

# History and Future of Oaks in and around the San Joaquin

January 24, 2011

San Joaquin County  
Historical Society

Tom Gaman

California Oaks



East-West Forestry Associates, Inc.  
[www.forestdata.com](http://www.forestdata.com)

Tonight:

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Landscape history of oaks in California

The status of oaks today

Statewide

San Joaquin Region

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Efforts to maintain and restore oaks

# Oaks

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Family Fagaceae

Mostly *Quercus*, some *Lithocarpus*

400-600 hybridizing species

Appx. 200 spp. In North America

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16 species in California incl. shrub oaks



# The Oak Woodland Bird Conservation Plan

*A Strategy for Protecting and Managing  
Oak Woodland Habitats and Associated Birds in California*



A project of California Partners In Flight  
and Point Reyes Bird Observatory

Published by California Oak Foundation

PRBO



WCS

“California oak woodlands rank among the top 3 habitat types in North America for bird richness.”

acorns

habitats

cavities

micro habitats

great and diverse ecosystems



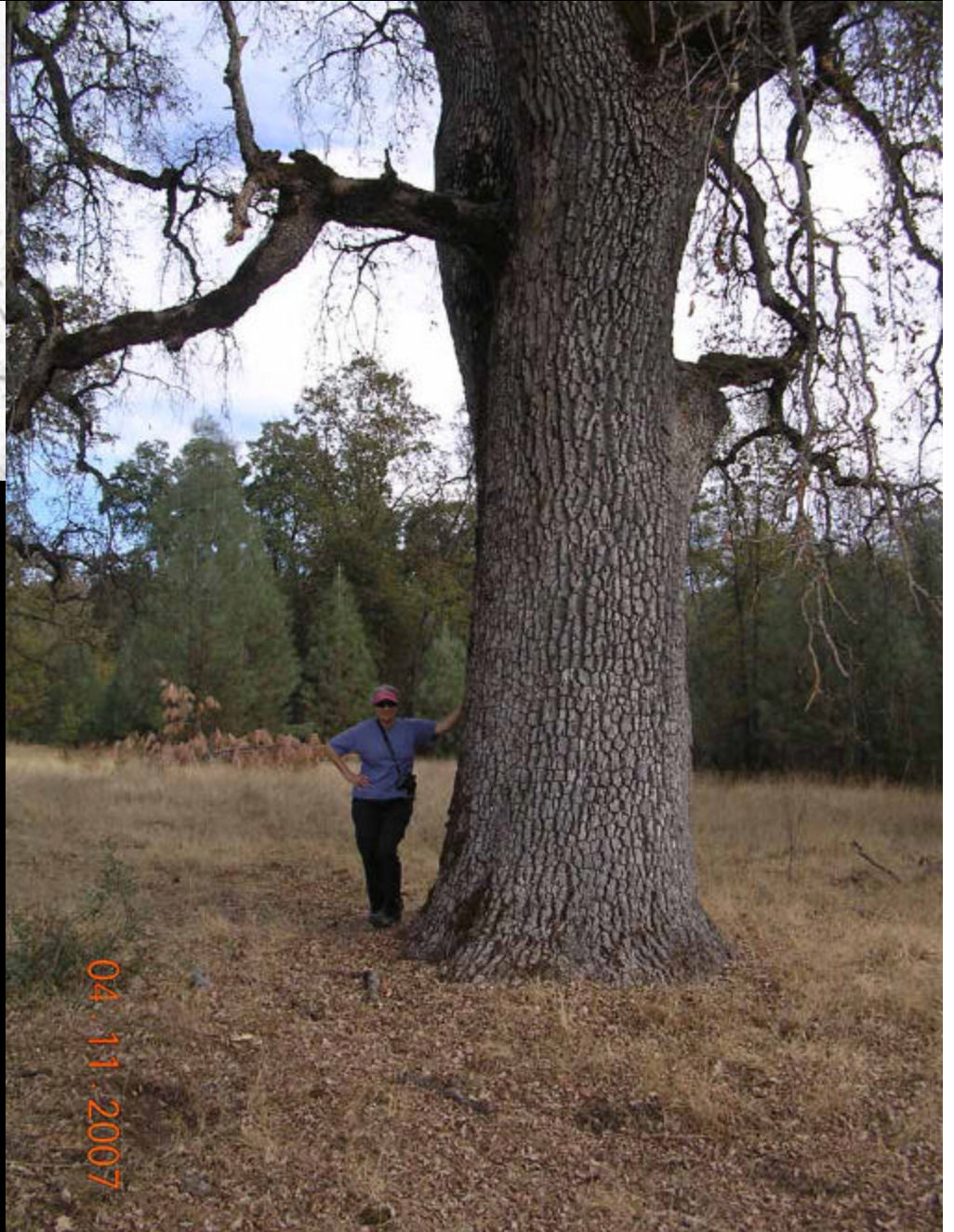
What did the early California landscape look like?



....Big trees then

Big trees now.....

What of the future??



