



FORESTLAND STEWARD

WORKING TOGETHER FOR HEALTHY FORESTS

SPRING 1999

Habitat Sweet Habitat

The opportunity to enjoy wildlife is one of the great pleasures of being a forestland owner. If support for wildlife is one of your goals, a few basic concepts can help.

All animals need four things: food, water, cover, and space. All of this must be available in the proper types and amounts for an animal's health and survival. Each species has its own unique set of requirements which are collectively known as its *habitat*.

Managing for wildlife is based on a simple premise—animals will go where their habitat needs are met. Management techniques involve providing or enhancing those habitat requirements that are in short supply. This might include providing corridors of vegetation, leaving fallen logs in place, building nest boxes, or planting vegetation for food and cover.

Start by deciding what species you want to attract. Since habitat that attracts one species may exclude another, this is

an important decision. You might want to enhance the habitat of a single species such as deer, or a group of species that use similar habitat, or you may want to attract as many species as possible—an emphasis on species richness.

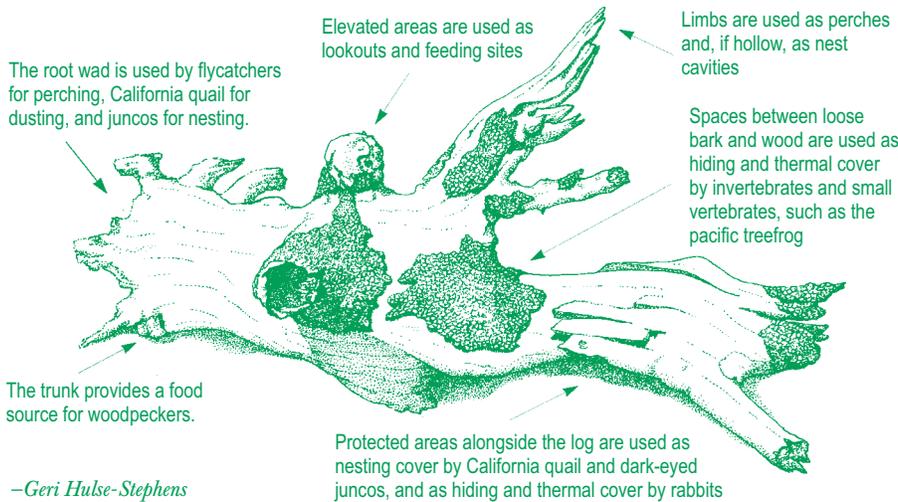
The location of your property, its size, shape, and the animals native to the area will determine the limits of what you can do. Be realistic. If the goal is species richness you will need a large area of land in which to provide a variety of habitats. If you have a small property, it may be best to focus on a single habitat type.

You also need to consider how your wildlife management plans fit in with other goals. If, for example, timber production is your primary goal, your wildlife decisions will be built around that. In addition, plans should be consistent with the need for wildfire protection and other safety issues.

Understanding the habitat needs of the species you want to attract is the key. Some animals use ecotones—edges where one plant community meets another (e.g. where a forest borders a meadow). Others require large unbroken tracts of forestland. And some need different ecological

(see *Managing for Wildlife*, page 9)

Habitats provided by a fallen oak



—Geri Hulse-Stephens

California Dept. of Forestry & Fire Protection
Forest Stewardship Program
P.O. Box 944246
Sacramento, CA 94244-2460

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Interview

An inside look at the 1996 Fire Plan

Can you summarize the most important points of the 1996 California Fire Plan?

There are several key ideas the Board of Forestry and Fire Protection put in the California Fire Plan. They wanted a living fire plan, one that would be “worn out” from use rather than left on the shelf to gather dust. The Board recognizes the role of fire in California’s ecosystems so this plan focuses on reducing costs and losses from wildland fires.

First, they set up a process for “stakeholder” involvement. They recognized that the fire problem in California is big, so they called for a priority-setting process to focus effort on the most important areas. A key is hazard and risk assessment which includes an analysis of society’s assets at risk.

How is this Fire Plan different?

Previous plans tended to focus on the fire protection system that CDF manages and puts into action when fires occur. This new plan uses the fire protection system as a foundation and considers action that can be taken before fires occur.

This new approach opens the door for “pre-fire” projects to set the stage for reduced impact (cost and loss) from fire. A second major difference is the risk assessment built into the new planning process. The implication is that living with the risk and accepting the consequence may be the logical thing to do in some places.

How is planning done?

The planning process starts with a problem assessment. There are about 67 million acres of wildland in California. In an average year, CDF suppresses about 7,500 fires and our federal partners suppress another 2,000 fires. Every year grass, brush, and forestlands grow more vegetation (fuel to a fire fighter). The fire problem is huge and we can’t do every-

thing all at once so we have to find the areas that are most likely to experience a large costly fire and target those first.

CDF does this with a “level of service” analysis. This looks at the ability of the initial fire fighters to contain fires while small, before costs and losses become unacceptable. The result is mapped.

The next assessment considers the flammability of the vegetation (fuel to the fire). Many of our plant communities increase in flammability as they age. This information is also mapped.

A third assessment considers the frequency of severe fire weather. Fires can burn on most days during the fire season, but weather on a few days can be critical. The variation in the weather is mapped.

The public has a stake in the success of the fire fighting effort. They get involved in defining the “assets at risk” part of the problem. Information on fire potential as it impacts the various assets is mapped.

This mapping finds areas with high potential for fire and high impact on the stakeholders. Specific solutions can then be planned. Stakeholders also have an interest in how the projects are planned. The stakeholders and the Board want projects that make sense in the local area.

What does that mean?

The Department of Forestry and Fire Protection doesn’t own the land, they provide wildland fire protection service. The private landowners make the decisions on how their land is managed. Many of the solutions to the local fire problem involve proactive land management. CDF staff works with landowners and the community to find solutions that work for them.

