San Luis Obispo County

Oak Woodlands Management Plan

Prepared by the Native Tree Committee of
San Luis Obispo County

Autumn 2003

The following Oak Woodland Management Plan is designed to encourage the long-term conservation of oak woodlands and recognizes that farming, ranching, and grazing operations can be compatible with oak woodland conservation.

San Luis Obispo County supports landowners that voluntarily participate in the Oak Woodlands Conservation Program, and encourages education and outreach efforts designed to demonstrate the economic, social, and ecological values associated with oak woodlands.

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Introduction

Background and Purpose

The Native Tree Committee of San Luis Obispo County was organized in January 1998 to implement the voluntary guidelines in the Native Tree Resolution, as adopted by the County Board of Supervisors. The committee is dedicated to the coordination of an educational program encouraging rural landowners to participate in tree protection and enhancement. The members of the committee are a diverse group committed to the long-term improvement of oak woodlands in the county.

This Management Plan was prepared by the Native Tree Committee to promote the conservation of oak woodlands in the County and to meet or exceed the requirements necessary to participate in the Oak Woodlands Conservation Program as established by the Wildlife Conservation Board. Currently there is approximately ten million dollars in funding available through this program for education and easement acquisition. The committee hopes this Plan will be utilized by the diverse group of landowners and organizations interested in oak woodland conservation in San Luis Obispo County.

This plan is voluntary and for informational purposes and shall in no way be binding by law on the private landowner or abridge the private property rights of a landowner.

The Oak Woodlands Conservation Program

(Courtesy, Department of Fish and Game)

The Oak Woodlands Conservation Program offers landowners, conservation organizations, cities and counties, an opportunity to obtain funding for projects designed to conserve and restore California's oak woodlands. While the Program is statewide in nature, it provides opportunities to address oak woodland issues on a regional priority basis.

The Program is designed to help local efforts achieve oak woodland protection. More importantly, this Program provides a mechanism to bring ranchers and conservationists together in a manner that allows both to achieve that which is so valued - sustainable ranch and farming operations and healthy oak woodlands.

Status of Oak Woodlands in San Luis Obispo County

Oak Woodlands are a major component of SLO County's rural landscape. As of 1994 oak woodlands covered more than 36 percent of the total land area of the county. This puts SLO County in the State's "Top Ten" both in total oak woodland acreage and in proportion of county lands that are oak woodlands. The California Department of Forestry and Fire has identified four types of oak woodlands in the county:

1. Valley Oak Woodland

This habitat occurs in a wide range of settings, but is best developed on deep, well-drained alluvial soils usually in valley bottoms, and on non-alluvial soils in the coast range. Valley oak woodland varies from savanna-like to forest-like stands with partially closed canopies, with a grassy understory. Individual trees may reach over 100' high. Valley oak woodland mixes with valley oak riparian forest near rivers and with blue oak woodland in drier locations.

2. Blue Oak Woodland

Blue oak woodlands are usually associated with shallow rocky, infertile, well- drained soils. Blue oaks are well adapted to dry, hilly terrain where the water table is usually unavailable. Blue oak woodlands intergrade with valley oak woodlands, but generally occur on drier slopes. This habitat varies in structure from open savanna to dense woodland and is typically found in the valleys and foothills of the coast ranges.

3. Blue-Oak Grey Pine Woodland

This habitat is typically diverse, with a mix of hardwoods, conifer and shrubs. Associated species are the coast live oak, and valley oak. Soils are generally well drained, ranging from gravelly loam through stony clay loam and are typically rich in rock fragments. Most mature stands of this type have a canopy that can range up to 59 percent, and generally have small accumulations of dead and downed woody material and relatively few snags compared to other tree habitats.

4. Live Oak Woodlands

These woodlands are extremely variable. They are known to exist on over 15 different soil types in the county, generally occurring on moderately to well-drained soils that are moderately deep and have low to medium fertility. The overstory consists of deciduous and evergreen hardwoods, mostly oaks, up to 70 feet in height. The understory can vary from shrubs that are dense and almost impenetrable to more scattered under and between trees, to grasslands where the trees are scattered to form open

woodland. These woodlands are comprised of slow growing, long lived trees, so succession requires a long time.