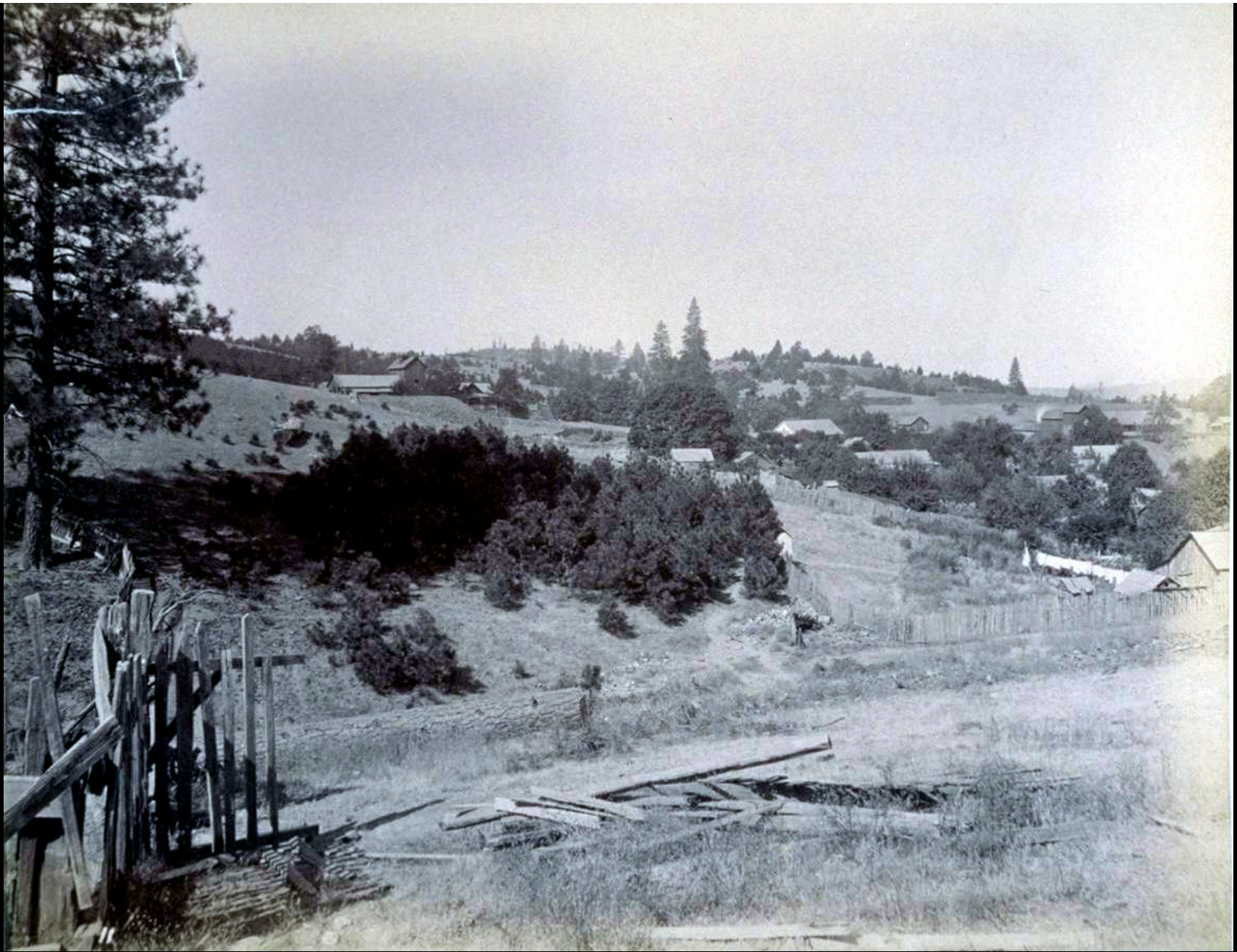


*Historic Photos courtesy of Bancroft Library Online Archives of California*



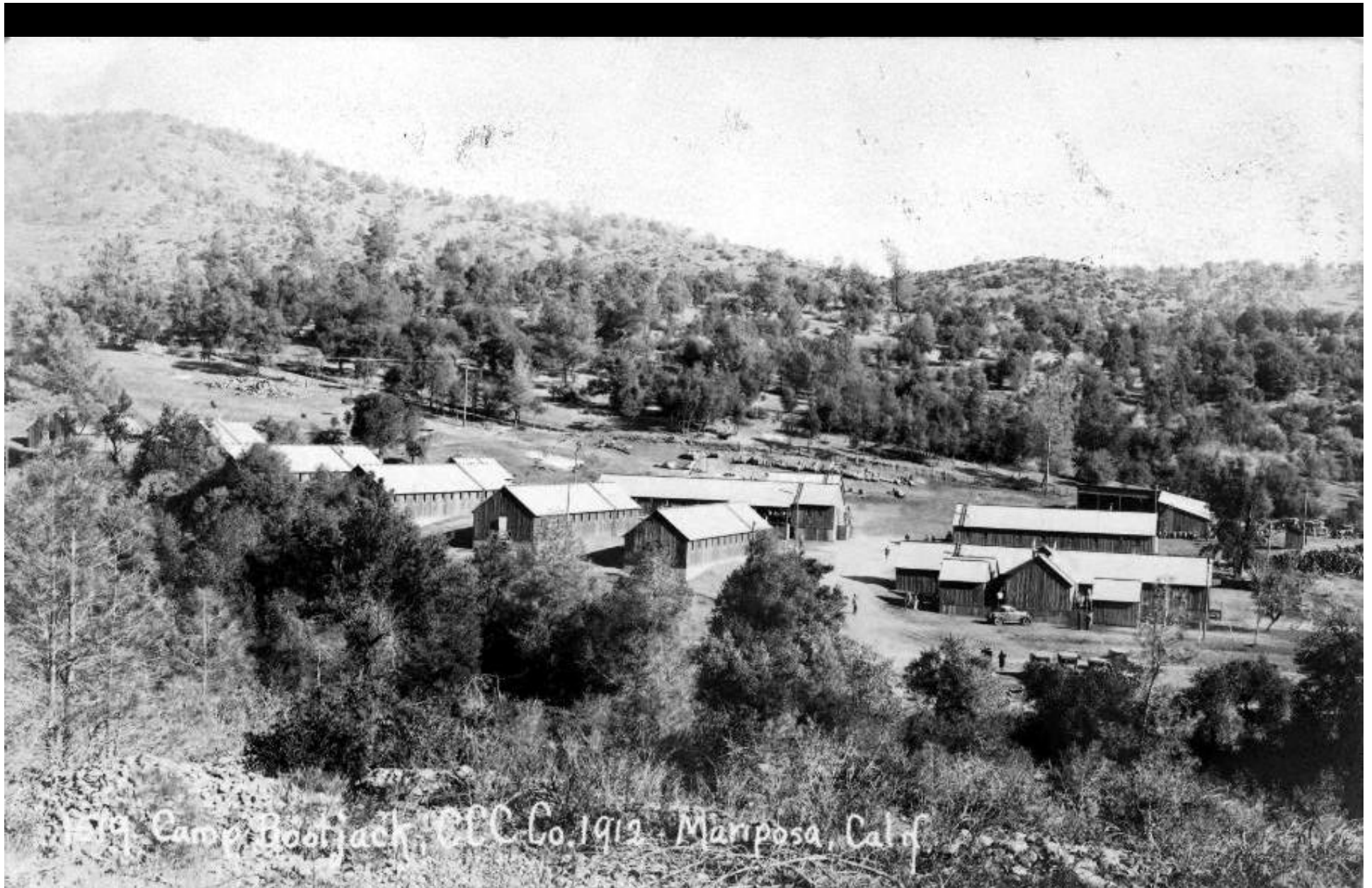
**Last Chance Ditch Kings County 1893**





Sheep Ranch 1900



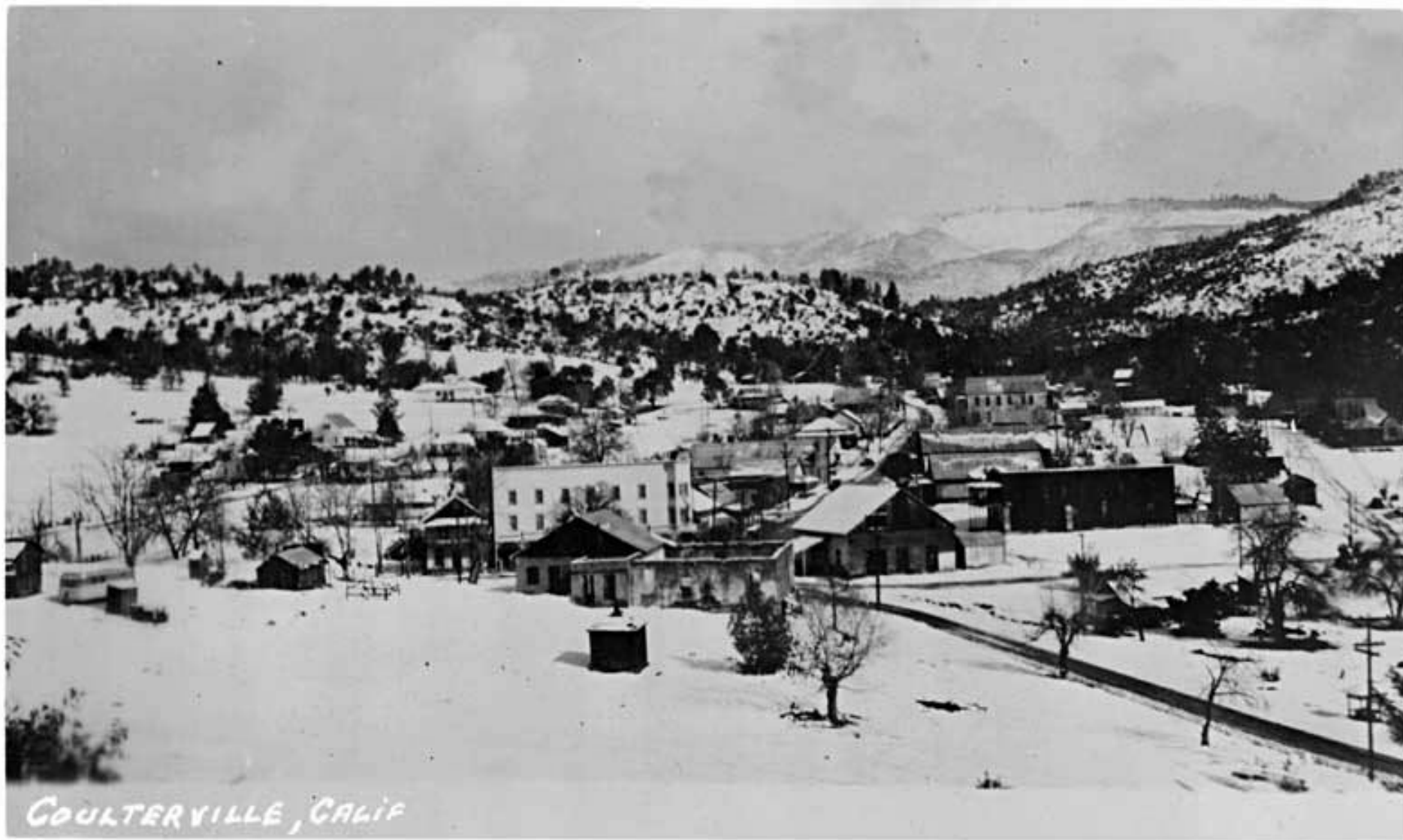


Mariposa 1912



1913 Central Valley





Coulterville 1940





THE OLD COARSEGOLD STORE

There is still a legacy of oak woodland today.

California Oak Foundation wanted to answer these questions:

What is the extent of oak woodlands? Are we losing them?



# Oaks 2040



The Status and Future of Oaks in California

*By Tom Gaman and Jeffrey Firman  
Published by the California Oak Foundation*

Available online

at

[www.californiaoaks.org](http://www.californiaoaks.org)

The California Oak  
Foundation



Used public data.



