



The silhouette of valley oaks (*Quercus lobata*) in tulle fog in Sonoma County's Valley of the Moon. Photograph by David Cavagnaro.

SAVING SOMEONE ELSE'S OAKS

by Lynn Huntsinger and Richard B. Standiford

Large-scale conservation of California oak woodlands depends on the goals, practices, and futures of private rangeland landowners in California. Sweeping changes in land use have the potential to alter irrevocably the landscape of the state. More than eighty percent of the 7.4 million acres of oak woodland are owned, for the most part, by individuals who use their land for earning income and to support a way of life. The decisions these landowners make over the next few decades, and the markets and institutions affecting these decisions, will determine the fate of most of the oak woodlands in California. In 1986 the University of California and the California Department of Forestry and Fire Protection started an ambitious ten-year program of extensive education, research, and monitoring to address concerns about the sustainability of the state's oak woodland resource.

Oak woodlands, whether in small parks or on wildland, can provide rich and diverse scenery, wildlife habitat and settings for recreation. But a critical part of their value to both Californians and wildlife lies in what might be termed their "extensiveness." While oak woodlands have all but disappeared from California's

valley lowlands, vast and mostly contiguous expanses of foothill oak woodland remain today throughout the state. This is because over the last two hundred years the owners of foothill woodlands have commonly used their land for extensive livestock grazing, rather than more intensive crop production or development. But accelerating state growth means that this realm is now increasingly fragmented by development for residential use and intensive agriculture. Even if funds for public acquisition of oak woodland preserves were to grow enormously, a few more parks would not halt this fragmentation.

Oak woodlands produce about one-third of the forage used by the state's range livestock industry. The owners of large ranching properties have often held the land for more than one generation, and take pride in their land stewardship. While there is no doubt that occasional cases of abuse have occurred and that some will continue to occur, for the most part it is the stewardship of this privately-owned resource by individuals and families that has shaped today's oak woodlands. Finding the means to influence the future management and use of these woodlands is an important prerequisite to long-

term conservation of oak woodlands in California. The Integrated Hardwood Range Management Program, a cooperative effort spearheaded by the University of California and the California Department of Forestry and Fire Protection, uses the tools of education, research and communication to encourage oak woodland landowners to make decisions that will benefit both the oak woodlands and themselves.

Land Ownership Patterns

Because of the pattern of settlement of California, today more than half of the state's forests and deserts are in public ownership. Twenty percent of forestlands and nine percent of desert lands are in reserve status, managed for wildlife, recreation, or research. On the other hand, the majority of California's grasslands and woodlands were claimed by settlers of European origin: first by the recipients of Spanish and Mexican land grants, and then by squatters and homesteaders in the wake of the Gold Rush. Lowland valleys were converted to cropland agriculture, while the foothills, with shallow soils and steep slopes, remained grazing land. Only four percent of these grasslands and woodlands are in reserve status.

Some rural counties are among the fastest growing in the state. One consequence of population growth in rural areas is the subdivision of large properties traditionally used for grazing. While less than one percent of deserts and forests have undergone conversion to urban or agricultural use between 1950 and 1980, seven percent of oak woodlands have. The major reason for cutting oaks was once forage improvement, but since the 1970s it has been vastly overshadowed by clearing for road and residential development.

Oak Woodland Landowners

Just who are the owners of California's oak woodlands? A 1985 statewide survey of oak woodland landowners indicated that more than three-fourths of the oak woodland is owned by landowners who graze livestock. Among those who own more than 200 acres, ranching is the major source of family income, and in the majority of cases the land has been in the family for more than twenty-one years. The dependence of these landowners on the woodlands for a livelihood is an important consideration in developing programs to reach them.

Rangeland livestock producers tend to believe in absolute private land rights. Those landowners with the largest holdings oppose interference in private rights the most. In the survey, more than two-thirds felt that state regulation "means a loss of liberties and freedom" to the landowner, and few believed oak use should be regu-

lated. At the same time, a majority of the large landowners reported that they were participants in some type of government-sponsored incentive program.

Many ranching families are willing to live on little income in order to enjoy the ranching way of life. For them, the land itself is the majority of the family's financial assets. Even if they do not plan on selling all or part of the land, they believe that it is a reserve source of funding in case of family emergencies and for paying for future needs including the education of their children. The land is also the wealth that they will eventually pass on. Regulation and land-use restrictions limit options, and may reduce the potential value of these assets.