Valley, Blue and Live Oak Disturbance and Removal

By the turn of the 19th Century, over 90% of all the state's valley oak had been removed (Pavlik et al, 1991, p. 125). Between 1850 and 1950, 98.5% of the valley oak was cleared from the central valley to make way for agricultural enterprises and urban expansion (Rossi, 1979, pp. 44-45). In the Salinas River Valley of San Luis Obispo County, 70% of the valley oaks were removed (ibid, p. 314.). Valley oaks often grew in areas that were prime land for developers and farmers—along streams and flats lands. Today, there are few valley oaks between five and 100 years old. The only location where any significant numbers of young valley oaks are seen in San Luis Obispo County is growing within the freeway right of ways, where few animals dwell, cows are unable to forage, and excess rainwater drains to keep the young trees moist.

Blue oaks, located in drier hills, were often removed to improve grazing conditions for cattle and sheep. In the early days of Atascadero, nearly 12,000 acres of valley and blue oak were removed to make way for the colony's planned orchards, vineyards, agricultural fields, and housing (ibid, p. 183). Today, blue oak trees are most often removed to make way for vineyard expansion and rural and suburban development in San Luis Obispo county.

Live oaks in San Luis Obispo County are also removed for new residential and commercial development, and when rangeland is converted to a more intensive agricultural use. Some of these developments undergo environmental review. In these cases the landowner is required to replace all removed oak trees at a four-to-one ratio in order to mitigate oak tree loss.

Poor Recruitment

Researchers have implicated a broad range of probable causes for poor oak recruitment - the transition from a sapling to an adolescent, pole-sized tree. These include excessive livestock grazing, deer browsing, acorn predation by rodents, and changes in the makeup of the grassland surrounding the oaks. Fire suppression efforts, flood control projects, and lowered water tables also have significant adverse effects on the recruitment of oaks. In addition, although oaks planted to satisfy environmental mitigation measures are usually monitored to insure their health for three years - successful growth of saplings after that point is not guaranteed.

It appears that successful recruitment often occurs only when a variety of positive factors converge. These include a summer ground fire, large acorn crop, a wet winter and reduced deer populations (ibid, p. 124). When these factors combine, it appears that future recruitment of oaks from that year will improve.

Appendix A displays the current distribution of oak woodlands in San Luis Obispo County.

Sudden Oak Death

In 1995 significant quantities of coast live oaks began to die suddenly in Marin County. Eventually, it was determined that a fungus called *Phytophthora ramorum* [phy-TOFF-thoruh ra-MOR-um] was the cause. It is infecting four different species of oaks as well as closely related tanoaks and at least twenty other plant species that are often found in native oak habitat. The disease has been given the common name Sudden Oak Death, or SOD, even though it affects many other species. To date, 12 California counties, including Monterey, have discovered *P. ramorum* infections. Hundreds of thousands of trees have become infected and many have died, which increases fire hazards, the likelihood of erosion, the loss of important wildlife habitat, and devastates landscapes that are defined by their oaks.

Sudden Oak Death has not yet been discovered in San Luis Obispo County. The County's Agricultural Commissioners Office is actively working to stop its spread through the import of infected agricultural material (plants, wreaths, and other material that may be infected). The Cooperative Extension, through the Master Gardeners program, can help property owners determine if their vegetation is infected. Research continues to determine what areas of the county are at risk.

Economic Values of Oak Woodlands

Livestock Production

Today oak rangeland and woodland provides over two-thirds of California's total forage area for livestock. Oaks in these areas provide shade as well as some feed in San Luis Obispo's hot interior foothills and valleys. Oak woodland in the state is mostly privately owned. While there are some concerns about adverse impacts from livestock on oak woodlands, these grazing lands largely function for the multiple purposes of livestock production and habitat biodiversity, as well as watershed protection, scenic beauty and aesthetics. Livestock production often has a far lighter impact on oak habitat than urban development.

Property Values

The value of trees to a community is also significant. Various studies have been done to assess the monetary values of oaks, which is often best reflected in the value of a property. One study shows that a property with oaks is worth approximately 27% more when oaks are present (compared to similar property without trees). Research also showed that in terms of real estate value, land with approximately 40 trees per acre was the most highly valued in property value terms (Standiford, 1999). Individual oak trees may be highly valued as well. Some individual oak trees have been valued at $18,000 to $50,000 dollars, because of their large size or landmark status in a community or neighborhood.