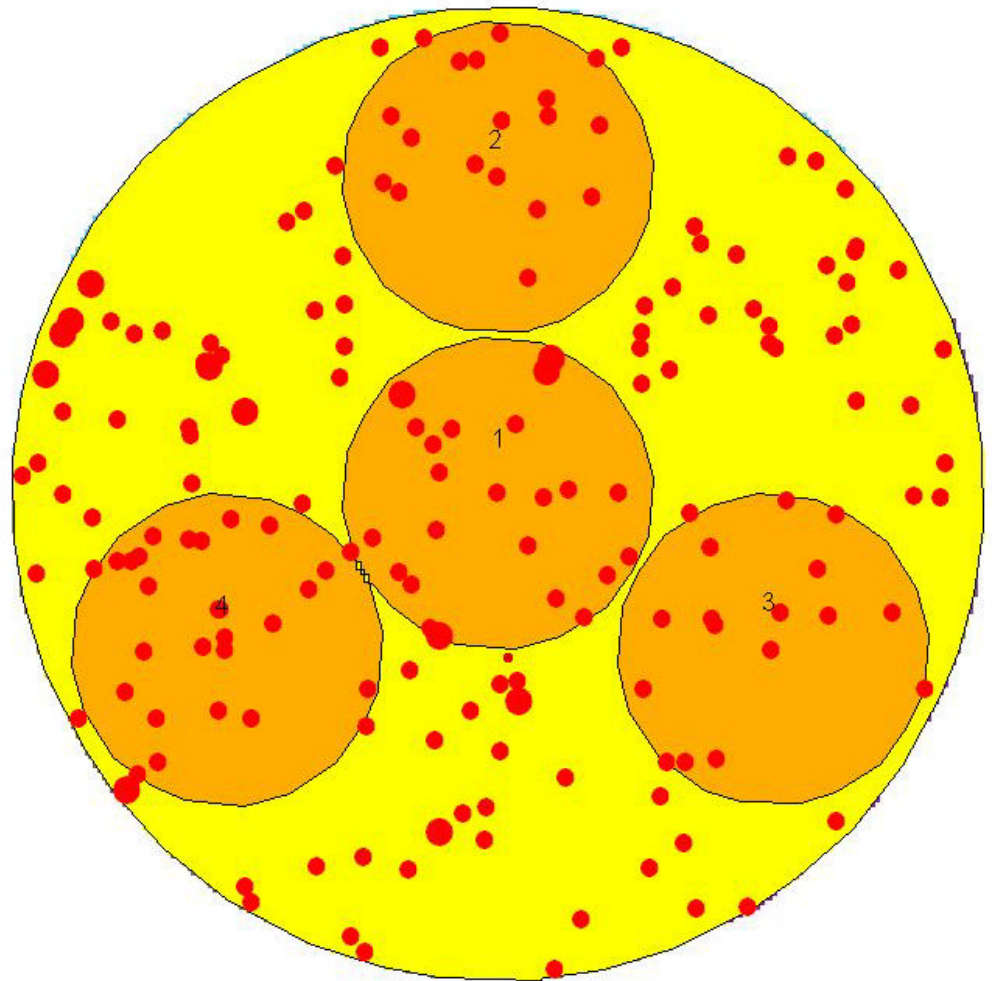
- ✍ State Fed Vegetation Maps
- ✍ USFS Forest Inventory Data
- ✍ Department of Finance “At Risk”
- ✍ Regional Analyses

We wanted to be able to provide inventory information about what can be found on these woodlands and forests.

Stem map

The USFS Forest Inventory  
& Analysis program  
California's forests and  
woodlands.

1340 Plots in the stratified  
Oak Types from 2001 -2006





Northern California  
FIA Plots

The map shows the state of California with a black outline. A large area in the northern and central parts of the state is filled with a dense pattern of small purple crosses, representing FIA Plots. The crosses are distributed across various land types, including what appears to be forested areas and open lands. The crosses are more densely packed in some regions than others.

**Plots are on  
Public  
AND  
Private  
Lands**

## Northern California Plots

Inverness





# Generating an Oak Type Map



- CALVEG Maps

- Woodlands & Forests

- 10 Oak Types

OAK TYPE	SCIENTIFIC NAME	TYPE(S)
Black Oak	<i>Quercus kelloggii</i>	QK
Blue Oak	<i>Quercus douglasii</i>	QD
Canyon Live Oak	<i>Quercus chrysolepis</i>	QC
Coast Live Oak	<i>Quercus agrifolia</i>	QA
Engelmann Oak	<i>Quercus engelmannii</i>	QN
Interior Live Oak	<i>Quercus wislizeni</i>	QW
Oregon White Oak	<i>Quercus garryana</i>	QG
Tanbark Oak	<i>Lithocarpus densiflorus</i>	QT
Valley Oak	<i>Quercus lobata</i>	QL
Mixed Oaks	not applicable	EX/NX/TX