The goal in the Fire Plan is that we target costly damaging fires. These fires are typically large, affecting many landowners and whole communities. This affects a lot of people, not just the landowners. We work with local stakeholder groups to define the problem and the risk



Wayne Mitchell,
CDF Fire Plan Project Manager

and to determine mutually agreeable solutions.

Community stakeholder groups consider trade-offs between costs, environmental impacts, and benefits. CDF has a variety of programs designed to assist landowners, e.g. the Vegetation Management Program, state and federal forest improvement programs, grant programs, etc. There are various ways to get the

(continued next page)

FORESTLAND STEWARDSHIP

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P.O. Box 944246
Sacramento, CA 94244-2460
(916) 653-8286
Fax (916) 653-8957
<http://ceres.ca.gov/foreststeward>

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Seasonal Stewardship

Steps to a Firewise Home

The following can help homeowners develop defensible space:

- ❑ Use noncombustible roofing materials.
- ❑ Create fuelbreaks (vegetation-free strips).
- ❑ Minimize or eliminate tall grass, weeds and dense brush and other highly flammable plants around structures.
- ❑ Remove accumulations of woody debris, leaves, and pine needles.
- ❑ Replace highly flammable plants within the defensible space with fire resistant species, or carefully manage them to reduce flammability.
- ❑ Remove trees, especially highly flammable ones, within 10' of structures.
- ❑ Prune branches that overhang roofs or raise the lower canopy of large specimen trees to provide at least 15' of clearance between the roof, chimney and the tree's foliage.
- ❑ Remove lower tree limbs to a height of at least 10' or maintain a vegetation-free zone beneath the tree's dripline and 10' beyond with herbicides or noncombustible mulch.
- ❑ Selectively remove trees/shrubs to provide adequate lateral clearance
- ❑ Reduce the fuel load within the canopy of trees/shrubs by pruning crowded and dead branches.
- ❑ Irrigate plants to maintain greater fire resistance.
- ❑ Remove vegetation under decks.

—*Fire Safe Landscaping by Bruce W. Hagen,*

Interview *(continued from previous page)*

projects going. The community decides on a course of action that's appropriate.

You keep talking about community.

Yes, that's another key word: "community" as in a group with common interests. We're talking about fire impacting the interests of more people than a single landowner. We're trying to design projects to meet the needs of the community in addition to the needs of the landowner.

How do community groups form?

Sometimes the stakeholders get together and form their own group and they may ask the local fire officials to join them. Sometimes the local CDF unit manager will act as a catalyst and invite stakeholders to a meeting and form a Fire Safe Council. It depends on local community dynamics.

CDF has been working with community groups for quite some time. A renewed

interest came with the Fire Plan and the emphasis on stakeholder involvement.

Has it made a difference?

Yes, I hear of great success stories. A group in Shasta County has been clearing overgrown vegetation from around their houses, chipping the material and hauling it to a biomass plant. A community in Calaveras County had cleared vegetation around their houses when a large forest fire burned into the area; the houses were saved and the fire stopped from going into the next drainage.

CDF would like to do more but our budget and crews are limited. One way to fund projects is with grants but these are not always available to government agencies. Several community groups, Resource Conservation Districts (RCDs) and Fire Safe Councils have filed for tax exempt status and obtained grants for projects.

This is the kind of public/private partnership that can get work done.

Good News! Grant Funds Available!

CFIP—We anticipate renewed funding for the California Forest Improvement Program (CFIP) with significant dollars—approximately \$2.2 million. (Legislature and governor approval is still needed at this time.) Ten percent is proposed for support of local organizations for planning, outreach and education, and for organizing restoration projects in watersheds. The remaining 90% will go to assist landowners in undertaking forest improvement practices on their property. The Request for Proposals for interested watershed groups is expected to be out this spring. Watch for it.

FIP—California has received \$216,000 in Forestry Incentives Program (FIP) funds to aid forest ecosystems devastated by natural disasters such as catastrophic wildfires, drought, and insect and disease infestations.

Call the Forest Stewardship Helpline, 1-800-738-TREE for more information on these programs.

How can people get involved?

Contact your local CDF office or RCD. Check the Internet (*see page 10 for sites*). Getting involved in local groups is really important. They want to hear what you think is important and you get to hear what your neighbors think is important.

How do you feel about the progress that's been made?

I'm pretty excited about the direction the Department is taking. It's very positive, has great potential, and is good for the environment. Fire is a part of our California landscape and together we can learn to live with it. I think we can reduce the negative and enhance the positive that fire creates as an ecosystem process. When I look at how much work there is to do I get frustrated. But when I look at how much progress is being made, I feel pretty good. I think this proactive approach is the best bet for learning to live with fire in California. ▲



Fire Safety

Firewise Landscaping

Bruce W. Hagen

Defensible Space

Roofing material, plant selection, landscape design, and maintenance are the most critical elements in developing a firewise home.

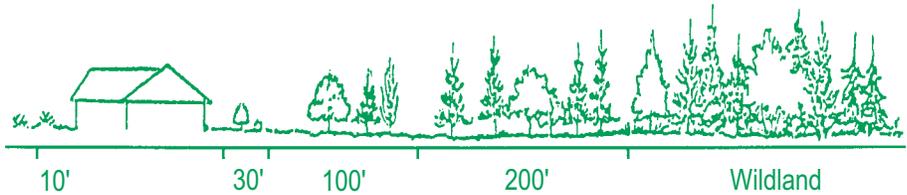
Homeowners can greatly reduce the risk of wildfire by creating “defensible space” around structures. Section 4291 of the California Public Resource Code requires clearing flammable vegetation around structures a minimum of 30 feet, up to 200 feet depending on conditions. Local ordinances may be more stringent. In areas of dense vegetation, at least 100 feet of clearance is needed. However, on hillsides where fire spreads more rapidly and with greater intensity, a clearance of 200 feet or more may be advisable.

The need to be firewise must be balanced with the need for privacy, shade, and aesthetics. Reducing fuel volume and eliminating highly flammable plants in the defensible space is key to being firewise.