Other Benefits

Like all trees, oaks produce oxygen and through their normal respiration reduce air pollutants. The air pollutants partially controlled by oaks include nitrogen oxides, sulfur dioxides, carbon monoxides, carbon dioxide, ozone as well as particulate matter smaller than 10 microns in size.

Other benefits of oak trees are extensive. They include shade, wind control, improved air quality, oxygen production and carbon dioxide reduction, reduced water runoff and erosion and improved water quality, noise abatement, glare reduction, animal habitat, visual enhancement, and reduced cooling and heating expenses (Idso & Idso, 2003).

Natural Resource Values Of Oak Woodlands

Much of the diversity of the state's wildlife is found in oak ecosystems. Over 320 terrestrial vertebrates and thousands of invertebrates are associated with California's oak landscapes. Table 1 illustrates this:

Table 1: Species Associated With Oaks

Birds	170 (110 utilize oaks for breeding)
Acorn woodpecker, bald eagle, least Bell's vireo, California condor	
Mammals	105
Black bear, dusky-footed woodrat, island fox, silver-haired bat, bobcat	
Reptiles & Amphibians ("Herps")	58
Tehachapi slender salamander, California newt, California legless lizard, striped racer	
Insects	At least 5,000
Valley elderberry longhorn beetle, oak treehopper, springtail, California oak moth, California gall wasp	
Plants	Approximately 2,000
	(Pavlik 1991, pp. 80-88 & 168-169; California Oaks 2001)

Acorns as well as oak leaves, wood and sap are sustenance for a myriad of insects, birds, and mammals. Many other species, including amphibians, reptiles and birds, do not directly feed on oaks but prey heavily on insects that do. Oaks also contain nooks, crannies, perches and passages, places that are homes, breeding grounds and resting areas for many animal species. Oaks provide habitat to more different animals than any other ecosystem in the state. Some of these animals, like cavity nesting birds, rely on oaks for nesting grounds. Thirty-seven different mammals eat acorns, as do at least thirty different birds (Pavlik 1991, p. 85 & 88).

Small mammals such as mice, voles, gophers, moles and others rely upon and may assist oaks. By eating mycorrhizal fungi, they spread the spores of this beneficial fungus into areas where young trees are growing. The fungi attach to the roots of oaks and enhance the uptake of inorganic nutrients from the soil. Even though these mammals often kill young oaks by eating their bark, roots or leaves, in other cases they appear to enhance their chances of survival. (Johnson, 1995, p. 6).

Over 130 species of cynipid wasps form galls on various parts of oak trees. These tiny wasps lay their eggs on a portion of the oak. When the eggs hatch, the larvae secrete a unique chemical and in response the oak tree forms a gall, a kind of growth that surrounds the larvae to protect the rest of the tree (Little, Swiecki, & Tietje, 2001, pp. 8-9). The galls found on oaks range from minute growths on the edge of leaves to the "oak apple," a gall that can grow up to 4 inches in diameter and appears apple-like while young. In most cases galls do no harm to the oak tree, but provide another example of the diversity of life that depends on oaks.

Aesthetic/Open Space Value

The various species of oaks found across the county are often the physical features that define those areas. The majestic valley oaks in northern San Luis Obispo county are often synonymous with "wine country", while the broad spreading limbs of the live oak help define the beauty of the hills overlooking the local coastline. From San Miguel to Nipomo, Cambria to Pozo, the blue, valley and live oaks that dot the open spaces are a constant reminder to locals and tourists alike of our county's healthy environmental and agricultural roots.

Research has quantified some of the social benefits of trees. People find oaks and other trees attractive and the presence of trees is associated with positive perceptions about a place. Looking at trees reduced stress in individuals, so much so that hospital patients who have a view of trees and natural areas have significantly shorter stays, require less pain medicine and have fewer post-operative complications (Ulrich, et. al, 1991).

