

# Albany Hill Forest Management & Habitat Restoration Plan

Public Education Session  
November 8, 2023





# Land Acknowledgment

Public Education Session  
November 8, 2023





# Session Goals

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1. Provide Community with accurate information
2. Understand community concerns and interests
3. Answer Questions
4. Receive initial input





# Project Team

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- City of Albany



- Restoration Design Group



- Nomad Ecology



- Creekside Science





# Tonight's Topics

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PROJECT BACKGROUND

Albany Hill through time & How we got here

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EUCALYPTUS - Health and Habitat

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FIRE RISK - and other hazards

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ECOLOGY OF ALBANY HILL – opportunities!

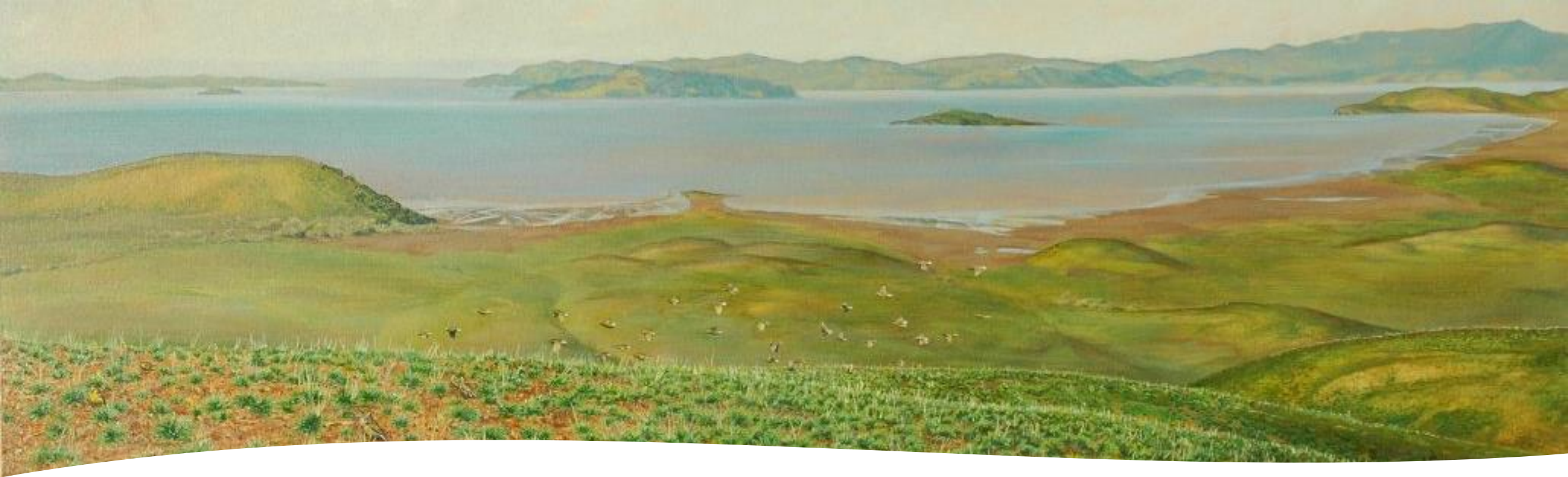
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MONARCHS - Biology & Albany Hill Population

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NEXT STEPS & Project Schedule





*Painting by Laura Cunningham, from her book **State of Change: Forgotten Landscapes of California**, Heydey Press, 2010. [www.lcunningham-art.com](http://www.lcunningham-art.com)*

500 years ago

- Albany Hill can be seen on the left hand side of the painting
- Riparian area winds from the left along the north side the hill, feeding the coastal wetlands
- Eastern slopes and top of hill are dominated by grasslands





*Above: 1850's photo from the east of Albany hill – before the gun powder factory but after Spanish arrival and cattle grazing. You can see the oaks canopies on the far right.*

## Before Albany

- For millennia, Albany Hill was predominantly grassland with an oak woodland on the more sheltered northern slope.
- Native Americans established a village near the creek and oak woodlands
- Eucalyptus arrived only in the last 140 years

*“The north side of the hill was home to Native Americans, who lived in small groups around the Bay. On the cool north side of the hills, oaks supplied acorns, which were ground into flour along with seeds from the grasslands that dominated the landscape.”*

*Susan Schwartz, Friends of Five Creeks, for King Tides walk 2020*





# Arrival of the Eucalyptus

## Supplying Gold Rush Demand

- Giant Powder Company moves operations from West Bay to East Bay around 1880 and planted Eucalyptus for 'blast protection'
- 1883 explosion
- Judson Chemical Works established adjacent to supply acids
- Massive explosion in 1892 involving both factories that started in a nitroglycerine house
- Giant Powder Company moves to Pt. Pinole (and plants more eucalyptus) - Judson stays and rebuilds
- 1905 chain of explosions at Judson factory – finally dismantled and sold.



# Views from the Past

Eucalyptus had not  
yet covered the  
ridge of the hill



1938



1955





# Current Landscape

Albany Hill Is a quilt of land ownership and stewardship.

- Private landowners
- Public Parks
- Easements

Unique and Iconic Landscape feature embedded in an urban fabric



# Current Context



San Francisco Bay

Albany Bulb

Cerrito Creek

Eastshore State Park

Bay Trail

Pierce St. Park

Albany Hill Park

El Cerrito Plaza

Albany Middle School



Codornices Creek

Albany Village

Ocean View Park

Buchanan Bikeway

Village Creek

San Pablo Avenue 123

Solano Avenue

Ohlone Greenway

Albany High School

Marin Avenue

Key Route Blvd

Pomona Ave

9th St

8th St

10th St

San Pablo Ave

Albany Ave

Talbot Ave

Evelyn Ave

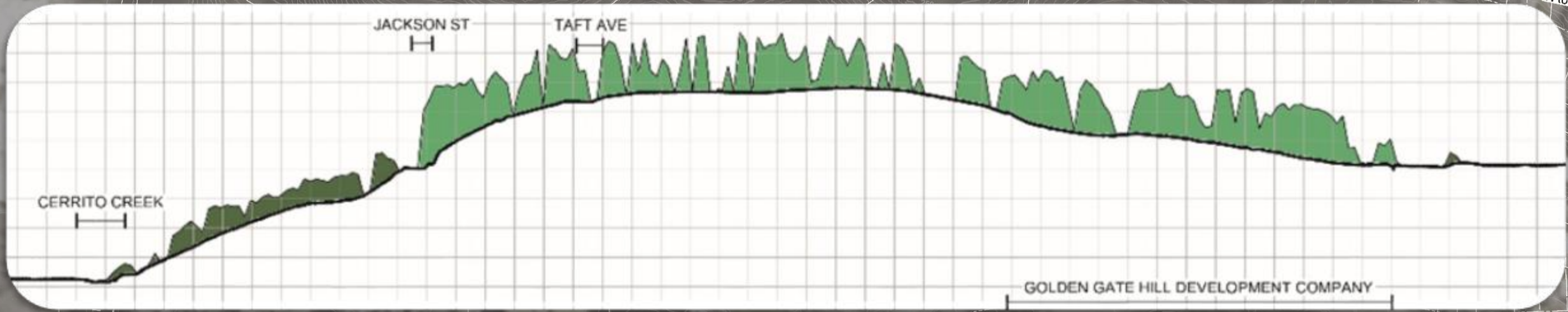
Albany Greenway

Albany Ave





# Project Area





# Why is this project happening?

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Fall of 2020 City staff noticed a decline in Eucalyptus health

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Oct 2021: The City Council established the **Albany Hill Eucalyptus Project** for addition to the Capital Improvement Plan (Project No. 41015) and appropriated local funds to support the initiation of the project.