# Oregon white oak





# Canyon live oak





# Black Oak





# Engelmann Oak

Interior live oak





Blue Oak



Coast Live Oak



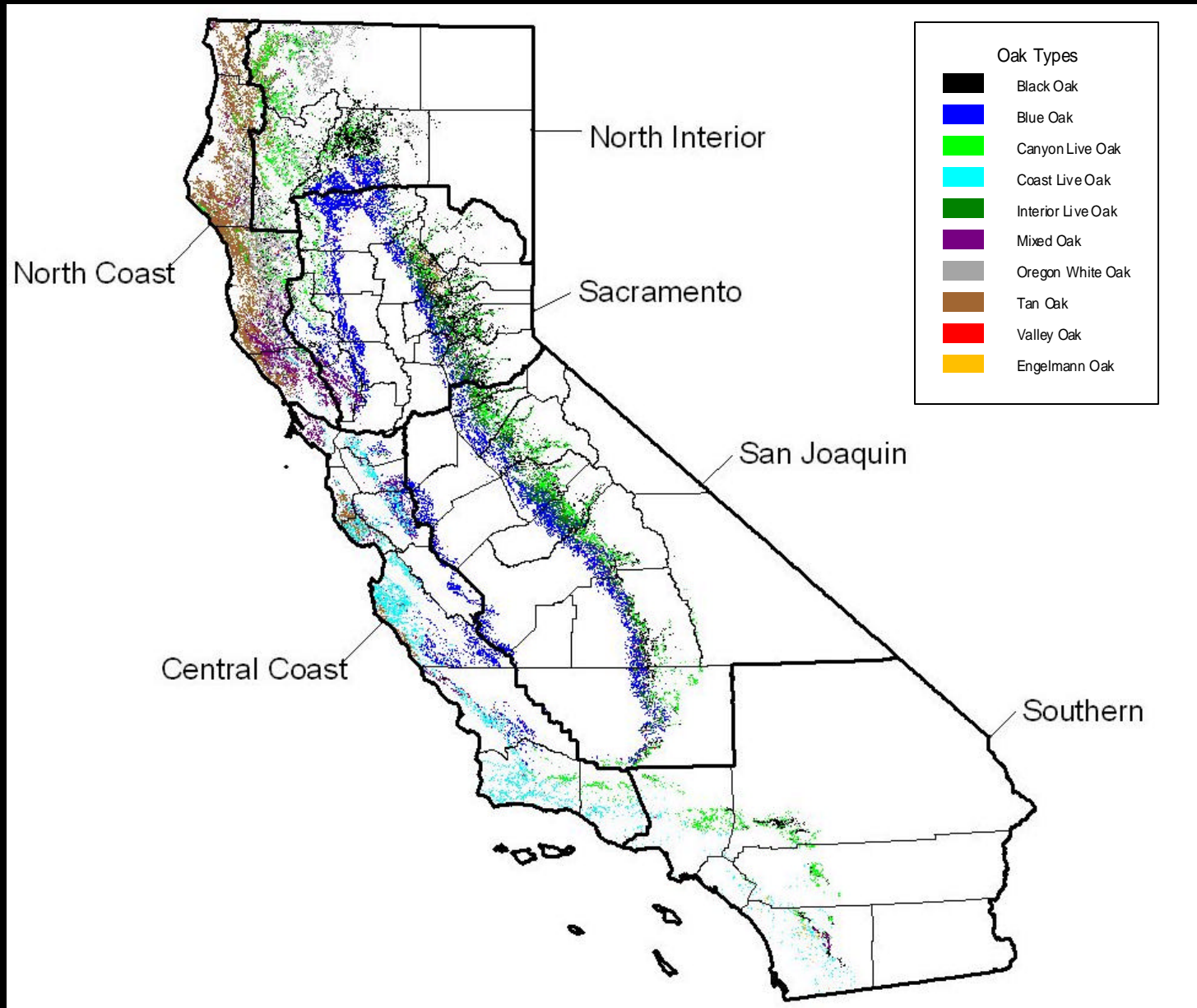


# Valley Oak



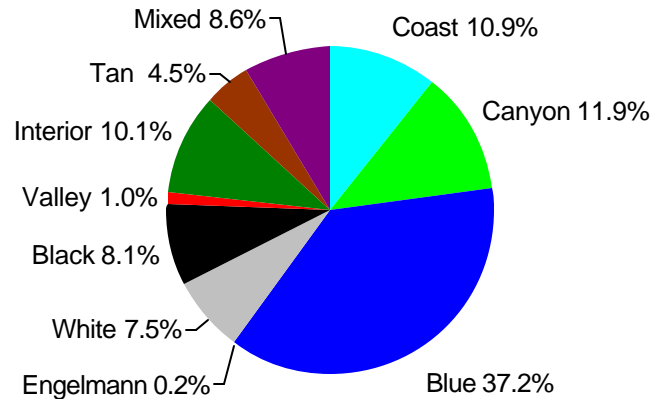


# California Oak Diversity

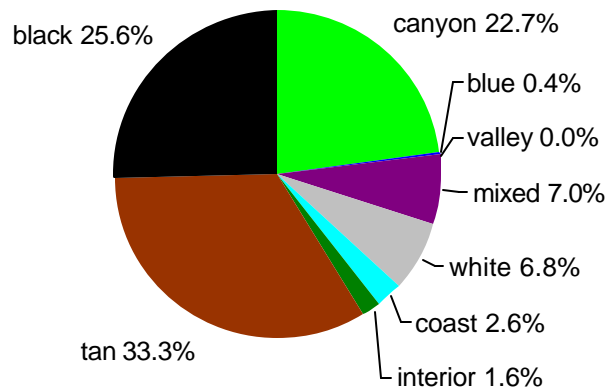


# California Oak Diversity

**Oak Woodland Diversity of California**



**Oak Forest Diversity of California**



<i>Oak Type</i>	<b>Woodlan</b>	<b>Forest</b>
<b>Blue</b>	3,184,000	15,000
<b>Canyon</b>	1,015,000	995,000
<b>Coast</b>	930,000	115,000
<b>Interior</b>	870,000	70,000
<b>Mixed</b>	740,000	305,000
<b>Black</b>	695,000	1,125,000
<b>White</b>	640,000	300,000
<b>Tan*</b>	390,000	1,460,000
<b>Valley</b>	85,000	0
<b>Engelmann</b>	20,000	0
<b>Totals</b>	<b>8,575,000</b>	<b>4,385,000</b>



# Summaries for Woodlands and Forests Statewide and for Each Region Woodlands

## OAK INVENTORY SUMMARY FOR 932 FOREST INVENTORY AND ANALYSIS (FIA) PLOTS IN CALIFORNIA OAK WOODLANDS AND FORESTS 2001-2004

### OAK WOODLAND

<i>Oak Type</i>	ACRES	# FIA PLOTS	TOTAL BASAL AREA SQ FT /ACRE	OAK BASAL AREA SQ FT /ACRE	REGEN- ERATION SEEDLINGS /AC	OAK REGEN- ERATION SEEDLINGS /AC	# TOTAL TREES /ACRE ≥1.0" DBH	OAK TREES /ACRE ≥1.0" DBH	OAK TREES /ACRE 1-5" TREES	OAK TREES /ACRE 5-10" TREES	OAK TREES /ACRE 10-16" TREES	OAK TREES /ACRE 16-24" TREES	OAK TREES /ACRE 24-32" TREES	OAK TREES /ACRE ≥32" DBH
Black Oak	692507	35	91	39	272	454	382	223	135	72	14	1	0	0
Blue Oak	3184018	244	23	19	31	49	101	81	49	22	7	2	0	0
Canyon Live Oak	1016373	76	77	49	129	190	307	227	121	86	16	3	0	0
Coast Live Oak	930534	79	44	36	94	192	234	136	92	23	15	5	1	0
Engelmann Oak	20367	2	20	20	0	0	10	10	0	0	6	3	1	1
Interior Live Oak	869380	60	42	31	70	135	196	172	110	51	8	2	0	0
Mixed Oak	738455	74	59	36	240	138	154	68	25	21	15	6	1	0
Oregon White Oak	639449	40	68	33	223	112	189	111	64	30	13	3	1	0
Tanbark Oak	388695	20	148	26	615	165	610	93	49	32	8	3	1	0
Valley Oak	85882	4	28	20	0	0	67	44	19	18	6	0	1	1

# Oaks 2040: Status of Oaks

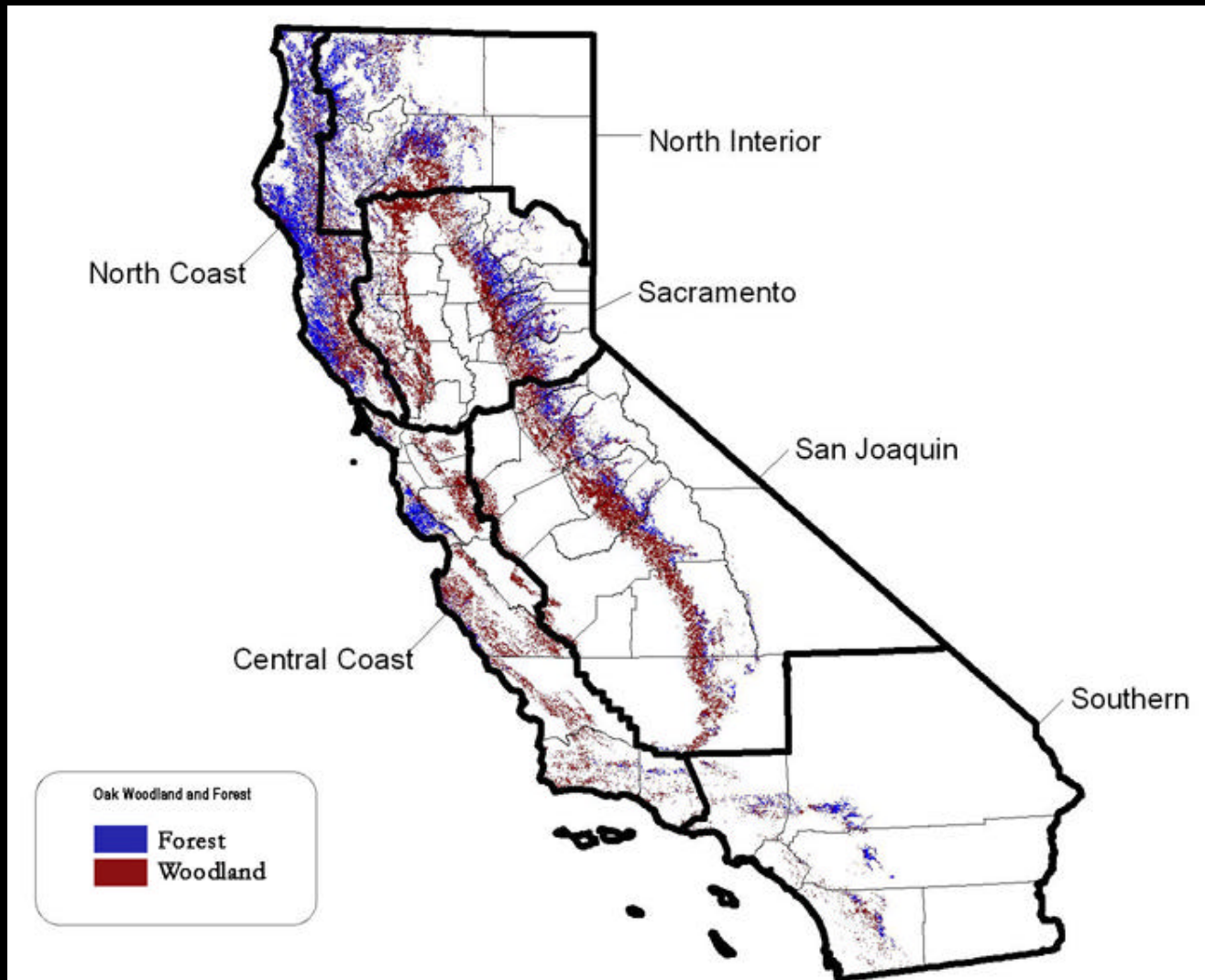
## Natural Environment of California Oaks