The Zone Concept

A practical approach to developing defensible space involves varying the level of fuel reduction, plant selection, and maintenance by zones around the structure. Typically, three to four zones are delineated. The innermost zone within 30 feet of a home is a critical buffer zone between the structure and the surrounding native vegetation.

The intent is to establish and maintain a “greenbelt” of irrigated, low-growing, fire resistant plants around the home. Some ground cover plants gradually lose their fire resistance as their lower, inner branches die. For this reason, it is advisable to prune out dead material and to mow or shear the plants



Plan a zone defense. —from *The Defensible Space and Healthy Forest Handbook* (see p. 10)

periodically to encourage new succulent growth.

Additional protection can be provided by incorporating rock, brick or concrete pathways and patios, masonry walls, lawns, and rock gardens. Irrigation, dead branch pruning, removal of accumulated leaf litter and other woody debris play an integral role in the effectiveness of this zone. Bare soil in the greenbelt can be mulched with 2–3 inches of clean wood chips, fir or redwood bark with little risk. This will help reduce erosion, conserve soil moisture, retard weed growth, and improve growing conditions.

The mid zone, 30–70' from the house, is designed to provide maximum fire protection; it should contain mostly low growing, fire resistant plants. Some well-spaced, fire resistant trees can be maintained. Plants in this area should be drought tolerant; periodic irrigation will increase their fire resistance.

More native vegetation can be maintained in the outermost zone, although dense brush must be cleared and crowded trees thinned. Ideally, trees within this zone should be spaced 20–40' apart to prevent lateral fire spread. Prune off all lower branches within 10' of the ground. The removal of dead branches and trunk sprouts in the lower crown is also desirable. Space shrubs about 10–20' apart, depending on size. Small groupings can be maintained. Stagger tree placement and

space irregularly to avoid alignment resulting in a continuous fuel supply.

Plant Selection

Most conifers are quite flammable, but some, like pine, incense cedar, and juniper are extremely flammable. Many species of eucalyptus and acacia are extremely flammable as well, due to their volatile oils and resins. Species with shedding bark and heavy litter drop are particularly hazardous because fire can spread more easily up the tree.

Plants considered to be highly flammable must be kept pruned-up, thinned out, free of litter and peeling, loose bark, well irrigated and at least 10 feet from any structure. Better yet, remove them.

Many native and Mediterranean plants are well suited for firewise landscaping. Base selections on slope, exposure, available space and tolerance to shade, sun, wind, and drought. The oil-to-resin content, water and mineral level and production of fine fuels (large surface area per unit volume) determine the degree of fire resistance. Local fire agencies can provide fire resistant plant recommendations and other firewise literature.

Ultimately, homeowners must accept the risks of living in the wildlands, and take appropriate measures to protect their lives, homes, property and surrounding environment from wildfire. ▲



Fire Resistant Trees and Shrubs

Ray Moritz

Species selection and maintenance practices are key to developing a firewise landscape. Although all plants are flammable under the right conditions, the following practices may decrease their flammability and reduce their accessibility to fire:

Select species and varieties that are fire resistant:

- ◆ Plants that are well-adapted to the local climate, microclimate, aspect, slope and local environmental conditions.
- ◆ Plants with low fuel volumes: low growing, limited spread, and “clean”
- ◆ Plants that are deep-rooted and proficient at water uptake
- ◆ Plants with relatively fire resistant foliage:
 - ❖ deciduous trees and shrubs.
 - ❖ trees and shrubs with large, fleshy leaves.
 - ❖ trees and shrubs lacking volatile chemicals, oils, waxes, etc.

Increase fuel moisture:

- ◆ Place trees and shrubs near natural water sources, e.g., moist soils, seeps, springs, ponds, streams, seasonal or ephemeral drainages, etc.
- ◆ Cultivate, amend and mulch the soil surface surrounding plants to enhance water penetration, retention/storage, reduce evaporation and to prevent compaction. Use permeable materials for drives, walks and patios.
- ◆ Place trees and shrubs in or adjacent to areas that are currently irrigated.
- ◆ Deep irrigate trees and shrubs every 20 to 30 days during the fire season.

Maintain plant health and vigor:

- ◆ Avoid crowding and over-competition for available soil, water and nutrients.
- ◆ Remove unhealthy, dying or dead

plants, and prune out dead branches and foliage.

- ◆ Treat pests and diseases promptly and monitor for recurrence.
- ◆ Fertilize and irrigate plants as needed to maintain vigor.

Disrupt the horizontal and vertical continuity of shrub and tree fuels:

- ◆ Separate shrubs and shrub islands by a distance of no less than two times their height. Limit island groupings to 18 feet diameter. Thin shrub cover to less than 1/3 of the area.
- ◆ Place only fire resistant, low growing (less than 18") shrubs under trees.
- ◆ Raise tree crowns to at least 10 feet above grade or to a maximum of 1/3 of their height.

Privacy screens. Although aesthetically desirable, they can be hazardous in four ways:

1. They interrupt the flow of wind, forming a partial vacuum, causing turbulence on the leeward side that draws “firebrands” down onto homes and decks.
2. They provide a highly dense fuel cluster, often with much deadwood from crowding and shading of internal and lower branches.
3. They typically are composed of species that maintain their lower branches which form a ground-to-crown, vertical “ladder fuel” architecture.
4. They are often composed of highly flammable (pyrophytic) plants.

Staggered planting provides screening while maintaining plant spacing

TREES

- ◆ When thinning out trees, remove dying and dead trees first. Then thin

out or “clean up” trees with excessive deadwood. Next, thin highly flammable species (needle leaf and blade leaf trees with volatile leaves.)