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2021 & 2022 Arborist, Water stress, and Pathogen Reports

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Nov 2022 Monarch Butterfly Habitat Assessment  
Dec 2022 Fuel and Fire Hazard Assessment

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All Studies pointed to the need for Eucalyptus removal and management – no action is not an option.

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The project is intended to responsibly mitigate wildfire and related hazards while also repairing and restoring native habitat for generations of wildlife to come.



# Purpose Statement

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The City seeks a comprehensive plan for the phased removal of dead and dying eucalyptus trees on Albany Hill and the restoration of habitat for monarchs and native plants and wildlife in a way that creates self-sustaining ecosystems with low fire hazards and minimal maintenance requirements





# Eucalyptus – Health and Management

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Natradee Quek  
Restoration Design Group





City Manager

City Attorney

City Treasurer

+ City Clerk

+ Community Development

+ Building

+ Planning & Zoning

- Public Works

Service Request

Construction Alerts

+ Capital Improvements

+ Operations & Maintenance

Streets

Sidewalks

+ Urban Forestry

- Creeks & Open Space

Albany Hill

City Standards Details & Specifications

Street Sweeping

Citywide Streetlighting Evaluation

+ Sustainability

+ Finance

+ Human Resources

+ Police Department

+ Fire Department

+ Neighborhood Services

+ Recreation & Community Services

[Departments](#) » [Public Works](#) » [Creeks & Open Space](#) »

## Albany Hill

Print Font Size:



Albany Hill is located on the west end of the City of Albany near the shoreline of the San Francisco Bay. Albany Hill is the most prominent landmark within the City, with current undeveloped acreage totaling approximately 39 acres. Of

that space, 28 acres is dedicated to open space (see below).

Currently, Albany Hill maintenance responsibilities are shared between City Public Works and Fire Departments, and the City's nonprofit partner, **Urban Tilth**. Projects focus on keeping the Hill accessible to residents while also investing in ecosystem health and fire safety. Read more about current and past efforts to maintain, preserve, and enhance this precious natural resource in Albany below.

### Open Space Acreage

- City-owned park & open space: 15 acres
- Privately-owned dedicated open space: 11 acres
- City easement on private dedicated open space: 2 acres
- Privately-owned undeveloped open space (zoned as Residential Hillside Development): 11 acres
- **Total open space acreage: 39 acres**

### About Albany Hill

- [Facility Directory - Albany Hill & Creekside Park](#)

### Maintenance



### Public Works Department

540 Cleveland Ave  
Albany CA 94710  
1 + (510) 524-9543  
[Email](#)

**Mark Hurley**  
Public Works Director/  
City Engineer

**Margot Cunningham**  
Natural Areas Coordinator

### Fire Department

1000 San Pablo Avenue  
Albany, CA 94706  
Emergencies: 911  
1 + (510) 525-7300  
[Email](#)

[Webpage](#)

**James Boito**  
Fire Chief

[Submit a Service Request](#)



scroll down





## Albany Hill Eucalyptus Project (CIP No. 41015)



In October of 2021, the City Council established a Capital Improvement Project to address increasing decline of eucalyptus forest on Albany Hill. The project is intended to responsibly mitigate wildfire and related hazards while also repairing and restoring native habitat for generations of wildlife to come. The project is currently in the planning phase as of October 2023.

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<a href="#">Next Steps</a>	>

click here



### Project Documents



#### Project Overview

- [Project Map](#)
- [East Bay Regional Park District Regional Map of Tree Die-Off \(Full\) \(Albany only\)](#)
- [Bay Area Tree Mortality Overview](#)

#### New Assessments & Studies

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- [Eucalyptus Dieback Report - Matteo Garbelotto, Principal Investigator, U.C. Berkeley \(August 2021\)](#)
- [Eucalyptus Water Stress Report - Dr. Curtis Ewing, Senior Environmental Scientist, CalFIRE \(September 2021\)](#)
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- **NEW!** [Assessment of Drought and Fire Impacts and Fuels Management on Monarch Butterfly Habitat - Stuart B. Weiss, PhD, Creekside Science \(November 2022\)](#)
- **NEW!** [Characterization of Fuels, Fire Hazards, and Recommendations - Carol Rice, Cheryl Miller, Wildland Res Mgt \(December 2022\)](#)

#### Previous Assessments & Planning Documents

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- [Monarch Habitat Assessment - Stuart B. Weiss, PhD, Creekside Science \(2018\)](#)



# Eucalyptus Health

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*"Since 2020, widespread decline and dieback of Eucalyptus trees has been reported in multiple parts of the San Francisco Bay Area in California"*

*"In Northern California, all Eucalyptus species are exotic and invasive, and the presence of decline could be used as an indicator that a stand should be removed, because it is maladapted to the recent warmer and drier climate."*

U.C. Berkeley, 2021  
(Eucalyptus Dieback Report)





# Eucalyptus Dieback

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*“The dieback in Eucalyptus appears to be strongly driven by environmental stress factor such as those caused by drought, increasing temperature, and fewer fog days, combined with the expression of disease by endophytic latent pathogens or by opportunistic fungi.”*

U.C. Berkeley, 2021  
(Eucalyptus Dieback Report)





## TREE DIE-OFF WITHIN RTA vs. SRA April 2021



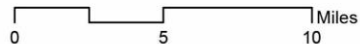
### Detailed Maps

- Map 1 - Carquinez Strait Shoreline
- Map 2 - Point Pinole Shoreline
- Map 3 - Miller / Knox Shoreline
- Map 4 - Albany Hill Park (Non-EBRPD)
- Map 5 - Hillside Park (Non-EBRPD)
- Map 6 - Briones / San Pablo Reservoirs (Non-EBRPD)
- Map 7 - Tilden
- Map 8 - Sibley
- Map 9 - Reinhardt Redwood (Non- EBRPD)
- Map 10 - Roberts
- Map 11 - Anthony Chabot / Lake Chabot
- Map 12 - Garin
- Map 13 - Dumbarton Quarry Campground on the Bay
- Map 14 - Las Trampas
- Map 15 - Mount Diablo (Non-EBRPD)

