

LANDSCAPING AROUND CALIFORNIA NATIVE OAKS

For the Santa Clara Valley Chapter of the California
Native Plant Society, November 6, 2013



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The Basics

- Keep it simple
- Less is more
- It's more than just the plants!
- Put the oak tree first!



Our Native Oaks (Santa Clara Valley)

Quercus agrifolia, coast live oak

Q. lobata, valley oak

Q. douglasii, blue oak

Q. kelloggii, black oak

Q. chrysolepis, canyon live oak

Quercus agrifolia



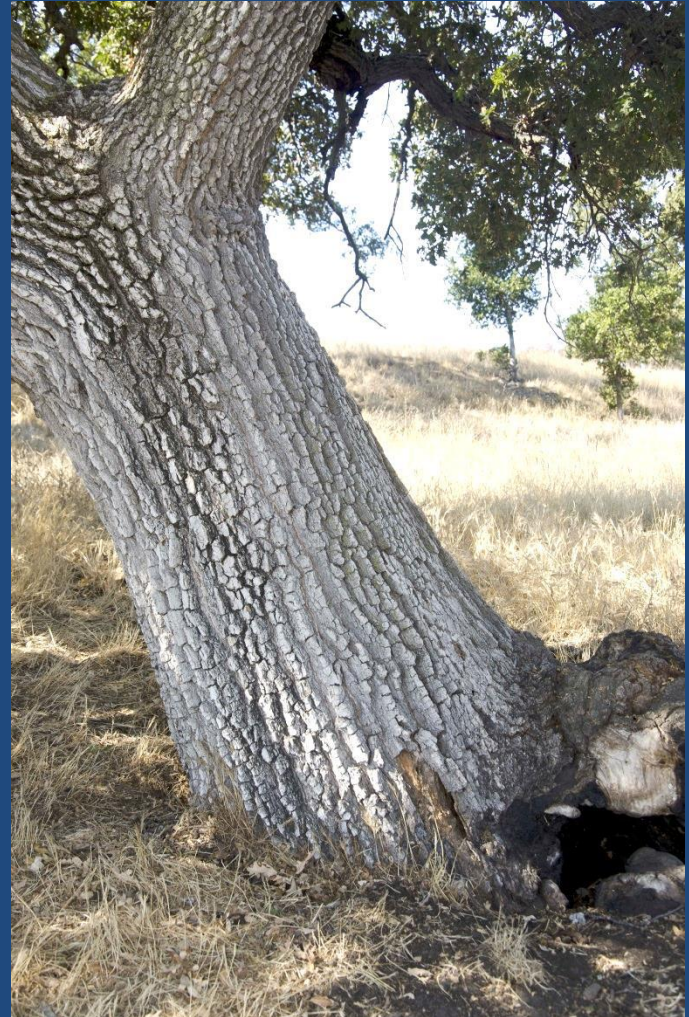
Quercus agrifolia



Quercus lobata



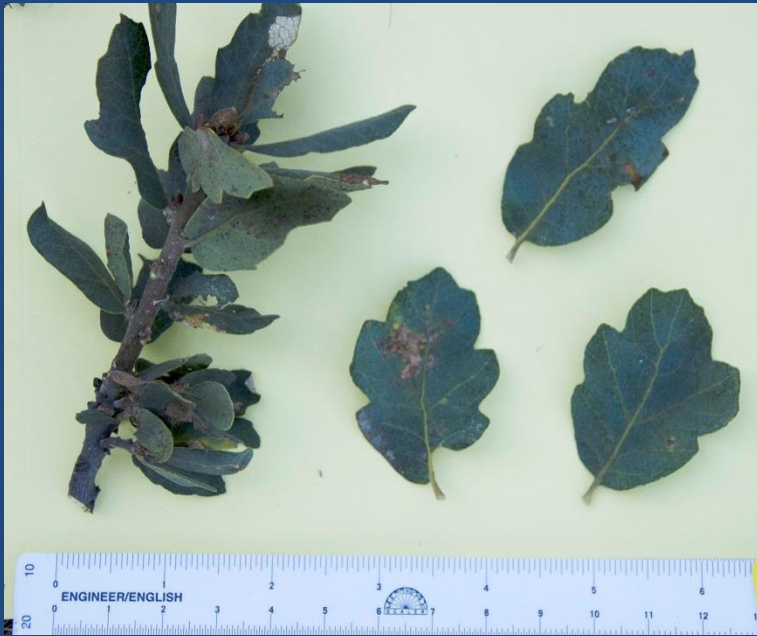
Quercus lobata



Quercus douglasii



Quercus douglasii



Quercus agrifolia, *douglasii* & *lobata*



Quercus kelloggii



Quercus kelloggii



Quercus chrysolepis



Quercus chrysolepis



Where do they live?

Climate:

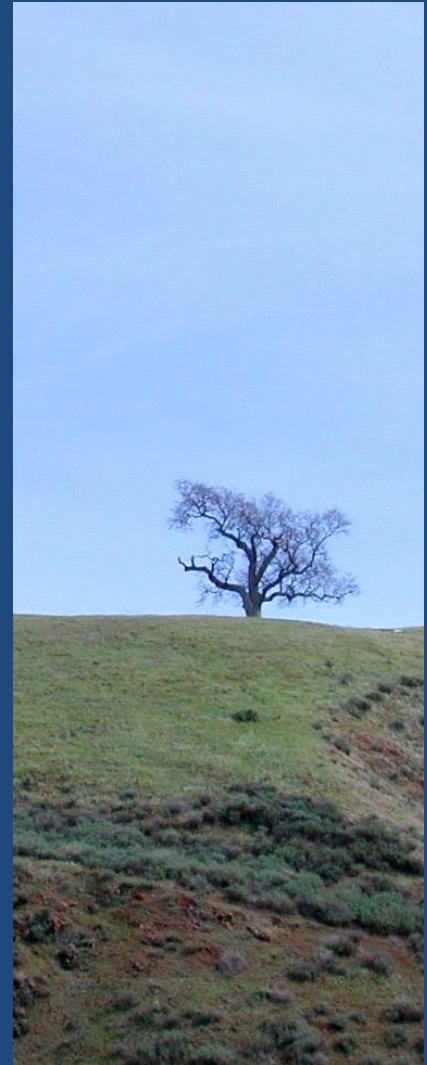
Mediterranean

Soils:

Varies, but generally well drained

Exposure:

Varies, but full sun is best



What Do They Really Want?

Guiding Principles

1. Provide as much undisturbed space as possible around trunk & canopy
2. Mulch as much of the ground surface underneath the tree's canopy as possible
3. Companion plantings should be "Summer Dry"
4. Pruning: be a minimalist

Space – How Much?