- ◆ Tree crowns should be separated by at least ten feet. Add five additional feet for every ten percent increase in slope (10 feet of separation on slopes 0 to 10%, 15 feet of separation on slopes from 11 to 20%, 20 feet on slopes from 21 to 30%, and so forth).
- ◆ Raise all tree crowns at least ten feet above soil grade.
- ◆ Thin tree crowns (up to 25%) to reduce total fuels.
- ◆ Remove dead branches and large areas of dead foliage, all vines and loose, papery bark.
- ◆ Remove flammable undergrowth and woody debris.

SHRUBS

- ◆ Separate individual shrub crowns by two times their height, or group shrubs into islands less than 18 feet in diameter, and separate the islands by a distance of no less than two times their canopy height.
- ◆ When thinning brushy areas, remove dead, dying or stressed shrubs first, then the highly flammable shrubs, e.g., highly twiggy shrubs, shrubs with small woody leaves, shrubs with volatile oils (smell them!). The shrub cover should not exceed 30 percent of your defensible space landscape.
- ◆ Remove dead, declining or diseased branches. The maximum dead to live ratio is 20 percent.
- ◆ Limb-up shrubs (raise the skirt), but no greater than one-third their height.
- ◆ Remove all vines, papery bark or other debris in the crown.
- ◆ Remove or mow undergrowth to 3", and remove all loose, woody debris.

Ray Moritz is a fire ecologist and urban forester in Marin County. ▲



Archaeology

Stewards of the past



California is rich in history—from the earliest inhabitants with no written records to Spanish settlements and Gold Rush activities. Much of the record of the past, especially the prehistoric past, lies in the ground. These sites contain information that is precious and irreplaceable. There is concern, however, that this information is rapidly disappearing, often destroyed inadvertently through activities that could be avoided with proper knowledge and care.

Landowners who have historic or prehistoric sites on their property are the stewards of the past. In their safekeeping is the guardianship of these records for future generations to have the opportunity to learn from and experience history.

Landowner responsibility goes one step further. Knowledge of the past is considered part of the heritage of all Californians. For this reason, cultural resources are protected by law.

Protected resources include both historic and prehistoric artifacts as well as locations of cultural significance to local Native Americans which do not necessarily have visible artifacts or features. Important heritage values may include logging camps, emigrant trails, homesteads, Gold Rush era mining towns and features; prehistoric archaeological sites such as ancient Native American villages, campsites, milling stations, quarry locations or petroglyphs; or other specific locations of significance such as sacred peaks, ceremonial dance grounds, trails, guardian trees, cemeteries, gathering areas, or other sacred places.

Where to look

Sites are generally found in predictable locations although it's important to be aware that there are exceptions.

Most prehistoric sites occur near sources of fresh drinking water—springs, seeps, drainages, streams, rivers, or

ponds. Where streams meander through alluvial valleys, the most likely location is often back on the edge of the hillslope on slightly higher ground rather than directly along the stream.

Archaeological sites in California forests often occur in or along the margins of natural openings, especially those with water sources nearby. Sites may be found along ecotones, those edges where different plant communities come together.

Regional patterns vary—the most

**Knowledge of the past
is part of the heritage
of all Californians.**

obvious indicator of archaeological sites may be Franciscan chert in northern California or bedrock mortars in the Sierra Nevada. It is important to determine the characteristics of sites in your area—common artifacts, location, type of art, and other patterns.

A typical Sierran site may contain a midden deposit, numerous bedrock mortars on granite exposures, surface artifacts, and perhaps rock art. The presence of nearby oak trees is also a good indicator of archeological sensitivity as they provided Native California people with their staple food—acorns.

Statewide, one of the best ways to identify an archeological deposit is by learning to recognize middens. Middens are refuse heaps that may contain items such as broken tools, burned bones, charcoal, waste flakes, cooking stones and broken equipment. There may also be chipped stone flakes from the manufacture of tools. Rodents often burrow into

midden deposits resulting in black back-dirt piles that allow identification.

Look for a lens of dark soil in cut banks for possible buried deposits. Not all dark soil is midden. False middens may be formed near springs and under oak groves but middens can usually be identified by the following:

- ◆ localized soil color change
- ◆ an ashy, greasy feel
- ◆ dark film of fine sticky dust sticks to the hands if the soil is dry
- ◆ occurs in areas such as stream terraces, near springs, on ridgetops, etc.

Another important indicator of archeological resources are housepits. These circular depressions are remnants of structures or dwellings, usually found in open areas in the oak woodland as well as forests. Characteristics include:

- ◆ occurrence as a cluster of pits on a flat bench near water.
- ◆ midden and/or artifact scatters.
- ◆ earthen rim may be present.
- ◆ large rocks sometimes found inside the pits or around its perimeter.

Housepits may exceed 50' in diameter (dancehouse or roundhouse) but the typical dwelling is 10–15'. The most common type in California forests is the small family dwelling, 6–8' diameter and 1–2' deep. Housepit depressions in northwestern California are usually rectangular.

Another archeological feature is prehistoric rock art. These can be petroglyphs (designs pecked, scratched, or ground in rock surface) or pictographs (painted designs).

In the Sierra Nevada, bedrock milling stations can be found. These are circular holes or depressions ranging from 3–6" in diameter that generally occur in clusters on flat-topped rocks, boulders, or outcrop-



pings. These bedrock mortar panels may be concealed by dirt or forest debris. Pestles, triangular or roughly cylindrical cobbles that exhibit wear on their end(s), may also be present. In addition, there may be grinding basins or metates seen as oval depressions with polished surfaces.

Map Review

There are many historical clues to be found by examining a 7.5' USGS quadrangle.

- ◆ Archeological sites within California forests usually occur in three main topographic settings: stream terraces, mid-slope benches, and ridgetops.
- ◆ Flat areas along streams are excellent locations for sites.
- ◆ Prehistoric sites often occur where two streams come together, especially the point of land immediately upstream from the confluence.
- ◆ Give extra attention to trending ridges, which prehistoric people used as travel routes through the mountains.
- ◆ Look for springs near ridgetops or ridgetop saddles. A ridgetop saddle is a low, flat area between two points of higher ground. These provide shelter from wind and also contain water sources and vegetation.
- ◆ Look for place names such as "Indian Bar" and "Arrowmakers Ridge" etc.
- ◆ Historic mines and ranches are sometimes shown on quad maps. These places may be historic homesteads in addition to camping places chosen by Native Americans as the best flat area near water.
- ◆ The margins of interior valleys are particularly sensitive since major prehistoric villages were often established there.