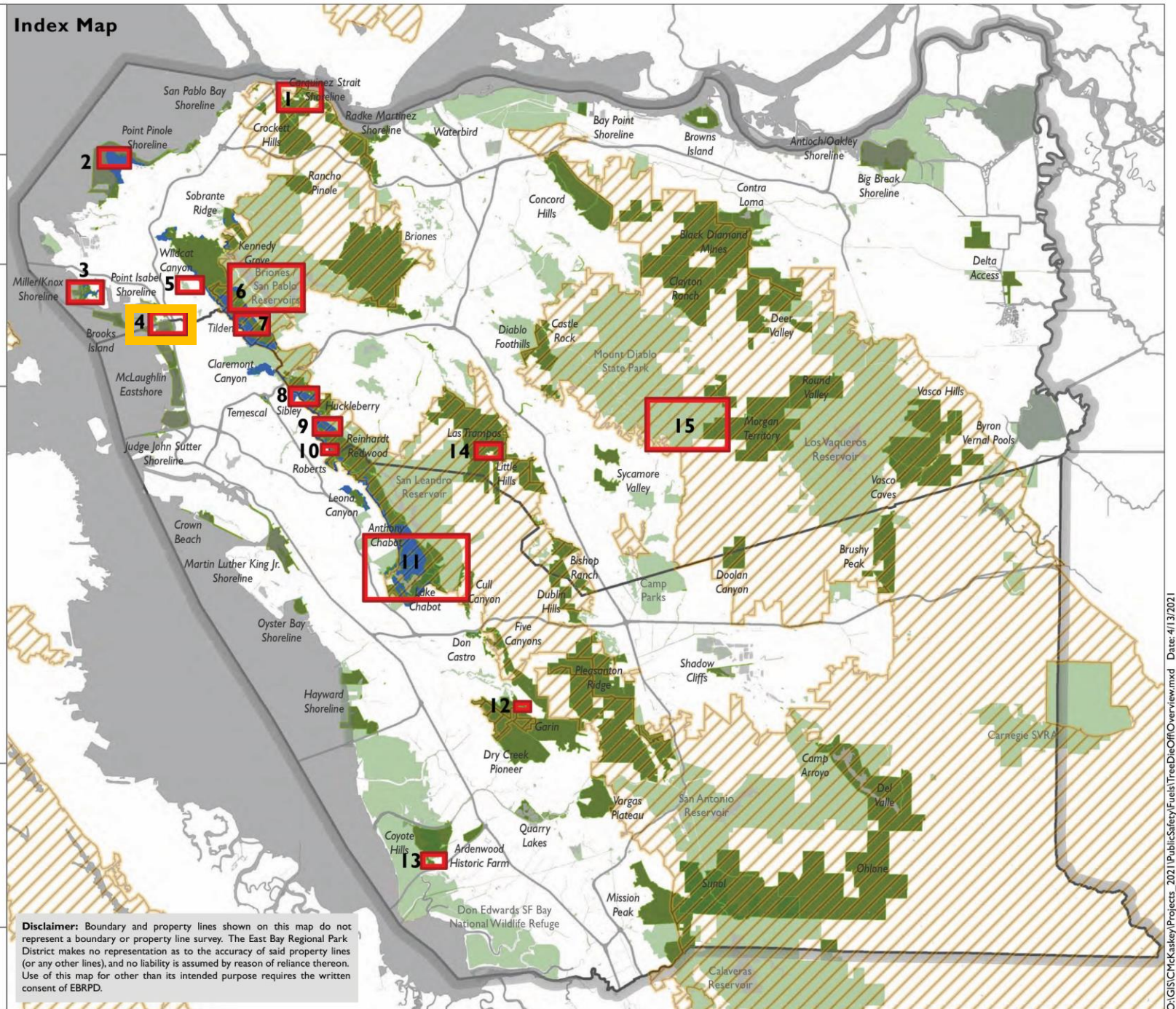
Note: All maps are set at different scales.

### Abbreviations:

- RTA:** Recommended Treatment Area
- SRA:** State Responsibility Area
- FEMA:** Federal Emergency Management Agency
- HMGP:** Hazard Mitigation Grant Program
- PDM:** Pre-Disaster Mitigation Grant



### Index Map



**Disclaimer:** Boundary and property lines shown on this map do not represent a boundary or property line survey. The East Bay Regional Park District makes no representation as to the accuracy of said property lines (or any other lines), and no liability is assumed by reason of reliance thereon. Use of this map for other than its intended purpose requires the written consent of EBRPD.





# Water and Eucalyptus

*“Average rainfall for Albany is 23.62 inches per year... This species of Eucalyptus tree is native to Tasmania where it normally receives around 30 inches of yearly rainfall”*

SBCA Tree Consulting, 2021  
(TRAQL2 Arborist Report)





# Report Findings

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*190 trees were observed with dead tops*  
*150 trees were observed to have internal decay*  
*96 trees located on slopes above roads*  
*69 trees have developed as stump sprouts*

SBCA Tree Consulting, 2021  
(TRAQ L2 Arborist Report)



Photo 7. Photo above shows a previously removed tree that was destabilized due to the graywacke sandstone giving way underneath.



# Eucalyptus roots & increased slope instability

Photos 8 and 9. Photos below show two trees that previously failed by roots on the slope on the upper side of Taft.



*Ninety-six (96) trees located on slopes above roads are recommended for removal... When strong winds blow, the force is transferred to the roots that tend to loosen the bank soil, graywacke (sandstone) in this case, resulting in greater erosion of the bank*

SBCA Tree Consulting, 2021  
(TRAQ L2 Arborist Report)



EUCALYPTUS ROOTS FORCE THEMSELVES BETWEEN SANDSTONE CRACKS LOOKING FOR WATER, AND TO STABILIZE THE TALL TREE FROM WIND FORCES, LOOSENING THE SOIL



Photo 14. Photo above shows another example above of slope destabilization under trees.







# Arborist Recommendations

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*318 out of the 390 Eucalyptus surveyed have been identified with defects that warrant removal*

SCBCA Tree Consulting, July 2021  
(TRAQ L2 Arborist Report)

*“We concur with the management recommendations of SBCA Tree Consulting, with the exception of the removal of tree #258”*

McNeil Arboriculture Consultants, March 2022  
(TRAQ L3 Arborist Report)



# Fire Hazards & Public Safety

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Erik Stromberg  
Restoration Director, RDG





2012

*Albany Hill Creekside Master Plan*



# Vegetation Management Plan

## Fire Hazard Concerns:

*This vegetation type is a high fire hazard due to volatile oils in eucalyptus leaves, high volume of forest litter accumulation, and low moisture content in shedding bark allowing easy fire ignition. Additionally vertical continuity from branches or bark that reach the ground allows for fire spread into the crown. Once fire reaches the crown of these trees, embers can be carried for miles (“spotting”) into other parts of the community and can be very difficult to control. The grove on the top of the hill shows signs of decline due to age and little regeneration except from resprouts from cut stumps; dead material is prevalent in the canopy of some of the trees.*

City of Albany, 2012  
(Albany Hill Creekside Master Plan)



# Vegetation Management Units (2012)

- **EGHT** – Eucalyptus Forest Hill Top
- **EGJT** – Eucalyptus Grassland Jackson Taft
- **EOJT** – Eucalyptus Oak-Woodland Jackson Taft
- **ESHT** – Eucalyptus Forest Shrub Hill Top
- **ETHT** – Eucalyptus Forest Toyon Top
- **G** – Grassland
- **GOW** – Grassland Oak Woodland
- **OW** – Oak Woodland
- **R** – Riparian

*“one whole vegetation type (Eucalyptus Forest Toyon Hill Top) is no longer appropriate. Because of the growth of young oaks, this area would best be classified in the mapping scheme of the 2012 Vegetation Management Plan as Eucalyptus Oak Woodland.”*

*Rice & Miller, 2022*







# Public Hazard (physical)

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*“Because a well-used public pathway winds through these trees they present hazard to park visitors. Many of the trees could be pruned at considerable expense. Due to current decline in health they are not attractive, and would become less so with the pruning required to reduce risk. The pruning would likely accelerate mortality, at which time the trees would have to be removed.”*

McNeil Arboriculture Consultants, 2022  
(TRAQ L3 Arborist Report)





# Characterization of Fuels, Fire Hazards and Recommendations

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Carol Rice and Cheryl Miller, Dec. 2022

- Study expanded on 2012 Vegetation Management plan by including parcels adjacent to City parcels to allow for multi-owner grant proposals and management
- Describes types of fuels (fuel volume, characteristics, types)
- Studies fire behavior analysis and hazard mapping to assess relative fire hazards
- Proposes treatments and prioritization to reduce hazards



# Study Area

*Fire study area included a buffer of 1000 feet from Albany Hill and Creekside Park.*

*Total Study Area = 292.1 ac*



FIGURE 1. STUDY AREA BOUNDARY MAP.



