

Calaveras County

Voluntary Oak Woodland Management Plan

INTRODUCTION

Oak woodlands are an integral part of the Calaveras County landscape. The oak covered rolling hills are valued for their beauty and function. Oak woodlands are rich in wildlife and are a favored place for people to recreate, build their homes, and pursue their livelihoods.

In Calaveras County, approximately 89 percent of the county's hardwood rangelands are privately held (CDF FRAP 2003a). Data summarized by the University of California Cooperative Extension for the period from 1991-2001 shows that there was a net loss in acres of Hardwood Canopy Cover in Calaveras County (Frost and Churches, 2004). Much of this loss can be attributed to wildfire or thinning projects. The percentage of oak woodland with a decrease in oak canopy cover from 1996-2001 was 0.72% of the total oak woodland area (Frost and Churches, 2004).

It is estimated that Calaveras County's population will grow from its current level of approximately 44,000 residents to over 92,000 by 2050 (Department of Finance 2004). Based on U.S. Census Bureau figures and current development trends, Calaveras County was the sixth fastest growing county in California, with more than 9% growth from 2001 through 2003. At the current rate of growth, the county could reach the 92,000 population threshold on or before January 2024.

As the county's population grows, there is increasing pressure to construct homes and businesses in areas that currently support oak woodlands. The problems associated with development in woodlands, including fire safety and loss of functional wildlife habitat, are clearly demonstrated in Sierra foothill counties and other places where woodlands have been highly fragmented by development (Wacker 2002).

With approximately 159,000 acres of hardwood habitat, including 2,000 acres of Blue Oak-Foothill Pine, 55,000 acres of Blue Oak Woodland, 102,000 acres of Montane Hardwood, and a small amount of Montane Riparian habitat, Calaveras County contains approximately 1.6% of California's nearly 10 million acres of hardwood rangeland and forests (CDF FRAP 2003a). It leads all other counties in the percentage of county land area in oak woodland within the state.

The county's unique geography and topography create a diversity of oak habitats, including shady riparian woodland along the Mokelumne and Calaveras Rivers, extensive blue oak savannas and woodlands in the lower foothills, and significant black oak habitats in the mid and higher elevations. Calaveras County contains four of the state's five identified hardwood rangeland habitat types: valley oak woodlands, blue oak/foothill pine woodlands, blue oak woodlands, and montane hardwood forests. The oak woodlands of eastern and central Calaveras County provide the primary winter range for the migratory Rail Road Flat deer herd.

To successfully manage this valuable natural resource, planning processes must identify and address the various land use practices that adversely impact oak woodlands, as well as those land uses that promote the conservation of oak woodlands and develop appropriate mechanisms to achieve effective conservation. Without policies to manage, protect, and conserve its existing oak woodlands, Calaveras County will be subject to:

- Degradation of wildlife habitat and loss of biodiversity.
- Increased potential for extensive wild land fires.
- Increased oversight by resource conservation and regulatory agencies.
- Loss of scenic resources.

PURPOSE

The purpose of Calaveras County's Oak Woodland Management Plan is to develop a set of voluntary oak protection guidelines for oak conservation planning and use of oak woodland habitats throughout the County. The document is also expected to provide direction to landowners, the Calaveras County Planning Department, and developers regarding activities that have the potential to adversely impact oaks and oak woodland habitat. The adoption of this plan by a resolution of the County Board of Supervisors will also give the County the opportunity to obtain funding through the California Oak Woodlands Conservation Program (California Oak Woodlands Conservation Act - Fish and Game Code, Division 2, Chapter 4, Article 3.5, Section 1360-1372). This program provides funding for oak education, landowner assistance, and projects designed to conserve and restore oak woodlands. In addition, adoption of this plan will allow the county to create a local oak mitigation fund reserve with the purpose of providing monetary support for oak conservation activities specific to Calaveras County. Activities supported by the program also encourage interaction among ranchers, conservationists, educators, and others who share similar values regarding oak woodlands.

The goals of the Calaveras County Oak Woodland Management Plan are to:

- Support and encourage voluntary, long-term private stewardship and conservation of Calaveras' oak woodlands
- Develop a plan that would provide incentives to encourage farming and ranching operations that are operated in a manner that protect and promote healthy oak woodlands and provide wildlife value.
- Provide support to protect and encourage farming and ranching operations that are operated in a manner that promotes healthy oak woodlands.
- Encourage local land use planning that is consistent with the preservation of oak woodlands, particularly special oak woodlands habitat elements.
- Provide educational and resource support programs that assist private landowners in the management and protection of their oak woodlands and associated wildlife habitat.
- Maintain information on the status of oaks and oak woodland within Calaveras County.

EXISTING POLICIES AND LAWS

In 1993, the California Board of Forestry mandated that the 41 counties with significant hardwood resources develop and maintain programs for the protection of this resource. At that time, and continuing today, the potential exists for the California Department of Forestry and Fire Protection to classify some or all species of oaks as a commercial timber species, resulting in their harvest and management activities falling under the requirements of the California Forest Practices Rules. In response to potential onerous regulation that this classification could place on Calaveras County landowners, the Board of Supervisors passed Resolution #96-284 (Appendix A-1) which formally established a Hardwood Advisory Committee to study the extent of oak woodlands in the county and make recommendations that would steer the county towards sound oak woodland management. A set of Voluntary Oak Woodland Management Guidelines (Guidelines) was also adopted as part of this Resolution. The Hardwood Advisory Committee was, and is, tasked with evaluating the effectiveness and progress of the educational programs on hardwood management and the effectiveness of the Guidelines in sustaining oak woodlands within Calaveras County. The Oak Woodland Management Plan proposed in this document, if adopted, would supplement the existing Guidelines.

In 2001, the California Legislature passed the California Oak Woodland Conservation Act (COWCA), which acknowledged the positive impact that oak woodlands have on the monetary and ecological values of property. Requirements associated with COWCA were added as §§1360-1372 to Division 2, Chapter 4, Article 3.5 of the California Fish and Game Code (Appendix A-2), and included the following:

- (a) Support and encourage voluntary, long-term private stewardship and conservation of California's oak woodlands by offering landowners financial incentives to protect and promote biologically functional oak woodlands over time.
- (b) Provide incentives to protect and encourage farming and ranching operations that are operated in a manner that protects and promotes healthy oak woodlands.
- (c) Provide incentives for the protection of oak trees providing superior wildlife values on private lands.
- (d) Encourage local land use planning that is consistent with the preservation of oak woodlands, particularly special oak woodlands habitat elements.
- (e) Provide guidelines for spending the funds allocated for oak woodlands pursuant to the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000 (the Villaraigosa-Keeley Act (Chapter 1.692 (commencing with Section 5096.300) of Division 5 of the Public Resources Code).
- (f) Establish the Oak Woodlands Conservation Fund to support and implement the oak woodland conservation elements of COWCA.

Senate Bill 1334, the Oak Woodlands Conservation Act (Act) was passed by the California Legislature in 2004 and was added as Section 21083.4 of the Public Resources Code (PRC) when the bill became law in January 2005 (Appendix A-3). The Act requires the consideration of oak woodland conversion as part of the California Environmental Quality Act (CEQA). Specifically, PRC §21083.4 requires that a county determine whether the conversion of oak woodlands proposed by a project would have

a significant adverse effect on oaks, oak woodland, and/or associated wildlife and habitats. If the impact is considered potentially significant, the county must require one or more specified alternatives to reduce the impacts from the proposed project. Mitigation options include the conservation of existing oak woodlands, planting of replacement trees, and/or the combination of a number of additional options aimed at long-term oak woodlands and related habitat protection. The Act exempts agricultural operations.

THE IMPORTANCE OF OAK WOODLANDS

The value of land and its resources is definitely in the eye of the beholder and can be evaluated from four perspectives: (1) the monetary value of the land if sold on the open market; (2) the value of the land as wildlife habitat; (3) the historic and personal value to the individual; and (4) the aesthetic, economic, and environmental contributions associated with open space, clean air and water, sense of community, and the rural quality of life. These values are not mutually exclusive. With effective oak woodland management, we can protect the natural, cultural, and aesthetic resources of the land without jeopardizing its contribution to the county's economic future.

Quality of Life

Foothill communities in Calaveras and surrounding counties have seen a rapid rise in suburban-style developments as more and more people seek to escape the crowded cities of the Sacramento, San Joaquin Valleys and Bay Area or retire in a more rural setting. Landowners often weigh the value of their undeveloped property or grazing lands, as working landscapes, against the increased monetary return from its sale for residential or commercial development. Land situated within oak woodland and savanna habitats are often considered prime development property. However, as the oaks are lost and rolling hills graded to accommodate the developments, the qualities that draw people to the area is often destroyed.

The recreational opportunities, aesthetics, and tranquility of open land greatly add to our quality of life. Open space, working landscapes, or areas that buffer individuals from the trappings of commerce and daily activities are considered a strong incentive for people to move to an area or identify with a community. The loss of agriculturally productive lands contributes to community degradation. The consequences of failing to preserve these working landscapes are often cited as a "loss of quality of life for future generations" and a major contributor to urban sprawl; increased pollution; erosion of beauty, personal space, and community connection; and lower property values. The resulting dissatisfaction can also contribute to a loss of jobs and business diversity, and a long-term erosion of the community's economic sustainability.

Wildlife Conservation

Oak woodlands harbor a rich diversity of native plant and wildlife species. The richness of species found in oak woodlands is due primarily to the diversity of available habitats. In addition, the mild Mediterranean climate and abundant food provided by acorns allow many animal species to remain year-round. The relationship between some wildlife species and oaks is complementary: species such as acorn woodpeckers and western

scrub jays do not completely retrieve cached acorns and thus disperse oak seedlings across the landscape. Oak woodlands also provide critical wintertime habitat to migratory species that spend their summers at higher elevations or northern latitudes. Because of these qualities, oak woodlands are thought to have the richest wildlife species abundance of any habitat in California. According to the California Wildlife Habitat Relationships Model (CWHR), a database maintained by the Department of Fish and Game, Calaveras' oak woodlands provide suitable habitat for many species of vertebrate species. These include amphibians, reptiles, birds, and mammals.

Appendix B is an inclusive list of wildlife species found in the various Calaveras County oak woodlands. The list also identifies the status of protection if applicable under federal or state laws. The appendix includes approximately 221 species of amphibians, reptiles, birds, and mammals that are predicted to use Calaveras County's oak habitats. The appendix has been modified from information developed by the Integrated Hardwoods Range Management Program (IHRMP) and the California Reptiles and Amphibians website. The wildlife species lists developed by the IHRMP were derived from Version 5.0 of the California Wildlife Habitat Relationship System (CWHR) and includes those species that are predicted to use one or more hardwood rangeland canopy cover classes for breeding, feeding, and/or cover. Most waterfowl like ducks, geese, gulls, and shorebirds were not included in the CWHR predictions because they are mostly associated with lakes, ponds, and rivers.

Additional information in the tables indicates several important habitat elements of the California hardwood rangeland habitats. The habitat elements listed include: acorns; riparian habitat; logs, slash, and brush piles; snags; burrows, rocks, talus, caves and cliffs; and vernal pools and wetlands.

Protected Species

The federal Endangered Species Act establishes protection for federally listed species of plants and animals throughout California. Numerous protected species live or migrate into Calaveras County's oak woodlands (Appendix B). Oak woodlands are widespread, as a result they often form the setting for natural communities in which less common habitats occur. For this reason it is not surprising that they support many species that are declining in other parts of California. For example, oak woodlands in Calaveras County border important riparian corridors that are breeding habitat for declining bird species such as yellow-breasted chat and yellow warbler. Also embedded in the oak woodland are aquatic habitats. Streams, springs and seeps provide habitat for threatened species such as California red-legged frogs and foothill yellow-legged frogs. Oak woodlands also encompass the principal watersheds supporting critical habitat for protected fish species. For example, the lower portion of the Calaveras River supports federally protected steelhead trout.

Wildlife habitats, particularly those of endangered and threatened species, can be severely altered when oak woodlands are impacted by development. A study in the developing woodlands of Placer County showed some breeding bird populations decreased in developed areas. Other bird species seemed to be less sensitive if blocks of oaks remained (Stralberg and Williams 2002). Aquatic habitats are also degraded when development in woodlands requires the diversion of water, more septic systems,

and roads. It is likely that the protection of oak woodland habitats will help reduce the chance that woodland species will be listed as threatened or endangered and reduce the need for regulatory action by state and federal authorities.

"Sensitive" plants are those species that are considered rare, threatened, or endangered within California, whether or not they are state or federally listed. The IHRMP states that 8 of the 42 plant species listed for protection in California occur in oak woodlands. Plants that are state-listed as rare, threatened, or endangered are protected under the Native Plant Protection Act or the California Endangered Species Act. California Native Plant Society (CNPS) maintains an inventory that evaluates native plants on their rarity, endangerment, and distribution.