For more information on CDF's Archaeology Program or the Forest Practice Rules for the Protection of Cultural Resources, visit the CDF website at http://www.fire.ca.gov/cdf_archaeology.html.

Special thanks to Dan Foster, CDF Senior State Archaeologist, for providing the information for this article. ▲

Archaeological Rules and the THP

Timber harvesting activities involve ground disturbance that can damage cultural resources. To protect these resources, the California State Board of Forestry and Fire Protection has adopted a set of rules that requires an archaeological investigation as part of any Timber Harvest Plan (THP). (Other land uses such as residential development, use of prescribed fire, and forest restoration also require cultural resource evaluation.) The Registered Professional Forester (RPF) who prepares the THP must include a Confidential Archaeological Addendum (CAA) as part of the THP preparation.

There are three main procedures required for the CAA: a check of the state's archeological records, notification of the Indian tribe that occupied the land as part of its traditional territory, and an archaeological survey of the property.

The records check involves a search with the appropriate Information Center of the California Archaeological Inventory to determine if any known sites exist or if the area has received previous archeological study. The local US Forest Service or CDF archeologist should also be contacted for advice on what types of sites are found in the area, sensitivity determinations, and listings of available cultural resource references pertinent to the region. In addition, the landowner, property manager, or other knowledgeable individuals or neighbors should also be asked if any artifacts or sites have been found on the property or nearby.

The RPF is required to submit written notification of a proposed THP to local Native American groups and individuals listed on the Native Ameri-

can Contact list provided by the Native American Heritage Commission (NAHC). This notification contains specific elements including a scaled map with the project boundary, vicinity background, name of USGS quad map, etc. The notice requests information on the existence of any cultural resource sites that may be affected by the proposed operations.

An archaeological survey of the THP area must be conducted by a professional archaeologist or a person with archaeological training (often the RPF).

If sites are identified, appropriate protection measures are developed and incorporated into the THP. It is often possible to protect cultural sites at little or no impact to the landowner. With careful planning, the timber harvest can go ahead with some adjustments to avoid the site.

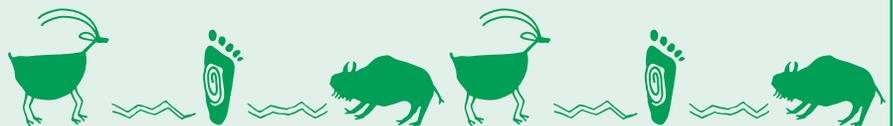
All written comments, including those on cultural resources, must be considered and responded to by CDF before THP approval.

Confidentiality

One concern over site identification is an increased incidence of looting and vandalism. To avoid this, site identification is treated as confidential with reports kept to a minimum. Locations of cultural sites are not released to the public. Instructions to timber operators are conveyed through on-the-ground meetings rather than maps or written documents.

Post-Review Site Discovery

If an archaeological or historical site is discovered during timber harvest, the harvesting in that area must stop while CDF is informed. An archaeologist will evaluate the site and protection measures may be amended into the THP.



Out on a Limb

Hot issues in forest planning

Gary Nakamura

UC Cooperative Extension Forestry

There are a number of forest planning and policy issues that should be of interest to you as citizens and as non-industrial forest landowners in California.

In the Sierra Nevada, there are two USDA Forest Service planning exercises underway.

Sierra Nevada Framework

The Sierra Nevada Framework for Conservation and Collaboration (Framework) is an effort to integrate new science into forest plans for Sierra Nevada national forests. Though primarily a planning effort for the national forests, private forest landowners should be involved because "Another objective of the Framework will be to bridge planning processes between Federal, State, County and community levels...by providing range-wide coordination....



This project will explore how to better integrate planning among agencies and involve the public and local interests in setting future directions." Thus, a series of public meetings were conducted this past fall and winter to gather input on two questions:

- ◆ Is there other new science relevant to Sierra Nevada national forest management that was not considered in the Sierra Nevada Science Review?
- ◆ In light of the Science Review and other new information, what changes would you suggest for management direction on the Sierra Nevada national forests?

Based on these and other discussions, the Forest Service issued a Notice of Intent (NOI) on Nov. 16, 1998 which said five problem areas will be the focus of the Framework: Old Forest Ecosystems and Associated Species; Aquatic, Riparian, and Meadow Ecosystems; Fire and Fuels; Noxious Weeds; and Low Elevation Hardwood Forests.

Comments on the NOI will be analyzed, and in March 1999 a Draft Environmental Impact Statement (DEIS) will be published, followed by a 90-day public comment period. Based on the DEIS and comments, the Regional Forester will issue a final EIS and Record of Decision which will then be used to amend national forest plans from the Modoc through the Sequoia national forests. The DEIS will be available on the Internet, <http://www.r5.fs.fed/sncf> or from Rick Alexander at 916 492- 7554.

Quincy Library Group

The other planning effort is the Quincy Library Group plan, officially known as the Herger-Feinstein QLG Forest Recovery Act (QLG Act). This is a 5-year, landscape scale effort to strategically reduce the fire hazard and improve

the economies of communities of the Plumas and Lassen National Forests, and Sierraville District of Tahoe National Forest.

Though again focused on public forests, there are implications for private forestlands nearby. The QLG Act focuses on a broad strategy of fuel treatments to reduce the threat of catastrophic wildfire for the protection of both communities and resources. The strategy includes fuel treatments around communities, which will involve private forest landowners.

