



The Natural Resources Conservation Service  
is your private lands conservation agency.

The USDA Natural Resources Conservation Service (NRCS) is the federal agency that works with private landowners to help them protect their natural resources and keep the watersheds healthy. The agency emphasizes voluntary, science-based assistance, partnerships, and cooperative problem-solving at the community level.

In California, some two-thirds of the private land is made up of agricultural cropland, pasture and rangeland. NRCS conservationists spend much of their time working with farmers and ranchers. The agency also works in close cooperation with Resource Conservation Districts and other community leaders.

NRCS provides landowners with technical and financial assistance to implement conservation practices on their land.

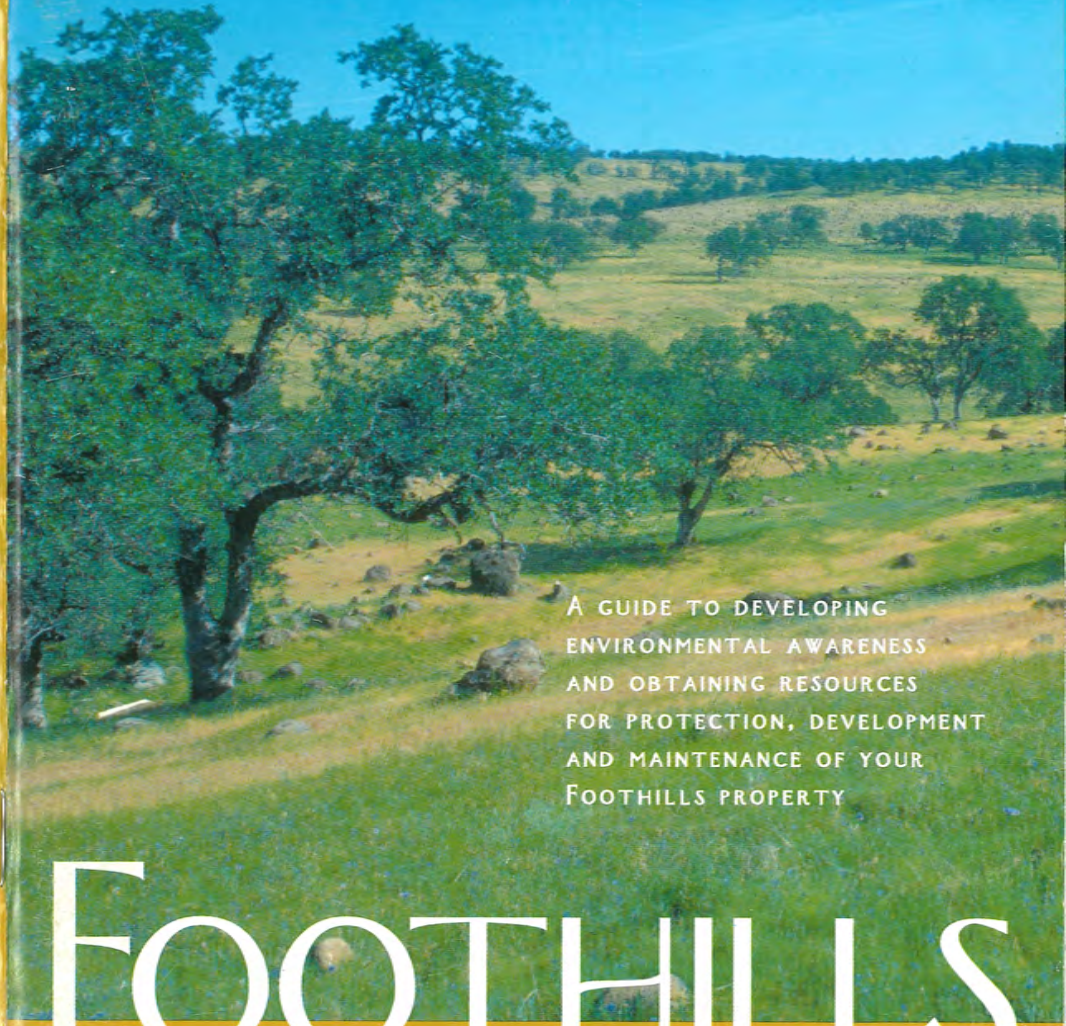
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# LIVING *in the*



A GUIDE TO DEVELOPING  
ENVIRONMENTAL AWARENESS  
AND OBTAINING RESOURCES  
FOR PROTECTION, DEVELOPMENT  
AND MAINTENANCE OF YOUR  
FOOTHILLS PROPERTY

# FOOTHILLS





# SIERRA NEVADA FoothILLS



The USDA's Natural Resources Conservation Service in California created this booklet as a guide towards environmental awareness. Created for those living or moving to the Sierra Nevada Foothills and other foothill areas, the goal is to highlight the environmental benefits and responsibilities associated with living in the foothills. Additionally, this booklet acts as an introduction to the public and private resources available for the protection, development and maintenance of your property. We encourage you to read this booklet and share the information with your neighbors.