8.5 million Acres  
of Oak  
Woodlands

4.3 million acres  
Of Oak Forests

Millions of acres  
Already lost

750,000 acres  
At risk by 2040  
+ fragmentation



# We have an aging oak population and we are losing trees.

Loss of habitat

Over grazing

Lack of regeneration

Climate Change

Urbanization and sprawl

Fire management and mismanagement

Invasive Plants & high rodent population

Heat and drought



Sudden Oak Death



# San Joaquin Region

- 2.3 million acres of oak woodlands
- 1/3 of CA's blue oak
- 2/3 of CA's interior live oak
- 500,000 acres of oak forests



*Alpine*  
*Amador*  
*Calaveras*  
*Fresno*  
*Inyo*  
*Kern*  
*Kings*  
*Madera*  
*Mariposa*  
*Merced*  
*Mono*  
*San Joaquin*  
*Stanislaus*  
*Tulare*  
*Tuolumne*

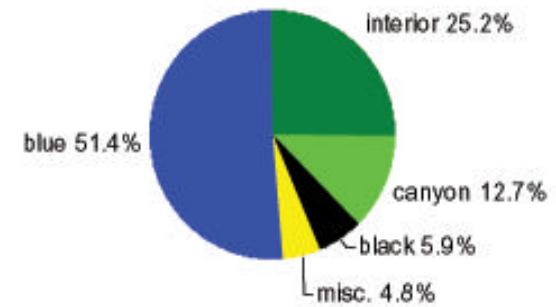


113  
million  
oaks

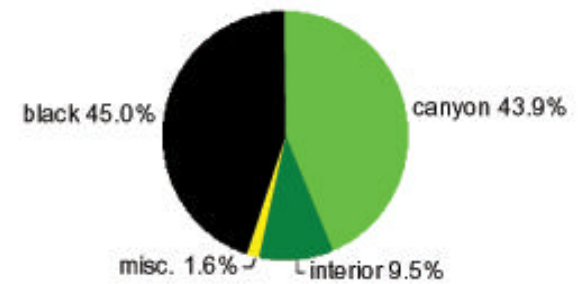
# Oaks of the San Joaquin Region



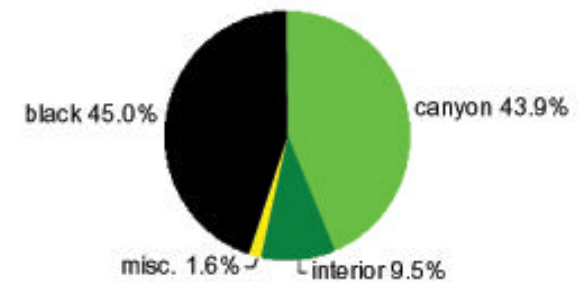
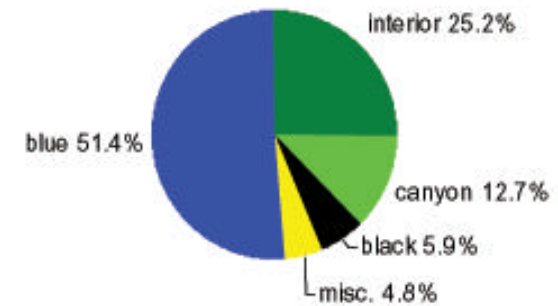
San Joaquin Oak Woodland Diversity



San Joaquin Oak Forest Diversity



450 million trees





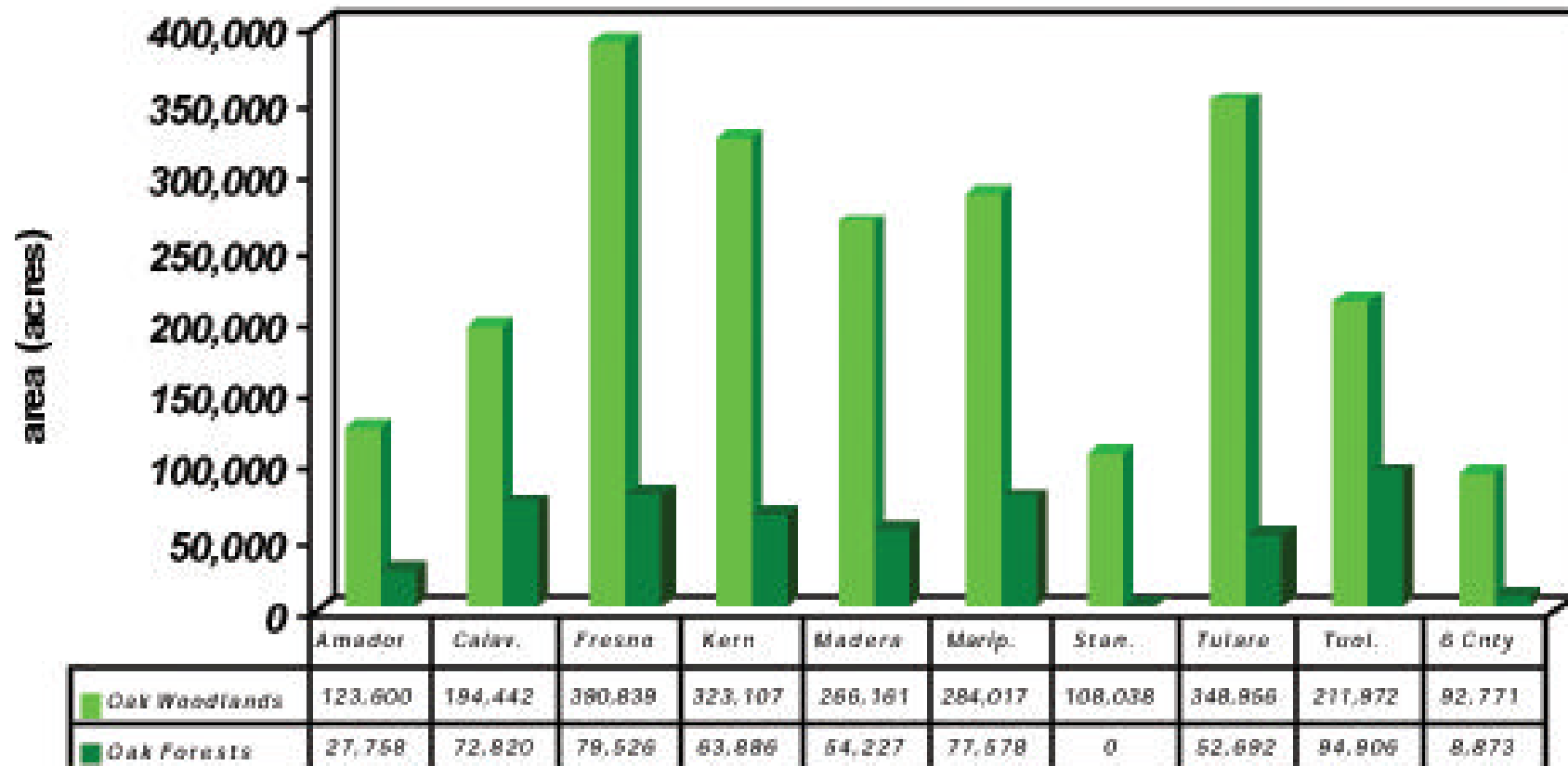
# Oaks of the San Joaquin Region



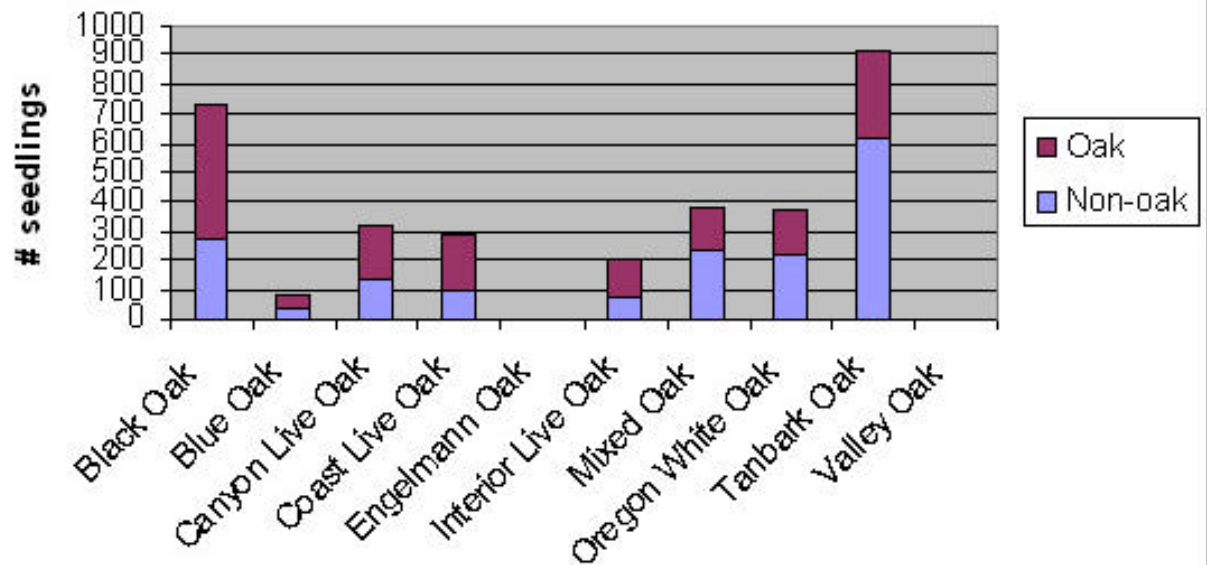
## The San Joaquin Region

Alpine, Amador, Calaveras, Fresno, Inyo, Kern, King  
Madera, Mariposa, Merced, Mono, San Joaquin,  
Stanislaus, Tulare, Tuolumne