# Fuel Types

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Fuels are classified into **surface fuels** – generally under 12' high, carry fire near the ground

and

**canopy fuels** – found in the tree canopy, which can carry fire to other canopies



FIGURE 10. THE MOST HAZARDOUS TIMBER-LITTER FUEL MODEL (TL9, OR 189).



# Fire Ladders - connecting fuel types

*Eucalyptus shed highly flammable bark and accumulate leaf litter which does not decompose readily.*

*Their physical structure and tendency towards limb failure make Eucalyptus a source of fire ladders from ground to canopy.*



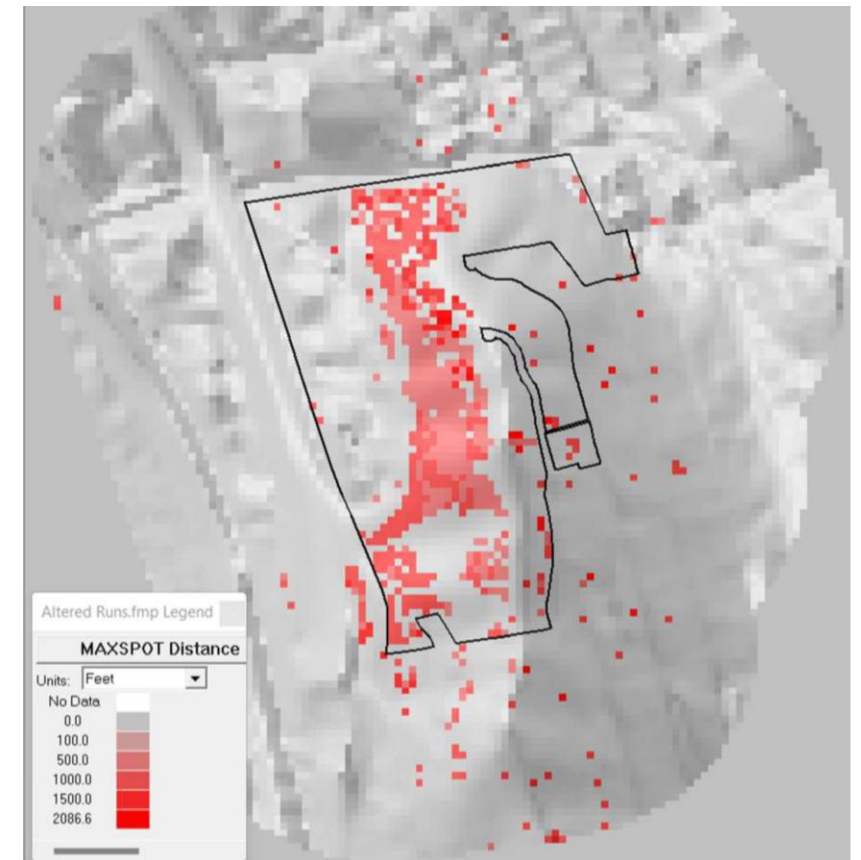


# Fire Risk Assessment

*Wildland fire behavior predictions indicate a high level of hazard, with more than a quarter of the area expected to burn with exceedingly long flame lengths, rapid rate of fire spread and widespread torching and production of embers.*

*The highest hazard is in the eucalyptus stands on the top of Albany Hill. The area north and east of Jackson St is where the wildfire hazard is least.*

Wildland Resource Management, 2022  
(Characterization of Fuels, Fire Hazards, and Recommendations)





# Recommendations from Study

- Remove dead and dying eucalyptus throughout the study area, and specifically on City Property.
- Continue thinning of understory shrubs and dead material
- Dissuade unauthorized trail development and use
- Defensible space (100ft) should be created and maintained around all structures
- Where Monarch habitat is present, City and private landowners should consider alternative fuel management strategies

Rate of Spread (SW)

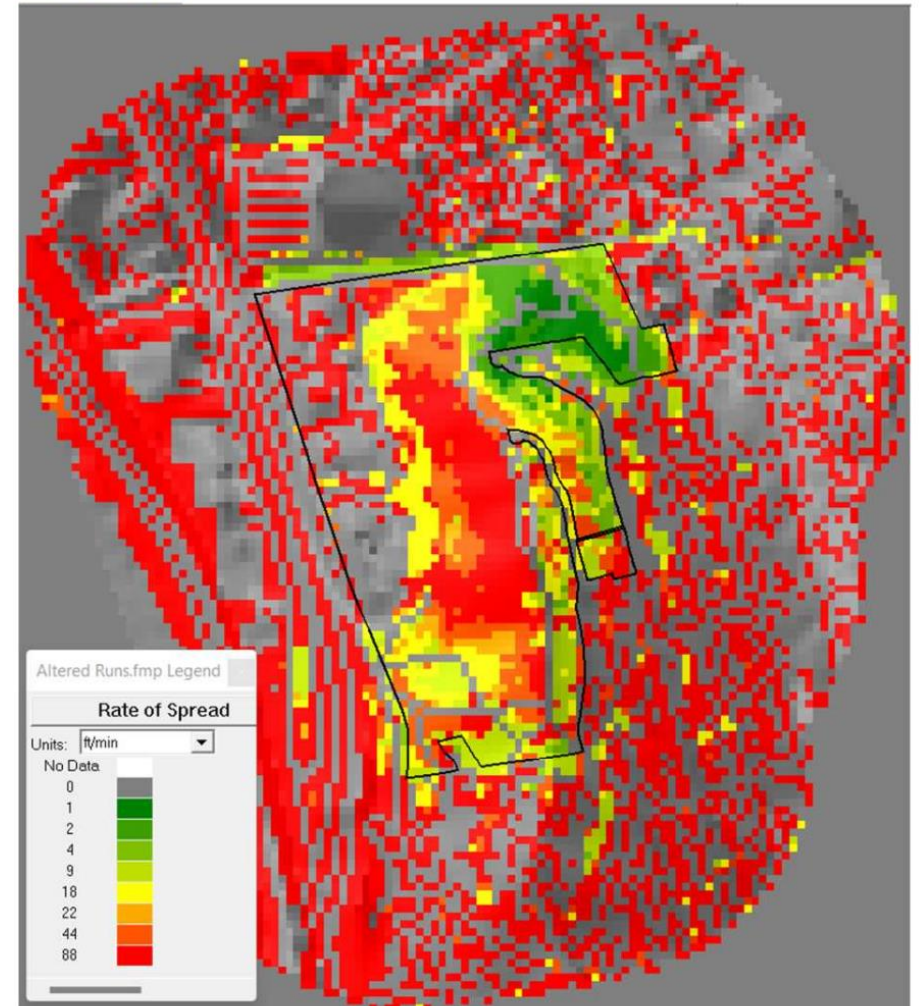


FIGURE 17. PREDICTED RATE OF SPREAD (FEET/MINUTE) FOR THE SOUTH/SOUTHWEST WIND SCENARIO.