Current landowner management practices are generally conservative when it comes to oaks. About a third of woodland landowners with more than 200 acres reported that they had sold some firewood from their lands. Most agreed that improving forage production was one reason why oaks might be removed, but those with woodlands of less than fifty-percent canopy cover seldom cut oaks for any reason. Indeed, recent research has indicated that scattered oaks can actually increase forage production, especially in dry years. On the other hand, where oaks grow in shrub form, for example as part of the chaparral, landowners are more interested in controlling or removing them. More than two-thirds of the surveyed landowners valued oaks for shade, wildlife habitat, and natural beauty.

Factors Affecting Landowner Decisions

Policies to limit conversion pressures and retain large acreages of oak woodlands will require knowledge of the factors that affect the private owners who manage the resource. A conceptual model of some of the factors affecting management of California's oaks shows that natural, institutional, demographic and economic forces all influence landowner decisions.

The major factor affecting oaks on private lands is increasing subdivision pressure. Almost 14,000 acres of oak woodland have been lost annually over the past twenty years to residential and commercial development. Rapidly increasing land prices in many of the state's oak woodlands have brought about fragmentation of large oak-covered ranch properties. This creates not only a loss of oaks as a part of the development process, but diminishes the habitat value of the residual oaks.

Local land-use policy has major influence on private land oak management. How county general plans zone oak woodland properties will affect land prices and property taxes; increasing land values may, in turn, encourage subdivision. Many counties emphasize the preservation of prime agricultural and timberlands, resulting in subdivision pressure being concentrated on the less productive oak woodland sites. Subdivision has

also brought urban dwellers into closer proximity to ranchers.

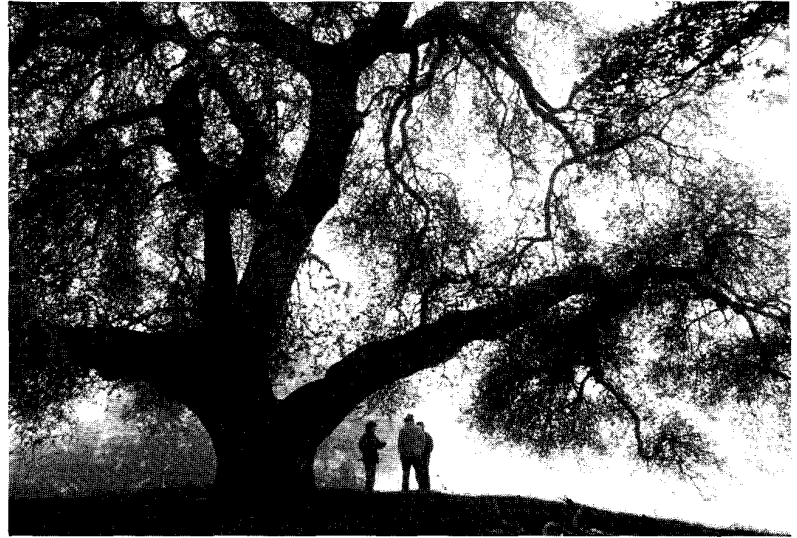
Attitudes of these new neighbors often reflect urban value systems that do not fully accept resource-exploitive management activities such as firewood harvesting, cattle grazing, or range improvement. Differing value systems between neighbors at the ever-expanding urban-rural fringe areas of the state creates new tensions. Over fifty percent of the oak woodland owners in the state report that a subdivision is located within five miles of their property.

Oak tree removal for range improvement has been a major factor affecting oaks on private lands. This type of range improvement activity in the state reached a peak in the 1950 to 1960 era. Rangeland clearing to improve forage production was the major source of oak loss in the period between 1945 and 1973, averaging about 32,000 acres per year. These operations were often facilitated by federal cost-share incentive programs, and recommended by various state and federal technical assistance programs. Since then, however, range clearing has fallen off considerably and now averages only 2,400 acres per year.

Strong firewood markets caused dramatic increases in the price of oak firewood in the mid-1970s and resulted in increased oak harvesting. Firewood prices, however, have remained relatively constant in real dollars during the past eight years. Although accurate estimates of firewood harvest levels are not available, observation shows that harvesting is often used to alleviate cash-flow problems resulting from poor livestock market years.