Four common oak woodland plant species are found in Calaveras County (Appendix C). All four species occur in low elevation blue oak woodland habitats in western Calaveras County. A complete list of all plant species found in oak woodlands throughout Calaveras County would be too exhaustive for inclusion in this plan.

Railroad Flat Deer Herd

The Railroad Flat Deer Herd is a well studied migratory herd of predominately California mule deer (*Odocoileus hemionus californicus*) that travel across approximately 550 square miles of land in the central Sierras annually. The herd's annual migratory route takes thousands of animals from the high elevation pine and fir forests of their summer range in Alpine County to the winter range, spring and fall holding areas, and fawning areas in the open oak woodland and oak savanna of the lower foothills and higher elevation timberlands of central and eastern Calaveras County. Portions of these areas have been designated as Critical Winter Range Habitat by the California Department of Fish and Game (CDFG). Nearly 80% of the critical winter range is on privately held land. There are at least 6,700 acres in Fish and Game Conservation Easements in Calaveras County that protect the winter range of the herd.

The herd can adapt to most habitat types, but optimum habitat has food and canopy cover types arranged in close proximity. Open oak woodlands near water generally support the highest deer population. As browsers, and as prey for mountain lions, black bear, and coyotes, deer are an integral component of the food web (Longhurst 1952, Leopold and Dasmann 1952). From an economic perspective, recreational hunting is an important component of the rural lifestyle and a seasonal visitor attraction that helps support the local economy.

Declines in the Railroad Flat Deer Herd since the 1960s are generally attributed to reduced quality and fragmentation of habitat. Overuse of available forage, predation, fire suppression, human encroachment, highway fatalities, wildfires, and drought are all factors contributing to this decline.

RESOURCE FOR ECONOMIC SUSTAINABILITY

Outdoor Recreation

Oak woodland habitats are the primary feature of many state and local parks, enhancing the experiences of hikers, bicyclists, picnickers, and wildlife enthusiasts throughout the year. Seasonal changes draw locals and visitors to enjoy the wildflowers, dappled shade, or autumn color on the trails and roadways throughout the county and greatly enhance the quality of life for those living within view of these areas. Game animals, including deer, wild turkey, duck, and bandtailed pigeon, thrive in these woodland areas, providing excellent opportunities for hunters of all ages.

Woodland Products

Sustainable wood harvesting in oak woodlands provides a reliable heating source and ambiance for many homeowners in Calaveras County and has the potential to provide an important source of income for rural property owners and communities. Although the removal of oak trees may decrease the habitat potential for game species, careful woodcutting practices can balance sustainable woodland management, livestock production, and habitat protection for game and non-game species.

Ranching Operations as Working Landscapes

Ranches are located throughout Calaveras County and contain a broad diversity of habitats. Much of the grazing land in the county contains mature oak woodland and savanna and is managed to protect both the agricultural production and wildlife habitat. Because livestock prices and forage yields can change significantly from year to year, ranching operations often experience large fluctuations in income and profit (Standiford 1999, Harper et al. 1989). However, some Calaveras County ranches have been able to use the aesthetic and habitat qualities of their property to attract hunters, fishers, campers, and equestrians who have significant disposable incomes. Income from these non-traditional ranch uses can soften the impact of unstable cattle markets. Fee hunting and other forms of agritourism can increase the value of a ranching operation (Standiford and Tinnin 1996). Sustainable harvesting of firewood may also provide an additional source of income. With an estimated yearly production value of \$8,627,000 in 2004, ranching has consistently been the county's leading farm commodity providing 26.1% of the total value of agriculture production (Calaveras County Department of Agriculture and Weights and Measures 2004). Calaveras County residents value the ranching culture, which provides much of the County's ambiance and identity. Productive ranches provide many benefits to all county residents including; wildlife habitat, open-space, recreation lands, view sheds, fire control, weed management, and watersheds that produce abundant clean water. It is vital to the conservation of oak woodlands that the County's ranching operations and the working landscapes they provide remain viable.

Property Values

The retention of oak woodlands within a community can contribute to a community's economic well being. Woodlands contribute to increased property values and a subsequent increase in property tax revenues. One study in Southern California showed that a 10% decrease in the distance to an open space preserve increased the value of

4,800 surrounding lots by over \$20 million dollars, significantly increasing tax revenue to the county. In addition, lots containing native oaks have been found to be valued at a 27% premium over properties having no trees. Individual trees of large size or landmark status within a community were found to increase property values by an additional \$18,000 to \$50,000 each (Standiford 1999a). Studies comparing tree populations and property values also indicate that retaining approximately 40 trees per acre generally provides optimal lot coverage and yields the highest market value premium, roughly 22% to 27%, over bare land (Standiford 1999a).

POTENTIAL THREATS TO OAKS AND OAK WOODLAND HABITAT

Table 1 summarizes decreases and increases in hardwood canopy cover from 1991-2001 for three counties. Information for Calaveras County is highlighted.

Table 1: El Dorado, Amador, and Calaveras Counties Acres With Changes in Hardwood Canopy Cover

1991 - 1996

Acres		Large Decrease	Moderate Decrease	Small Decrease	No Change	Small Increase	Moderate Increase	Large Increase
El Dorado		178	818	3,427	248,857	890	92	4
Amador		9	243	1,418	133,839	224	17	0
Calaveras		2,642	6,519	4,521	195,593	10,494	4,189	245

Percent of Total Area		Large Decrease	Moderate Decrease	Small Decrease	No Change	Small Increase	Moderate Increase	Large Increase
El Dorado		0.10	0.30	1.30	97.90	0.40	0.04	<0.01
Amador		<.01	0.18	1.00	98.60	0.02	0.01	0
Calaveras		1.20	2.90	2.00	87.20	4.70	1.90	0.11

1996-2001

(Bill Frost)		71% to 100% Decrease	41% to 70% Decrease	16% to 40% Decrease	Little / No change	16% to 40% Increase	41% to 100% Increase
Acres	El Dorado	723	342	195	204,675	25	383
	Amador	412	170	36	108,264	4	55
	Calaveras	473	351	265	149,098	2	64

Percent of Total Area		71% to 100% Decrease	41% to 70% Decrease	16% to 40% Decrease	Little / No change	16% to 40% Increase	41% to 100% Increase
El Dorado		0.35	0.17	0.09	99.20	0.01	0.19
Amador		0.38	0.16	0.03	99.40	<0.01	0.05
Calaveras		0.31	0.23	0.18	99.20	<0.01	0.04

Information summarized from:

California Land Cover Mapping and Monitoring Program, 2002. Monitoring land cover changes in California: Northeastern California Project Area. USDA Forest Service and California Department of Forestry and Fire Protection Cooperating Monitoring Program. 171 p.

California Land Cover Mapping and Monitoring Program, 2004. Monitoring land cover changes in California: Northern Sierra Project Area - Cycle II. USDA Forest Service and California Department of Forestry and Fire Protection Cooperating Monitoring Program. 226 p.

Table Source: Frost and Churches 2004.

The following potential threats could be responsible for these changes in land cover.

Wildfire

As noted above, commercial and residential development has been identified as the major cause of encroachment into oak woodlands (Light & Pedroni 2002). However, the California Department of Forestry and Fire Protection (CDF) has indicated that, although loss of oak tree habitat to building development is often more visible and more likely to occur in locations critical to habitat sustainability, wildfire is usually the most immediate cause of major extensive oak woodland conversion. Wildfires can result in 14-90% of the annual change in a region (CDF FRAP 2003b). Although periodic, low-intense fires can be beneficial to many oak woodland habitats, uncontrolled wildfires, often the result of extended fire suppression, usually result in significant, widespread loss of individual oaks, supporting plant communities, and wildlife habitat. Erosion resulting from the loss of vegetative cover can also contribute to additional loss of trees and habitat. Habitat loss due to wildfire is often permanent.

Residential Development

Substantial fragmentation and conversion of oak woodlands for residential and commercial uses is occurring with increased frequency in Calaveras County. Actions to reduce the potential impacts of these projects have generally been confined to removal of trees and associated native plant communities on the project site and replanting of seedlings and/or acorns in common areas and off-site mitigation banks, with little regard for habitat sustainability, retention of mature oak communities, or the continuity of existing wildlife corridors on the original site. Additionally, because a majority of the intense development is occurring on the margins of existing communities and along primary transportation corridors, a substantial amount of the oak woodland being lost is in local, concentrated, highly visible areas. The intense projected growth in both the community centers and rural suburbs of the county increases the potential for significant habitat loss within and adjacent to our communities.

Woodcutting

Woodcutting can be an integral part of a sustainable woodcutting management plan that balances harvesting with habitat protection and agricultural use. However, indiscriminate cutting without regard for habitat continuity, lack of replanting or protection of saplings, removal of nest or wildlife trees, and thinning within a woodland to produce a monoculture will all contribute to reduction of overall quality of the woodland habitat and eventual loss of the woodland resources.

From an economic perspective, removal of oak trees or damage to the stability of the woodland may also decrease the habitat potential for game species. In some cases, the resulting decrease in potential hunting revenues may be greater than the revenues generated by firewood (Harper et al 1989, Tietje 1996).

Agriculture and Rangeland Improvement

Established oak woodland and oak savanna have proven tolerant to grazing and other agricultural activities. However, inappropriate grazing management practices, improper cultivation, and excessive irrigation can be factors in the loss of oak woodlands by

eroding the ecosystem, destroying seedlings and encouraging the growth of invasive species.

Non-Native Species

The introduction of non-native species of plants and animals over time has had an adverse effect on oak woodland habitat. Examples of invasive non-native plant and animal species prevalent in Calaveras County include yellow starthistle, Himalayan blackberries, wild turkeys and feral pigs.

Sudden Oak Death

Sudden Oak Death (SOD), a disease caused by a fungus-like parasite, *Phytophthora ramorum*, has attacked oaks and other woodland plants in 14 California counties. The impacts from SOD are potentially grave: massive die-off of oak trees over thousands of acres; permanent change in forest cover and ecosystems; and a serious increase in fire threat. Since the mid-1990s, SOD has caused substantial mortality in tanoak trees and several oak tree species (coast live oak, California black oak, Shreve oak, and canyon live oak). Twig and foliar diseases, attributed to the parasite, have also been found in numerous other plant species, including California bay laurel, Douglas-fir, and coast redwood. As of June 2004, 32 genera are known to be susceptible to *P. ramorum*. To date, SOD has not established itself in Calaveras or other foothill communities, but future migration of the parasite to foothill areas could further exacerbate the loss of oak woodland habitat in the Sierra foothills.

MECHANISMS TO CONSERVE OAK WOODLAND VALUES

Williamson Act

The California Land Conservation Act of 1965, also known as the Williamson Act, is a land protection program established to preserve agricultural and open space lands. By participating in the Williamson Act (Act), landowners are able to protect large tracts of farmland and open space from development and reserve it for agricultural use. Much of this land, especially in Calaveras County, contains large contiguous areas of oak woodland and savanna habitat. Williamson Act contracts are established for a rolling term of 10 years. In return, parcels are assessed at a rate which reflects their agricultural and open space uses rather than their full market value. If a contract is not renewed, it normally terminates nine years after non-renewal. Early cancellation of a contract can result in substantial penalties. Currently, there are approximately 135,000 acres restricted by Williamson Act Contracts in the County.

Oak Woodland Conservation Easements

A conservation easement is a legal agreement between a landowner and a non-profit organization or government agency that restricts the type of uses allowed on the property in order to protect its conservation values. It allows the landowner to continue to own and use the land, within the constraints of the contract, and to sell it or pass it on to heirs. Each easement is individually negotiated and only certain rights to the land are purchased or donated. For example, the landowner might give up the right to build

additional structures, while retaining the right to ranch or grow crops. The easement runs with the land and future owners are also bound by the terms of the agreement. An easement may apply to just a portion of a parcel and usually does not need to allow public access. Conservation easements are generally permanent. Currently, there are at least 6,700 acres under conservation easements in Calaveras County.

If an easement is donated and benefits the public by permanently protecting important resources, it may qualify as a tax-deductible charitable donation. Conservation easements may also lower the estate tax when passing land on to the next generation. Lands under a conservation easement are usually assessed at a similar rate to properties protected under the Williamson Act.

California Oak Woodland Conservation Program

As a result of the California Oak Woodland Conservation Act (COWCA), the Oak Woodland Conservation Program was established within the Wildlife Conservation Board (WCB). The program is designed to provide \$10 million to help local jurisdictions protect and enhance their oak woodland resources. It offers landowners, conservation organizations, cities, and counties an opportunity to obtain funding for projects designed to conserve and restore California's oak woodlands. It authorizes the WCB to fund land protection, land improvements, oak education, and restoration. The Act required that at least 80 percent of program dollars be used for grants that fund land protection, restoration or enhancement projects within oak woodlands. The remaining 20 percent of the funds could be used for public education and outreach efforts by local governments, park and open space districts, resource conservation districts, and nonprofit organizations. Within the 20 percent category, funds could also be used for grants designed to provide technical assistance to develop and implement oak conservation elements in local general plans (McCreary 2004, CWCB 2001).