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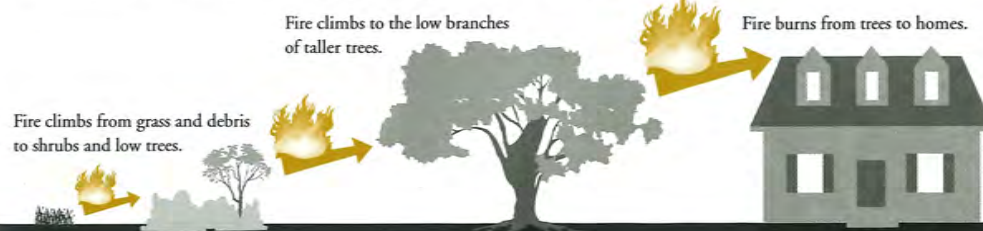
# CHAPTER 1

## FIRE

Living in the California foothills, you are annually at risk from wildfires. The damage and destruction caused by these fires can be devastating. It is important to understand the role fire has in the foothills and how it travels. Through this understanding steps may be taken to prevent loss of human life, property, and wildlife. The issue is not **IF** but when will the wildfire occur.

Fire is a natural phenomenon. It is one of nature's recycling agents and is key to maintaining the natural processes in many wildland ecosystems. In the foothills the decay of woody material is a slow process and dead fuels tend to accumulate faster than they decay. Naturally occurring fires reduce fuel buildup. However the control of natural fires, in an effort to protect our property, has allowed large amounts of fuel to accumulate, creating a landscape primed for larger more dangerous and destructive fires.

The structure of the forest affects how fire spreads. A fire that is started on the ground, where plenty of debris is available, will spread along the ground burning those fuels until it reaches the canopy of low trees or shrubs. The fire will climb up shrubs and quickly rise to the low branches of taller trees. Once the fire has reached the tops of trees it will spread quickly from tree to tree. This is called the **Ladder Effect**. Wind and dry conditions exacerbate the **Ladder Effect**. The flammable materials created by the vegetation are called **Fuels**.



Fire is a natural phenomenon in our California foothills. Realizing this threat, steps can be taken to protect your family and property.





To slow the rate at which fire spreads, and protect property, you should remove potential fuels and a space should be cleared around flammable structures. This area is called **Defensible Space**.

Defensible space reduces the wildfire threat and provides firefighters the opportunity to defend the building. Often times defensible space is a backyard, a driveway, or community greenbelt. Creation of defensible space involves three major concepts.

1. Removing Fuels: such as the removal of a dead tree or a very flammable shrub.
2. Reducing Fuels: such as pruning dead limbs from a shrub, removing low tree branches or mowing or grazing grass.
3. Replacing Fuels: such as removing dense flammable shrubs and replacing them with an irrigated flowerbed.



Chapter 2 provides advice on designing fuel breaks to create defensible space.

## CHAPTER 2

### FIRE PREVENTION

Fire prevention is the responsibility of the landowner, and is required by state law. Public Resources Code 4291 states that anyone owning or leasing land covered by flammable materials must reduce fire hazard around buildings. Beyond any legal requirements, proper landscaping and maintenance are key to your property surviving a fire and preserving the natural, majestic harmony of the area. The first step to securing your home and valuables begins with the creation of fuel breaks.

#### Create Fuel Breaks

Fuel breaks can be defined as a space or area where flammable materials have been removed. A good example is a gravel driveway or paved parking area. To begin work on your property, remove all dead trees, shrubs, and branches. After all the dead material is removed, assess your property in increments.

1. Remove all brush, weeds, flammable vegetation and combustible growth located 30 – 100 feet from all structures.
2. All shrubs and/or groups of shrubs should be at least 10 feet apart. Reduce the height of shrubs and remove lower branches in order to reduce the ladder effect.
3. Prune lower branches of trees up to 10 feet. Leave at least 1/3 of the live crown to keep trees healthy.





*It is a good idea to leave a thin layer of pine needles (one to two inches) on the ground to reduce soil erosion.*

4. Clear roof, gutters, and decks of leaves, needles or any other dead vegetation or flammable materials.
5. Remove any portion of a tree that comes within 10 feet of a chimney vent and/or stovepipe outlet. Be certain to cover any chimney or stovepipe with a 1/2-inch screen.
6. Consider planting fire and drought resistant vegetation around the first 10 feet of structures.
7. Keep woodpiles away.

