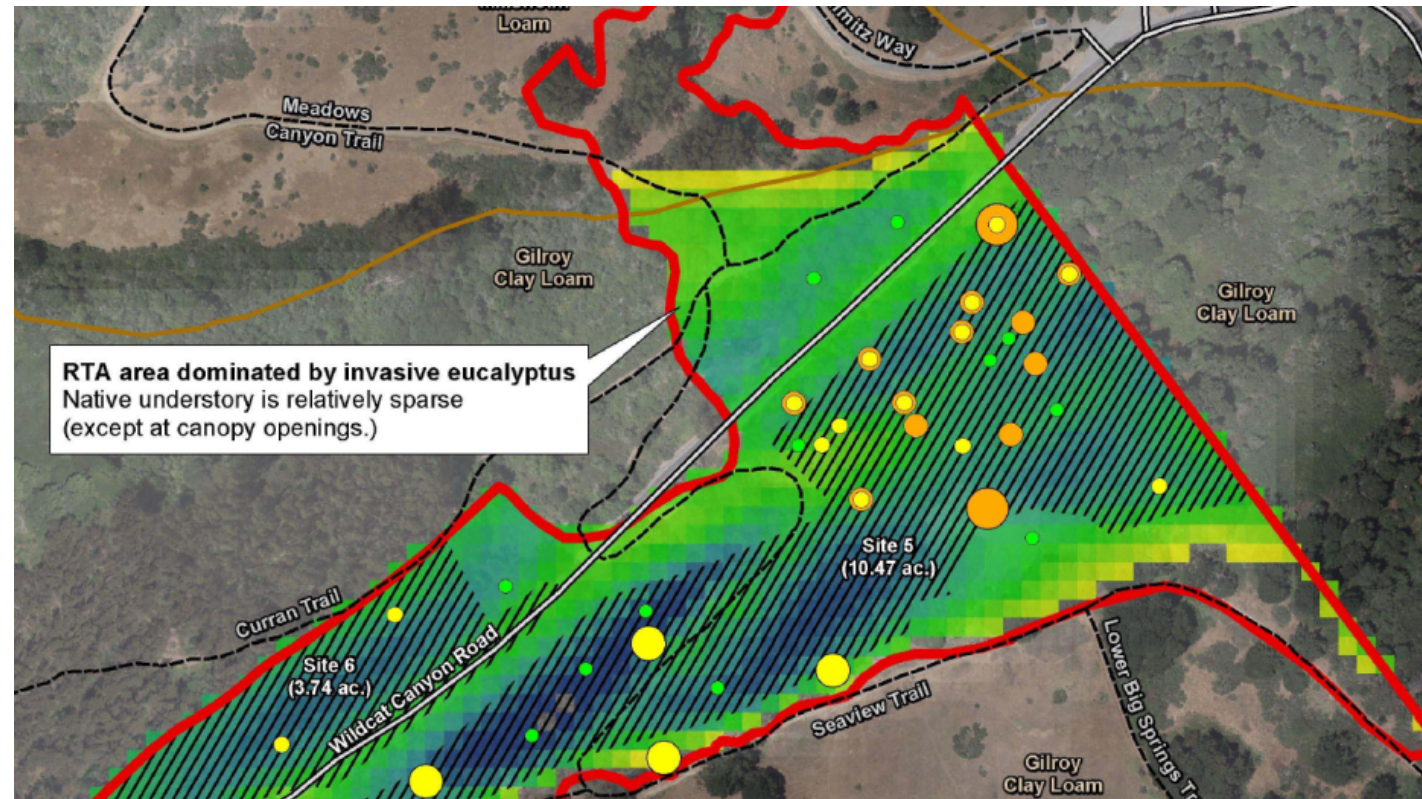
- Seed funding from California Native Plant Society
- Matching funds from Measure FF
- Oak Woodland Restoration Plan
- Pilot: 2024
- Scalable





# Oak Woodland Project Development

- Habitat suitability analysis: soils, aspect, solar radiation
- Within or near treatment areas
- Where eucalyptus have been or will be removed
- Determined best areas to site restoration projects
- Reference sites provide density and pattern information