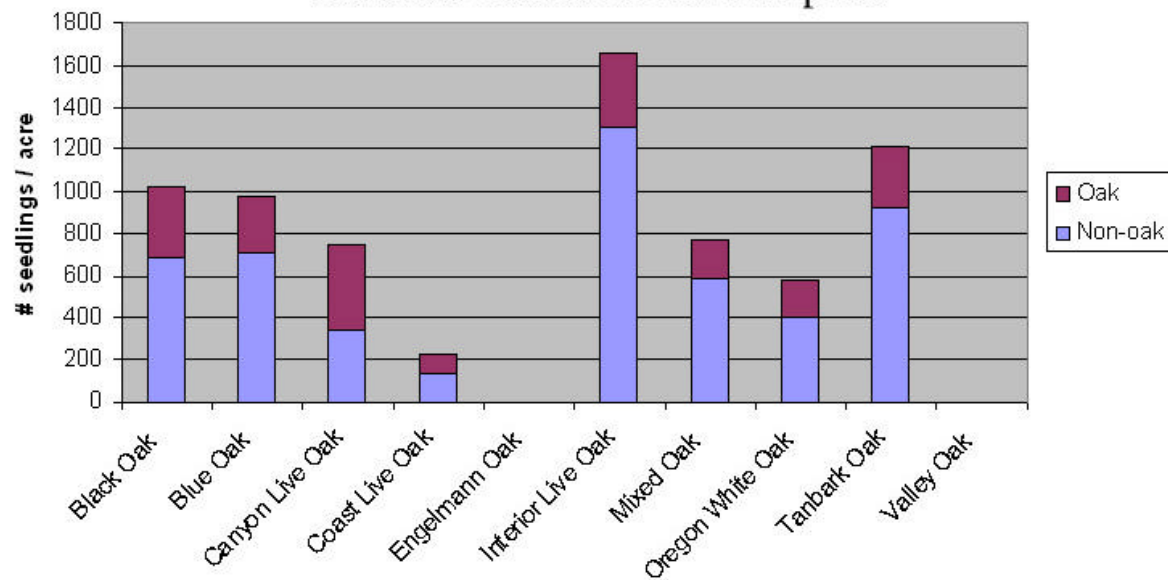
San Joaquin Oak Distribution



## Woodland Seedlings per Acre



## Forest Seedlings Per Acre Statewide results for 932 FIA plots





**Alpine, Amador, Calaveras, Fresno, Inyo, Kern, King  
Madera, Mariposa, Merced, Mono, San Joaquin,  
Stanislaus, Tulare, Tuolumne**

## Table 6. San Joaquin Region

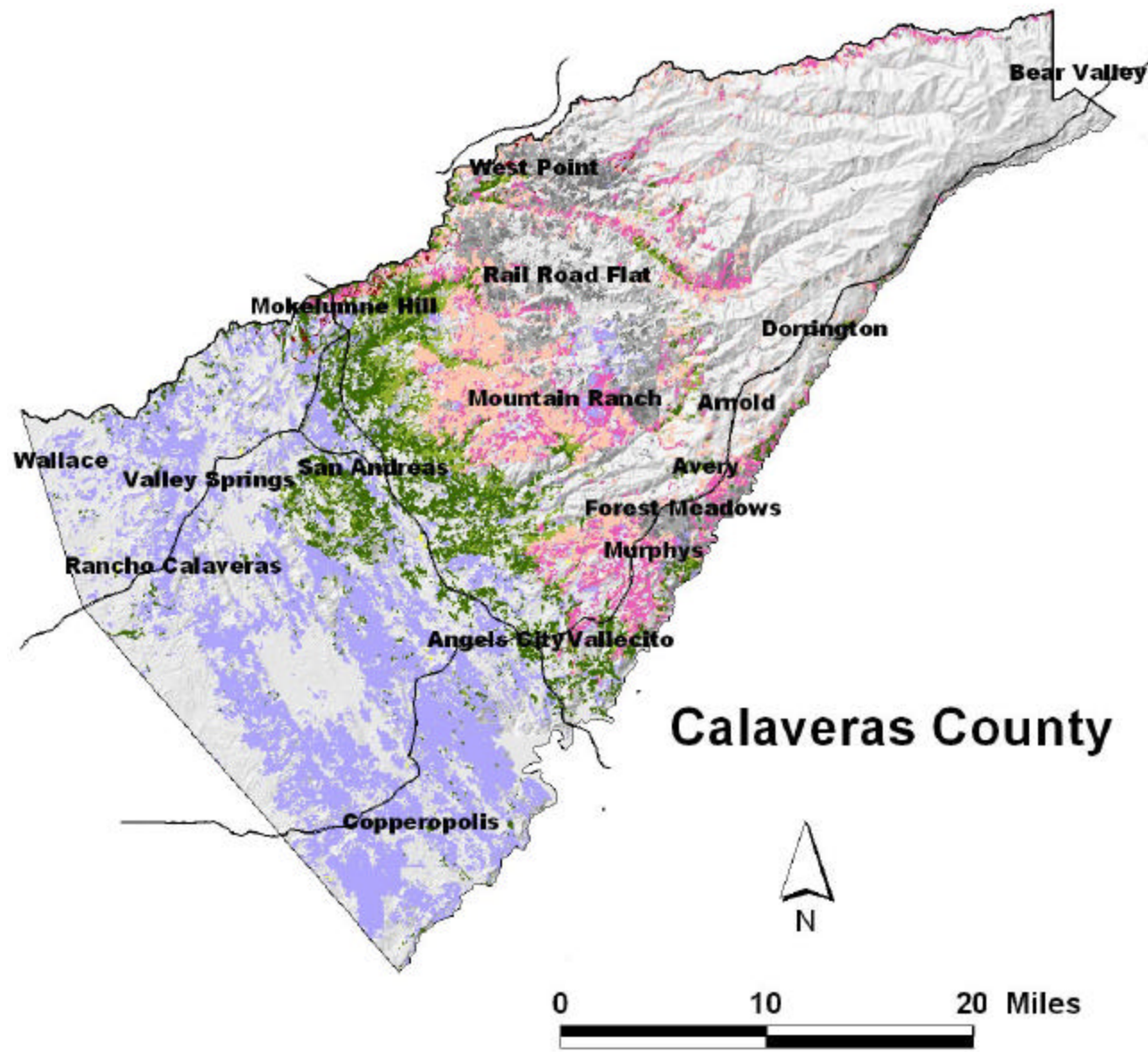
### Oak Woodland

### San Joaquin Region

*Oak Type*

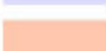

Black Oak	239443	12	113	27	681	375	497	300	262	29	7	2	0
Blue Oak		NO PLOTS IN THIS TYPE											
Canyon Live Oak	233771	14	113	37	316	305	378	182	123	43	10	4	1
Coast Live Oak		NO PLOTS IN THIS TYPE											
Engelmann Oak		NO PLOTS IN THIS TYPE											
Interior Live Oak	50785	7	74	12	1478	386	66	27	11	9	6	1	0
Mixed Oak		NO PLOTS IN THIS TYPE											
Oregon White Oak		NO PLOTS IN THIS TYPE											
Tanbark Oak		NO PLOTS IN THIS TYPE											
Valley Oak		NO PLOTS IN THIS TYPE											

# Available for all Counties in California



## Oak Habitat Types

### Forest Types

	black oak
	blue oak
	canyon live oak
	interior live oak
	mixed oak
	valley oak

### Woodland Types

	black oak
	blue oak
	canyon live oak
	coast live oak
	interior live oak
	mixed oak
	valley oak



We have an aging oak population and we are losing trees and fragmenting habitats.