Long-term Leasing Agreements

Long-Term leases are designed to protect oak woodlands for purposes of open space, viewshed, wildlife habitat or alternative grazing opportunities. Such leases are managed according to a management plan prepared to meet the goals as stated in the long-term lease agreement.

Cost-sharing Incentive Payments

According to information provided by the Wildlife Conservation Board in the Oak Woodlands Conservation Program, agreements for cost-sharing incentive payments can include management practices that benefit the goals of the landowner and the oak woodlands. The length of the long-term agreement is dependent upon the nature of the project, the goals of the landowner and benefits to the oak woodlands. Typical long-term agreements could run 15 to 45 years. Cost-share incentive payments could include, but are not necessarily limited to: compensation for not cutting trees for firewood; long-term payment to keep the land in open space, managed according to a plan designed to benefit the landowner and the oak woodlands; reimbursements for conservation improvements; and compensation for alternative grazing practices.

WOODLAND RESOURCES CLASSIFICATION

Oak Species in Calaveras County

True oaks are those species included in the taxonomic genus *Quercus*. They include both evergreen and deciduous species. Oak species represented in Calaveras County are:

- Interior Live Oak (*Q. wislizeni*)
- Canyon live Oak (*Q. chrysolepis*)
- Black Oak (*Q. kelloggii*)
- Valley Oak (*Q. lobata*)
- Blue Oak (*Q. douglasi*)
- Scrub Oak (*Q. dumosa*)

Types of Oak Woodlands in Calaveras County and their Distribution

Oak Woodlands as described in this plan are defined by the California Department of Fish and Game's Wildlife Habitat Relations Classification System (WHR). Calaveras County has the following oak natural communities:

- Valley Foothill Riparian Forest
- Valley Oak Woodland
- Blue Oak Woodland
- Blue Oak / Foothill Pine Woodland
- Oak Savanna
- Oak Montane Woodland

A map of the distribution of oak woodlands is attached as Appendix D. A general review of these habitats follows.

Valley Foothill Riparian Forest

Valley Foothill riparian forest habitats occur in the Central Valley and the lower foothills of Calaveras County where deeper alluvial soils and a high water table exist. Foothill Riparian forest habitat ranges from sea level to 1000 m (3000 ft), fingering upward to 1550 m (5000 ft) on south-facing slopes (CWHR). They are often found on sloping alluvial fans, and are generally associated with low velocity flows, flood plains, and gentle topography. The substrate is often coarse, gravelly or rocky soils that are close to ground water, and well aerated. Dominant species in the canopy layer are cottonwood, California sycamore and valley oak. Subcanopy trees are white alder, boxelder and Oregon ash. Typical understory shrub layer plants include wild grape, wild rose, California blackberry, blue elderberry, poison oak, buttonbrush, and willows.

Valley foothill riparian habitats provide food, water, migration and dispersal corridors, escape, nesting, and thermal cover for an abundance of wildlife. At least 50 amphibians and reptiles occur in lowland riparian systems. Many are permanent residents and others are transient or temporal visitors (Brode and Bury 1984). In one study conducted on the Sacramento River, 147 bird species were recorded as nesters or winter visitors (Laymon 1985). Additionally, 55 species of mammals are known to use California's Central Valley riparian communities (Trapp et al. 1984).

Valley Foothill riparian communities need active floodplains to regenerate. On regulated streams and rivers where peak winter flood flows are removed regeneration is often lacking. Extensive studies are being conducted on the Sacramento River by CALFED and other agencies to determine the winter pulse flows and the spring draw down timing needed for regeneration of this community. These oak stands can provide an environmental corridor linking the riparian habitats along the Calaveras River with upland ecosystems for miles thus allowing species to efficiently move between habitat types.

Valley Oak Woodland

Valley oaks are endemic to California. At the present time, there are approximately 122,000 acres of these woodlands remaining within the state. They are generally associated with the deep alluvial soils of the Central Valley. This habitat varies from savanna-like to forest-like stands with partially closed canopies, comprised mostly of winter-deciduous, broad-leaved species. Denser stands typically grow in foothill soils along natural drainages. Valley oak woodlands at low elevations usually merge with annual grasslands or border agricultural land. Where these woodlands extend to the foothills surrounding the valley, they intergrade with Blue Oak Woodlands or Blue Oak-Foothill Pine habitats.

Near major stream courses this community intergrades with Valley-Foothill Riparian vegetation. Tree density decreases with the transition from lowlands to the less fertile soils of drier uplands. Most large, healthy valley oaks are likely rooted down to permanent water supplies.

The natural distribution of valley oak woodlands in Calaveras County is along the various rivers and creeks including the lower portions of the river's tributaries. Along the lower Calaveras River pure stands of valley oaks are most often found growing in groves on the upper river terraces (older deposits). Closer to the River, they are often mixed in with other riparian tree species such as Fremont's cottonwood, willow, and black walnut. Mature valley oaks have well-developed crowns and reach maximum heights of 15-37 m (50 to 120 ft). The massive trunks (often up to 6 feet DBH) and branches of mature trees dominate valley oak woodlands. Scattered groves of valley oaks as well as individual trees can be found up to elevations of approximately 762 m (2500 ft) in places where deeper soils can be found including lands converted to agricultural uses although generally the valley oak community occurs below 610 m (2000 ft). These scattered groves form a well-recognized landscape throughout the lowlands of Calaveras County.

Of all the oak woodland communities found in Calaveras County, valley oak woodland has likely experienced the most change primarily due to conversion to farmlands, orchards, and vineyards. In places where valley oaks occur, there is also concern that they are not regenerating at a rate to ensure long-term populations. Throughout California, most remaining valley oak woodlands exhibit little recruitment of young oaks to replace the veteran oaks dying of natural causes or being destroyed by urban and agricultural development (Griffin 1977). The lack of oak recruitment is reported to be related to animal damage of acorns and seedlings (Griffin 1980a).

Blue Oak Woodland

The Blue Oak Woodland natural community is the most abundant oak woodland in Calaveras County and presently totals about 55,000 acres (CDF FRAP 2003a). These woodlands occur along the western foothills of the Sierra Nevada-Cascade Ranges, the Tehachapi Mountains, and in the eastern foothills of the Coast Range, forming a nearly continuous ring around the Central Valley. Blue oak woodlands occur in the lower foothill belt of western Calaveras County at elevations from 152 to 610 m (500 to 2000 ft). They are usually associated with shallow, rocky, infertile, well-drained soils from a variety of parent materials. Blue oaks are well adapted to dry hilly terrain where the water table is usually unavailable (Griffin 1973). Blue oaks have an unusual tolerance of severe drought, even shedding their leaves during periods of extreme moisture stress. This survival trait contributes to its pattern of distribution as it competes most successfully with other tree species on drier sites (McDonald 1981). When they occur on gentle slopes they are often in large blocks with highly variable canopy coverage. On steeper ground they occur in smaller patches interspersed with other habitats such as annual grasslands and chaparral. Associated shrub species typical of blue oak woodlands in Calaveras County include poison-oak, California coffeeberry, buckbrush, California buckeye, and manzanita spp.

Blue oaks are relatively slow-growing, long-lived trees. Large blue oaks range in age from 153 to 390 years; however, age studies in the Coast Range indicate that most blue oak stands are currently 80 to 120 years in age (Pillsbury and De Lasaux 1983). Research shows that estimation of tree age based on diameter measurements is risky because the relationship varies tremendously depending on site quality. Moreover, growth is extremely slow or even ceases after trees reach 65 cm (26 in).

Verner and Boss (1980) give data on wildlife use in blue oak savannahs of the western Sierra Nevada. They indicate that 29 species of amphibians and reptiles, 57 species of birds, and 10 species of mammals find mature blue oak woodland suitable or optimum for breeding, assuming that other special habitat requirements are met. At the present time, there is concern about regeneration of blue oaks across their range. Few areas can be found in California where successful recruitment of blue oaks has occurred since the turn of the century (Holland 1976). This may be due to changes in land use; increased consumption or damage of acorns and seedlings by insects, non-native species, livestock, and native animals; competition between seedlings and introduced annuals for available soil nutrients and moisture; and the absence of appropriate climatic conditions. Where germination of acorns occurs, survival and growth of the seedlings typically fail. Where regeneration is succeeding, greater success tends to be better in areas of higher rainfall, on north slopes and in areas where competition with introduced grasses is low. Standiford (1999b) found that regeneration of blue oaks from stump sprouts after woodcutting was lower in Calaveras County than counties to the north. Probably in the drier savanna-like stands, the grassland openings will simply become larger as older trees die. Griffin (1977) suggests that live oaks may replace deciduous oaks in some areas, because their seedlings are more browse resistant. Many authorities question whether conditions will ever again support the recruitment of blue oaks needed to maintain these important woodlands.

Blue Oak - Foothill Pine Woodland

Blue Oak-Foothill Pine woodlands have a diverse mix of hardwoods, conifers, and shrubs, and widely variable overstories. Foothill pine and blue oak typically form most of the overstory of this highly variable habitat type. Blue oak is usually the most abundant tree species, although foothill pine is taller and dominates the overstory. Stands dominated by foothill pine have low blue oak density because of its shade intolerance. Blue Oak - Foothill Pine Woodland generally forms the upper boundary of blue oak woodlands in Calaveras County, although blue oak do extend into the low elevation California black oak/Ponderosa pine forest. Blue oak/foothill pine woodlands currently total approximately 979,000 acres in California (CDF FRAP 2003). This woodland type rings the Central Valley, between 150 and 915 m (500 and 3000 ft) in elevation (Neal 1980).

In Calaveras County, interior live oak and California buckeye are often associated with this type. At lower elevations, where blue oaks makeup most of the canopy, the understory tends to be primarily annual grasses and forbs. Interior live oak becomes more abundant on steeper slopes, shallower soils, and at higher elevations. Shrub associates include several *Ceanothus spp.* and manzanita *spp.*, California coffee berry, poison-oak, and California redbud and are usually clumped in areas of full sunlight. Associated species are the interior live oak, valley oak, and California buckeye (Griffin 1977). Interior live oak sometimes dominates the overstory, especially in rocky areas and on north-facing slopes at higher elevations (Neal 1980).

Concern has been expressed for the long-term existence of this habitat (Holland 1976), because "little regeneration has occurred since the late 1800s, as livestock, deer, birds, insects, and rodents consume nearly the entire acorn crop each year." Of the few seedlings that become established a large proportion are eaten by deer (Neal 1980). Furthermore, the absence of grazing livestock does not generally result in regeneration (White 1966), because many other animals eat acorns and seedling oaks.

Oak Savanna

Relatively little information is available on Sierra foothill oak savannah biological communities. Oak savanna habitat is typically composed of grasslands and wildflowers with few or no shrubs growing in between. The low density of trees in savanna habitat is few enough in numbers not to affect light penetration to the ground. The savanna is a transition ecosystem between the grasslands and woodland environments, so it is an important habitat for both woodland and grassland species providing extremely high diversity in flora and fauna.

Blue oak savannah habitat is most common on low hills and exposed south facing slopes ranging in elevation below 731 m (2400 ft) in Calaveras County. The soil is typically shallow and punctured by bedrock outcrops, an occasional California buckeye or interior live oak is interspersed with blue oaks.

Blue oak savanna is probably the driest and hottest of all tree-dominated communities in California. Oak savanna is differentiated from oak woodlands by a variety of authors and agencies. For our purpose, the project has adopted the National Resource

Conservation Service (NRCS) and US Department of Agriculture (USDA) standard of twenty percent canopy coverage with a minimum of one acre in size. Savanna habitat relies on periodic disturbances such as fire, grazing and drought to flourish. Such disturbances prevent other trees from establishing themselves and succeeding into a woodland community.

Oak Montane Woodland

Montane hardwoods range throughout Calaveras County above the blue oak and valley oak woodlands, and surrounded by conifer dominated plant types extending to approximately 2286 m (7500 ft) in elevation. Montane hardwood forests are perhaps the most variable of any California hardwood type. The dominant oak species vary by topography, soils, and elevation. Montane hardwood forests typically lack blue oaks and valley oaks. The characteristic oaks in Calaveras County are canyon live oak, interior live oak, and California black oak. Many montane hardwood forests are located on fairly productive forest soils, and are not truly "hardwood rangelands", but commercial hardwood forests under the jurisdiction of the California Forest Practices Act (FPA).