# Stewardship and Fuel Reduction efforts

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- *2020 - Urban Tilth Stewardship Field Crew begins partnership!*
  - *Mow grasslands*
  - *Pruning along paths and fire roads*
  - *Thinning young oaks*
  - *Removing excess Eucalyptus bark and downed wood*
  - *Native plant amplification and care*





# June 26, 2022 Fire

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*The fire burned, with varying intensity, influenced by topography and fuel volume available to burn. The fire burned eastward from Pierce, uphill.*

*Rice & Miller, 2022. Characterization of Fuels, Fire Hazards, and Recommendations*

**Jim Boito**  
Fire Chief for the City of Albany





# ECOLOGY of ALBANY HILL

Erin McDermott, Nomad Ecology





# Ecological Island

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- Albany Hill is an ecological island with a large diversity of native plants.
- It is the only significant topographical feature in the East Bay that is immediately adjacent to the Bay, directly across from the Golden Gate where it receives fog and cool winds.
- Plants that are adapted to cooler climates can persist there.
- Provides native habitat surrounded by urban development.





# Geology of Albany Hill

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- Albany Hill appears on the geologic map as a patch of unit Kfn, which is Franciscan rocks of the Novato Quarry terrane.
- Franciscan sandstone dating from late in the Cretaceous Period, about 70 to 83 million years old.
- Cerrito Creek runs past its north end, and Marin Creek's drainage lies to its south.







# Vegetation Communities and Wildlife Habitat

- Coast Live Oak Woodland
- Eucalyptus Forest
- Grassland Openings



# Oak Woodland

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- Canopy of oaks with native shrub species in understory
  - California rose (*Rosa californica*)
  - sticky monkeyflower (*Diplacus aurantiacus*)
  - blue elderberry (*Sambucus mexicana*)
  - snowberry (*Symphoricarpos albus* var. *laevigatus*)
  - pink flowering currant (*Ribes malvaceum* var. *malvaceum*)
- 117 bird species identified on Albany Hill





# Birds on Albany Hill

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# Eucalyptus Forest

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- Canopy of Eucalyptus with some native species in understory
  - Poison oak (*Toxicodendron diversilobum*)
  - Coast live oak
  - Toyon (*Heteromeles arbutifolia*)
- Eucalyptus provides habitat for monarch butterflies







# Grasslands

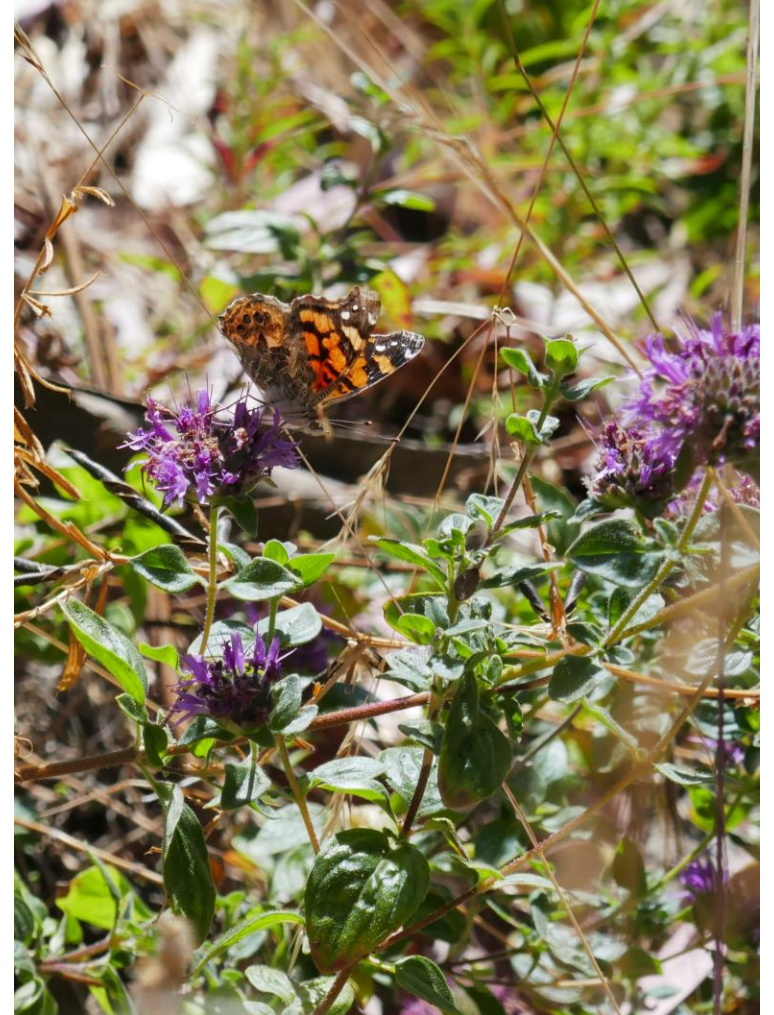
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- Grassland in openings in the Eucalyptus Forest and in the meadows
- Native species observed include:
  - yarrow (*Achillea millefolium*)
  - blue wild rye (*Elymus glaucus*)
  - golden aster (*Heterotheca sessiliflora* subsp. *bolanderi*)
  - gumweed (*Grindelia hirsutula* var. *hirsutula*)
  - narrowleaf mule's-ear (*Wyethia angustifolia*)
  - summer lupine (*Lupinus formosus* var. *formosus*)
- Habitat for butterflies – at least 30 species of butterflies have been identified on Albany Hill.



# Insects on Albany Hill

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# Restoration Opportunities

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- Native coast live oak and toyon is present in the understory Eucalyptus forest that will grow and form canopy if Eucalyptus trees are removed.
- Invasive weed control will be important.







# Restoration Opportunities

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- Abundant native plants are present for seed collection and native plant enhancement throughout Albany Hill.
- Opportunity for enhancement of coastal prairie grasslands.