Urbanization and sprawl: 750000 acres at risk statewide

20% of oak woodlands will be built or threatened by 2040

Sierra foothills and central valley at highest risk

80% of urbanization in Sacramento and San Joaquin regions











# What can be done?

County Oak Woodlands Management Plans, SB1334

Landscape Scale Conservation Opportunities

Conservation Easements

Wildlife Conservation Board

California Wildlife Foundation/ California Oaks

Experiment with grazing programs

Plant oaks and other native trees

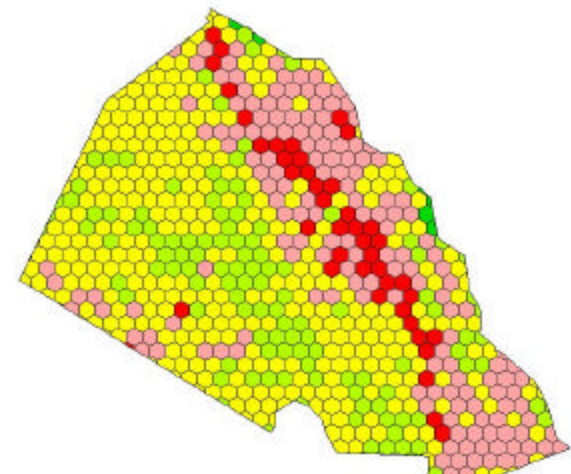
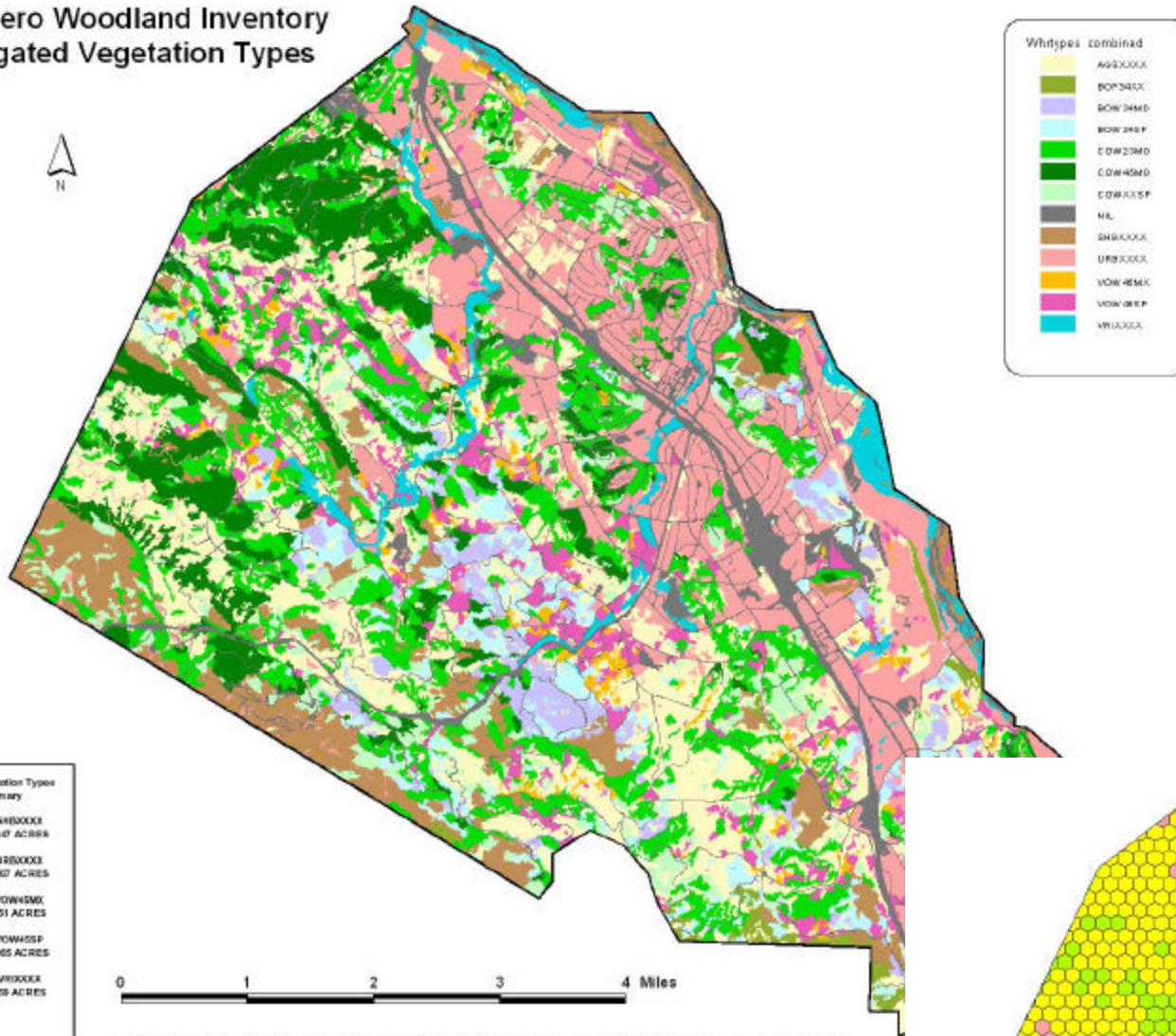
Protect large trees and manage microhabitats

Smart development

Support ongoing Research to find THE answer

# What can be done?

## Atascadero Woodland Inventory Aggregated Vegetation Types



# Focus on Priority Areas



Start local acorns in nurseries or in your garden.





What can be done?



**Grow and plant oaks !!!**



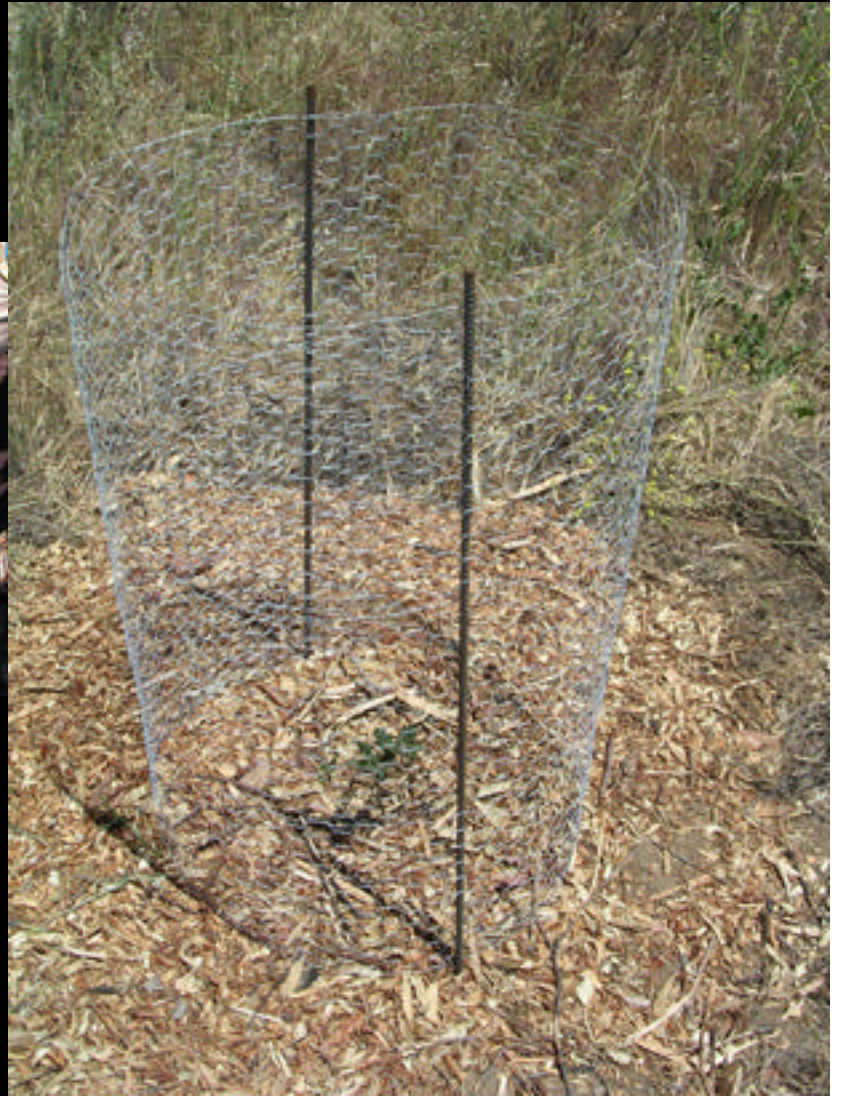
# What can be done?