Fluctuating cattle prices have been a historical source of risk for owners of oak woodlands. This creates great uncertainty on the part of oak rangeland owners. During periods of cattle price downturns, diminished profitability of the cattle enterprise creates additional incentives to liquidate oak woodland resources such as land for subdivision or oak firewood.

Increases in the demand for recreational hunting in the state in recent years, with hunters willing to pay landowners for trespass rights, has created a new market opportunity for owners of oak rangeland. Since the principal upland game species in the state, namely deer, quail, turkey, and feral pig, are all enhanced by stands of oak, then landowners who are able to market hunting rights would be able to capture private economic benefits from the retention of oaks, despite the fact that wildlife species are public goods. The Private Lands Wildlife Management Act of 1984 (AB-580) allows landowners to receive economic benefit from wildlife habitat improvement. Once a habitat management plan is approved by the California Department of Fish and Game, the landowner may be allowed to offer expanded seasons, increased bag limits, and hunting of both sexes of game species.



The coast live oak is a magnificent tree on the hills of Sonoma County. Photograph by David Cavagnaro.

Natural factors such as variability in annual rainfall and other climatic factors, wildlife species, and fire history, all affect California's oaks and management practices on oak woodlands. These factors, combined with grazing practices and range improvement activities, have resulted in apparent poor regeneration of some oak species in certain geographical areas of the state. This has resulted in concern about the long-term sustainability of oaks.

Tools to Encourage Sustainability

A variety of regulatory, incentive and land-use planning programs are in place that can be used to enhance the sustainability of California oak woodlands. In addition, emerging market forces may offer new opportunities for multiple-use management of private oak woodlands that protect public as well as private goods. Federal, state, and local governments, as well as private conservation groups, can influence the use and management of privately-owned oak woodlands. Of course, counties and local governments vary widely in their economic status and in the attitudes and values of their citizens. This means that local regulations, the land-use planning process, and certain county-run incentive programs, such as the California Land Conservation Act (CLCA) of 1965, also vary widely in their application and effectiveness.

There is currently no statewide regulation aimed at conserving oak woodlands. While a body of existing legislation aims at conserving privately-owned forest resources and maintaining timber production, no legislation currently exists with the objective of

maintaining the long-term productivity of rangelands, including oak woodlands, for grazing, wildlife habitat, or other uses. Direct regulatory solutions are only found at the local level, through county and city ordinances, and through land-use planning. It has been argued by some that regulatory programs can sometimes stimulate land conversion by increasing costs to private landowners.

Many statewide programs affect the use and management of oak woodlands indirectly, offering incentives for specific management practices. One of the most influential incentive programs is the CLCA, often referred to as the Williamson Act. Under the act, assessment of property taxes is based on the land's potential for agricultural income rather than on its market value. This is designed to avert land conversion that occurs when speculation-driven increases in property assessments place tax burdens on ranchers that reduce profits below a reasonable operating level. Counties participate on a voluntary basis, and conditions for utilizing CLCA as a land-use planning tool varies considerably from county to county. In 1988 land enrolled as "non-prime," often synonymous with rangeland, was ten million acres. The 1985 survey of oak woodland landowners found that about two-thirds of those with more than 200 acres were enrolled in the Williamson Act. The previously-mentioned Private Lands Wildlife Management Act of 1984 (AB-580) is another statewide incentive program for landowners. About 700,000 acres are currently enrolled in the program.

Land-use planning at the county and local level can be used to protect oak woodlands. Protection of oak woodlands can be built into county and local general plans.

An increased market for oak firewood since the mid-1970s has resulted in significant increases in oak harvesting. Photograph by David Cavagnaro.



Development permits may require developers to protect individual trees or to set aside woodland areas as permanent open space. The open space may be held in trust by the new homeowners, donated to the local government, or managed by a private organization in trust with provisions for funding long term maintenance. In another approach, developers might be required to pay a fee to local governments in order to acquire necessary permits for development. These fees may be quite high, and may consist of a lump sum of money placed in trust to pay for services to the residents of the new development, and to defray any other increased costs to the county or city due to urban expansion. This may result in discretionary funds of many millions of dollars available to the local agency that can be used to acquire woodlands for parks and open space.

Another land-use planning approach is to allow landowners to sell the development rights to their property, either to developers interested in applying the rights to increase development density at another location, or to private conservation groups. This allows landowners to profit from the development value of their land, while directing actual construction to other locations. Some public interest groups work with local government to make decisions about selection of sites for acquisition or development, and to arrange long-term management of lands held in trust or acquired.