A wide range of physical characteristics affect montane hardwood forests. Slopes range from gentle to steep. Soils are mostly rocky, coarse, and poorly developed. However, relatively large California black oak stands occur in mountain valleys on alluvial soils. Exposures tend to be south, west, and east, while conifers tend to dominate on northern exposures. Climates are typically Mediterranean but extremely variable given the wide distribution of this type. Average summer temperatures are moderate, while average winter temperatures range from near freezing to the mid-40's. Snow occurs in the winter at higher elevations, but does not remain as long as on adjacent conifer-dominated habitats.

Since oaks of montane hardwood communities are long-lived, the community is rather stable and persistent without stand replacing disturbances. Trees are initially established by acorns, and dispersal by animals plays a major role in planting and survival. Once established, the dominant oaks can sprout vigorously from stumps, allowing rapid re-establishment after a fire. Frequent fires over relatively small areas result in a variety of age classes across the landscape. The large number of hardwood and conifer species allows this type to occupy many environments and locations. The general inaccessibility of these habitats has protected them from many of the human-induced disturbances such as residential and commercial development, wood cutting, and intensive agricultural.

CONSERVATION GOAL, STRATEGIES & IMPLEMENTATION MEASURES

Goal

Encourage and support voluntary, long-term stewardship and conservation practices in the management of oak woodlands and their habitat within Calaveras County.

Strategy #1 Develop county-wide programs that will provide incentives and support to private landowners, including, but not limited to farming, ranching and grazing operations, that are compatible with oak woodland conservation and habitat protection.

Implementation 1A – Develop and/or streamline mechanisms that provide incentives to private landowners. (e.g. Williamson Act contracts, purchase of conservation easements, long-term leases, cost-sharing)

Implementation 1B – Identify and/or develop funding mechanisms to provide financial incentives to private landowners. Target multiple funding sources to support projects or programs.

Implementation 1C – Participate in governmental or non-profit cost-share programs through local, state and federal conservation programs.

Implementation 1D– Develop and distribute guidelines for best management practices for protecting oak woodlands on farming and ranching operations.

Strategy #2 Encourage local land use planning that is consistent with the stewardship and conservation of oak woodlands.

Implementation 2A – Develop and distribute guidelines that assist landowners and developers in identifying alternatives to oak tree removal, root system compaction, placement of fill around trees, landscape irrigation, road construction, and other issues that may arise during construction, utilizing best management practices.

Implementation 2B – Encourage clustering of houses to avoid fragmenting habitat and wildlife corridors.

Implementation 2C – Allow for density bonuses and transfer of development rights as a means to achieve oak woodland conservation and preservation.

Implementation 2D – Utilize local resources and expertise to promote non-traditional or low impact business ventures within oak woodlands.

Implementation 2E – Recognize and avoid implementing policies, taxes or fees that threaten the sustainability of farming and ranching (working landscapes) within Calaveras County.

Strategy #3 Provide educational and resource support programs that assist the private landowners in the management and stewardship of their oak woodlands and associated wildlife habitats.

Implementation 3A – Make available various UC Extension support documents for Oak Woodlands Management to private landowners. Examples include *Guidelines for Oak Woodlands Management* and *Regenerating Rangeland Oaks in California*.

Implementation 3B - Conduct workshops, seminars, field trips, and other outreach activities for the general public, ranchers, farmers and developers. Utilize resources from UC Extension, NRCS, Wildlife Conservation Board, Watershed Councils, Resource Professionals, and others.

Implementation 3C – Provide oak woodland conservation information to various County departments and Special Districts, such as Planning, Building, Public Works, CCWD, CPUD and Department of Agriculture.

Strategy #4 Maintain information on the status of woodlands within Calaveras County.

Implementation 4A – Continue to assess and report the status of Calaveras' oak woodland canopy cover by examination of aerial photos and satellite imagery and record changes and the known causal effects of changes to the oak woodlands. Utilize the Hardwood Advisory Committee to periodically evaluate the state of oak woodlands, using available data sources.

Implementation 4B – Evaluate existing oak woodlands and establish baseline information on the locations and types of the oak woodlands within Calaveras County.

Implementation 4C - Evaluate the effects of changing land uses in oak woodlands on wildlife, ranching, water quality and economics.

Implementation 4D – Identify those areas in Calaveras County where threats to oak woodlands are most pressing, as well as those areas where oak woodland preservation would serve the greatest public good.

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Appendix A

Appendix A-1.
Calaveras County Resolution #96-284

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**BOARD OF SUPERVISORS, COUNTY OF CALAVERAS
STATE OF CALIFORNIA
August 26, 1996**

**RESOLUTION
NO. 96-284**

**A RESOLUTION ADOPTING OAK WOODLAND VOLUNTARY
MANAGEMENT GUIDELINES AND ESTABLISHING A
HARDWOOD ADVISORY COMMITTEE FOR CALAVERAS
COUNTY.**

**WHEREAS, the California Board of Forestry has taken action to support oak
woodland protection through local efforts; and**

**WHEREAS, those lands described as oak woodlands within Calaveras County provide
multiple benefits, including commercial livestock production, wildlife habitat, land
development and fuelwood harvesting; and**

**WHEREAS, a majority of the oak woodlands within Calaveras County are under
private ownership; and**

**WHEREAS, the County of Calaveras recognizes and respects the importance of
private property rights and endorses the concept that landowners be provided the maximum
right of self determination; and**

**WHEREAS, the economic viability of agricultural enterprises operating within these
oak woodlands must be protected; and**

**WHEREAS, the County of Calaveras recognizes responsible stewardship by
landowners is necessary to sustain these oak woodland resources;**

**NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of the
County of Calaveras, State of California, does hereby adopt the following for the sustained
management of oak woodlands:**

- 1. All landowners with 40 acres or more of land, located in oak woodland areas of
the County, shall be provided with a copy of the Calaveras County Oak Woodland Voluntary
Management Guidelines which are hereby adopted and identified as Exhibit A of this**

1 resolution.

2 2. All landowners who wish to harvest oak are hereby encouraged to develop their
3 own management plan for properties within Calaveras County.

4 3. All such landowners are further encouraged to contact private or public sources
5 for expert assistance and to use the Calaveras County Oak Woodland Management Guidelines
6 and the information provided by the Integrated Hardwood Range Management Program in the
7 development of their harvest plans.

8 4. The Calaveras County Hardwood Advisory Committee is hereby established and
9 shall be comprised of stakeholders as defined in Exhibit B of this resolution. The Hardwood
10 Advisory Committee shall meet as often as necessary, but no less than annually. The
11 Committee shall evaluate the effectiveness and progress of the educational programs on
12 hardwood management and the effectiveness of the Calaveras County Oak Woodland
13 Management Guidelines in sustaining oak woodlands within Calaveras County. The
14 Committee shall make periodic reports and recommendations to the Board of Supervisors
15 with regards to local oak woodlands management.

16 **BE IT FURTHER RESOLVED** that the Calaveras County Board of Supervisors
17 hereby encourages the University of California Cooperative Extension, Calaveras County, to
18 coordinate with local government agencies and/or private organizations to offer workshops on
19 oak woodland management and conservation to landowners, realtors, developers and
20 community organizations.

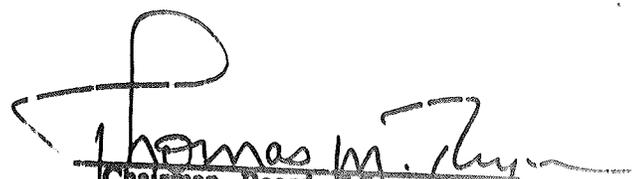
21 **BE IT FURTHER RESOLVED** that nothing herein may be interpreted or applied to
22 modify or cancel any provision of any regulation, ordinance or condition of development
23 governed by the County.

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ON A MOTION by Supervisor Dell'Orto, seconded by Supervisor Taylor, the foregoing Resolution was duly passed and adopted by the Board of Supervisors, County of Calaveras, August 26, 1996, by the following vote:

AYES: Supervisors Dell'Orto, Taylor, Bailey and Tryon
NOES: Supervisor Callaway
ABSENT: None


Thomas M. Tryon
Chairman, Board of Supervisors

ATTEST:


County Clerk and Ex-Officio Clerk
to the Board of Supervisors,
Calaveras County, State of California

**CALAVERAS COUNTY
VOLUNTARY OAK WOODLAND MANAGEMENT GUIDELINES**

The following guidelines have been developed and are being provided to private landowners to assist in determining how to best manage their existing oak woodlands. We emphasize that these guidelines are voluntary and general in nature. The guidelines are not in any particular order of importance and should all be considered when evaluating a specific parcel of land. Landowners are encouraged to plan their oak harvest using the Integrated Hardwood Range Management Program information and the other listed resources for specific assistance.

**I. WHEN HARVESTING OAKS FOR FUEL OR RANGELAND IMPROVEMENT
PLAN YOUR HARVEST TO:**

- maintain an average leaf canopy of 30% or more of single stemmed oaks and 15% or more of multi-stemmed oaks.

AVERAGE LEAF CANOPY PERCENTAGE - DEFINITION:

The percent of an acre covered by the shadow of standing oak trees, in leaf, when the sun is directly overhead. Each acre is to be evaluated and measured separately and solely on its own growth without regard to other surrounding acres. Only acres with oak tree growth are to be considered in the equation.

- retain trees of all sizes and species represented at the site that are compatible with the intended land use.
- when safety permits, leave old hollow trees and those actively being used for nesting, roosting or feeding.
- where low fire risk and aesthetics allow, pile limbs and brush to provide wildlife cover.
- where commercial or extensive harvest is being contemplated, seek professional advice from such resources as U.C. Cooperative Extension California Department of Forestry and/or private consultants.

II. WHEN BUILDING WITHIN OAK WOODLANDS:

- cluster houses to preserve wildlife corridors and habitats.
- protect existing oaks during construction.
- avoid root compaction by limiting heavy equipment in the root zone.
- carefully plan roads, cuts and fills, building foundations and septic systems to avoid damage to tree roots.
- design roads to minimize excessive erosion and sedimentation to down stream resources. Consider re-seeding of disturbed ground.
- avoid landscaping which requires or allows irrigation within ten feet of the trunk of an oak tree.
- consider replacing trees whose removal during construction was unavoidable.

III. **FIRE PROTECTION PURPOSES:**

- prune branches and limbs of single stemmed oaks to 10' above groundline, near structures and fuel breaks.
- prune lower limbs and remove dead limbs on desired brush species to reduce the *fireladder effect*.
- on multi-stemmed oaks, reduce the number of stems to 2-4 per clump and prune to 10'.
- emphasize single stemmed oak species.
- remove brush from under the dripline of desired and residual trees.
- remove debris from the base of the residual trees.
- remove from desired species any unwanted plants on the fuelbreak.
- control unwanted sprouts by manual, biological, mechanical, chemical means or burning (for further information see publication *A Property Owners Guide to Reducing Wildfire Threat*).

IV. **DISPOSAL OF UNWANTED VEGETATION:**

- utilize unwanted vegetation if at all possible for mulch, co-generation, fuelwood, etc.
- unutilized material should be piled and burned.
- burn dry material, with good ventilation, to reduce the smoke production.
- burn on Burn Days only in compliance with Air Pollution Control District Guidelines.
- use prescribed burning when possible.

Oak Woodland Management Publications Available

University of California Cooperative Extension, Calaveras County, in person 476 E. St. Charles Street, San Andreas, (by mail Government Center, 891 Mountain Ranch Rd., San Andreas CA 95249-9709. (209)754-647

Guidelines for Managing California's Hardwood Rangelands

Management recommendations for landowners and resource managers, PUB#3368, 96pp. \$15.00.

Harvesting Firewood for Sustained Yield on Oak Rangelands

Assessment methods and harvesting recommendations, PUB#21487, 32pp. \$3.50

University of California Cooperative Extension, Natural Resources Program, 163 Mulford Hall, Berkeley CA 94720 (510)643-5428

A Planner's Guide to Oak Woodlands

Includes planning guidelines and alternatives, with sections on oak ecology, 94pp. \$10.00

Living Among the Oaks

An oak management guide for homeowners, 8pp. Free.

Wildlife Among the Oaks

Recommendations for managing oak woodland wild fire, 165pp. Free.

How to Grow California Oaks

Includes detailed information relevant to restoration, 4pp. Free.

Integrated Hardwood Range Management Program Cooperative Extension, University of California, 160 Mulford Hall, Berkeley CA 94720

Oaks 'n' Folks

An Integrated Hardwood Range Management Program newsletter with articles on scientific, social and economic issues. Free.

Quercus

An Integrated Hardwood Range Management Program newsletter on planning for oak woodlands. Free.

California Oak Foundation, 1212 Broadway - Suite 810, Oakland CA 94612, (510)763-0382.