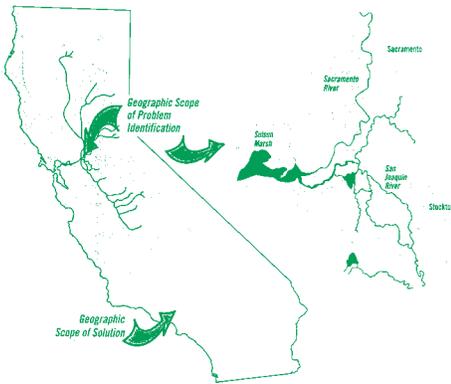
Over the past few years the Forest Service has emphasized the wildland elements of the fuel reduction strategy because there is less landownership complexity. Community protection is expected to receive greater emphasis in the implementation of the fuel treatment strategy because of the recent creation of several Fire Safe Councils. Watch for efforts to involve forest landowners on a voluntary basis in forest thinning near communities for fuelbreak development. More information is available at the QLG website, <http://www.qlg.org>. A DEIS will be published in June 1999 with a 45-day public comment period.

CALFED Bay-Delta Program

The CALFED Bay-Delta Program began in May 1995 to address a number of complex issues—ecosystem restoration, water quality, water supply reliability, and levee system integrity. Though restoration of the Sacramento-San Joaquin River delta between Sacramento and Stockton is the focus of this effort, the entire Sacramento and San Joaquin River watersheds supplying water to these rivers and delta will be involved in the resolution of its problems.

The forests of the westside Sierra Nevada contribute the bulk of the water for this system and thus public and private forest landowners will be affected by





CALFED Bay-Delta Area

this program. The CALFED Watershed Program will be making recommendations on appropriate goals and objectives people in watersheds can address. Local people can identify the types and locations of watershed improvement projects which support these CALFED objectives. Such projects might include fuel reduction projects to reduce wildfire hazard and the resulting soil erosion as well as meadow restoration to improve water infiltration.

A Draft Environmental Impact Statement (DEIS) will be issued in mid May 1999, followed by at least a 60-day public comment period. Those comments will be considered and incorporated in a final EIS by December, 1999. To obtain copies of CALFED documents (there are a lot) contact the public information line at 1-800-700-5752 or <http://calfed.ca.gov>. To get involved in the Watershed Management Work Group, follow the instructions for Public Meetings at the 1-800 number.

TMDL

The U.S. Environmental Protection Agency's TMDL (total daily maximum load) program addresses nonpoint source pollution on a watershed scale in those waters that do not meet the Clean Water Act goal of being swimmable and fishable. Pollutant types and potential sources (agriculture, municipalities, forestry, grazing, etc.) are identified in the affected watershed, pollutants are given priority rankings, and sources are assigned a percentage of the pollution they are determined to be contributing. Targets

Managing for Wildlife *(continued from page 1)*

habitats in different seasons or life stages.

Animals divide up the environment in complex ways. Landscaping plans should emphasize diversity in structure and composition with a great variety of types, sizes, heights, ages, and densities of vegetation. This will allow more species to share the same area.

Water is essential to wildlife. Some of the most valuable habitat includes rivers, streams, springs, and other wetlands. The riparian vegetation that borders streams and rivers is also essential—for food, nesting, cover, shade and much more.

While you're helping wildlife, remember that the benefits go both ways. A healthy, diverse fauna provides many functions needed to maintain a healthy forest. One important "job" done by wildlife is insect control; birds, bats, even bears are insectivorous and help keep the insect populations down. Animals—primarily birds and insects—are also necessary for pollination. Wildlife aids in seed dispersal. Squirrels bury acorns, in effect planting oak trees. Burrowing animals such as rodents turn over the soil and recycle nutrients. By supporting wildlife, you are doing your part to enhance these vital ecological processes.

And don't neglect the non-fuzzy creatures. Amphibians, reptiles, and insects all have important roles in the ecosystem and should be valued and protected.

Since animals don't recognize

property boundaries, be aware that your activities will affect your neighbors. Communicate with them; you might even work together on a wildlife enhancement project.

The following are some general suggestions for encouraging wildlife. Your own management choices will be based on your specific property and goals.

- ◆ Plant trees and shrubs that produce food such as berries, nuts, and acorns.
- ◆ Provide and maintain corridors of habitat between tracts of land, especially those that connect to water.
- ◆ Construct brush piles to give cover to small birds and mammals.
- ◆ Retain or create dead or dying trees (snags) for the many birds, mammals, and insects that need them. Snags should be at least 4" dbh (diameter at breast height) and 6' tall.
- ◆ Choose a variety of native plant species to provide different heights and cover.
- ◆ Retain downed logs on the forest floor.
- ◆ Protect vegetation along waterways.
- ◆ Thin forest stands to allow sunlight in to stimulate plant growth.
- ◆ Talk with a wildlife biologist about habitat needs or learn through your own careful observations.



are then developed for a pollutant in that water body and for the amount of reduction required by the potential sources.

The current focus is on watersheds in the coastal counties of California, but this program impacts all water bodies determined to be "impaired". TMDLs are set by the EPA, but the decisions on how water quality is improved and how TMDLs are achieved is up to the state Regional Water Quality Control Boards. In the Garcia River watershed, where sediment TMDLs have been established, forest practices will be regulated over and

above the requirements of the Forest Practices Act (e.g. timber harvesting is not allowed within 25 feet of any Garcia body of water and there will be retention of large conifers along water courses to recruit woody debris for the channel). The ranching communities in the Garcia watershed are working with the UC Coop. Extension to develop ranch water quality plans, including sediment budgets, in order to meet the requirements in the TMDL. For more information on TMDLs and EPA's water programs, visit <http://www.epa.gov/owow/tmdl>. ▲



Resources

Cost-share for Prescribed Burns

The Vegetation Management Program (VMP) is a cost-sharing program that encourages the use of prescribed fire to control unwanted brush and other vegetation which creates wildfire hazards. Besides decreasing wildland fire potential, burning can improve wildlife habitat and watershed values.