The Whole Dripline

Half the Dripline

1.5 x the Dripline

2 x the Dripline

One foot every inch of diameter

3xD

4xD

5 feet

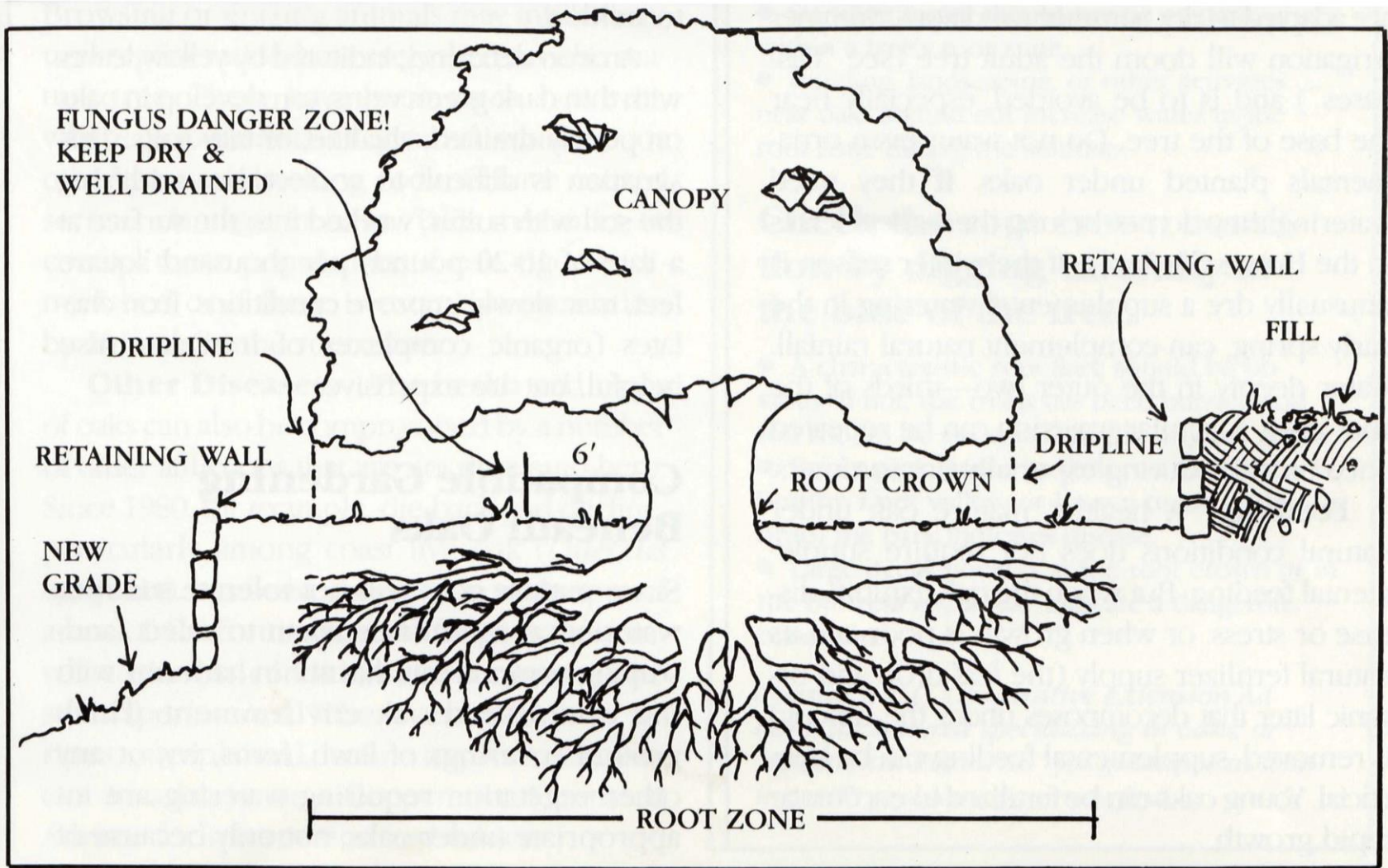
6 feet

7 feet

12 feet

20 feet

**NO ONE
really
KNOWS!**



CONCEPT COURTESY OF SACRAMENTO CO. OFFICE OF EDUCATION

Taken from: *Living Among the Oaks, a Management Guide for Landowners*. Johnson et al. U.C.C.E. at Berkeley, Natural Resources Program. No Date, > 10 years old.

3xDBH

- DBH: Diameter At Breast Height (4.5 feet above the ground).
- Standard trunk diameter measurement height for Forestry, then Arboriculture
- Common size descriptor for trees
- Used to calculate many tree related concerns such as root protection distances
- 3xDBH – danger zone for whole-tree stability
- 5xDBH or greater – better for tree long-term tree health.
- 24" DBH tree – 3xDBH = 6 ft., 5xDBH = 10 ft.

Mulch



Benefits of Organic Mulch

1. Conserves soil moisture
2. Encourage beneficial microbial growth & interaction with plant roots
3. Benefits shallow soil tilthe
4. Reduces weed growth
5. Cushions soil from foot or other traffic

More Benefits of Organic Mulch

5. Provides slow-release fertilizer for the tree, custom-made for each species!
6. Recycles an otherwise “waste” material
7. It is free!

Mulch Sources

1. Best – the tree itself
2. Landscape Supply Companies
3. Tree Service Companies

Mulch Materials

1. Tree's own natural leaf, twig & small branch litter.
2. Bark chips, wood chips, mixture
3. Tree trimming chippings (bark, wood, foliage)

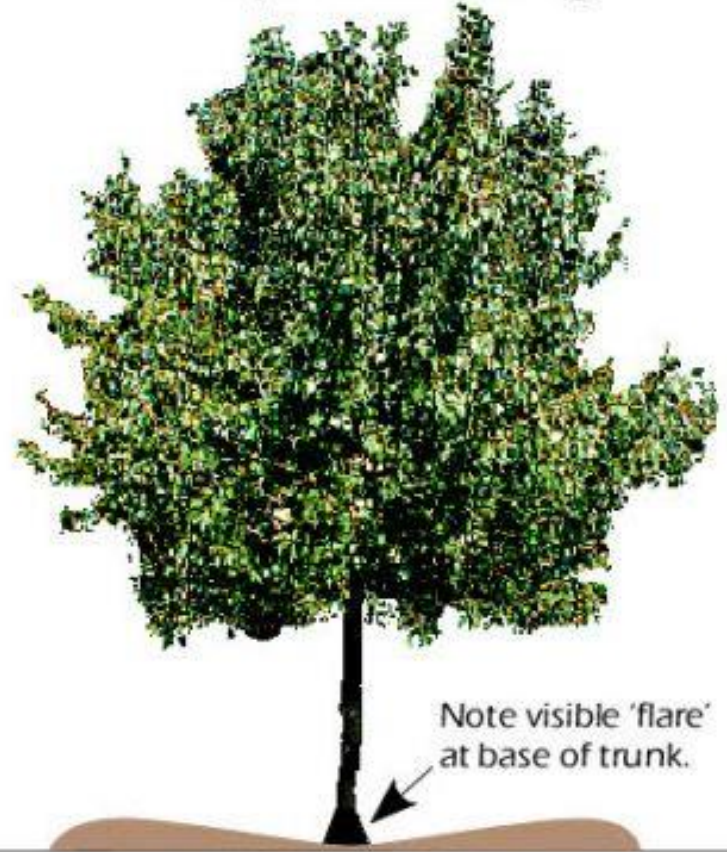
Mulch Cautions

1. 3 – 4” depth (6” or more maybe OK if coarse)
2. Avoid potentially toxic materials such as walnut or Eucalyptus
3. Keep it off root collar
4. Do not mulch or rake back mulch if trying to dry out soil.
5. Do not place weed fabric underneath mulch.