Oaks of California

A broad overview of the ecology and natural history of California's oaks, 184 pp. Hardcover \$28.95, Softcover \$19.95.

Compatible Plants Under and Around Oaks

Landscaping information and plant checklist, 69pp. \$10.00

California Oaks

The newsletter of the California Oak Foundation, Free to members (membership \$25.00 per year).

California Native Plant Society, 909 12th St #116, Sacramento CA 95814, (916)447-2677

Oak Action Kit

A selection of publications and resource lists on preservation and conservation of Oak Habitats, 3-ring binder \$13.00

**HARDWOOD HARVEST PLAN
ADVISORY COMMITTEE
MEMBERS**

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SUPPORTING AGENCIES

- Calaveras County
Air Pollution Control District
- Calaveras County
Agricultural Commissioner
- Calaveras County
Board of Supervisors
- Calaveras County
Building Department
- Calaveras County Farm Bureau
- Calaveras County
Fire Department
- Calaveras County
Planning Department
- Calaveras/Tuolumne
Cattlemen's Association
- U.C. Cooperative Extension,
Calaveras County

**OAK WOODLANDS
MANAGEMENT RESOURCES -
LOCAL AGENCIES**

California Dept. of Forestry
785 Mountain Ranch Rd
San Andreas CA 95249
209/754-3831

California Dept. of Fish and Game
Region 2 Headquarters
1701 Nimbus Rd
Rancho Cordova CA 95670
916/355-0978

University of California
Cooperative Extension
Calaveras County
Located at:
478 E. St. Charles Street
San Andreas, California
Mail to:
Government Center
891 Mountain Ranch Rd
San Andreas CA 95249-9709
209/754-6477

Calaveras County Hardwood Advisory Committee

Dear Oak Woodland Landowner:

In May of 1993, the State of California Board of Forestry reviewed impacts to oak woodlands due to over harvest or development losses. Of concern to the Board of Forestry were suggestions by various interest groups to regulate these impacts. The Board reviewed the need for statewide regulation of oak woodland resources and decided that such controls were not yet warranted. Rather, the Board opted for a renewed effort to encourage local government and citizens to design strategies that will address local hardwood management and conservation. The Calaveras County Hardwood Advisory Committee, Board Resolution, and following Guidelines were the result of the Board of Forestry's suggestion promoting local action.

On behalf of the Calaveras County Board of Supervisors, the Hardwood Advisory Committee provides you with the following information regarding management of oak woodlands. The Committee has volunteered many hours to develop practical and reasonable suggestions that all oak woodland owners should consider for proper management of their resources. We strongly encourage you voluntarily develop a management plan to help protect and wisely use our remaining oak woodlands. In addition to the enclosed Guidelines and sources of assistance, we encourage you to attend one of the local workshops to be offered.

Should you have any questions or concerns regarding this program, please feel free to write to us or contact your Supervisor. Thank you for your consideration towards the stewardship of our oak woodlands.

Sincerely,

SIGNATURE HERE

Committee Chair

Calaveras County Hardwood Advisory Committee
San Andreas CA 95249

**ADDRESS LABEL
HERE**

**CALAVERAS COUNTY HARDWOOD
ADVISORY COMMITTEE**

The Calaveras County Hardwood Advisory Committee shall consist of ten (10) stakeholder members who shall own land within Calaveras County upon which oak trees are growing. Membership on the Hardwood Advisory Committee shall be for four (4) year terms, except that five (5) of the initial members shall be appointed to two (2) year terms and five (5) members shall be appointed to four (4) year terms. All terms shall expire on January 1 of the designated year.

Members of the Hardwood Advisory Committee shall be appointed by the Board of Supervisors and shall consist of stakeholders from the following sectors:

1. A member of the Agricultural Advisory Committee
2. A member of the local Fish and Game Commission
3. A land developer/realtor
4. A woodcutter
5. A registered professional forester
6. A member of the Calaveras County Farm Bureau
7. A member of the Calaveras/Tuolumne Cattlemen's Association
8. A graduate of the Calaveras County Master Gardeners Program
9. A member of the Calaveras County Board of Supervisors
10. A member at large

In addition to the foregoing, the Director of Cooperative Extension, Calaveras County and the County Agricultural Commissioner shall serve as Ex-Officio members of the Committee to provide support. The Committee may request participation in an Ex-Officio capacity of such other public agency representatives as it deems appropriate.

At the first meeting of the Hardwood Advisory Committee, the appointed representatives shall select a chairperson, vice chairperson and secretary. Election of officers shall occur at the first meeting of the calendar year every year thereafter. The Committee shall establish operating rules at its initial meeting which may be amended from time to time to facilitate conducting business.

Appendix A-2. FISH AND GAME CODE SECTION 1360-1372

1360. This article shall be known, and may be cited, as the Oak Woodlands Conservation Act.

1361. For purposes of this article, the following terms have the following meanings:

- (a) "Board" means the Wildlife Conservation Board established pursuant to Section 1320.
- (b) "Conservation easement" means a conservation easement, as defined in Section 815.1 of the Civil Code.
- (c) "Fund" means the Oak Woodlands Conservation Fund.
- (d) "Land improvement" means restoration or enhancement of biologically functional oak woodlands habitat.
- (e) "Local government entity" means any city, county, city and county, district, or other local government entity, if the entity is otherwise authorized to acquire and hold title to real property.
- (f) "Nonprofit organization" means a tax-exempt nonprofit organization that meets the requirements of subdivision (a) of Section 815.3 of the Civil Code.
- (g) "Oak" means any species in the genus *Quercus*.
- (h) "Oak woodlands" means an oak stand with a greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover.
- (i) "Oak woodlands management plan" means a plan that provides protection for oak woodlands over time and compensates private landowners for conserving oak woodlands.
- (j) "Special oak woodlands habitat elements" means multi-and single-layered canopy, riparian zones, cavity trees, snags, and downed woody debris.

1362. It is the intent of the Legislature that this article accomplish all of the following:

- (a) Support and encourage voluntary, long-term private stewardship and conservation of California's oak woodlands by offering landowners financial incentives to protect and promote biologically functional oak woodlands over time.
- (b) Provide incentives to protect and encourage farming and ranching operations that are operated in a manner that protects and promotes healthy oak woodlands.

- (c) Provide incentives for the protection of oak trees providing superior wildlife values on private lands.
- (d) Encourage local land use planning that is consistent with the preservation of oak woodlands, particularly special oak woodlands habitat elements.
- (e) Provide guidelines for spending the funds allocated for oak woodlands pursuant to the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000 (the Villaraigosa-Keeley Act (Chapter 1.692 (commencing with Section 5096.300) of Division 5 of the Public Resources Code).
- (f) Establish a fund for oak woodlands conservation, to which future appropriations for oak woodlands protection may be made, and specify grant making guidelines.

1363. (a) The Oak Woodlands Conservation Fund is hereby created in the State Treasury. The fund shall be administered by the board. Moneys in the fund may be expended, upon appropriation by the Legislature, for the purposes of this article.

- (b) Money may be deposited into the fund from gifts, donations, funds appropriated by the Legislature for the purposes of this article, or from federal grants or loans or other sources, and shall be used for the purpose of implementing this article, including administrative costs. Funds from the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000 (the Villaraigosa-Keeley Act (Chapter 1.692 (commencing with Section 5096.300) of Division 5 of the Public Resources Code)), but not including funds dedicated as matching funds for the federal Forest Legacy Program, shall be deposited in the fund.
- (c) To the extent consistent with the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000 (the Villaraigosa-Keeley Act (Chapter 1.692 (commencing with Section 5096.300) of Division 5 of the Public Resources Code)), the board may use money designated for the preservation and restoration of oak woodlands in the Oak Woodlands Conservation Fund for projects in conjunction with the California Forest Legacy Program (Div. 10.5 (commencing with Sec. 12200) of the P.R.C.)), but only for the purposes specified in this article and only if the following requirements are met:
 - (1) The Department of Forestry and Fire Protection shall make an initial recommendation to the board.
 - (2) The board may deny any initial recommendation to the Department of Forestry and Fire Protection. Subsequently, if the department alters an initial proposal, in a manner that the board determines to be significant, the board may withdraw its initial approval of the recommendation at any time during the process.

- (d) The purposes for which moneys in the fund may be used include all of the following:
- (1) Grants for the purchase of oak woodlands conservation easements. Any entity authorized to hold a conservation easement under Section 815.3 of the Civil Code may hold a conservation easement pursuant to this article. The holder of the conservation easement shall ensure, on an annual basis, that the conservation easement conditions have been met for that year.
 - (2) Grants for land improvement.
 - (3) Cost-sharing incentive payments to private landowners who enter into long-term conservation agreements. An agreement shall include management practices that benefit oak woodlands and promote the economic sustainability of farming and ranching operations.
 - (4) Public education and outreach by local government entities, park and open-space districts, resource conservation districts, and nonprofit organizations. The public education and outreach shall identify and communicate the social, economic, agricultural, and biological benefits of strategies to conserve oak woodlands habitat values, including watershed protection benefits that reduce soil erosion, increase streamflows, and increase water retention and sustainable agricultural operations.
 - (5) Assistance to local government entities, park and open-space districts, resource conservation districts, and nonprofit organizations for the development and implementation of oak conservation elements in local general plans.
 - (6) Technical assistance consistent with the purpose of preserving oak woodlands.
- (e) Not more than 20 percent of all grants made by the board pursuant to this article may be used for the purposes described in paragraphs (4), (5), and (6) of subdivision (d). Not less than 80 percent of funds available for grants pursuant to this article shall be expended for the purposes described in paragraphs (1), (2), and (3) of subdivision (d).
- (f) Notwithstanding any other provision of law, this article governs the expenditure of funds for the preservation of oak woodlands pursuant to paragraph (4) of subdivision (a) of Section 5096.350 of the Public Resources Code.

1363.5. (a) Commencing on June 30, 2003, and every two years thereafter, the board shall report to the Legislature and the Governor concerning the activities and expenditures of the fund.

- (b) (1) In the first report to the Legislature, the board shall provide its best estimate of the total amount, in terms of acreage, species, and coverage, of oak woodlands habitat purchased with funds from the Habitat Conservation Fund and other funds pursuant to the California Wildlife Protection Act of 1990 (Chapter 9 (commencing with Section 2780) of Division 3.
- (2) In each subsequent report, the board shall update the information required by paragraph (1) to reflect additional oak woodlands habitat purchased with funds from the Habitat Conservation Fund pursuant to Chapter 9 (commencing with Section 2780) of Division 3, and any purchases made with moneys deposited in the Oak Woodlands Conservation Fund.

- (c) The board shall provide its best estimate in each report, the acreage, cover, and species of oak woodlands habitat purchased with all moneys from the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Fund.
- (d) The board shall make all information available online at its Web site.
- (e) This section shall become inoperative on July 1, 2020, and, as of January 1, 2021, is repealed, unless a later enacted statute that is enacted before January 1, 2021, deletes or extends the dates on which it becomes inoperative and is repealed.

1364. Moneys in the fund shall be available to local government entities, park and open-space districts, resource conservation districts, private landowners, and nonprofit organizations for the purposes set forth in subdivision (d) of Section 1363.

1365. The board shall develop and adopt guidelines and criteria for awarding grants that achieve the greatest lasting conservation of oak woodlands. The board shall develop these guidelines in consultation with the Department of Forestry and Fire Protection, the Department of Food and Agriculture, the University of California's Integrated Hardwood Range Management Program, conservation groups, and farming and ranching associations. As it applies to the award of grants for the implementation of this article, the board criteria shall specify that easement acquisitions that are the most cost-effective in comparison to the actual resource value of the easement shall be given priority.

1366. (a) To qualify for a grant pursuant to this article, the county or city in which the grant money would be spent shall prepare, or demonstrate that it has already prepared, an oak woodlands management plan that includes a description of all native oak species located within the county's or city's jurisdiction.

(b) To qualify for a grant pursuant to this article, the board shall certify that any proposed easement was not, and is not, required to satisfy a condition imposed upon the landowner by any lease, permit, license, certificate, or other entitlement for use issued by one or more public agencies, including, but not limited to, the mitigation of significant effects on the environment of a project pursuant to an approved environmental impact report or to mitigate a negative declaration required pursuant to the California Environmental Quality Act (Division 13 (commencing with Section 21000)) of the Public Resources Code.

(c) To qualify for a grant under this article, the applicant shall demonstrate that its proposal provides protection of oak woodlands that is more protective than the applicable provisions of law in existence on the date of the proposal.

(d) A county or city may develop an oak woodlands management plan. A nonprofit corporation, park and open-space district, resource conservation district, or other local government entity may apply to the board for funds to develop an oak woodlands management plan for a county or city, but the county or city shall maintain ultimate authority to approve the oak woodlands management plan.