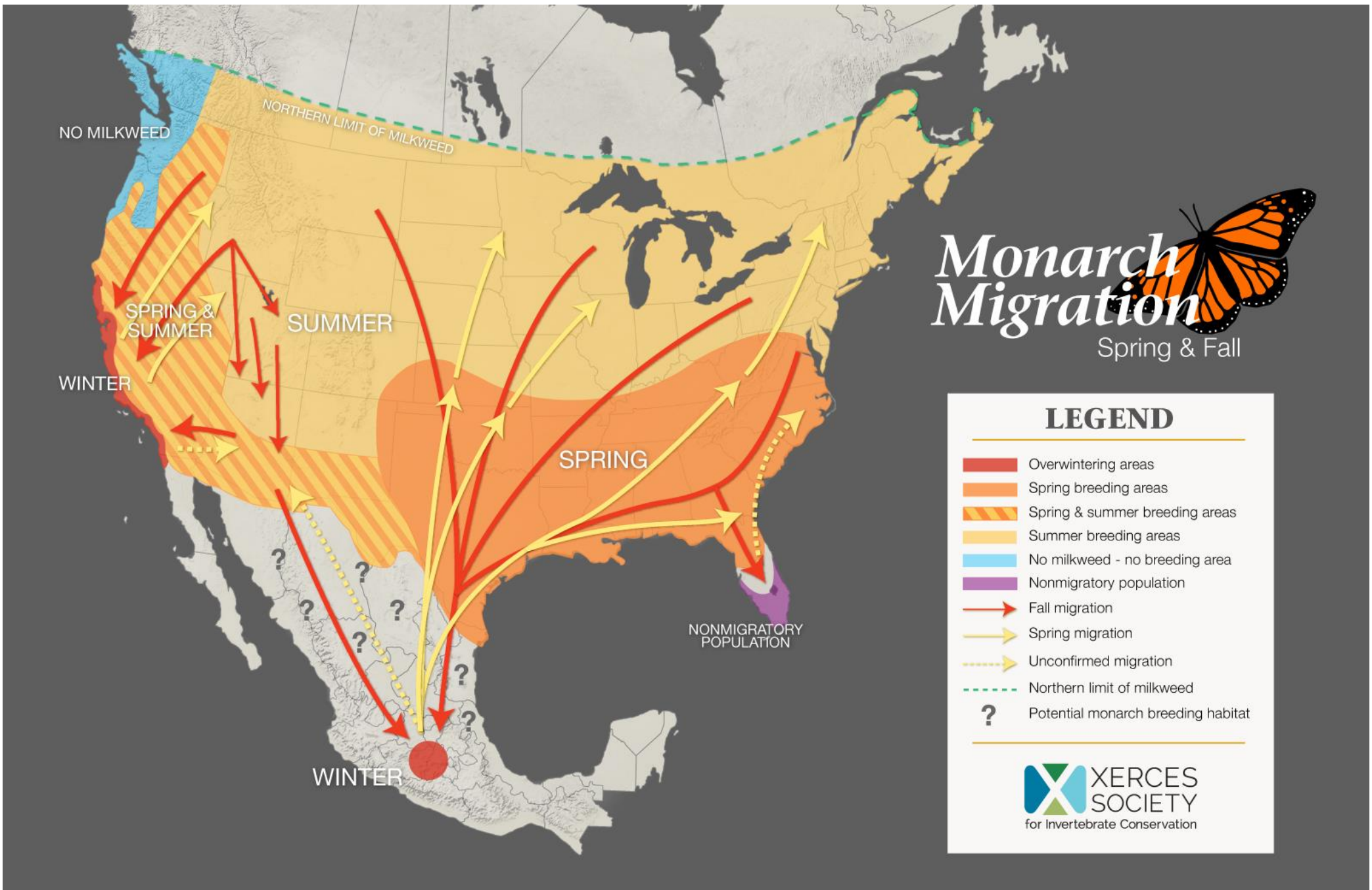
# Monarchs!



Stu Weiss, Creekside Science







# Monarch Migration

Spring & Fall



## LEGEND

-  Overwintering areas
-  Spring breeding areas
-  Spring & summer breeding areas
-  Summer breeding areas
-  No milkweed - no breeding area
-  Nonmigratory population
-  Fall migration
-  Spring migration
-  Unconfirmed migration
-  Northern limit of milkweed
-  Potential monarch breeding habitat





# Ancestral Condition – Monterey Pines Pt. Lobos State Reserve 2011





10 – 100,000 individuals in colonies  
mostly in non-native *Eucalyptus*





# California Monarchs

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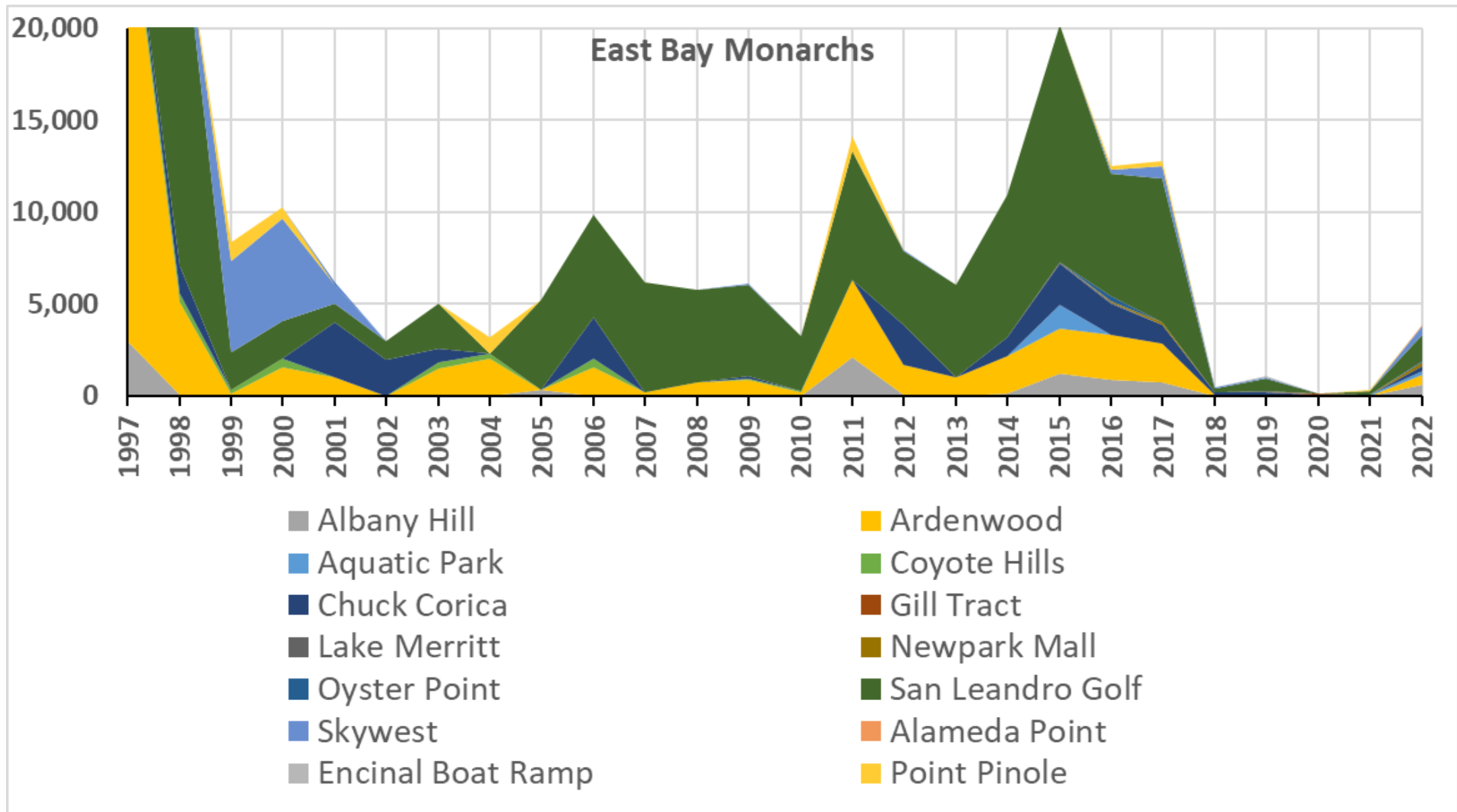
## Top 50 Overwintering sites

- Many sites are along the coast
- Primarily Eucalyptus, but many other tree species contribute