### Maintain Your Fuel Breaks

Once you evaluate your property and construct the appropriate fuel breaks you must maintain them. Maintenance is an ongoing process that should last as long as you choose to live in the foothills. The good news is there are many ways to reduce the amount of work and maintenance needed. The following is a list of guidelines and suggestions:

1. Remove exotic and introduced species that add to the fuel load and compete with native species. Scotch broom and Himalayan blackberry are two common species that are exotic and highly flammable.
2. Continue to remove any diseased or damaged trees and shrubs.
3. Use low growing shrubs and mulches to break up fuel continuity.
4. For residential landscaping consider planting fire and drought resistant vegetation. Some plant varieties may require supplemental irrigation. Contact the local UC Extension or Resource Conservation District for specific vegetation suggestions.
5. Use livestock grazing to keep grasses and fuel loads low.

6. Research and understand local permit requirements and restrictions for burning and chemical spraying.
7. Keep a record of time spent on property management. Knowing how much time and energy your property requires will help you plan ahead and stay safe.

### Keep In Mind

- When creating defensible space be cognizant of your actions on water quality. A large portion of the state's water comes from your watersheds. If things are done improperly, creating defensible space can encourage accelerated soil erosion and contaminate our water.
- The use of livestock can be a rewarding, cost efficient and environmentally friendly way to reduce your fuel load. Contact your local USDA Natural Resources Conservation Service field office, or your local UC Cooperative Extension Farm Advisor for more information.
- Your local fire district will have ordinances pertaining to fuel reduction activities.

*Heat or sparks from mechanical equipment may cause fires. Keep fire extinguishers in convenient locations in case of an emergency.*



FIRE PREVENTION



# CHAPTER 3

## FIRE PREPAREDNESS

### Pre-Fire Planning Guide

Taking time as a family to discuss and implement pre-fire planning is one of the easiest ways to secure the safety of your home and loved ones. Be sure to include your neighbors and pets when creating your plans. Regularly discuss and revise your fire plan taking into consideration changes in access roads, safety items, and family concerns. Use the following Pre-Fire Planning Guide as a starting point for your plan. The list is not all-inclusive. Revise it, and make additions so that it will work for you.

Discuss fire preparedness with your family. Use Chapter 3 as your planning guide.

- Designate a meeting place out of the area for family members to gather. Extension Farm Advisor or the Animal Control Center is a good place to start.
- Know your access roads out of the area. Plan at least two escape routes.
- Discuss fire plans with elderly neighbors who may need assistance.
- Create a Fire Evacuation Duties List.
- Research your local livestock animal evacuation services. Contacting your local UC
- Make a list of items you may wish to remove during a fire. Include important papers, irreplaceable memorabilia, and vital prescription medicines.
- Keep your fire insurance policy up-to-date and compare rebuilding costs with today's economy.





- Video tape your house and its contents. Store the tape in a safe deposit box. This will provide documentation for insurance claims and replacement should the need arise.
- Fire extinguishers can be an effective first hit on small fires. Have a few extinguishers strategically mounted near doors or exit points of your structures.
- Completely bury plastic water line. If burned, water lines will drain your water supply system.
- Equip pool or hot tub with a gasoline-powered pump for use as an auxiliary water supply for hose lines.
- Completely drain gas from pump engine when not in use. Store fresh gas in a metal can. You may also purchase or build a water storage tank for fire protection.
- Remove junk cars or other debris that would inhibit firefighters' access.
- Support your local fire department.



### Sample Supply List

During a disaster the foothill community could be without electricity, telephone and water supplies for many days. Local roads may be closed, and access to medical supplies may be hindered. It is helpful to have the following items far in advance of a disaster. Regularly check your supplies to make sure batteries are in good working order, and supplies have not been contaminated.

- Flashlight and batteries
- Portable radio and batteries
- First aid kit
- Fire extinguishers
- Supply of non-perishable foods
- Alternative cooking source (camp stove)
- Infant food, medicines, and diapers
- Hearing aids and glasses
- Water, 3 – 4 gallons per person
- Portable generator
- Matches







## Evacuation

Evacuation is stressful and filled with uncertainty. Remember to stay calm and utilize your pre-fire plan. The following is a list of considerations when evacuating. It may be helpful to create your own evacuation duties list to make sure all areas of concern are addressed.