- (e) The process for developing an initial oak woodlands management plan, and the adoption of significant amendments to a plan, as determined by the county or city, are subject to the Ralph M. Brown Act (Chapter 9 (commencing with Section 54950) of Part 1 of Division 2 of Title 5 of the Government Code).
- (f) A proposal by a local government entity, nonprofit corporation, park and open-space district, private landowner, or resource conservation district for a grant to be expended for the purposes of this article shall be certified by the county or city as being consistent with the oak woodlands management plan of the county or city. If the land covered by the proposal is in the jurisdiction of more than one county or city, each county or city shall certify that the proposal is consistent with the oak woodlands management plan of each county or city.
- (g) If two or more entities seek grant funding from the board pursuant to this article for the same jurisdiction, the county or city shall designate which entity shall lead the efforts to manage oak woodlands habitat in the area.

1367. On or before April 1, 2002, the board and the Department of Forestry and Fire Protection shall develop a memorandum of understanding regarding the protection of oak woodlands that does all of the following:

- (a) If necessary, creates a specific process for working together to use money from the fund in conjunction with the California Forest Legacy Program Act of 2000 (Division 10.5 (commencing with Section 12200) of the Public Resources Code).
- (b) Lists elements a county or city shall include in its oak woodlands management plan. Items included in the plan shall assist a county or a city to specify conservation priorities and prevent oak woodlands habitat fragmentation while minimizing the cost and administrative burden associated with developing the plan. The elements may include any or all of the following:
 - (1) Tree inventory mapping.
 - (2) Oak canopy retention standards.
 - (3) Oak habitat mitigation measures.
 - (4) A procedure to monitor the effectiveness of the plan and to modify the plan as necessary.
- (c) Designates an online repository for oak woodlands management plans that will be easily accessible to the public and any other state agency involved in oak woodlands conservation efforts.
- (d) Discusses the relationship between oak woodlands conservation efforts under this article and efforts by other state agencies to protect oak woodlands, including efforts to combat sudden oak death, and outlines a plan, as necessary, for coordinating with these agencies.

1368. The board may not approve a grant to a local government entity, park and open-space district, resource conservation district, or nonprofit organization if the entity requesting the grant has acquired, or proposes to acquire, an oak woodlands conservation easement through the use of eminent domain, unless the owner of the affected lands requests the owner to do so.

1369. A city or county planning department may utilize a grant awarded for the purposes of this article to consult with a citizen advisory committee and appropriate natural resource specialists in order to report publicly to the city council or the board of supervisors on the status of the city's or county's oak woodlands. Each city or county planning department that receives a grant for the purposes of this article shall report to the city council or to the board of supervisors of the county, as appropriate, on the use of those grant funds within one year from the date the grant is received.

1370. No money may be expended from the fund to adopt guidelines or to administer the fund until at least one million dollars (\$1,000,000) is deposited in the fund.

1372. Nothing in this article grants any new authority to the board or any other agency, office, or department to affect local policy or land use decisionmaking.

APPENDIX A-3. OAK WOODLANDS CONSERVATION ACT (SB 1334)

- 21083.4. (a) For purposes of this section, "oak" means a native tree species in the genus *Quercus*, not designated as Group A or Group B commercial species pursuant to regulations adopted by the State Board of Forestry and Fire Protection pursuant to Section 4526, and that is 5 inches or more in diameter at breast height.
- (b) As part of the determination made pursuant to Section 21080.1, a county shall determine whether a project within its jurisdiction may result in a conversion of oak woodlands that will have a significant effect on the environment. If a county determines that there may be a significant effect to oak woodlands, the county shall require one or more of the following oak woodlands mitigation alternatives to mitigate the significant effect of the conversion of oak woodlands:
- (1) Conserve oak woodlands, through the use of conservation easements.
 - (2) (A) Plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees.
(B) The requirement to maintain trees pursuant to this paragraph terminates seven years after the trees are planted.
(C) Mitigation pursuant to this paragraph shall not fulfill more than one-half of the mitigation requirement for the project.
(D) The requirements imposed pursuant to this paragraph also may be used to restore former oak woodlands.
 - (3) Contribute funds to the Oak Woodlands Conservation Fund, as established under subdivision (a) of Section 1363 of the Fish and Game Code, for the purpose of purchasing oak woodlands conservation easements, as specified under paragraph (1) of subdivision (d) of that section and the guidelines and criteria of the Wildlife Conservation Board. A project applicant that contributes funds under this paragraph shall not receive a grant from the Oak Woodlands Conservation Fund as part of the mitigation for the project.
 - (4) Other mitigation measures developed by the county.
- (c) Notwithstanding subdivision (d) of Section 1363 of the Fish and Game Code, a county may use a grant awarded pursuant to the Oak Woodlands Conservation Act (Article 3.5 (commencing with Section 1360) of Chapter 4 of Division 2 of the Fish and Game Code) to prepare an oak conservation element for a general plan, an oak protection ordinance, or an oak woodlands management plan, or amendments thereto, that meets the requirements of this section.
- (d) The following are exempt from this section:
- (1) Projects undertaken pursuant to an approved Natural Community Conservation Plan or approved subarea plan within an approved Natural Community Conservation Plan that includes oaks as a covered species or that conserves oak habitat through natural community conservation preserve designation and implementation and mitigation measures that are consistent with this section.
 - (2) Affordable housing projects for lower income households, as defined pursuant to Section 50079.5 of the Health and Safety Code, that are located within an urbanized area, or within a sphere of influence as defined pursuant to Section 56076 of the Government Code.

- (3) Conversion of oak woodlands on agricultural land that includes land that is used to produce or process plant and animal products for commercial purposes.
- (4) Projects undertaken pursuant to Section 21080.5 of the Public Resources Code.
- (e) (1) A lead agency that adopts, and a project that incorporates, one or more of the measures specified in this section to mitigate the significant effects to oaks and oak woodlands shall be deemed to be in compliance with this division only as it applies to effects on oaks and oak woodlands.
- (2) The Legislature does not intend this section to modify requirements of this division, other than with regard to effects on oaks and oak woodlands.
- (f) This section does not preclude the application of Section 21081 to a project.
- (g) This section, and the regulations adopted pursuant to this section, shall not be construed as a limitation on the power of a public agency to comply with this division or any other provision of law.

Appendix B

Appendix B-1. Potential Calaveras County Oak Woodland Amphibian Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, Slash, brush piles	Snags	Burrow, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest Species
Arboreal Salamander	<i>Aneides lugubris</i>	.	X	X	X	X	.	.	.	.
Bullfrog	<i>Rana catesbeiana</i>	.	X	.	.	.	X	.	.	X
California Newt	<i>Taricha torosa</i>	.	X	.	.	X	X	.	Spec. conc.	.
Ensatina	<i>Ensatina eschscholtzi</i>	.	X	X	.	X	.	Cand.	Spec. conc.	.
Foothill Yellow-Legged Frog	<i>Rana boyleii</i>	.	X	.	.	X	.	.	.	.
Pacific Treefrog	<i>Pseudacris regilla</i>	.	X	.	.	X	X	.	.	.
California Red-Legged Frog	<i>Rana aurora draytoni</i>	.	X	.	.	X	X	Prop.	Spec. conc., Prot.	.
Tiger Salamander	<i>Ambystoma tigrinum</i>	.	X	X	.	X	X	Cand.	Spec. conc., prot.	.
Hell Hollow Slender Salamander	<i>Batrachoseps diabolicus</i>									
California Slender Salamander	<i>Batrachoseps attenuatus</i>	.	X	X	.	X	.	.	.	.
Western Toad	<i>Bufo boreas</i>	.	X	X	.	X	X	.	.	.

Special Status Codes

Cand. = candidate species

Spec. conc. = species of special concern

Prot. = protected species

End. = endangered species

Threat = threatened species

(a) = Species or subspecies with special status primarily associated with wetlands, marshes, and riparian areas

(b) = Species or subspecies with special status occurs on the Channel Islands

(c) = Species or subspecies with special status primarily associated with shrub, sandy, scrub, and desert habitats

Appendix B-2. Potential Calaveras County Oak Woodland Reptile Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
California Mountain Kingsnake	<i>Lampropeltis zonata</i>	.	x	x	.	x	.	Cand.	Spec. conc., Prot.	.
California Nightsnake	<i>Hypsiglena torquata nuchalata</i>	.	x	x	.	x	.	.	.	.
California Striped Racer	<i>Masticophis lateralis lateralis</i>	.	x	x	.	x	x	.	.	.
California Whipsnake	<i>Masticophis lateralis</i>	.	x	x	.	x	.	Cand.	Threat Prot.	.
California Whiptail	<i>Aspidoscelis tigris munda</i>	.	x	x	.	x	.	Cand.	.	.
Coast Horned Lizard	<i>Phrynosoma coronatum</i>	.	x	x	.	x	.	Cand.	Spec. conc., Prot.	.
Common Garter Snake	<i>Thamnophis sirtalis</i>	.	x	x	.	x	x	End., Cand.	End., Prot. (a)	.
Common Kingsnake	<i>Lampropeltis getulus</i>	.	x	x	.	x
Gilbert's Skink	<i>Eumeces gilberti</i>	.	x	x	.	x

Special Status Codes

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Appendix B-2. Potential Calaveras County Oak Woodland Reptile Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Gopher Snake	<i>Pituophis melanoleucus</i>	.	x	x	.	x	.	Cand.	Spec. conc.(b)	.
California Alligator Lizard	<i>Elgaria multicarinata multicarinata</i>	.	x	x	.	x	.	.	.	.
Racer	<i>Coluber constrictor</i>	.	x	x	.	x	x	.	.	.
Ringneck Snake	<i>Diadophis punctatus</i>	.	x	x	.	x	.	Cand.	.	.
Rubber Boa	<i>Charina bottae</i>	.	x	x	.	x	.	.	.	.
Sharp-Tailed Snake	<i>Contia tenuis</i>	.	x	x	.	x	.	.	.	.
Western Aquatic Garter Snake	<i>Thamnophis couchi</i>	.	x	x	.	x	x	.	.	.
Western Fence Lizard	<i>Sceloporus occidentalis</i>	.	x	x	x	x	.	.	.	.
Western Pond Turtle	<i>Clemmys marmorata</i>	.	x	x	.	.	x	Cand.	Spec. conc., Prot. (a)	.
Western Rattlesnake	<i>Crotalus viridis</i>	.	x	x	.	x	x	.	.	.
Western Skink	<i>Eumeces skiltonianus</i>	.	x	x	.	x	.	Cand.	Spec. conc. (c)	.
Western Terrestrial Garter Snake	<i>Thamnophis elegans</i>	.	x	.	.	x	x	.	.	.

Special Status Codes

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(a) = Species or subspecies with special status primarily associated with wetlands, marshes, and riparian areas

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(c) = Species or subspecies with special status primarily associated with shrub, sandy, scrub, and desert habitats

Appendix B-3. Potential Calaveras County Oak Woodland Bird Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	x	x	.	x	.	.	.	.	.
Allen's Hummingbird	<i>Selasphorus sasin</i>	.	x	.	.	.	.	.	.	.
American Crow	<i>Corvus brachyrhynchos</i>	.	x	.	.	.	x	.	.	.
American Goldfinch	<i>Carduelis tristis</i>	.	x	.	.	.	.	.	.	.
American Kestrel	<i>Falco sparverius</i>	.	x	.	x	x	x	.	.	.
American Robin	<i>Turdus migratorius</i>	.	x	.	.	.	.	.	.	.
Anna's Hummingbird	<i>Calypte anna</i>	.	x	.	.	.	.	.	.	.
Ash-Throated Flycatcher	<i>Myiarchus cinerascens</i>	.	x	.	.	.	.	.	.	.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	.	x	.	x	x	x	Threat	End., Prot.	.
Band-Tailed Pigeon	<i>Columba fasciata</i>	x	x	.	x	.	.	.	.	x
Barn Owl	<i>Tyto alba</i>	.	x	.	x	x	x	.	.	.
Barn Swallow	<i>Hirundo rustica</i>	.	x	.	.	x	x	.	.	.
Bewick's Wren	<i>Thryomanes bewickii</i>	.	x	x	.	x	.	.	.	.
Black-Crowned Night Heron	<i>Nycticorax nycticorax</i>	.	x	.	.	.	x	.	.	.