A recent study of the effect of current market forces affecting oak woodland management evaluated the interrelationship of livestock grazing, firewood harvesting, and fee hunting. Oak tree clearing operations have been highly publicized and thought to be a likely demise of many oak woodland habitats. However, based on the current and projected market conditions evaluated in the study, there is little probability that ranchers will completely clear their oak trees for immediate liquidation of this capital stock or for range improvement. This study also showed a high correlation between oak canopy levels and habitat for game species. Commercial hunting has the potential to be a dominant factor of production on many oak woodlands. This diversification of ranch portfolios through normal market forces may help decrease the pressure for subdivision by increasing net profits as well as spreading out the risks of production.

The Integrated Hardwood Range Management Program

The Integrated Hardwood Range Management Program (IHRMP) is a non-regulatory program developed by the University of California and the California Department of Forestry and Fire Protection, and was designed to develop basic information on ecology and management of oak woodlands, and to transfer this information to landowners of oak woodlands. IHRMP

activities focus on the key factors influencing California's oak woodlands. The program targets five main areas for research and education: improvement of oak regeneration; maintenance of wildlife habitat; showing the consequences of conversion; development of multiple-resource management techniques; monitoring short- and long-term trends on oak woodlands.

The research program has resulted in a number of significant accomplishments. Understanding of the complexities of site and species interactions in regeneration of oaks is developing rapidly, thanks to research projects carried out in many locations throughout the state. As a result, artificial regeneration success rates for a wide variety of geographical locations and environmental conditions are higher than ever. Knowledge of the effects of environmental characteristics and management practices on natural regeneration is also improved. Studies of wildlife habitat in oak woodlands have established the importance of specific woodland characteristics to a variety of wildlife species and will lead to further evaluation of the effects of management practices. Alternative oak woodland management strategies have been evaluated, with accurate management and economic models developed for the first time. These allow landowners to see the long-term benefits of sound multiple-resource management strategies.

Research results are transferred to landowners through an aggressive education program. Since the fall of 1986, over 11,000 people have been reached by the IHRMP with various educational outreaches including field days, leaflets, newsletters, and various workshops. Twenty-five different county offices of the University of California Cooperative Extension are involved with the IHRMP through an educational effort, field demonstration, or an applied research program.

Program extension activities have been directed to the varied audiences that have an effect on oak woodlands. Programs for the owners of large ranches have emphasized the new market opportunities for recreational hunting, the integration of grazing management with oak regeneration, and methods to assess oak regeneration and wildlife habitat on their property. Programs directed at smaller oak woodland ownerships have emphasized oak tree health, fire protection, and small pasture management. Recognizing the important role of local land-use planning in oak woodland conservation, the IHRMP has targeted planners and developers for outreach activities, emphasizing wildlife habitat requirements in oak woodlands and open space strategies at the urban-rural interface. A handbook for planners describing the values of oak woodlands is in preparation. A preliminary analysis of the impact of education efforts has shown a decrease in the occurrence of oak-clearing operations in the state. For example, in one county alone, oak harvest operations have declined by over 1,000 acres, and oak clearing has stopped being



A coast live oak, heavily browsed by native mule deer, is just escaping at the top. Landowners recently have recognized the value of oaks for wildlife. Photograph by David Cavagnaro.

used as a method of range improvement. Over 1,200 acres of oak habitat restoration in 1988 can be attributed to educational outreach.

The monitoring component of the Integrated Hardwood Range Management Program has recently completed mapping the location of the state's oak woodlands for a statewide geographic information system housed at the California Department of Forestry and Fire Protection's Forest and Range Resources Assessment Program. This has provided an opportunity to evaluate site factors affecting oak woodland distribution, and to identify areas with high risks of loss in the future. Short-term harvest and clearing trends are being evaluated through aerial reconnaissance and local contacts.

The IHRMP is currently establishing a "networking" system to facilitate two-way communication between state and local agencies and various groups with an interest in oak policy. The University of California, the California Department of Forestry and Fire Protection, and the California Department of Fish and Game, as well as a collection of landowner groups, conservation organizations, and local governmental agencies are all participating. County committees that include both state and local level participation have utilized monitoring data to assess local needs for oak woodland resource conservation in a county, and to develop responsive research and extension programs to address highest priority needs.