- Tune into local radio station.
- Assist elderly people who may need extra time for evacuation.
- Shut off propane tank valves.
- Hook up hoses to water supply.
- Place ladders up to house.
- Leave porch lights on.
- Close all doors and windows.
- Call Livestock Evacuation Services if appropriate.
- Know escape routes and share rides to minimize traffic.
- Do not speed.
- Do not block roads. Make room for emergency equipment.
- Watch for wild animals; they can be dangerous when frightened.



Assist elderly people who may need extra time for evacuation.

After the fire has passed, and fire officials have declared the area safe, be alert and exercise caution when returning to your home. Look around for fire and smoldering debris. Check all roof surfaces, gutters and vents. Check ground fuels under your house and decks.

Once you have secured the outside of your home, inspect all furniture, window coverings, bedding, carpets, closets and storage areas. Be sure to inspect all parts of your home, from the attic to the garage. After you have completed your inspection, check again. Continue to check for at least six to ten hours after you think the fire is out. It is not uncommon for small fires to be missed, or new fires to emerge. It is better to be safe than sorry.



# CHAPTER 4

## ENVIRONMENTAL AWARENESS

The beauty of the California foothills makes it an appealing place to call home. We must remember many plant and animal species enjoyed the California foothills long before we moved in. We have moved into their home, not the other way around. This chapter will discuss some of the environmental highlights of the foothills and ways settlement and wildlife can co-exist.

### Building Considerations

When building a home in the foothills, it is best to research the area. Issues include sewage, sanitation, water well, special building codes and existing underground storage tanks.

Check into personal services, police, doctors, utilities, grocery and other services to which you are accustomed.

- Build away from ridge tops and canyons.
- Use fire resistant materials.
- Enclose underside of balconies and above ground decks with fire resistant materials.
- Install dual-paned or triple-paned windows.
- Provide a turnaround area wide enough for emergency vehicles.
- Consider at least two exit routes.
- Make sure your address is visible from the street. Use reflective numbers.

When building or renovating a foothills home, you must keep in mind your environment. Chapter 4 will take you through the most important considerations.







## Soil

Soil properties vary in the foothills depending on location, elevation, topography, climate aspect, depth to bedrock and other factors. Local soil type should be a major consideration for all building construction and landscape planning. The range of potential soil-related problems can be great. For instance, swelling and shrinking of certain kinds of clayey soils may crack walls and foundations. Flooding and high water tables may damage buildings. Soils that are too steep, clayey, rocky or wet are not suitable for septic tank absorption fields. These and other soil-related problems can be anticipated through careful planning, analysis — and when necessary — professional consultation.

Determining soil properties that affect construction is essential to proper planning. Many soil properties can adversely affect construction and maintenance of roads, pipelines and buildings.

Among the important soil properties determining usage are:

- Natural soil drainage and permeability
- Infiltration rate
- Depth to seasonal wetness
- Ponding and flooding hazard
- Depth to bedrock or cemented hardpan
- Erodibility
- Stoniness
- Acidity and alkalinity
- Load bearing capacity
- Shrink-swell potential
- Soil structure and aggregation
- Slope

## Landscaping

Water is an extremely important part of landscape planning. Planning for water efficiency in your landscape design not only helps the environment, it also helps avoid unnecessary headaches and heartaches over foiled plantings and disappointing designs.

More than half of the water consumed by an average household is used for landscaping. In the summer months water use can increase by 250 percent, the majority of which goes for outdoor watering. Xeriscaping — a practice based on designing an attractive, sustainable landscape that minimizes water use and sound horticultural principles — is one possible solution to this problem.

Xeriscape is a word coined from the Greek word *xeros*, meaning dry. But unlike the dry unattractive landscape some people may picture when they hear the term xeriscape, landscapes can be beautiful and water efficient. Xeriscaping makes wise use of water and helps lower water bills too.







Whether planning a new landscape or renovating an existing one, consider these principles to help save water and achieve landscaping goals:

- *Plan and design comprehensively*  
Determine your needs, existing vegetation and the soils of the area. Landscapes are often installed in phases.
- *Water efficiently with properly designed irrigation systems*  
An irrigation system should be well planned and managed. Drip or trickle irrigation systems apply the water where it does the most good: directly to the soil.
- *Create practical turf areas*  
Lush green lawns are one of the largest consumers of water in a landscape. Reduce turf areas, select water efficient varieties, and properly locate turf to reduce water consumption.
- *Use organic mulch to reduce evaporation*  
Mulch minimizes evaporation, reduces weed growth, slows erosion, and helps prevent soil temperature fluctuations.
- *Use water-efficient plants*  
Plants native to the foothills are often well adapted to arid conditions and are also good landscape candidates. Check with your local nursery for recommended plants.
- *Practice appropriate maintenance*  
The quality and efficiency of a xeriscaped landscape is best maintained through proper pruning, weeding, and attention to the irrigation system.