People feel more comfortable in a shaded, open area of trees, compared to parking lots or other hard-surfaced areas (Kuo, Bacaicoa, & Sullivan, 1998). Urban residents who lived in "greener" surroundings reported lower levels of fear, fewer incivilities, and less aggressive and violent behavior and research found that the "greener" an apartment building's surroundings were, the fewer crimes reported (Kuo & Sullivan, 2001). Research into children with Attention Deficit Disorder has found the "greener" a child's play area, the less severe his or her attention deficit symptoms and that these children function better than usual after activities in green settings (Taylor, Kuo & Sullivan, 2001). Because of these and other reasons, over 100 California municipalities and ten counties have enacted

oak tree preservation ordinances, while many more, including San Luis Obispo County, have voluntary guidelines for oak protection.

Planning And Oak Woodland Conservation

Development across the state has been the primary cause of oak habitat loss for the last twenty- five years and this trend continues today. In the last century the state's population increased from less than 1½ million people to nearly 34 million. The population in SLO County has increased almost 14 percent in the last decade. At this rate, the County's population will double by the middle of the century and reach 1 million during this century. Without planning for development that accommodates new growth and maintains the natural environment, SLO will continue to lose oak woodlands.

Development can take many forms, and not all development is equal in terms of its affect on oak habitat. Lower density development spread over many acres may not require the removal of many trees, but the resulting housing, landscaping, and infrastructure can degrade the ecosystem by fragmenting the existing habitat. Fragmented habitats provide fewer values for the plant and animal species that remain, increasing competition for resources, and isolating populations, which can lead to a decrease in both plant and animal diversity.

Research by the Integrated Hardwood Range Management Program has addressed some of these difficulties, including the loss of habitat elements such as cavities, acorns, snags, and woody debris. When oak habitat is removed tree-planting mitigation measures do not immediately replace these elements. (Standiford, 2001).

Denser urban development often requires tree removal and impacts native trees by compacting or removing topsoil, introducing incompatible plants, or changing water infiltration rates. However, fewer acres are impacted and habitat can be less fragmented. Clustering development so that fewer acres are impacted and creating development so that fewer roads, parking lots, and other impacts are required will ultimately reduce the loss of oak woodlands. Planning for future growth and directing it toward existing urban areas, while also addressing transportation issues, will be key to protecting oak trees in the future.

The following planning techniques are currently used to encourage the conservation of existing oak woodlands by focusing development more densely:

Cluster Division: The County's Land Use Ordinance allows applicants to reduce minimum parcel sizes in agricultural lands, and increase the number of buildable units in an effort to encourage clustering of new residential development.

Ag Cluster: It is the policy of the Board of Supervisors to encourage the preservation of Agricultural lands in the county for the continued production of

food and fiber through the use of agricultural clusters. These subdivisions allow the clustering of allowable dwelling units on relatively small parcels in agricultural areas instead of the dispersal of the units on larger parcels.

Transfer of Development Credits (TDCs): The County's TDC program seeks to relocate development from environmentally sensitive areas, and from land with agricultural capability, to more suitable areas. This is a voluntary, incentive based program between willing buyers and sellers.

Current Oak Woodland Conservation Efforts

Another key to protecting oaks is the preservation of the oak habitat. Preservation can take many forms: city, county, state and national parks, recreation areas, wilderness, conservation easements, and open spaces are all mechanisms that protect oak habitat and provide a functional ecosystem in which the plants and animals of the oak woodlands can survive.

The City of San Luis Obispo has undergone an aggressive program to protect open space around the city, placing nearly 2000 acres into permanent conservation programs since 1995, including acres of oak woodland. Other organizations, including The Land Conservancy of San Luis Obispo with over 6,500 acres of oak woodland preserved and others are working to preserve critical habitats in order to provide an enduring legacy of natural areas for wildlife and future residents of San Luis Obispo County. Private citizens are also working to enhance oak habitat, through planting projects at places like Whale Rock Reservoir, along Highway 101, and on private parcels throughout the county.

In 1997, the County adopted a resolution approving Native Tree Management Guidelines that provide a voluntary program encouraging and supporting landowners to properly manage native trees. By adopting this resolution, the County recognized the importance of protecting SLO County's native oaks and associated habitat, planting acorns and oak trees to replace oak woodland that continues to be developed, and educating residents of the importance of our oaks.