Special Status Codes

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(a) = Species or subspecies with special status primarily associated with wetlands, marshes, and riparian areas

(b) = Species or subspecies with special status occurs on the Channel Islands

(c) = Species or subspecies with special status primarily associated with shrub, sandy, scrub, and desert habitats

Appendix B-3. Potential Calaveras County Oak Woodland Bird Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Black-Headed Grosbeak	<i>Pheucticus melanocephalus</i>	.	x	.	.	.	.	.	.	.
Black-Throated Gray Warbler	<i>Dendroica nigrescens</i>	.	x	.	.	.	.	.	.	.
Blue-Gray Gnatcatcher	<i>Poliophtila caerulea</i>	.	x	.	.	.	.	.	.	.
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	.	x	.	.	.	x	.	.	.
Brown Creeper	<i>Certhia americana</i>	.	x	.	x	.	.	.	.	.
Brown-Headed Cowbird	<i>Molothrus ater</i>	.	x	.	.	.	x	.	.	.
Bushtit	<i>Psaltriparus minimus</i>	.	x	.	.	.	.	.	.	.
California Quail	<i>Callipepla californica</i>	x	x	x	.	.	.	.	.	x
California Thrasher	<i>Toxostoma redivivum</i>	.	x	.	.	.	.	.	.	.
California Towhee	<i>Pipilo crissalis</i>	.	x	x	.	.	.	Threat	End. (c)	.
Calliope Hummingbird	<i>Stellula calliope</i>	.	x	.	.	.	.	.	.	.
Cassin's Kingbird	<i>Tyrannus vociferans</i>	.	x	.	.	.	.	.	.	.
Cattle Egret	<i>Bubulcus ibis</i>	.	x	.	.	.	x	.	.	.
Cedar Waxwing	<i>Bombycilla cedrorum</i>	.	x
Chestnut-Backed Chickadee	<i>Parus rufescens</i>	.	x	.	x

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(a) = Species or subspecies with special status primarily associated with wetlands, marshes, and riparian areas

(b) = Species or subspecies with special status occurs on the Channel Islands

(c) = Species or subspecies with special status primarily associated with shrub, sandy, scrub, and desert habitats

Appendix B-3. Potential Calaveras County Oak Woodland Bird Species

Common Name	Scientific Name	Habitat Elements						Special Status.		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Cliff Swallow	<i>Hirundo pyrrhonota</i>	.	x	.	.	x	x	.	.	.
Common Raven	<i>Corvus Corax</i>	.	x	.	.	x	x	.	.	.
Cooper's Hawk	<i>Accipiter cooperii</i>	.	x	.	x	.	.	.	Spec. conc.	.
Dark-Eyed Junco	<i>Junco hyemalis</i>	.	x	x	.	.	.	.	Spec. conc. (c)	.
Downy Woodpecker	<i>Picoides pubescens</i>	.	x	.	x	.	.	.	.	.
Dusky Flycatcher	<i>Empidonax oberholseri</i>	.	x	.	.	.	.	.	.	.
European Starling	<i>Sturnus vulgaris</i>	.	x	.	x	.	x	.	.	.
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	.	x	.	.	.	.	.	.	.
Ferruginous Hawk	<i>Buteo regalis</i>	.	x	.	x	x	x	Cand.	.	.
Fox Sparrow	<i>Passerella iliaca</i>	.	x	.	.	.	.	.	.	.
Golden-Crowned Kinglet	<i>Regulus satrapa</i>	.	x	.	.	.	.	.	.	.
Golden-Crowned Sparrow	<i>Zonotrichia atricapilla</i>	.	x	x	.	.	.	.	.	.
Great Blue Heron	<i>Ardea herodias</i>	.	x	.	.	.	x	.	.	.
Great Egret	<i>Casmerodius albus</i>	.	x	.	.	.	x	.	.	.
Great Horned Owl	<i>Bubo virginianus</i>	.	x	.	x	x	x	.	.	.

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Appendix B-3. Potential Calaveras County Oak Woodland Bird Species

Common Name	Scientific Name	Habitat Elements						Special Status.		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Green Heron	<i>Butorides virescens</i>	.	x	.	.	.	x	.	.	.
Hairy Woodpecker	<i>Picoides villosus</i>	x	x	x	x	.	.	.	.	.
Hammond's Flycatcher	<i>Empidonax hammondii</i>	.	x	.	.	.	.	.	.	.
Hermit Thrush	<i>Catharus guttatus</i>	.	x	.	.	.	.	.	.	.
Hermit Warbler	<i>Dendroica occidentalis</i>	.	x	.	.	.	.	.	.	.
Horned Lark	<i>Eremophila alpestris</i>	.		.	.	.	.	.	Spec. conc.	.
House Finch	<i>Carpodacus mexicanus</i>	.	x	.	.	x	.	.	.	.
House Sparrow	<i>Passer domesticus</i>	.	x	.	x	.	.	.	.	.
House Wren	<i>Troglodytes aedon</i>	.	x	x	x	.	.	.	.	.
Hutton's Vireo	<i>Vireo huttoni</i>	.	x	.	.	.	.	.	.	.
Lark Sparrow	<i>Chondestes grammacus</i>	.	x	.	.	.	.	.	.	.
Lawrence's Goldfinch	<i>Carduelis lawrencei</i>	.	x	.	.	.	.	.	.	.
Lesser Goldfinch	<i>Carduelis psaltria</i>	.	x	.	.	.	.	.	.	.
Lesser Nighthawk	<i>Chordeiles acutipennis</i>	.	x	.	.	.	x	.	.	.
Lewis Woodpecker	<i>Melanerpes lewis</i>	x	x	.	x	.	.	.	.	.
Lincoln's Sparrow	<i>Melospiza lincolni</i>	.	x	.	.	.	x	.	.	.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	.	x	.	x	.	.	End.	Spec. conc. (b)	.

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Appendix B-3. Potential Calaveras County Oak Woodland Bird Species

Common Name	Scientific Name	Habitat Elements						<u>Special Status</u>		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Long-eared Owl	<i>Asio otus</i>	.	x	x	x	x	.	.	Spec. conc.	.
Mallard	<i>Anas platyrhynchos</i>	.	x	.	.	.	x	.	.	x
Merlin	<i>Falco columbarius</i>	.	x	.	x	.	x	.	Spec. conc.	.
Mountain Bluebird	<i>Sialia currucoides</i>	.	x	.	x	x	.	.	.	.
Mountain Chickadee	<i>Parus gambeli</i>	.	x	.	x	.	.	.	.	.
Mountain Quail	<i>Oreortyx pictus</i>	x	x	.	x	.	.	.	.	x
Mourning Dove	<i>Zenaida macroura</i>	.	x	.	.	.	.	.	.	x
Nashville Warbler	<i>Vermivora ruficapilla</i>	.	x	.	.	.	.	.	.	.
Northern Flicker	<i>Colaptes auratus</i>	x	x	x	x	.	.	.	.	.
Northern Goshawk	<i>Accipiter gentilis</i>	.	x	.	x	.	.	Cand.	Spec. conc.	.
Northern Harrier	<i>Circus cyaneus</i>	.	x	.	.	.	x	.	Spec. conc.	.
Northern Mockingbird	<i>Mimus polyglottos</i>	.	x	.	.	.	.	.	.	.
Northern Oriole	<i>Icterus galbula</i>	.	x	.	.	.	.	.	.	.
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	.	x	.	x
Northern Saw-Whet Owl	<i>Aegolius acadicus</i>	.	x	.	x

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Appendix B-3. Potential Calaveras County Oak Woodland Bird Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Nuttall's Woodpecker	<i>Picoides nuttallii</i>	.	x	.	x	.	.	.	.	.
Oak Titmouse	<i>Baeolophus inornatus</i>	.	x	.	x	.	.	.	.	.
Orange-Crowned Warbler	<i>Vermivora celata</i>	.	x	.	.	.	.	.	.	.
Osprey	<i>Pandion haliaetus</i>	.	x	.	x	.	x	.	Spec. conc.	.
Pacific-Slope Flycatcher	<i>Empidonax difficilis</i>	.	x	.	.	x	.	.	.	.
Peregrine Falcon	<i>Falco peregrinus</i>	.	x	.	.	x	x	End., Threat	End., Prot.	.
Phainopepla	<i>Phainopepla nitens</i>	.	x	.	.	.	.	.	.	.
Pine Siskin	<i>Carduelis pinus</i>	.	x	.	.	.	.	.	.	.
Prairie Falcon	<i>Falco mexicanus</i>	.	x	.	.	x	x	.	Spec. conc.	.
Red-Breasted Nuthatch	<i>Sitta canadensis</i>	.	x	.	x	.	.	.	.	.
Red-Breasted Sapsucker	<i>Sphyrapicus ruber</i>	.	x	.	x	.	.	.	.	.
Red-Shouldered Hawk	<i>Buteo lineatus</i>	.	x	.	x	.	x	.	.	.
Red-Tailed Hawk	<i>Buteo jamaicensis</i>	.	x	.	x	x	x	.	.	.
Rock Dove	<i>Columba livia</i>	x	x	.	.	x	.	.	.	x

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Appendix B-3. Potential Calaveras County Oak Woodland Bird Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Rock Wren	<i>Salpinctes obsoletus</i>	.	.	.	.	x	.	.	.	.
Rough-Legged Hawk	<i>Buteo lagopus</i>	.	x	.	x	x	x	.	.	.
Ruby-Crowned Kinglet	<i>Regulus calendula</i>	.	x	.	.	.	.	.	.	.
Rufous Hummingbird	<i>Selasphorus rufus</i>	.	x	.	.	.	.	.	.	.
Rufous-Sided Towhee	<i>Pipilo erythrophthalmus</i>	x	x	x	.	.	.	Cand.	Spec. conc. (b)	.
Savannah Sparrow	<i>Passerculus sandwichensis</i>	.	x	.	.	.	.	Cand. (c)	End. (a), Spec. conc. (c)	.
Say's Phoebe	<i>Sayornis saya</i>	.	.	.	.	x	.	.	.	.
Scott's Oriole	<i>Icterus parisorum</i>	.	.	.	.	.	.	.	.	.
Scrub Jay	<i>Aphelocoma coerulescens</i>	x	x	.	.	.	x	Cand.	Spec. conc.	.
Sharp-Shinned Hawk	<i>Accipiter striatus</i>	.	x	.	x	.	.	.	Spec. conc.	.
Short-eared Owl	<i>Asio flammeus</i>	.	x	.	.	.	x	.	Spec. conc.	.
Solitary Vireo	<i>Vireo solitarius</i>	.	x
Song Sparrow	<i>Melospiza melodia</i>	.	x	x	.	.	x	Cand.	Spec. conc. (a)	.

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Appendix B-3. Potential Calaveras County Oak Woodland Bird Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Steller's Jay	<i>Cyanocitta stelleri</i>	x	x	.	.	.	.	.	.	.
Swainson's Hawk	<i>Buteo swainsoni</i>	.	x	.	.	.	x	.	Threat	.
Swainson's Thrush	<i>Catharus ustulatus</i>	.	x	.	.	.	.	.	.	.
Townsend's Warbler	<i>Dendroica townsendi</i>	.	x	.	.	.	.	.	.	.
Tree Swallow	<i>Tachycineta bicolor</i>	.	x	.	x	.	x	.	.	.
Turkey Vulture	<i>Cathartes aura</i>	.	x	.	x	x	.	.	.	.
Varied Thrush	<i>Ixoreus naevius</i>	x	x	.	.	.	.	.	.	.
Vesper Sparrow	<i>Poocetes gramineus</i>	.	.	.	.	.	.	.	.	.
Violet-Green Swallow	<i>Tachycineta thalassina</i>	.	x	.	x	x	x	.	.	.
Warbling Vireo	<i>Vireo gilvus</i>	.	x	.	.	.	.	.	.	.
Western Bluebird	<i>Sialia mexicana</i>	.	x	.	x	.	.	.	.	.
Western Kingbird	<i>Tyrannus verticalis</i>	.	x	.	x	.	x	.	.	.
Western Meadowlark	<i>Sturnella neglecta</i>	.	.	x	.	.	.	.	.	.
Western Screech-Owl	<i>Otus kennicottii</i>	.	x	.	x	.	.	.	.	.
Western Tanager	<i>Piranga ludoviciana</i>	.	x
Western Wood-Pewee	<i>Contopus sordidulus</i>	.	x	.	x

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Appendix B-3. Potential Calaveras County Oak Woodland Bird Species

Common Name	Scientific Name	Habitat Elements						<u>Special Status.</u>		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
White-Breasted Nuthatch	<i>Sitta carolinensis</i>	x	x	.	x	.	.	.	.	.
White-Crowned Sparrow	<i>Zonotrichia leucophrys</i>	.	x	x	.	.	.	.	.	.
White-Tailed Kite	<i>Elanus leucurus</i>	.	x	.	x	.	x	.	Prot.	.
White-Throated Swift	<i>Aeronautes saxatalis</i>	.	x	.	.	x	.	.	.	.
Wild Turkey	<i>Meleagris gallopavo</i>	x	x	.	.	.	.	.	.	x
Wilson's Warbler	<i>Wilsonia pusilla</i>	.	x	.	.	.	.	.	.	.
Wood Duck	<i>Aix sponsa</i>	x	x	.	x	.	x	.	.	x
Wrentit	<i>Chamaea fasciata</i>	.	x	.	.	.	.	.	.	.
Yellow Warbler	<i>Dendroica petechia</i>	.	x	.	.	.	x	.	Spec. conc.	.
Yellow-Billed Magpie	<i>Pica nuttalli</i>	x	x
Yellow-Rumped Warbler	<i>Dendroica coronata</i>	.	x

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Appendix B-4. Potential Calaveras County Oak Woodland Mammal Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
American Badger	<i>Taxidea taxus</i>	.	x	.	.	x	x	.	.	x
Beaver	<i>Castor canadensis</i>	.	x	x	.	x	x	.	.	x
Big Brown Bat	<i>Eptesicus fuscus</i>	.	x	.	x	x	x	.	.	.
Black Rat	<i>Rattus rattus</i>	.	x	.	.	x	.	.	.	.
Black-Tailed Hare	<i>Lepus californicus</i>	.	x	.	.	.	.	.	Spec. conc.	x
Bobcat	<i>Felis rufus</i>	.	x	x	.	x	x	.	.	x
Botta's Pocket Gopher	<i>Thomomys bottae</i>	.	x	.	.	x	.	Cand. (c)	.	.
Brazilian Free-Tailed Bat	<i>Tadarida brasiliensis</i>	.	x	.	.	x	x	.	.	.
Broad-Footed Mole	<i>Scapanus latimanus</i>	.	x	.	.	.	.	Cand.	Spec. conc. (a)	.
Brush Mouse	<i>Peromyscus boylii</i>	x	x	x	x	x	.	.	.	.
Brush Rabbit	<i>Sylvilagus bachmani</i>	.	x	x	.	x	.	Cand.	End. (a)	.
California Ground Squirrel	<i>Spermophilus beecheyi</i>	x	x	x	.	x
California Kangaroo Rat	<i>Dipodomys californicus</i>	x	.	Cand.	Spec. conc. (c)	.