Mulch Volcano - BAD



Proper Mulching



Pennsylvania Master Gardeners



Summer Dry Landscaping

1. As far from the trunk as possible
2. Same water requirement as the oak tree
3. Able to survive without irrigation; with only natural precipitation after a 2-3 year establishment period.
4. Sparsely planted
5. Use small container size plants, e.g. 1-gallon.

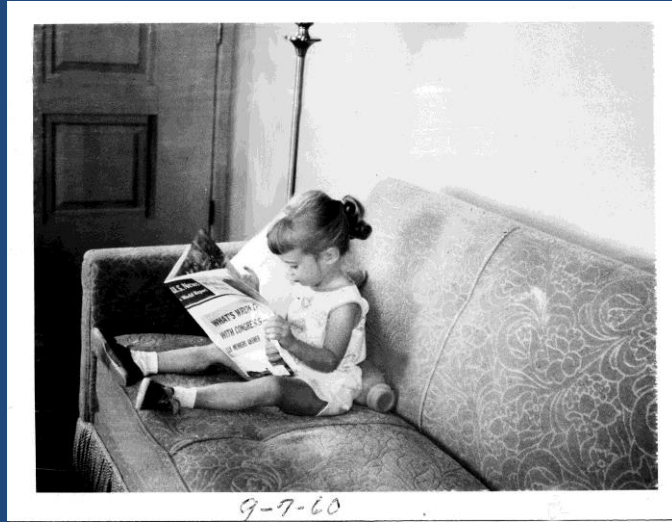
Summer Dry Landscaping

6. Individually dug planting holes. No rototilling or broadscale soil cultivation.
7. Irrigated by drip or manually to establish, then stop.
8. Can leave drip system in place for use in future, if needed.
9. Mulch around new plantings as well as in plant-free zone around trunk.

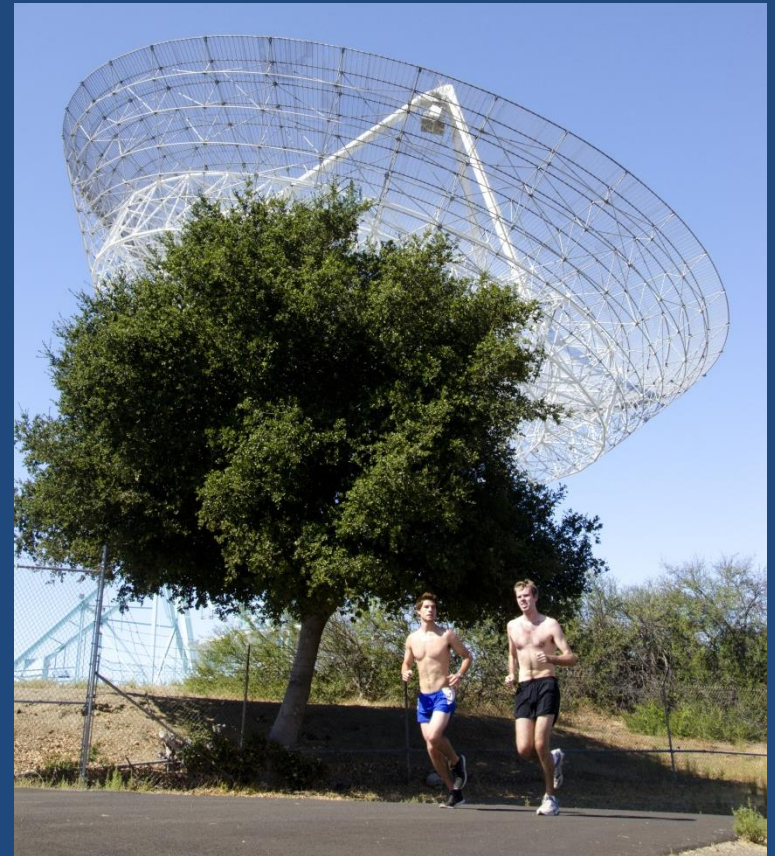
Minimal Pruning



Tree Aging



Tree Aging



Tree Aging



Tolerance?



Tolerance - Good



Acer rubrum, red maple



Platanus x hispanica, London plane tree

Tolerance - Poor







My Advice....