Future Conservation of Local Oak Woodlands

There are a number of ways that local residents and landowners can conserve San Luis Obispo County's remaining oak woodlands:

Design around existing oaks: New development in the county will continue. With careful design, existing oak trees and woodland habitat can be preserved. *The County will continue to encourage careful design of new development to minimize the number of oaks that must be removed.*

Encourage Clustered, Denser Developments: As stated previously, dense development may have more significant, site specific impacts to oak woodlands, but may result in conserving more oak woodland on a regional level*. The county will continue to encourage clustered developments.*

Encourage Landscaping with Oak Trees/Natives: Landowners of property both within and outside of urban areas can propagate new oak trees. Of particular importance are those properties that border existing oak woodland habitat. Improving oak woodlands on these lands could increase the size of existing wildlife corridors*. Organizations that encourage landscaping with native plants/trees on private and public land will be encouraged and supported.*

Improve Oak Regeneration on Grazed Lands: Cattlemen and women around the county have already taken part in Native Tree Committee, UC Extension, and the Natural Resource Conservation Service programs to enhance the oak woodlands on their properties. *These voluntary programs will be encouraged and enhanced to reach a wider range of landowners.*

Purchase Conservation Easements: Easements that protect oak woodland habitat can be purchased. There are a variety of local, state and national groups that participate. Some seek to purchase the property outright, while others may promote maintaining the properties as "working lands" allowing continued grazing, hunting and other activities. *The County will encourage and support efforts by non-profit and other conservation organizations to protect agricultural lands and maintain agricultural production.*

A Note Regarding Easements: Competition for conservation easement funding can be high. Because of this, funders look to get the most "bang for their buck". Properties that are most competitive may contain unique biological resources, and/or border other properties that are under public ownership or have conservation easements. Parcels that "fill in the gaps" between protected parcels are also valued. These pieced together parcels are often greater than the sum of their parts because they provide wildlife corridors and protect oak woodlands from the impacts of fragmentation. Map 2 in Appendix A shows the relationship between publicly owned lands and oak woodlands in the county. Currently approximately 80% of SLO County's oak woodlands are held in private ownership.

Local Organizations Involved with Oak Woodland Conservation

The following groups have local offices and can work with local landowners to conserve and/or improve oak woodland habitat:

The Native Tree Committee of SLO County: This committee was established in 1997 and works with local landowners who are interested in improving oak regeneration on their property. ***Contact:*** *Dick Montague, 238-0653.*

The UC Cooperative Extension/Integrated Hardwood Range Management Program/Master Gardner/Farm Advisor: Their mission is to maintain, and where possible, increase acreage of California's hardwood range resources to provide wildlife habitat, recreational opportunities, wood and livestock products, high quality water supply, and aesthetic value.

Regional cooperative extension specialists are located throughout the State to develop applied research and outreach programs addressing conservation of hardwood rangelands with local Cooperative Extension offices and various agencies and interest groups. The Extension program also develops newsletters and educational materials. ***Local Contact****: Bill Tietje, 781-5938.*

The University of California Cooperative Extension Master Gardener Program is a voluntary educational program. The purpose is to teach people more about home horticulture and to effectively extend the research-based information produced by the University to the public. The Master Gardener role is primarily that of "educator". ***Contact****: Mary Bianchi: 781-5939.*

In each county within the state, including SLO, UCCE farm advisors are designated as university contacts, extending useful technical, and economic research-based information to agriculturalists and others. Advisors provide leadership on local subject matter and expertise in assigned areas to help determine, evaluate and solve clientele problems.