Private landowners—individually or in groups—enter into a contract with CDF to develop a management plan with consideration of follow-up treatments to enhance the effects of the burn.

CDF covers the liability, plans for, and conducts the burn. In the event the

fire escapes, the State acts as leader and agrees to hold the landowner harmless.

The landowner pays a percentage of the cost of the burn based on the benefits accrued to the landowner and the benefits to the public in general. Cost also varies depending on the size and complexity of the burn.

Implementation of VMP projects is done by Ranger Units. Priority is given to those projects that fit within a unit's priority areas (e.g., those identified through the Fire Plan) and those considered to be of most value to the unit.

For more information on this program, contact your local CDF Ranger Unit. ▲

Websites to Help Make Your Property Firewise

There is an immense amount of information available to help in planning for a firewise home and community.

The excellent *Defensible Space & Healthy Forest Handbook* is no longer in print but don't despair. This guide to reducing the wildfire threat in the Sierra Nevada foothills is now available at <http://www.firesafecouncil.org> where it can be downloaded and adapted for other locations.

The Fire Safe Council has a great site at <http://www.firesafecouncil.org/>. Learn how to form your own Fire Safe Council at <http://www.firesafecouncil.org/actionguide.html>.

Firewise is another goldmine of information at <http://www.firewise.org/>.

The Fire and Resource Assessment Program (FRAP) has all the technical information you need on any aspect of fire (presented in a friendly, readable manner). Go to <http://frap.cdf.ca.gov/>. Numerous publications on California fire issues can be found at <http://frap.cdf.ca.gov/publications.html>. ▲

Technical Assistance Resources

Many agencies are available to provide technical assistance, referrals, information, education, land management plan assistance, and advice.

California Stewardship Helpline (800) 738-TREE

California Department of Forestry and Fire Protection

Forestry Assistance Program
Jim Geiger
(916) 653-8286
jim_geiger@fire.ca.gov

California Association of RCDs

Thomas Wehri
(916) 447-7237
carcd@ns.net

California Resources Agency: California Environmental Resources Evaluation System (CERES)

Deanne DiPietro
(916) 653-8614
deanne@ceres.ca.gov

Farm Service Agency

Larry Plumb
(530) 792-5520

Natural Resources Conservation Service

Jerry Reioux

(530) 792-5655
(209) 946-6229
jerry.reioux@ca.nrcs.usda.gov

California Dept of Fish & Game

Barrett Garrison
(916) 653-1738
bagarris@hq.dfg.ca.gov

U.C. Cooperative Extension Forestry

John LeBlanc
(510) 642-6678
jleblanc@nature.berkeley.edu

Richard Harris
(510) 642-2360
rrharris@nature.berkeley.edu

Gary Nakamura
(530) 224-4902
gmnakamura@ucdavis.edu

USDA Forest Service

Sandra Stone
(707) 562-8918
sstone/r5@fs.fed.us

Fire Resistant Plants

While all plants are flammable to some extent, some are more fire resistant than others. There are numerous lists of plant species that afford some measure of fire protection.

One noteworthy example is *Pyrophytic vs. Fire Resistant Plants* published by FireSafe Marin in cooperation with UC Cooperative Extension.

Contact the Forest Stewardship Helpline at 1-800-738-TREE for information and referrals on fire resistant plant species for your area. ▲



Calendar

NOTE: A number of Forest Stewardship Workshops will be offered for forestland owners throughout the spring and fall of 1999. Call the Forest Stewardship Helpline, 1-800-738-8733 for information.

April 27–29, 1999

Fire Ecology of California Oak Communities

San Luis Obispo, CA
UC Davis Extension
800-752-0881, fax 530-757-8558; specific program info 530-757-8878
<lunrinfo@unexmail.ucdavis.edu>; \$320
<<http://universityextension.ucdavis.edu>>

April 28–30, 1999

California Envirothon

Oakhurst, CA
RCDs, NRCS, others
Sharon J. Boyce 209-722-4119, ext. 115
<sharonboyce@iname.com>
High school students and advisors interested in natural resources/environmental educ./competition

April 29, 1999

Regional Workshops to Discuss Proposed Changes to Prescribed Fire Regulations

San Luis Obispo, CA
California Air Resources Board
Terry McGuire 916-322-5350; Bill Wilson 916-324-9747 <wwilson@arb.ca.gov>
County Govt. Ctr. Supervisors Chambers, 1050 Monterey St. <<http://www.arb.ca.gov/smp/notice.htm>>

April 29–May 1, 1999

Forest Landowners of California 1999 Annual Meeting: Responding to Changing Markets

Chico, CA
FLC
Dan Weldon 916-972-0273
<dweldon@forestlandowners.org>
Professionals, academics, general interest
\$75-\$125

April 30, 1999

GIS: An Introduction

Davis, CA
University of California Extension
800-752-0881, fax 530-757-8558; \$215
<<http://universityextension.ucdavis.edu>>

May 1, 1999 10 a.m.

Endangered Species Faire

Chico, CA
Butte Environmental Council
Mary Muchowski 530-891-6424
Cedar Grove, Bidwell Park, Chico

May 6, 1999

Regional Workshops to Discuss Proposed Changes to Prescribed Fire Regulations

Concord, CA
California Air Resources Board
Terry McGuire 916-322-5350; Bill Wilson 916-324-9747; <wwilson@arb.ca.gov>
Contra Costa Co. Farm Bureau, 5554 Clayton Rd. <<http://www.arb.ca.gov/smp/notice.htm>>

May 12, 1999

Art & Creativity in Watershed Stewardship

Location TBA
US Forest Services Rural Communities Dev. Program
Sheli Wingo 707-269-2059 or 707-269-2066 <nrs@rcaa.org>
No charge; call to get meeting details

May 16–19, 1999

6th National Watershed Conference

Austin, TX
John Peterson 703-455-6888

May 18–21, 1999

Short Course on Constructed Wetlands for Water Quality Improvement

Arcata, CA
HSU's Env. Res. Engineering Dept.
Barbara Smith 707-826-3619; \$800
<http://www.olawai.org/short_course_1999.html>