1. Play it safe
2. Respect the typical tolerance of the species
3. Recognize the risk the tree can pose if mistreated

Native Oak Landscapes

































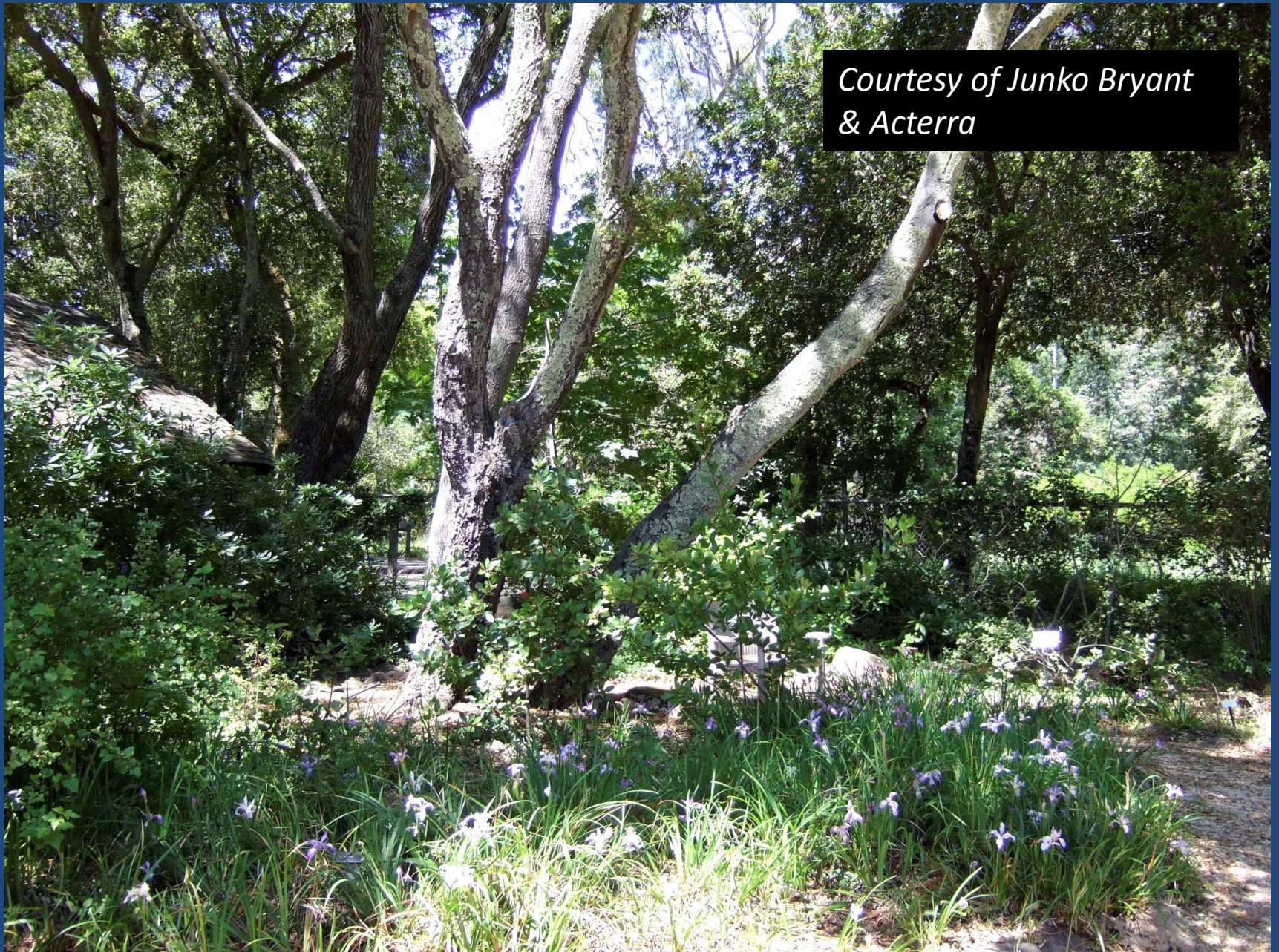
*Courtesy of Junko Bryant
& Acterra*





*Courtesy of Junko Bryant
& Acterra*

*Courtesy of Junko Bryant
& Acterra*













The Companion Plants

- Drought tolerant, summer dry
- Soil tolerances – Texture, pH
- Exposure



A few favorites



Arctostaphylos species, prostrate manzanitas



Iris douglasiana, Douglas iris



Mimulus aurantiacus,
sticky monkey flower



Ribes sanguineum
Red or pink flowering currant



Ribes viburnifolium
Evergreen currant



Monardella villosa,
Coyote mint



Frangula californica (Syn. *Rhamnus c.*)
coffeeberry



Umbellularia californica, Calif. bay tree
w/ red oak group (SOD)

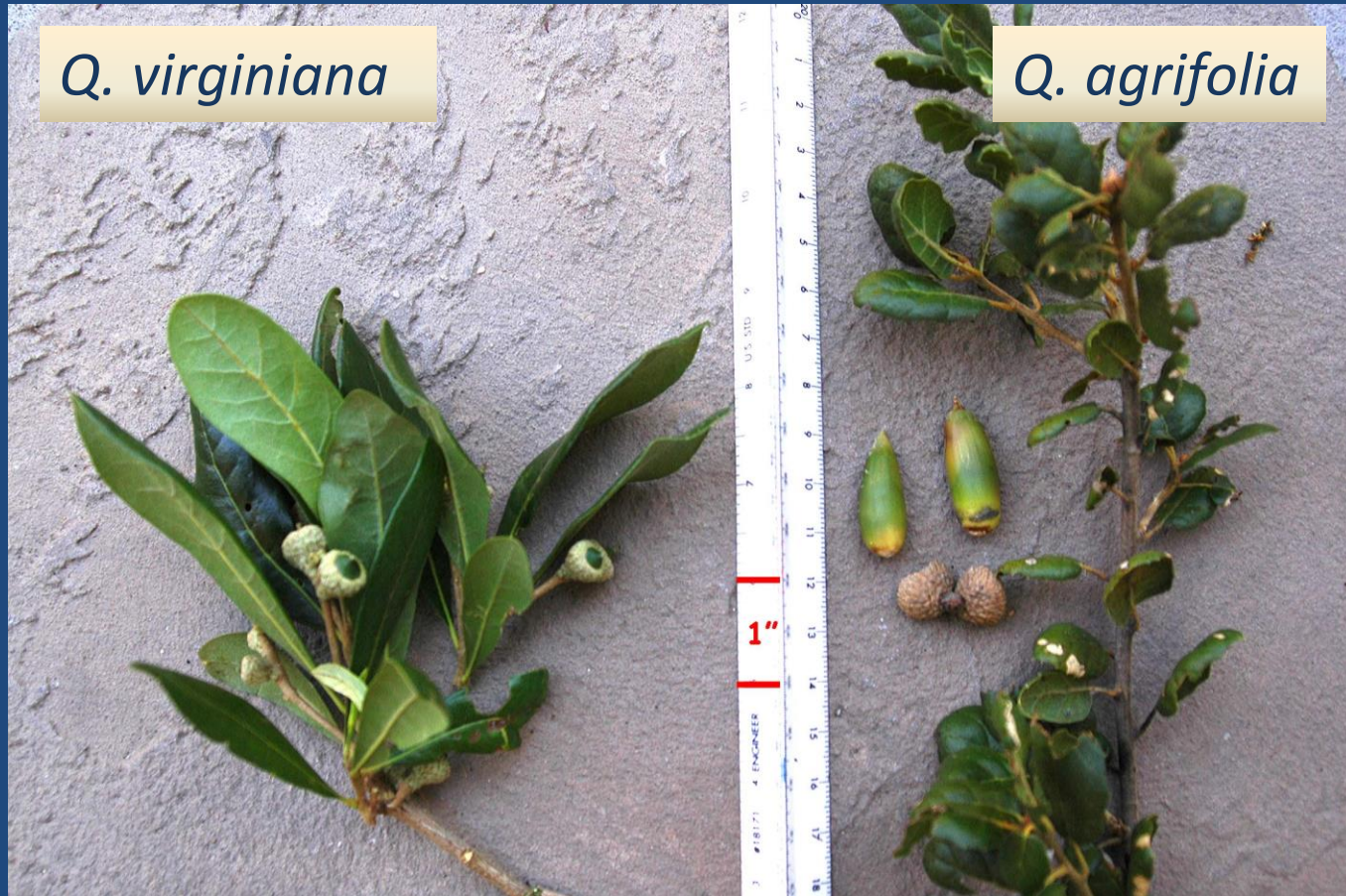
Your Plant Suggestions?

A coast live oak Ringer— for irrigated locations



Quercus virginiana, Southern live oak

Coast live oak Ringer— for irrigated locations



Quercus virginiana, Southern live oak

Plant Lists

Plant List & Procedures for Landscaping Under Native Oaks of the Central Valley.

Lichter et al.
U.C.C.E. HortScript #11
March 1995

UNIVERSITY OF CALIFORNIA

COOPERATIVE EXTENSION

HortScript



MARCH 1995, No. 11

PLANT LIST AND PROCEDURES FOR LANDSCAPING UNDER NATIVE OAKS OF THE CENTRAL VALLEY

John Lichter, Horticultural Consultant/Certified Arborist, Winters and Ellen Zagory, University Arboretum, UC Davis

California native oaks such as the valley oak (*Quercus lobata*), blue oak (*Q. douglasii*), interior live oak (*Q. wislizenii*), and coast live oak (*Q. agrifolia*) are some of the most significant natural components of our California landscape. Besides beauty they provide a multitude of benefits, including wildlife habitat, shading, erosion control, wind protection, pollution reduction, and screening. Oak woodlands are sustainable landscapes, requiring a minimum of resources if successfully incorporated into new developments. Even with the most careful attention to the architectural design in oak woodlands, constructional alterations bring environmental changes that often lead to tree decline. By understanding the oak's habitat, physiology, growth habits and response to environmental changes, we can design and manage landscapes near oaks which ensure their survival.