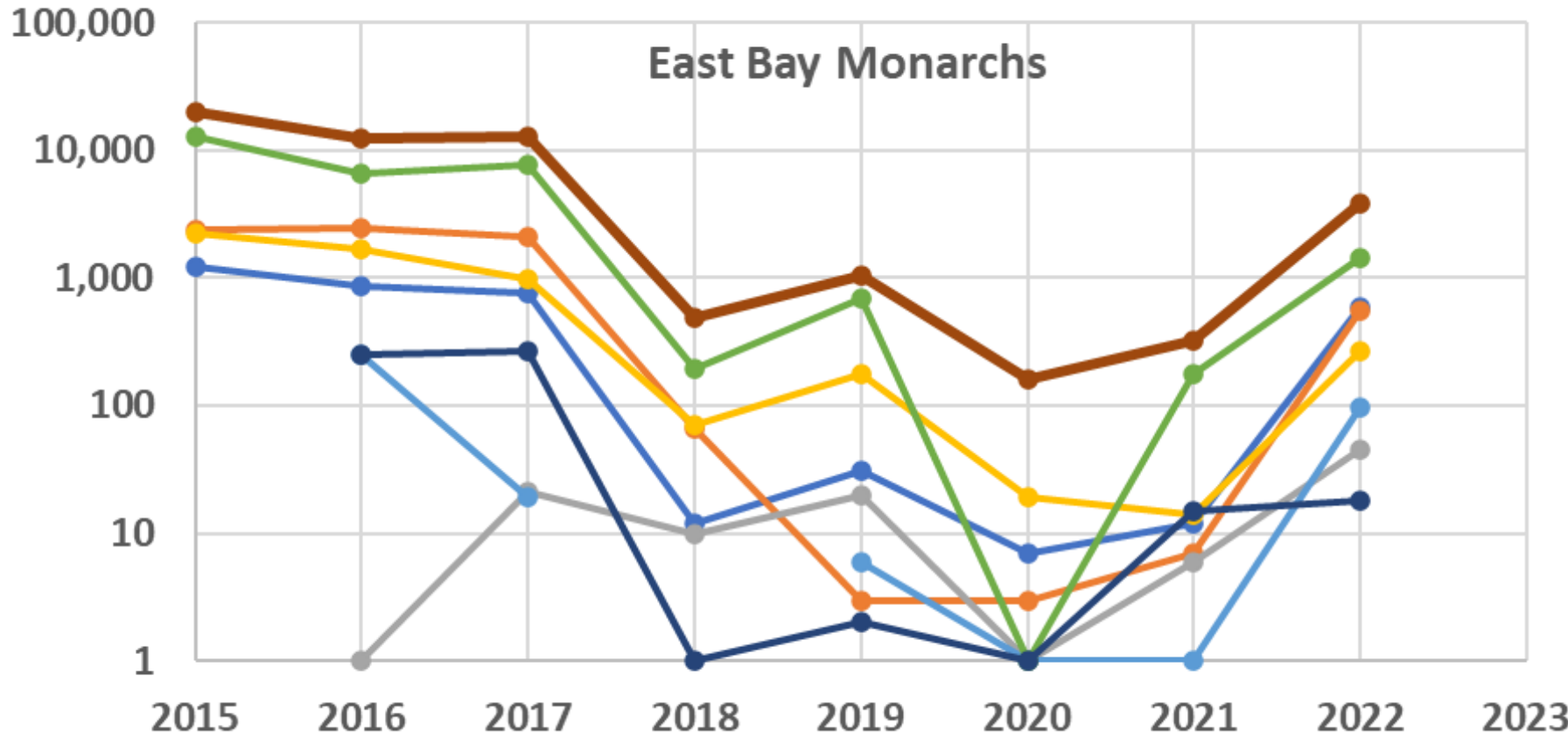
**Figure 2.** Locations of the Top 50 priority monarch overwintering sites in California. (Priority sites are orange, other sites white.)







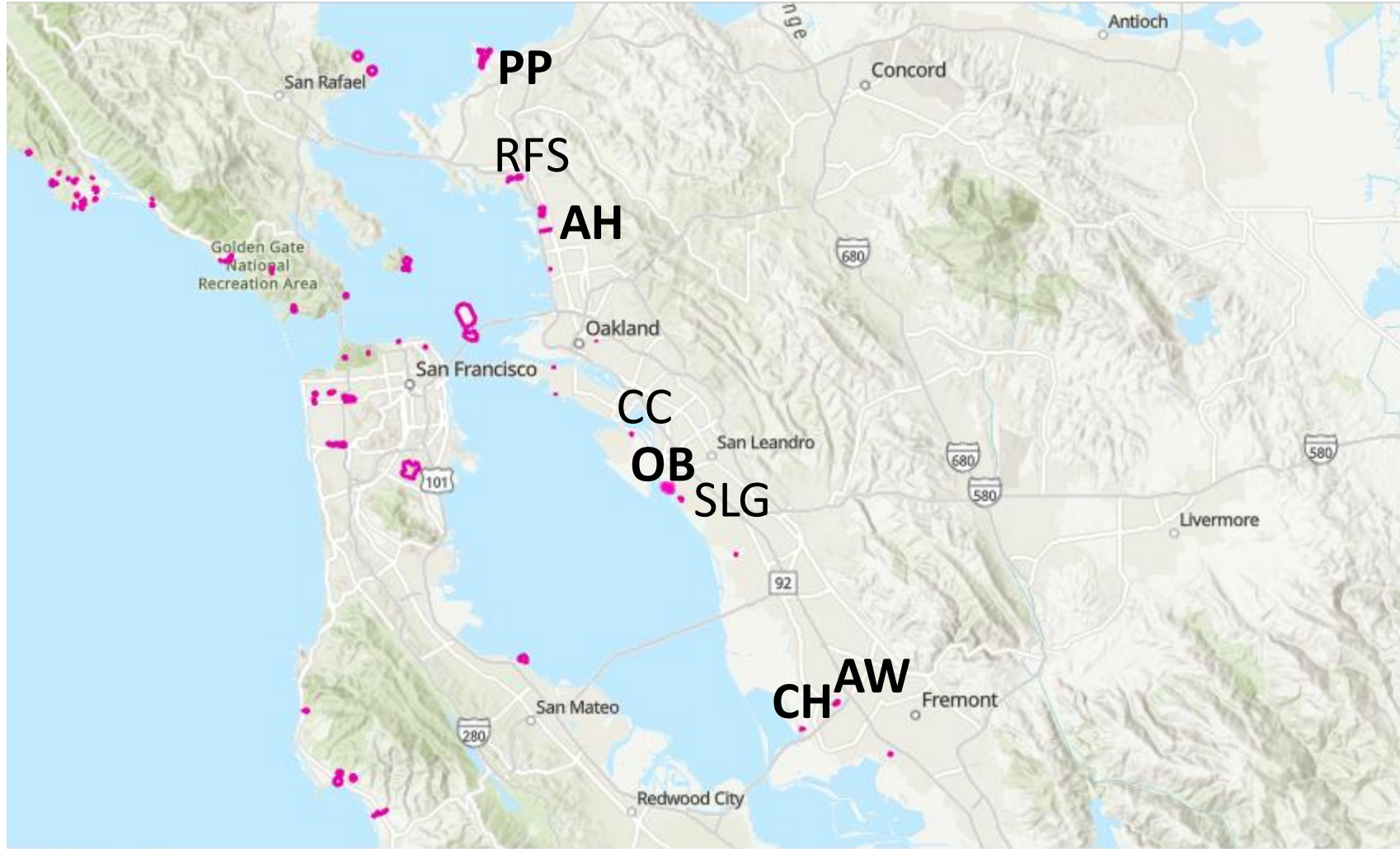
### East Bay Monarchs



- Albany Hill
- Ardenwood
- Coyote Hills
- Chuck Corica
- Oyster Point
- San Leandro Golf
- Point Pinole
- Total