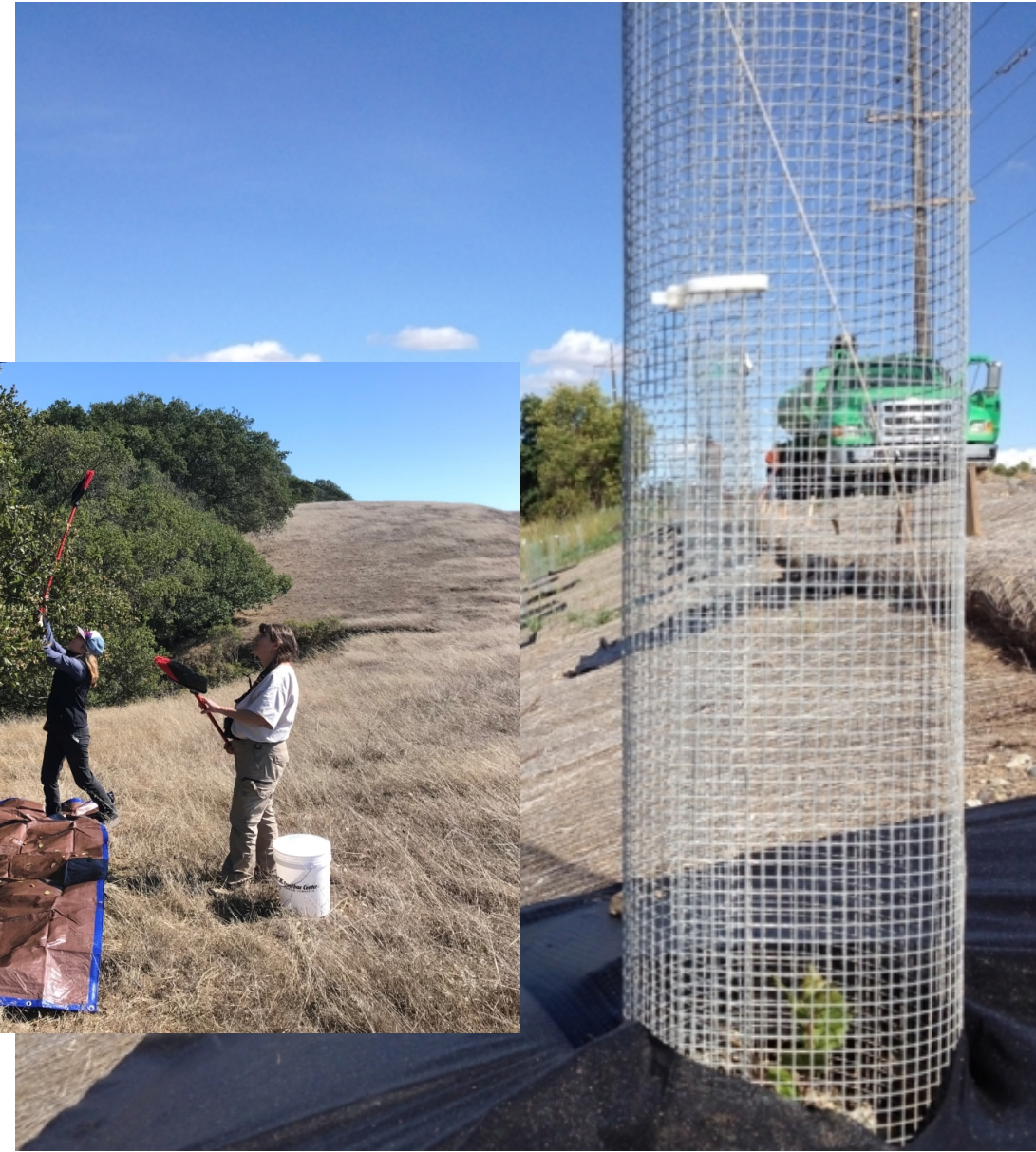


Oak Woodland Reference Site, Anthony Chabot Regional Park



# Restoration Methods

- All plants from seed (acorns)
- Collect in fall
- Store under refrigeration
- Plant in wire enclosures
- Multiple seeds per enclosure
- Emergence March - April





# Reference information and life history

- Mature stands tell us a lot about future goal conditions
- Oak woodland –  
25-60% canopy cover
- Up to 30 trees per acre
- Oak savanna –  
10-25% canopy cover
- Fewer than 10 trees per acre
- Cohorts recruit in  
stand replacement events
- Mature woodlands most of the  
trees are the same age/size and trees are long lived





# Expanding capacity to implement restoration

- “Light-touch”
- Scalable
- Low tech
- Cost efficient





# Post-Fire Restoration

- Assist landscape in recovery
- Opportunity to break the cycle





# Scenic Post-Fire Restoration Project



- Removal of burned and dead trees
- Restoration to grassland and oak woodland









Oak ecosystems are fire—resilient









To improve fire adaptation, management and policy decisions must reflect the specific needs of the diverse ecosystems in fire-prone regions.

Nuanced, ecosystem-specific approaches [are] essential for robust conservation and wildfire management.

*Calhoun et al 2021*