The Oak Habitat, Growth Habits and Roots

California native oaks have evolved under the cool, wet winters and hot, dry summers typical of our Mediterranean climate. Through adaptations such as the development of deep and extensive root systems, various water conserving leaf characteristics, and a slowing of growth in the summer, these trees are able to survive the prolonged seasonal droughts which typify the Central Valley. California native oaks often produce sinker roots within several feet of the trunk, which grow deep into the soil profile, providing the oak access to water as the summer progresses. Lateral roots are commonly shallow and extend well beyond the dripline of the tree. Maintaining the health of the oak root system is the key to successful landscaping around oaks.

Tree root health is largely affected by mechanical injury, physical and chemical properties of soil, and pathogens.

During landscape installation, oak roots may be directly injured by backhoes, trenchers, tillage equipment or shovels, or indirectly by altering physical soil properties due to grading and compaction. Frequent irrigation and compaction limit oxygen access to oak roots that favor pathogens, such as crown and root rot (*Phytophthora* sp.) and oak root fungus (*Armillaria mellea*). These fungi often lead to the decline or structural instability of California native oaks.

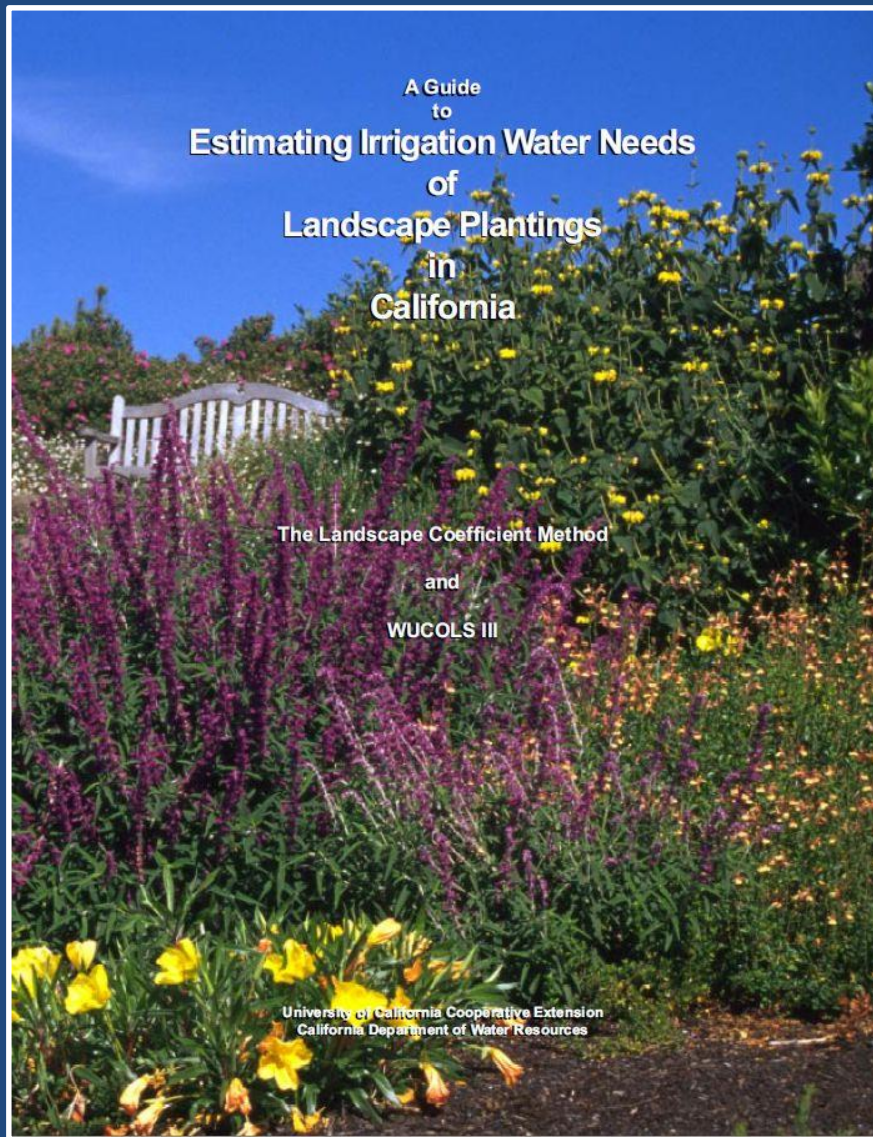
Recommendations for Landscape Planting, Establishment and Maintenance

As a general rule, strive to ensure that the environmental conditions both above and below ground are similar to those conditions under which the oak grows naturally. Therefore, an ideal landscape near most Central Valley oaks is one which will tolerate a minimum of maintenance and irrigation once established. An appropriate plant palette may be composed of plants native to the local region or those plants which will tolerate the local environment (California natives or other Mediterranean plants). When establishing landscapes near oaks, one should observe the following guidelines.

- **Ensure that drainage from landscaped areas does not collect under oaks.**
- **Prevent tree injury and soil compaction during landscape installation.**

Avoid traffic and storage of equipment in the oak root

WUCOLS III



A Guide
to
Estimating Irrigation Water Needs
of
Landscape Plantings
in
California

The Landscape Coefficient Method
and
WUCOLS III

University of California Cooperative Extension
California Department of Water Resources

<http://www.cuwcc.org>

WUCOLS III

Species Evaluation List--1999

TYPE	BOTANICAL NAME	COMMON NAME	REGIONAL EVALUATIONS						INVASIVE
			1	2	3	4	5	6	
S	<i>Abelia chinensis</i>	Chinese abelia	M	?	?	?	/	/	
S	<i>Abelia floribunda</i>	Mexican abelia	M	?	M	M	/	/	
S Gc	<i>Abelia X grandiflora</i>	glossy abelia	M	M	M	M	/	/	
S	<i>Abelia 'Sherwoodii'</i>	Sherwood dwarf abelia	M	M	M	M	/	/	
T	<i>Abies spp.</i>	fir	M	/	M	M	/	/	
T	<i>Abies pinsapo</i>	Spanish fir	L	/	L	/	/	/	
S	<i>Abutilon X hybridum</i>	flowering maple	M	H	H	H	/	/	
S	<i>Abutilon palmeri</i>	indian mallow	?	?	L	?	?	?	
S T	<i>Acacia abyssinica</i>	Abyssinian acacia	/	?	/	?	/	L	
T	<i>Acacia aneura</i>	mulga	/	?	?	?	/	L	
T	<i>Acacia baileyana</i>	Bailey acacia	L	L	L	L	/	/	⊗
T S	<i>Acacia berlandieri</i>	guajillo	?	?	?	M	/	L	
T	<i>Acacia boormanii</i>	Snowy River wattle	?	?	L	?	?	?	
T	<i>Acacia cognata (A. subporosa)</i>	bower wattle	L	L	M	M	/	/	