# East Bay Overwintering Sites





# *Asclepias curassavica* year-round non-migratory populations









# Albany Hill

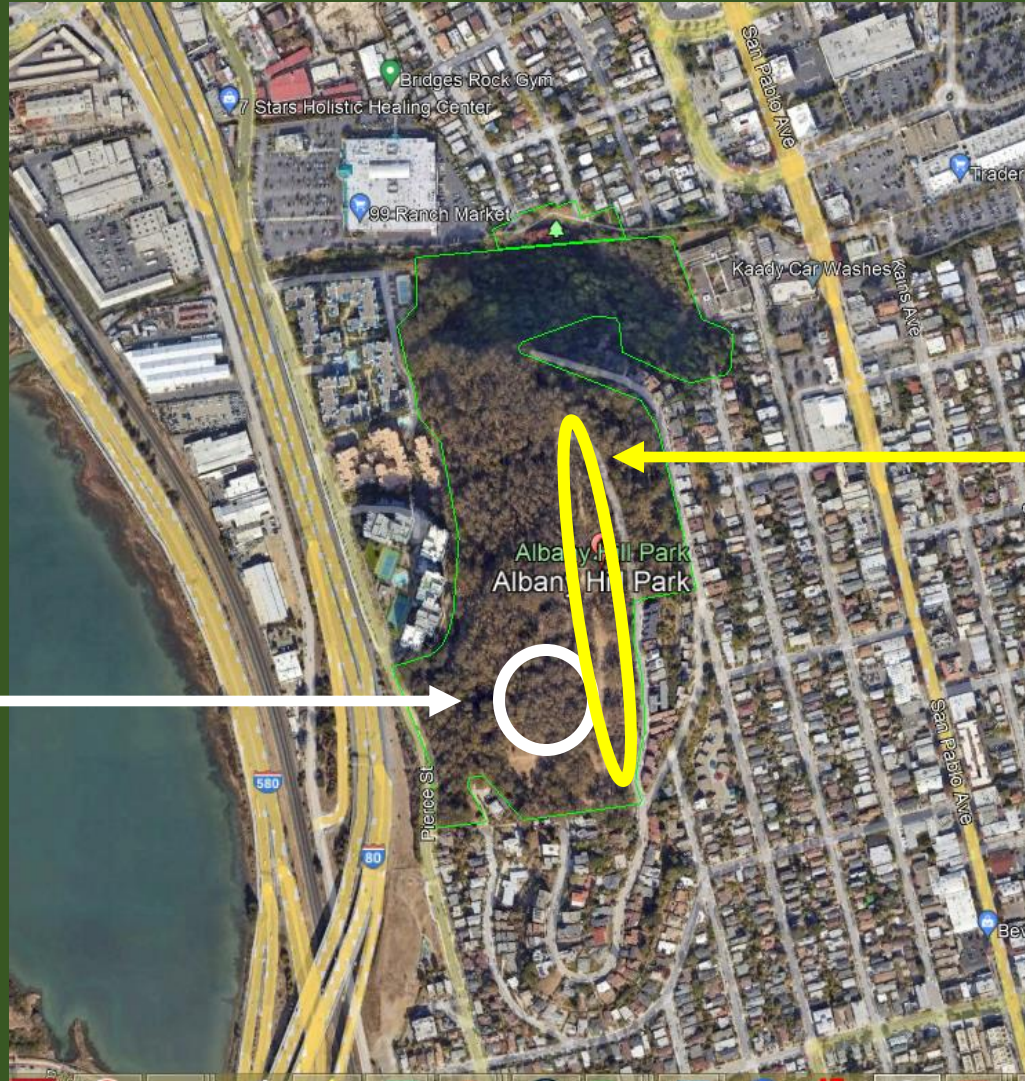
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- Eucalyptus forest under extreme drought stress
- Canopy thinning and tree death
- Fuels management
- Development proposals
- Ongoing assessments and development of a long-term strategy





# Albany Hill



**Ridgetop  
Cluster sites -  
transient**

**Refuge sites  
- sheltered**







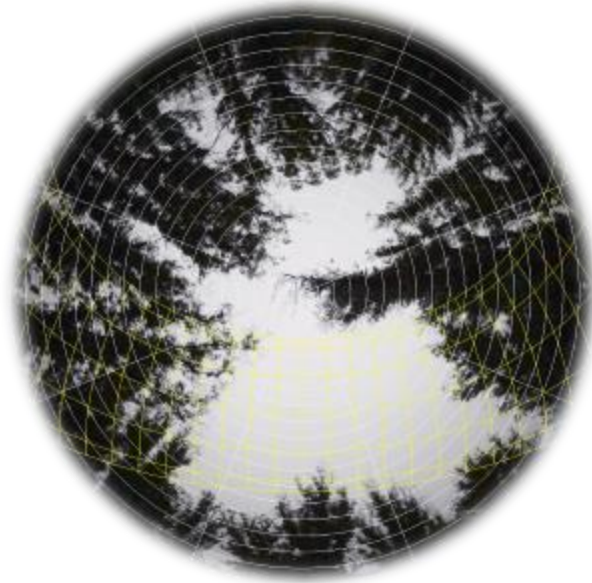


## Balancing safety/fire concerns with monarch habitat.

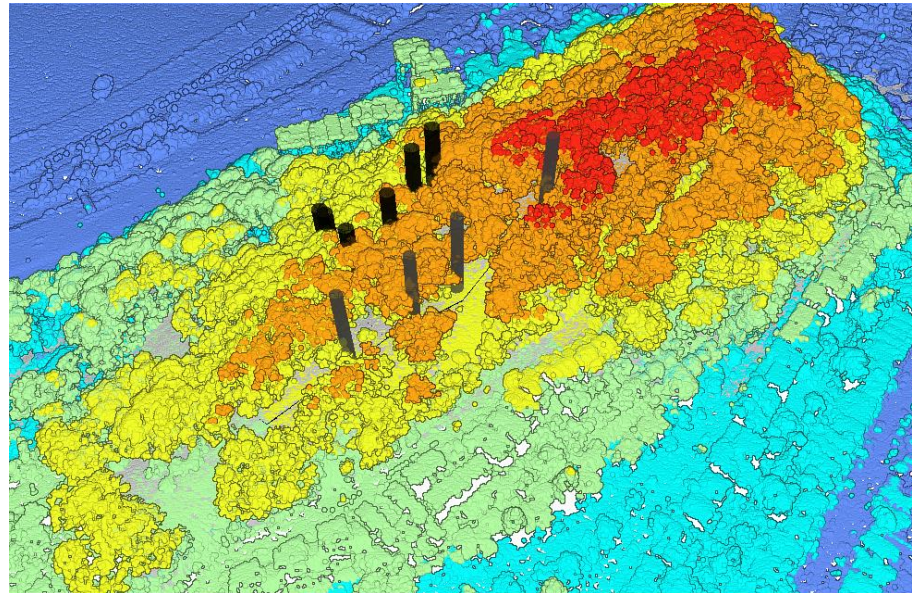
Structural analysis of monarch habitat

- Solar access
- Wind protection

## Hemispherical Photography



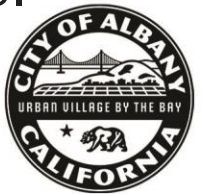
## High-density LiDAR





# Next Steps and Timeline

- ALBANY HILL COMMUNITY SITE WALK: SUNDAY DEC. 3, 12-2 PM
- Late winter--Develop and present up to 3 alternative plans for 1st Parks Rec Open Space Commission meeting
- Late spring--Present selected alternative to 2<sup>nd</sup> PROS Commission meeting
- Summer--Present to City Council
- PUBLIC INPUT – At each design stage, City staff and consultants will involve the community and be looking for feedback and input into the design plans.





## Albany Hill Eucalyptus Project (CIP No. 41015)



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posted here



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