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Appendix B-4. Potential Calaveras County Oak Woodland Mammal Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
California Mouse	<i>Peromyscus californicus</i>	x	x	x	x	x	.	.	.	.
California Myotis	<i>Myotis californicus</i>	.	x	.	x	x	x	.	.	.
California Pocket Mouse	<i>Chaetodipus californicus</i>	.	.	.	.	x	.	Cand.	Spec. conc. (c)	.
California Vole	<i>Microtus californicus</i>	.	x	.	.	x	.	End., cand.	End., Spec conc. (a)	.
Coyote	<i>Canis latrans</i>	.	x	x	x	x	x	.	.	x
Deer Mouse	<i>Peromyscus maniculatus</i>	x	x	x	.	x	x	Cand.	Spec. conc. (b)	.
Desert Cottontail	<i>Sylvilagus audubonii</i>	x	x	.	.	.	.	.	.	.
Dusky-Footed Woodrat	<i>Neotoma fuscipes</i>	x	x	x	.	.	.	Cand.	Spec. conc.	.
Fringed Myotis	<i>Myotis thysanodes</i>	.	x	.	.	x	x	.	.	.
Gray Fox	<i>Urocyon cinereo-argenteus</i>	.	x	x	x	x	x	.	.	x
Heermann's Kangaroo Rat	<i>Dipodomys heermanni</i>	.	x	.	.	x	.	End.	End., Prot. (c)	.
Hoary Bat	<i>Lasiurus cinereus</i>	.	x	.	x	.	x	.	.	.

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Appendix B-4. Potential Calaveras County Oak Woodland Mammal Species										
Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
House Mouse	<i>Mus musculus</i>	.	x	x	.	x	x	.	.	.
Little Brown Myotis	<i>Myotis lucifugus</i>	.	x	.	x	x	x	Cand.	Spec. conc. (c)	.
Long-eared Myotis	<i>Myotis evotis</i>	.	x	.	x	x	x	.	.	.
Long-Legged Myotis	<i>Myotis volans</i>	.	x	.	x	x	x	.	.	.
Long-Tailed Weasel	<i>Mustela frenata</i>	.	x	x	x	x	x	.	.	x
Mountain Lion	<i>Felis concolor</i>	.	x	.	x	x	x	Cand.	Spec. conc., Prot.	.
Mule Deer	<i>Odocoileus hemionus</i>	x	x	.	.	.	x	.	.	x
Narrow-Faced Kangaroo Rat	<i>Dipodomys venustus</i>	.	.	.	.	x	.	.	.	.
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	x	x	x	x	.	.	Cand.	.	.
Norway Rat	<i>Rattus norvegicus</i>	.	x	.	.	x	.	.	.	.
Ornate Shrew	<i>Sorex ornatus</i>	.	x	x	.	x	x	Cand.	Spec. conc. (a)	.
Pacific Kangaroo Rat	<i>Dipodomys agilis</i>	.	x	.	.	x

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Appendix B-4. Potential Calaveras County Oak Woodland Mammal Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Pallid Bat	<i>Antrozous pallidus</i>	.	x	.	.	x	x	.	Spec. conc.	.
Porcupine	<i>Erethizon dorsatum</i>	.	x	x	x	x	x	.	.	.
Raccoon	<i>Procyon lotor</i>	x	x	x	x	x	x	.	.	x
Ringtail	<i>Bassariscus astutus</i>	.	x	x	x	x	x	.	Prot.	.
River Otter	<i>Lutra canadensis</i>	.	x	x	x	x	x	Cand.	Spec. conc. (a)	.
San Joaquin Kangaroo Rat	<i>Dipodomys nitratooides</i>	.	.	.	.	x	.	End., Cand.	Spec. conc. (c)	.
San Joaquin Pocket Mouse	<i>Perognathus inornatus</i>	.	.	.	.	x	.	Cand.	Spec. conc. (c)	.
Silver-Haired Bat	<i>Lasionycteris noctivagans</i>	.	x	.	x	x	x	.	.	.
Spotted Bat	<i>Euderma maculatum</i>	.	x	.	.	x	x	Cand.	Spec. conc.	.
Striped Skunk	<i>Mephitis mephitis</i>	.	x	x	.	x	x	.	.	x
Townsend's Big-Eared Bat	<i>Plecotus townsendii</i>	.	x	.	.	x	x	Cand.	Spec. conc.	.
Trowbridge's Shrew	<i>Sorex trowbridgii</i>	.	x	x

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Appendix B-4. Potential Calaveras County Oak Woodland Mammal Species

Common Name	Scientific Name	Habitat Elements						Special Status		
		Acorns	Riparian	Logs, slash, brush piles	Snags	Burrows, rocks, talus, cliffs, caves	Vernal pool, wetland	Federal status	State status	Harvest species
Vagrant Shrew	<i>Sorex vagrans</i>	.	x	x	.	.	x	Cand.	Spec. conc. (a)	.
Virginia Opossum	<i>Didelphis virginiana</i>	x	x	x	x	x	x	.	.	x
Western Gray Squirrel	<i>Sciurus griseus</i>	x	x	x	x	.	.	.	.	x
Western Harvest Mouse	<i>Reithrodon-tomys megalotis</i>	.	x	.	.	.	x	.	.	.
Western Mastiff Bat	<i>Eumops perotis</i>	.	x	.	.	x	x	Cand.	Spec. conc.	.
Western Pipistrelle	<i>Pipistrellus hesperus</i>	.	x	.	.	x	x	.	.	.
Western Red Bat	<i>Lasiurus blossevillii</i>	.	x	.	x	x	x	.	.	.
Western Small-Footed Myotis	<i>Myotis ciliolabrum</i>	.	x	.	x	x	x	.	.	.
Western Spotted Skunk	<i>Spilogale gracilis</i>	.	x	x	x	x	x	Cand.	Spec. conc. (b)	x
Yuma Myotis	<i>Myotis yumanensis</i>	.	x	.	x	x	x	.	.	.

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Appendix C

List of Special Status Plants that Occur in Calaveras County Oak Woodlands.

Scientific Name	Common Name	Unique Ecological Traits			Special Status		
		Blooming Period	Life Form	Special Habitat or Soil	State Listed	Federally listed	CNPS List
<i>Calycadenia hooveri</i>	Hoover's calycadenia	July to September	annual herb	Rocky	.	.	1B
<i>Henderson's bent grass</i>	Agrostis hendersonii	April to May	annual herb	Vernal pools and grasslands	.	.	3
<i>Arctostaphylos myrtifolia</i>	Ione manzanita	November to February	evergreen shrub	Ione clay or sandy	.	.	1B
<i>Horkelia parryi</i>	Parry's horkelia	April to June	perennial herb	Ione formation	.	.	1B

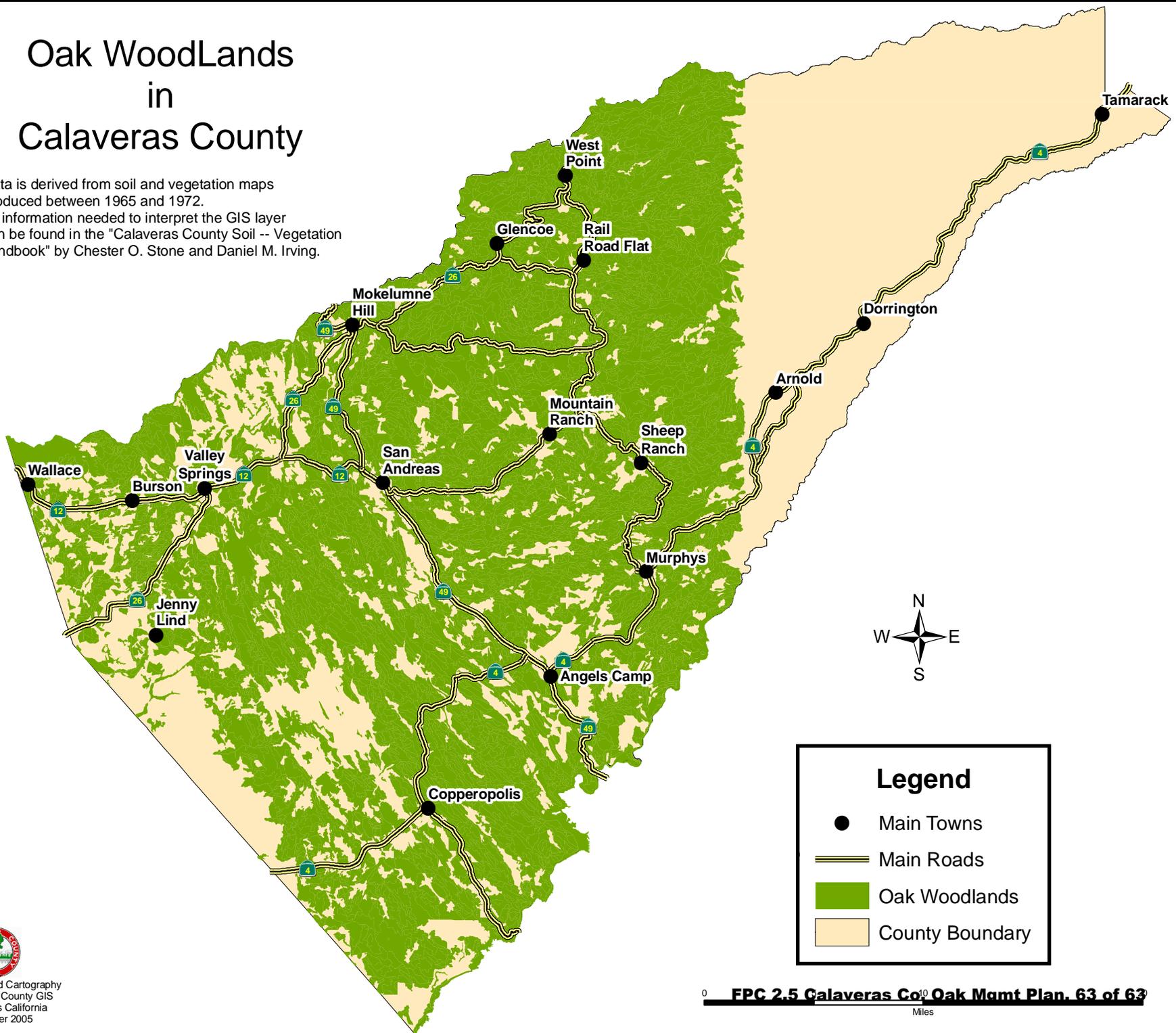
3 = CNPS Category to describe plants about which more information is needed.

1B = CNPS Category for Rare or Endangered in California and elsewhere.

Appendix D

Oak WoodLands in Calaveras County

Data is derived from soil and vegetation maps produced between 1965 and 1972. All information needed to interpret the GIS layer can be found in the "Calaveras County Soil -- Vegetation handbook" by Chester O. Stone and Daniel M. Irving.



Legend

- Main Towns
- == Main Roads
- Oak Woodlands
- County Boundary