Page 63 Species Evaluation List

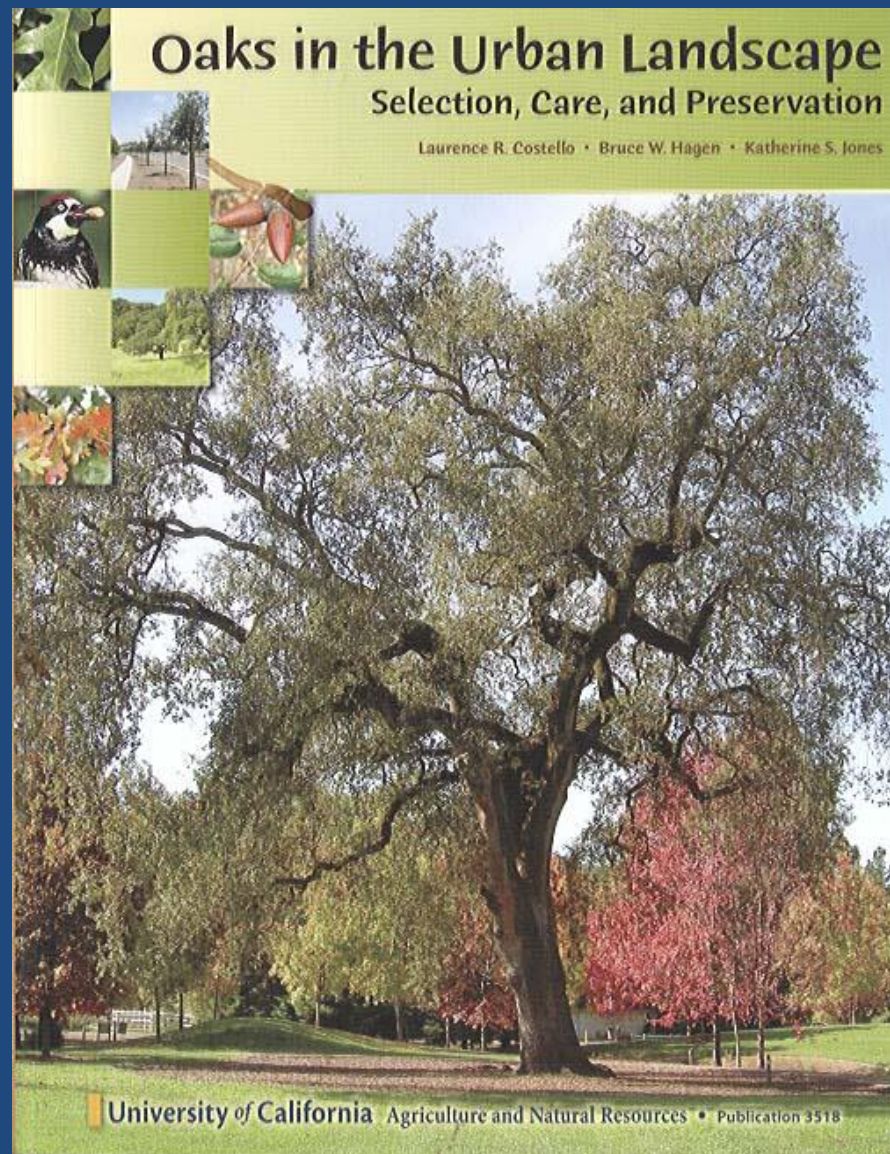
Other Good References

Oaks in the Urban Landscape, Selection, Care & Preservation.

Costello et al.

U.C.A.N.R. Publication #3518

U.C. Regents, 2011





TREE NOTES

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION

Pete Wilson
Governor
State of California

Richard A. Wilson
Director

Douglas Wheeler
Secretary for Resources
The Resources Agency



NUMBER: 7

JUNE 1990

Keeping Native California Oaks Healthy

Bruce W. Hagen

Urban Forester, Resource Management, P. O. Box 670, Santa Rosa, CA 95402-0670

Oak trees in the residential landscape are often seriously damaged or killed during the construction and/or landscaping phase of development. Decline and early death may also stem from inappropriate landscaping and irrigation practices. Damage often takes years to become evident, and by the time the tree shows signs of decline it is usually too late to help.

in the absorption of water and minerals. These fungi are easily killed by changes in soil conditions.

Common Problems That Occur During Construction and Landscaping

Life-supporting roots are frequently severed during construction or damaged by other construction practices that change the existing soil environment. The frequent irrigation of lawns and ornamental vegetation commonly planted under oaks after construction, leads to decay and progressive root loss. The net effect is reduced water and mineral uptake. This typically causes die-back and decline over one to many years. Few people associate this decline with construction or landscaping because the symptoms often develop gradually. Most of these trees will die or fall prematurely unless prompt remedial action is taken.

Oaks and Summer Water

Once established, native oaks require little or no supplemental irrigation. In fact, they do best in non-irrigated soils. This is because oak roots, particularly those originating at the base of the trunk (root crown), are susceptible to root-disease fungi when exposed to prolonged moisture during the summer (Figure 1). These fungi are normally inactive in dry soil, but proliferate under the warm, moist conditions created when frequent summer water is applied. (Other species of trees are less susceptible to these fungi because they have evolved where summer soil moisture is high.) Oaks weakened by the loss of roots or root function are particularly susceptible to root pathogens and other pests. Frequent summer irrigation, particularly near the root crown, is likely to cause root decay which, over time, may destroy the roots, killing the tree or causing a hazardous situation. Therefore, irrigation for lawns, ground covers or other ornamental vegetation should be avoided or, at the very least, kept well away from the trunk. The common notion that younger oaks can adapt to frequent irrigation is incorrect. Young or newly planted oaks in irrigated situations often show signs of decline after 15 to 20 years.

Activities That Damage Roots and Disturb the Soil Environment

Grade change. This involves either the addition or removal of soil within the drip line. Excavation can sever roots, while the addition of fill soil may suffocate them. Fill soils can also impede water infiltration and soil drainage, leading to drought conditions or waterlogging.

Trenching. Trenches dug for utility or irrigation lines within or across the drip line cut essential roots. This impairs the tree's ability to obtain water and essential elements, which may cause death, die-back, or gradual decline. It can also impede drainage and root development.

Pavement. Impermeable soil coverings such as asphalt or concrete restrict the amount of air, water, and minerals available to the roots. This impairs root growth and function, and can ultimately lead to their death.

Soil compaction. Frequent traffic, both human and livestock, and the operation and parking of heavy vehicles within the drip line, squeeze soil particles together, thus eliminating much of the natural air space. This reduces the infiltration and storage of water and air, inhibiting root growth and the uptake of water and minerals.

Oak Roots

The roots of mature oaks grow predominantly within the upper three feet of soil. Most of the roots responsible for the uptake of water and minerals are concentrated within 18 inches of the surface. Few roots grow deeper than three feet. Although the roots typically radiate well beyond the periphery of foliage (drip line), much of the active root system is within the drip line (Figure 1). Roots are sensitive to environmental change (soil compaction, grade change, increased moisture, paving). Oak roots like those of most trees, are associated with beneficial fungi that resist pathogens in the soil and aid

Keeping Native California Oaks Healthy.