May 22–23, 1999

Licensed Timber Operator Training

Ukiah, CA
California Department of Forestry
Mendocino College Community
Extension 707-468-3063; \$48
2 eight-hour day classes; \$75 license fee payable upon completion of class

May 25–26, 1999

Natural Resource Law for Foresters

Eugene, OR
Western Forestry & Conservation Assn.
Richard Zabel 503-226-4562
<richard@westernforestry.org>
\$295, \$325 after 5/20/99
<<http://westernforestry.org>>

May 26–27, 1999

Our Place in the World 2: A 21st Century Opportunity

Sacramento, CA
Great Valley Center
209-522-5103; fax 209-522-5116
<info@greatvalley.org>
<www.greatvalley.org>

June 5–12, 1999

Watershed Analysis and Restoration

Yuba Pass, CA
San Francisco State University's Sierra Nevada Field Campus
Jim Steele <jsteele@sfsu.edu> Sept-May: 650-738-1814; June-Aug: 530-862-1230; \$530
<http://thecity.sfsu.edu/snfc/watershe.htm>

June 9, 1999

Integrating CALFED Category III Funding Opportunities into Your Agency's Planning Efforts

Davis, CA
University of California Extension
800-752-0881, fax 530-757-8558; \$215
<<http://universityextension.ucdavis.edu>>

June 13–19, 1999

Forestry Institute for Teachers (FIT)

Shasta County
N. Cal. Soc. of American Foresters, etc.
Claralynn Nunamaker 1-800-738-TREE
<ncsaf@mcn.org>
<<http://www.norcalsaf.org/>> <<http://www.humboldt.edu/~csy1/NorCalSAF/FIT.html>>
Educators participate in a 1-week workshop. Call for application.

July 18–24, 1999

Forestry Institute for Teachers (FIT)

Humboldt County
See item above for info.

For more information, call the number given or the Forest Stewardship Helpline, 1-800-738-TREE. To submit an event or to receive this calendar by e-mail, contact Sherry Cooper, shcooper@ucdavis.edu

ONLINE CALENDAR!

You will find a more comprehensive calendar, updated regularly, at the Calif. Forest Stewardship website:
<http://ceres.ca.gov/foreststeward>



Language of Fire

What is a "Fire Hazard"?

David M. Soho

Fire hazard, fire risk, and other similar sounding terms can cause mix-ups in communication. Here is some background to help:

Fire hazard is composed of fire risk, fuel condition, weather, and topography.

Fire Risk

Risk is the chance of a fire starting based on the presence of causative agents such as humans, their equipment, and their facilities.

Past fire in a given area is the most commonly used measure of risk. The influx of humans and equipment into new wildland areas increases risk.

Fuel Condition

Fuel condition is a combination of fuel size, quantity, arrangement, and dead:live ratio. Fuel characteristics help determine how a wildfire burns. The fuel condition determined for an area makes up **fuel hazard** which is not to be confused with **fire risk**.

Fuel size is measured by the number of hours it takes the fuel to reach equilibrium with the relative humidity in the air. One hour fuels dampen or dry quickly. Dead grass is a one hour fuel. Very

small twigs and branches are examples of 10-hour fuels. Branches between 1/4 and 3" in diameter are usually considered 100-hour fuels. Larger branches, logs, and stumps over 3" in diameter are 1000-hour fuels because it takes so long for them to dry out each summer.

Fuel quantity is simply the amount of all fuel sizes located on an area of land. It is usually expressed in tons per acre. Annual grasslands may have only 1/2-2 tons per acre of one-hour fuels. Hardwood brush areas with a mixture of fuels can contain 30-40 tons per acre. Heavy logging slash can contain 40+ tons per acre of mostly 1000-hour fuels.

Fuel arrangement generally refers to density and compactness of fuel. A dry grain field is densely packed as planted by the farmer; it is all standing. Cut and drying hay is lower to the ground and is somewhat compressed or pushed down. A wind-driven standing grain fire will move more quickly than one in cut hay.

Ladder fuels are fuels present between the litter on the ground and the tops of trees; both living and dead. Unlogged logging slash is a ladder fuel, so is standing dead brush mixed in a forest vegetation type.

The **dead:live ratio** is sometimes considered, especially in standing live

brush fields or where groves of trees have a significant amount of dead lower branches extending to the ground. The ratio of dead to live fuel is important because it affects the rate of wildfire spread. Dead fuel hanging on live plants above the ground can ignite easily and spread fire rapidly into the crowns of trees or brush.

Weather

This is a component of fire hazard that humans have no control over. However, we must understand it to understand the effect on fire behavior. Temperature, humidity, and wind are the major components. For example, the hot, dry, swift winds of late summer and fall have had a huge impact on driving the major high intensity destructive fires in our state's history.

Topography

Topography is simply the lay of the land—flat, hilly, or mountainous. Canyons and valleys and their directions—north, south, east, west—have a large impact on fire spread. Rugged topography allows fire going uphill to pre-heat fuels ahead of the fire, causing explosive burning conditions. Fires generally move faster uphill than downhill or on flat terrain under the same weather conditions. ▲

How can the *Forestland Steward* newsletter help you?

I'd like to see more information on _____

My suggestion is _____

Add me to the mailing list / change my address:

Name _____

Address _____

City, Zip _____ Phone _____

Send to CDF, Forestry Assistance, P.O. Box 944246, Sacramento, CA 94244-2460.
Phone: (916) 653-8286; Fax: (916) 653-8957; e-mail: jim_geiger@fire.ca.gov

Many share the path

Many share the path
through the woods.
Each is unique,
yet bound to the others.
The survival of one
is the survival of all.
Go lovingly.
Step lightly.
Many will be
following your footprints.

*Pollyanna Sorenson, teacher
Jan. 11, 1999*