The California Rangeland Trust: The California Rangeland Trust is governed entirely by ranchers – men and women who understand the importance and challenges of maintaining working landscapes. The Rangeland Trust works closely with rangeland owners to protect and enhance the environmental and economic benefits that these working landscapes provide. In addition to drawing on the expertise of its Board of Directors, the Rangeland Trust has relationships with advisors from private industry, the University of California, government agencies and other land trusts. Their greatest advantage is that landowners have the confidence that the Rangeland Trust understands their concerns and will work with them to effectively protect and improve the environmental quality of their ranches and the economic stability of their ranching operations.
Local Contact: *Steve Sinton, 238-9495*

The Land Conservancy: The Land Conservancy of San Luis Obispo County is a local land trust working in San Luis Obispo County, California. Their mission is to protect land having scenic, agricultural, habitat and cultural values. They do this through land acquisition, conservation easements, and resource restoration. As a local land trust, they are part of a 100-year old nationwide tradition and their approach is time-proven. ***Contact:*** *Ray Belknap, 544-9096*

The Nature Conservancy: Their mission is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. They protect lands by purchasing them outright, acquiring conservation easements, and funding other conservation trust funds***. Local Contact****: Anne McMahon, 544-1767*

The Natural Resource Conservation Service: Farmers, Ranchers, and other conservation-minded agricultural producers, rely on NRCS for assistance through conservation programs and technical information to help them protect the natural resources on their land. Local USDA Service Centers help plan and install the best conservation practices for each individual piece of land. Ag producers also work with their partners, locally led Resource Conservation Districts (RCDs), who strive to increase voluntary conservation practices among farmers, ranchers and other land users. ***Local Contacts****: Margy Lindquist 434-0396 (Templeton Office); DJ Funk 434-0396 (Upper Salinas-Las Tablas RCD Office); Malcolm McEwan 772-4391 (Coastal RCD Office, Morro Bay).*

California Department of Forestry: The Department of Forestry and Fire Protection (CDF) protects the people of California from fires, responds to emergencies, and protects and enhances forest, range, and watershed values providing social, economic, and environmental benefits to rural and urban citizens. The Department's Fire and Resource Assessment Program (FRAP) assesses the amount and extent of California's forests and rangelands, analyzes their conditions and identifies alternative management and policy guidelines. ***Local Contact****: Ben Parker 543-4244*.

The Next Step

Private landowners interested in conserving and enhancing the oak woodlands on their property can contact one of the local organizations mentioned previously for “no strings attached” assistance. Some of these organizations already have funding available for oak woodland conservation efforts and/or may be able to work with the landowner to identify other funding sources such as the Oak Woodlands Conservation Program. Conservation projects can be large or small, and based on the location and size of the property could include:

- Developing alternative grazing practices that can improve the oak woodlands on your property,
- Selling or donating the development potential for your property,
- Enhancing oak woodlands by planting and maintaining oak trees and eradicating nonnative, noxious plants,
- Using all or part of your property as a part-time research or public education facility
- Enhancing stream and creek corridors through revegetation and grazing management,
- Improving wildlife habitat in oak woodlands by installing bird boxes,
- Maintaining oak woodlands while intensifying the agricultural productivity of your land.

Public agencies and nonprofit organizations can help conserve oak woodlands by continuing public education and outreach, planning for oak woodland conservation. The contributions of these organizations should include:

- Identifying those oak woodlands most susceptible to conversion to other uses
- Consistently re-evaluating local oak woodland health
- Purchasing conservation easements and/or properties from willing landowners
- Improving/enhancing public education and outreach campaigns
- Improving outreach to local landowners who may be critical to long-term oak woodland conservation
- Providing technical and financial support to landowners interested in improving oak woodlands
- Encourage public agencies to continue implementing policies that favor oak woodland conservation.

Conclusion

San Luis Obispo County is home to a wide variety of oak woodland habitats. These habitats provide numerous economic and environmental benefits on both a local and regional level. Historically oak woodlands have provided a foundation for livestock grazing, habitat for a variety of plants and animals, helped purify the water we drink, and filter the air we breathe.

During the last century local oak woodlands have been most substantially affected by:

1. Tree removal for urban development, agriculture, charcoal and firewood
2. Introduction of nonnative, competitive plants
3. Excessive livestock grazing, and
4. Conversion from grazing to more intensive uses such as crop production and urban development.

As the local population increases and the long-term economic feasibility of livestock production remains in question, pressures on local oak woodlands will continue. The challenge for San Luis Obispo County is twofold:

1. To conserve our existing oak woodlands, and
2. To enhance those woodlands that may have been impacted in the past.

Efforts to do both of these things are underway in San Luis Obispo County and have been successful on private and public lands. However continued efforts are necessary to ensure that our existing oak woodlands remain for future generations.

Appendix B: References

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