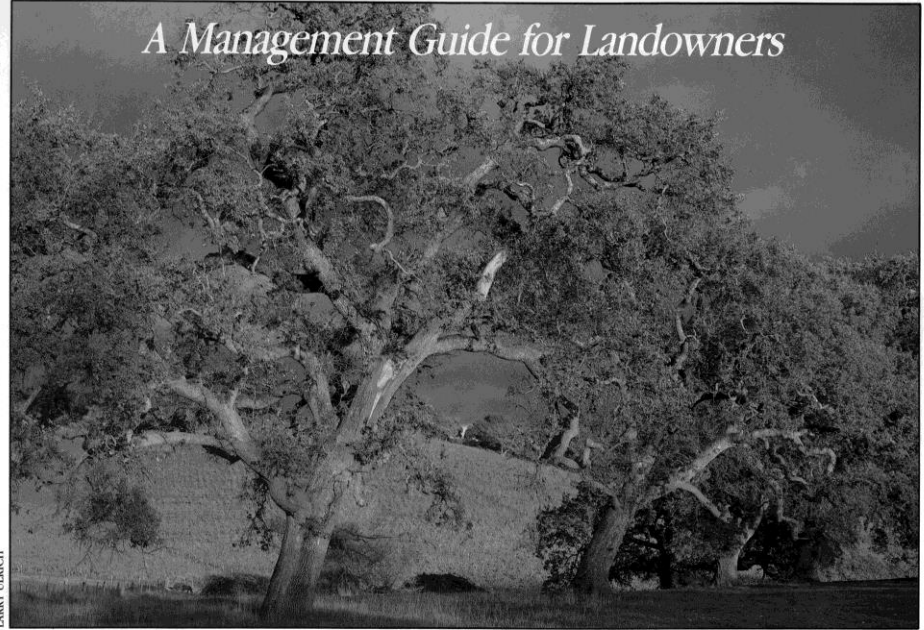
Hagen.

Tree Notes #7

CDF. June 1990

LIVING AMONG THE OAKS

A Management Guide for Landowners



LARRY ULBRICH

What is more characteristic of the California landscape than the oak? Round-crowned oaks dapple the rolling hills, solitary monarchs shade our rural roads, and valley giants stretch skyward in banners of leaves and lichen. Both past and present-day travelers have stopped in awe of our native oaks, and countless photographs and memories are framed by their spreading, weather-worn branches. The oak is particularly emblematic of the inland regions of California, where scattered oaks, rolling pasture, and distant cattle are the common elements of an infinitely variable landscape.

In this region—often called the hardwood range by land managers—the vistas of oaks, pasture, and cattle bestow a tranquility that sometimes belies the fourth element—people. Like the earliest Californians, humans today come to the oaks for food, shelter, and beauty. As we appreciate the beauty of oak landscapes, we fatten our flocks on their bounty, and seek homesites in their shadows. But intensifying land use in the hardwood range has brought soil erosion, reduced forage production, poor regeneration among some species of oaks, and dwindling resources, due to development. Today the hardwood range clearly shows signs of the last hundred years of human habitation.

All Californians can assist in the protection and enhancement of native oak resources, but none are in a better position to do so than landowners in the hardwood range. These individuals shape the future by their decisions, which cumulatively direct the management and land use of more than seven million acres of California's oaks and pasture.

This brochure is designed for you—the landowner. It brings together a variety of current information about living and making a living among the oaks. The University of California Cooperative Extension hopes that you will find this information useful as you manage your land and make decisions that shape the future of your oaks.

Needs and Conflicts

In designing and building homes, workspaces, storage areas, gardens, orchards, and places for animals, your decisions are shaped by your over-all objectives for your land. Managing land as a residential site, for animal production, for wild or park-like qualities, all may require different actions. As you choose management objectives for your land and evaluate its suitability, also consider the oaks on those sites and whether your objectives are compatible with the basic needs of the trees. Careful planning and design can often provide benefits for both people and oaks.

Past development among the oaks has revealed specific areas of conflict. Various construction practices seriously injure oaks or inadvertently kill them, increasing fire hazards and creating liability and management problems. Gardening practices such as amending the soil, planting lawns, or irrigating under established oaks will kill them. Domestic animals and wildlife, as well as insect and fungus pests, also take their toll. In combination these elements can present formidable obstacles to the survival of mature oak trees. Harmful effects can be minimized, however, by thoughtful management practices.

OAKS GIVE US:

- Shade & Shelter
- Increased Property Values
- Beautiful Carefree Landscapes
- Food & Fuel

Living Among the Oaks, a Management Guide for Landowners.

Johnson et al.

UCANR



CALIFORNIA OAK MORTALITY TASK FORCE

- Home
- About Sudden Oak Death
- Diagnosis and Management
- News and Events
- Library
- Research
- Contacts

Sudden Oak Death

California Oak Mortality Task Force



What is Sudden Oak Death?

Sudden Oak Death is a tree disease caused by the plant pathogen *Phytophthora ramorum*. The disease kills some oak species and has had devastating effects on forests in California and Oregon. [Read more about Sudden Oak Death.](#)

Areas of Interest



[P. ramorum in Wildlands](#) The information in this section is geared toward land management, forestry and arboriculture professionals, including [Best](#)

News

P. ramorum confirmed in Jackson Demonstration State Forest, Mendocino County. [Read more...](#)

Big Sur's burned areas becoming reinfested as vegetation returns. [Read more...](#)

Oregon's quarantine rule revised to allow

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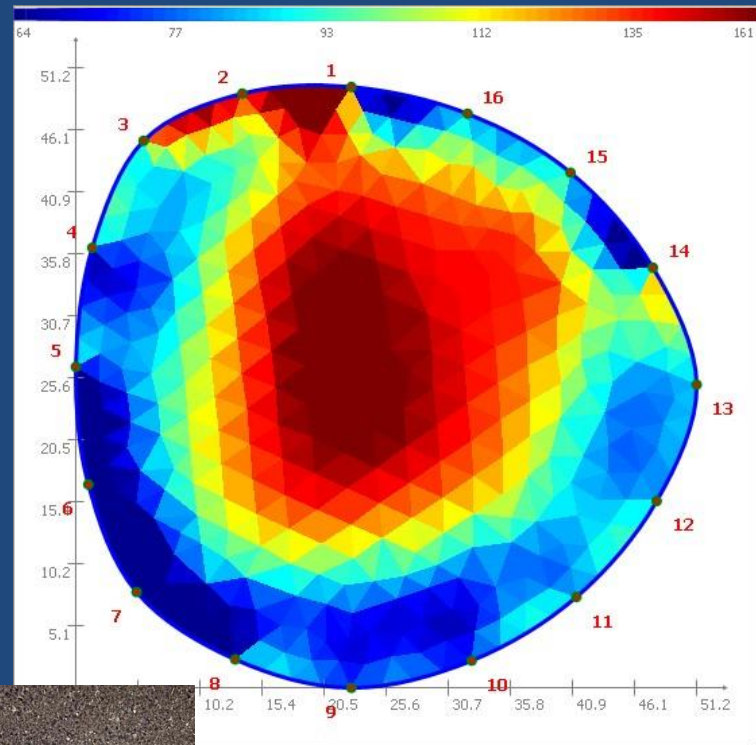
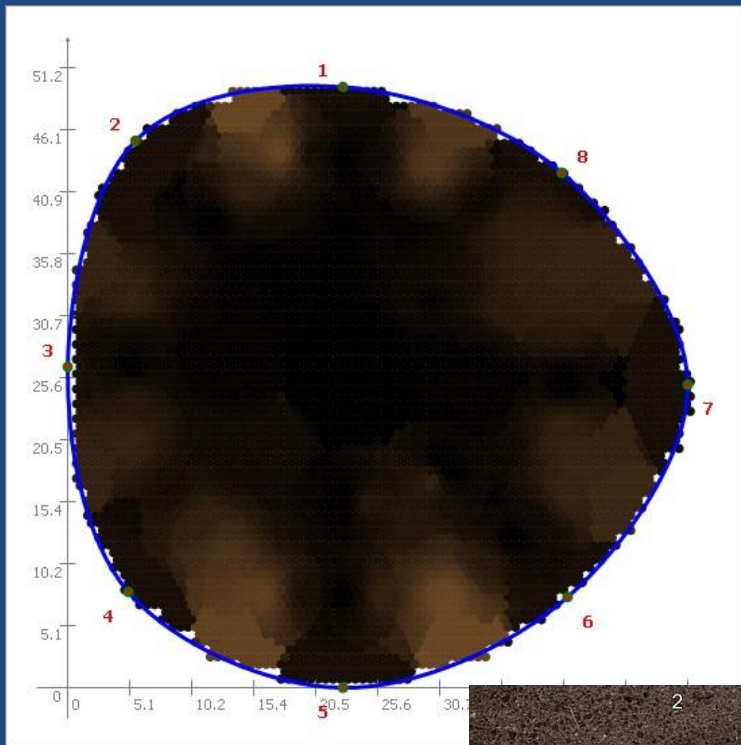
Symptom Gallery



