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
Tonight:

Landscape history of oaks in California

The status of oaks today

Statewide

San Joaquin Region

Efforts to maintain and restore oaks
Oaks

Family Fagaceae

Mostly Quercus, some Lithocarpus

400-600 hybridizing species

Appx. 200 spp. In North America

16 species in California incl. shrub oaks
“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??
Last Chance Ditch Kings County 1893

Historic Photos courtesy of Bancroft Library Online Archives of California
Sheep Ranch 1900
Coulterville 1940
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

Available online at

www.californiaoaks.org

The California Oak Foundation

By Tom Gaman and Jeffrey Firman
Published by 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.

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

1340 Plots in the stratified Oak Types from 2001 -2006
Northern California Plots

Inverness

Plots are on Public AND Private Lands
Generating an Oak Type Map

- CALVEG Maps
- Woodlands & Forests
- 10 Oak Types

<table>
<thead>
<tr>
<th>OAK TYPE</th>
<th>SCIENTIFIC NAME</th>
<th>TYPE(S)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Quercus kelloggii</td>
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<tr>
<td>Blue Oak</td>
<td>Quercus douglasii</td>
<td>QD</td>
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<tr>
<td>Canyon Live Oak</td>
<td>Quercus chrysolepis</td>
<td>QC</td>
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<tr>
<td>Coast Live Oak</td>
<td>Quercus agrifolia</td>
<td>QA</td>
</tr>
<tr>
<td>Engelmann Oak</td>
<td>Quercus engelmannii</td>
<td>QN</td>
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<tr>
<td>Interior Live Oak</td>
<td>Quercus wislizeni</td>
<td>QW</td>
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<td>Oregon White Oak</td>
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<td>Tanbark Oak</td>
<td>Lithocarpus densiflorus</td>
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<td>Valley Oak</td>
<td>Quercus lobata</td>
<td>QL</td>
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<tr>
<td>Mixed Oaks</td>
<td>not applicable</td>
<td>EX/NX/TX</td>
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</table>
Oregon white oak
Canyon live oak
Black Oak
Engelmann Oak

Interior live oak
Blue Oak

Coast Live Oak
Valley Oak
California Oak Diversity

Oak Types
- Black Oak
- Blue Oak
- Canyon Live Oak
- Coast Live Oak
- Interior Live Oak
- Mixed Oak
- Oregon White Oak
- Tan Oak
- Valley Oak
- Engelmann Oak
California Oak Diversity

Oak Woodland Diversity of California

<table>
<thead>
<tr>
<th>Oak Type</th>
<th>Woodland</th>
<th>Forest</th>
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<tbody>
<tr>
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<td>3,184,000</td>
<td>15,000</td>
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<tr>
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<td>995,000</td>
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<tr>
<td>Coast</td>
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<td>115,000</td>
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<tr>
<td>Interior</td>
<td>870,000</td>
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<td>Tan*</td>
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<td>Mixed</td>
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<td>White</td>
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<tr>
<td>Engelmann</td>
<td>20,000</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>8,575,000</td>
<td>4,385,000</td>
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### 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**

<table>
<thead>
<tr>
<th>Oak Type</th>
<th>ACRES</th>
<th># FIA Plots</th>
<th>Total Basal Area SQ FT /acre</th>
<th>Oak Basal Area SQ FT /acre</th>
<th>Regeneration Seedlings /AC</th>
<th>Oak Regeneration Seedlings /AC</th>
<th># Total Trees /Acre &gt;=1.0&quot; DBH</th>
<th>Oak Trees /Acre 1-5&quot; DBH</th>
<th>Oak Trees /Acre 5-10&quot; DBH</th>
<th>Oak Trees /Acre 10-16&quot; DBH</th>
<th>Oak Trees /Acre 16-24&quot; DBH</th>
<th>Oak Trees /Acre &gt;24-32&quot; DBH</th>
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<td>42</td>
<td>31</td>
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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
Oaks of the San Joaquin Region

San Joaquin Oak Woodland Diversity
- interior 25.2%
- blue 51.4%
- canyon 12.7%
- black 5.9%
- misc. 4.8%

San Joaquin Oak Forest Diversity
- black 45.0%
- canyon 43.9%
- misc. 1.6%
- interior 9.5%
San Joaquin Region Oaks

2,300,000 acres oak woodland

500,000 acres oak forest

27% of state total woodland

450 million trees
The San Joaquin Region

Alpine, Amador, Calaveras, Fresno, Inyo, Kern, King Madera, Mariposa, Merced, Mono, San Joaquin, Stanislaus, Tulare, Tuolumne
## Oak Inventory Summary for San Joaquin Region Plots in California Oak Woodlands and Forests 2001-2004

<table>
<thead>
<tr>
<th>Oak Type</th>
<th>ACRES</th>
<th># FIA plots</th>
<th>Total Basal Area sq ft/acre</th>
<th>Oak Basal Area sq ft/acre</th>
<th>Non-oak Regeneration seedlings/acre</th>
<th>Oak Regeneration Regeneration/&gt;=1.0&quot; dbh</th>
<th># Total Trees/Acre 1-5&quot; trees</th>
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<td>Coast Live Oak</td>
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<td>NO PLOTS IN THIS TYPE</td>
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<td>Interior Live Oak</td>
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<td>Oregon White Oak</td>
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<td>0</td>
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</table>

### San Joaquin Region

| Oak Type          | ACRES | # FIA plots | Total Basal Area sq ft/acre | Oak Basal Area sq ft/acre | Non-oak Regeneration seedlings/acre | Oak Regeneration Regeneration/>=1.0" dbh | # Total Trees/Acre 1-5" trees | 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 |
|-------------------|-------|-------------|-----------------------------|---------------------------|-------------------------------------|--------------------------------------|                                 |                              |                            |                             |                             |                             |                             |
| **Oak Forest**    |       |             |                             |                           |                                     |                                      |                                 |                              |                            |                             |                             |                             |                             |
| Black Oak         | 239443| 12          | 113                         | 27                        | 681                                 | 375                                  | 487                             | 300                          | 262                        | 29                         | 7                          | 2                          |
| Blue Oak          | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE |
| Canyon Live Oak   | 233771| 14          | 113                         | 37                        | 316                                  | 305                                  | 378                             | 182                          | 123                        | 43                         | 10                         | 4                          |
| Coast Live Oak    | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE |
| Engelmann Oak     | 50785 | 7           | 74                          | 12                        | 1478                                 | 386                                  | 66                              | 27                           | 11                         | 9                          | 6                          | 1                          |
| Interior Live Oak | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE |
| Mixed Oak         | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE |
| Oregon White Oak  | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE |
| Valley Oak        | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE | NO PLOTS IN THIS TYPE |

### Notes
- The Oak Inventory Summary provides data on the distribution and abundance of oak trees in the San Joaquin Region.
- The data includes various metrics such as total basal area, oak basal area, non-oak regeneration, and oak regeneration.
- The number of FIA plots is also indicated for each oak 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?

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

Hi! I’m your new valley oak tree, and here is my friend Corny, the blue oak acorn.

Hi!
California’s oak woodlands cover 10 percent of the state and are its most biologically diverse broad habitat. It also is 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 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.

**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

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**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 Range and 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:**


**Questions? Rick Standiford, UC Berkeley, standfo@berkeley.edu**

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**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

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www.terrafirmasurveys.com

Tom Gaman
tgaman@forestdata.com
www.forestdata.com

for these reports see:
www.californiaoaks.org