## Plant oaks!!!



# What can be done?



## Plant oaks!!!





Root protection

Browse protection

(irrigation)

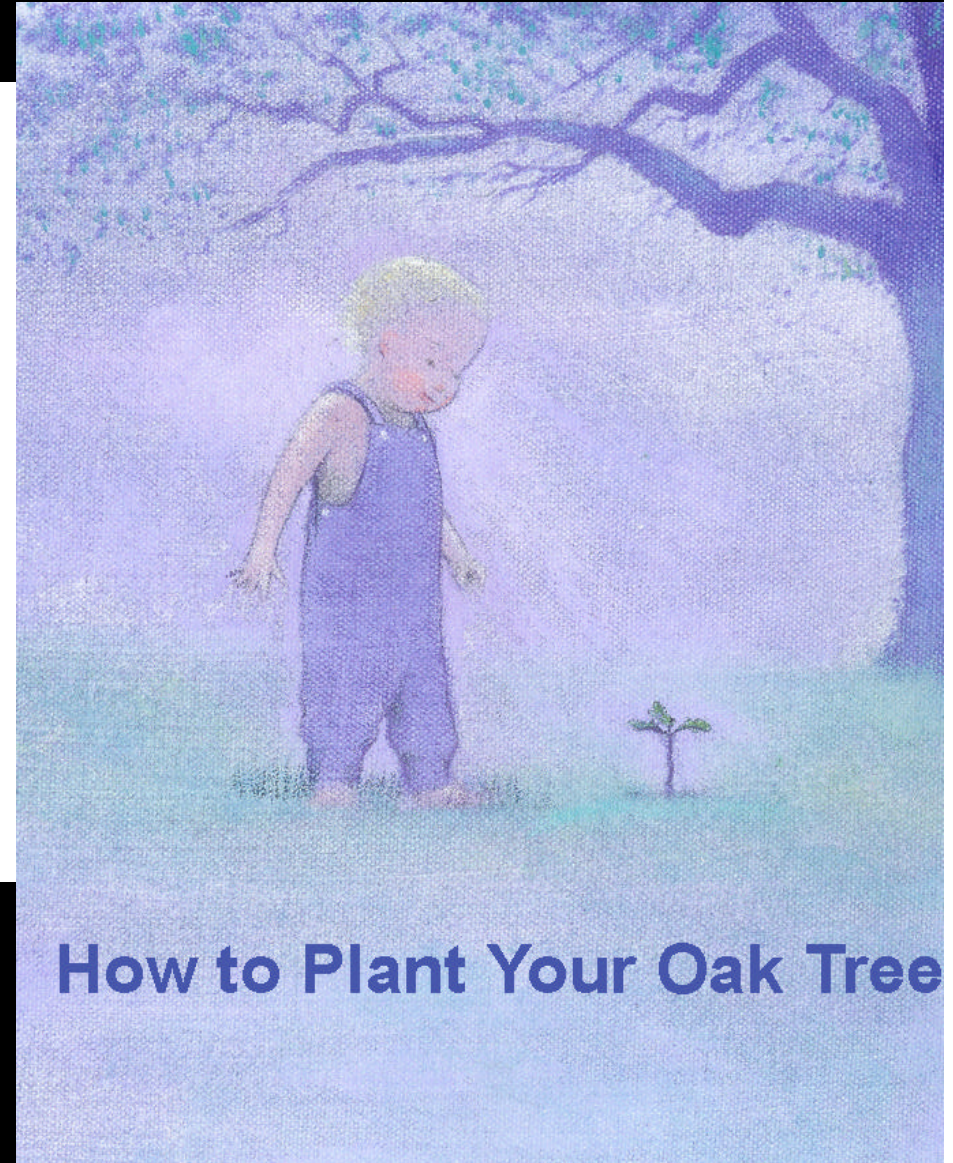
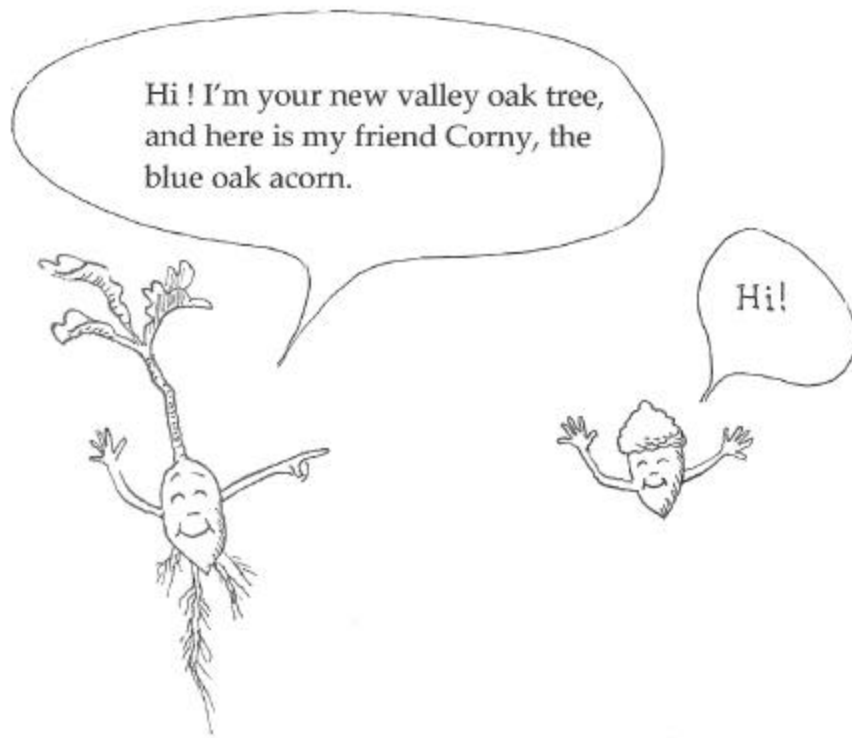


Acorns can be planted  
successfully too.



# Why to Plant a tree?

## Instruction & Educational materials





## Announcing a Webinar: *Guidelines for Managing Oak Rangelands*

**Webinar Dates:** March 15, 22, 29 and April 9, 2011

**Field Trip:** April 16, Sierra Foothill Res. and Ext. Center

April 30, Hopland Res. and Ext. Center

**Web Address:** [ucanr.org/oakwebinar](http://ucanr.org/oakwebinar)

California's oak woodlands cover 10 percent of the state and are its most biologically diverse broad habitat. It also is as an important location for agricultural and other economic enterprises. With 80 percent in private ownership, continued resource sustainability is in the hands of private landowners. This webinar series is designed to create an awareness of the importance of managing oak woodlands and to present alternative management strategies for landowners to consider. It will be presented around the concepts in the University of California's publication, "Guidelines for Managing California's Hardwood Rangelands." There will be four two-hour long sessions broadcast on the web, and a full day field trip (two locations to choose from). The series will be taped to allow participation for those who can't make the live webinar.



**Audience:** Intended for anyone involved in management and conservation of oak woodland ecosystems, including landowners and managers, consulting range managers and registered professional foresters, community and conservation groups, land trusts and policy makers.

**Registration:** Register for this series on-line at the address above. There is a \$25 fee to cover handout materials and administrative costs

**Webinar site:** <http://ucanr.org/oakwebinar>

### **March 15: Overview of Oak Rangeland Resource**

Importance of management, goals of webinar; Oak woodland overview; Setting Goals, Resource Assessment

### **March 22: Oak Rangeland Management**

Livestock and Grazing Management; Recreational Income; Wildlife and Biodiversity; Open Space Values; Forest Products

### **March 29: Sustaining Oak Rangelands**

Regeneration and restoration; Silviculture and stand management; Fire; Erosion Control and water quality

### **April 5: Sources of Assistance, Developing Plans**

General questions; Finding a consultant; Sources of cost-share assistance

### **Field Trip: Oak rangeland management in action**

Oak planting projects, water quality management, grazing management, fire

### **General Information on Oak Rangeland Conservation:**

[http://ucanr.org/sites/oak\\_range/](http://ucanr.org/sites/oak_range/)

### **Visit the Oak Rangeland Conservation Blog:**

<http://ucanr.org/blogs/oakblog/>

**Questions?** Rick Standiford, UC Berkeley, [standifo@berkeley.edu](mailto:standifo@berkeley.edu)

# •The message:

Oak woodlands conservation is complex.

Evenaged  
Few large trees  
Very few small trees

Oaks are vulnerable

You can help.





Thanks Marie Medford and the  
San Joaquin County Historical  
Society

Christopher Cole

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for these reports see:

[www.californiaoaks.org](http://www.californiaoaks.org)