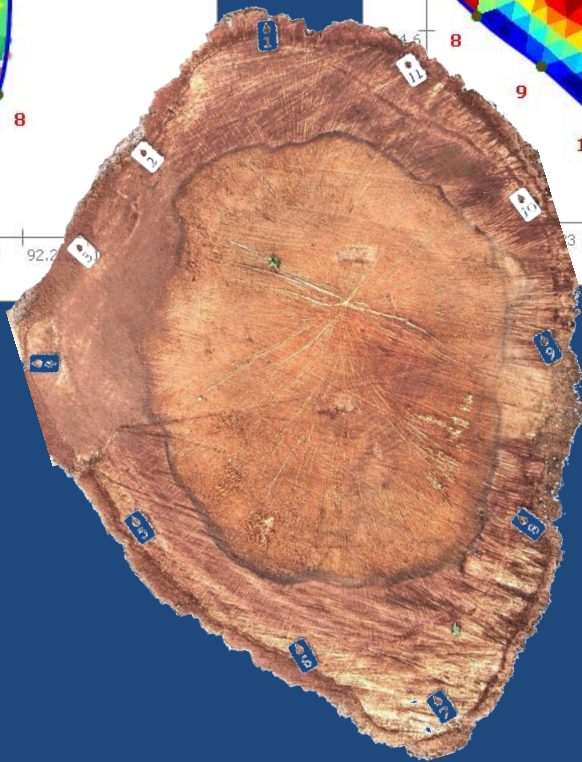
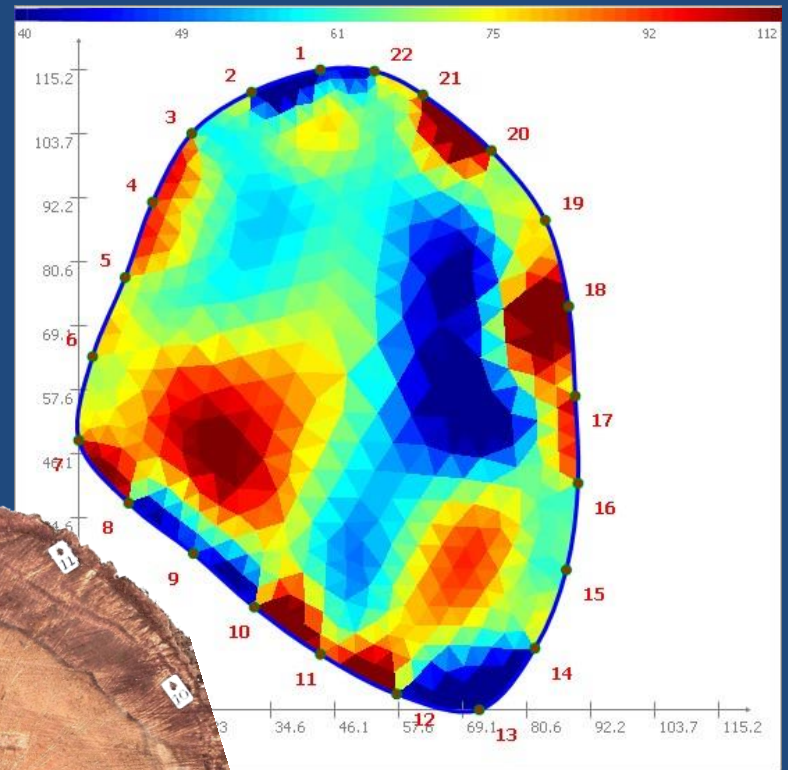
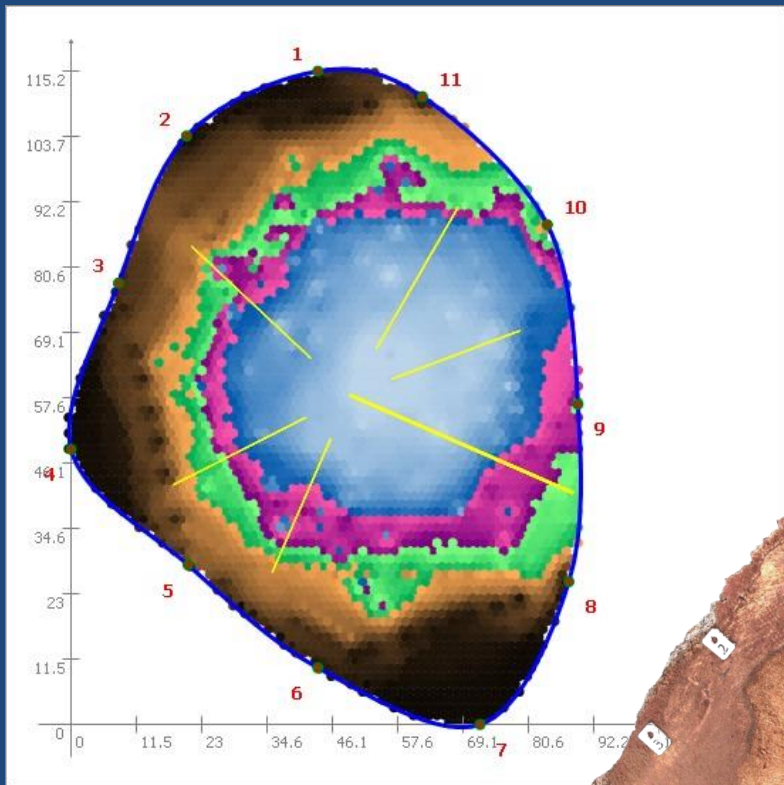
[See more in the symptom gallery](#)

Tree Tomography









Thank you!



Service since 1984

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