## Oaks

Native California Oaks are the dominant trees in the foothills. Providing a distinctive character to the area, oaks are vital to wildlife. The trees provide food and shelter for birds, squirrels, deer, and many other animals. As majestic and strong as the Oaks appear, they are actually quite vulnerable to changes in their immediate environment. Changes such as the addition of non-native plantings, inappropriate watering, irrigation and construction activities make them susceptible to disease and unable to regenerate. Oaks have thrived in our dry climate for over a millennium, and with our attention to their minimal needs they should be around for future generations to enjoy.

Consider the following guidelines when working with oaks on your property:

- Do not add or remove soil adjacent to large trees.
- Do not supplement the natural water for existing trees.
- Design your home and roads to minimize root system damage.
- Minimize any changes to drainage patterns for existing trees.



**For More Information:**  
California  
Oak Foundation  
(510) 763-0282  
[www.californiaoaks.org](http://www.californiaoaks.org)







## Conifers

Conifers become the dominant trees at higher elevations. Typically ponderosa pine, or yellow pine, is the tree that is most commonly found in the foothill zone. It is 60 to 200 feet high with spreading or drooping branches forming a narrow cylindrical crown.

A high fire danger is present when these trees occur in dense, overcrowded stands with canopies touching or interwoven. Competition between them increases as trees increase in size and number. To reduce the likelihood of fire and to maintain health and vigor, the landowner should consider reducing the number of trees. This provides a separation between the canopies and redistributes the soil moisture and nutrients to fewer trees.

Before trees are cut, give consideration to their use or potential commercial value. If mature conifer trees are sold (or bartered) as a timber “product” the activities may fall under the State Forest Practice regulations and a Registered Professional Forester (RPF) may be necessary to prepare a Timber Harvest Plan. A RPF is licensed by the State of California to perform forestry services on forestland. The California Department of Forestry and Fire Protection (CDF) regulates these activities and the local office should be contacted for further information.



## Erosion

Water is the primary erosive agent to soil during heavy rains and flooding. Some primary guidelines to slow soil erosion include:

- *Cover soil to resist erosion*  
Mulch helps prevent erosion, anchors seed and fertilizer, reduces seedling mortality and preserves moisture.
- *Divert water properly*  
Use a concrete lining in the ditch or a pipe to carry water down steep slopes onto pavement, or a well-vegetated area.
- *Manage falling water*  
Do not allow large amounts of water to concentrate along one route. On especially erodible soils, additional protection can be gained by using inexpensive plastic sheeting.
- *Slow water down*  
On long slopes, use ditches at intervals down the slope. Keep them close to the contour and build them to empty onto pavement or into dense vegetation.
- *Ground cover plants*  
In conjunction with the above steps, a vegetative cover should be established prior to the winter rains to slow soil erosion.

## For More

### Information:

Contact your local NRCS field office or visit the California Web site at [www.ca.nrcs.usda.gov](http://www.ca.nrcs.usda.gov).







## Deer

There are many steps property owners can take to protect deer and wildlife on their property. Deer will often avoid properties with tall woven wire or tightly spaced strand wire fences. Reduce your fencing and you will increase deer travel between properties. If a fence cannot be avoided consider a deer friendly design. Use a three to four strand wire fence with the bottom strand 18 inches off the ground and the top wire no more than 42 inches off the ground. The bottom-strand should be barb-less wire as deer will often crawl under fences.

Living in the foothills, you will undoubtedly experience deer damage to your property. Developing a tolerance for their presence and appetite is strongly encouraged. Deer enjoy eating many of the shrubs, flowers and garden plants people like to grow. The lack of summer rain in the foothills leaves few green plants for deer to eat, thus your irrigated garden is most appealing. To reduce damage, gardens should have six to eight foot fences and be located close to your residence.



*Limiting dog activity on your property will help preserve wildlife. Dogs should be kept in fenced runs and close to your home in order to protect both your pet and the deer.*

*The California Department of Fish and Game have published A Gardener's Guide to Preventing Deer Damage.*

## Birds

The California foothills may be the single most important region of California for migrating birds traveling from Central and South America and Mexico up the coast along what is known as the Pacific Flyway. The foothills are important feeding stops for breeding birds. Foothills meadows, creek-sides, forests, and chaparral brush provide food, water, shelter and nesting sites for these birds.

By taking a few simple precautions on your property, birds — whether migratory or resident species — can benefit. Some of their major “enemies” include:

- *Reflective windows*  
Reflections of false but apparent open space can be broken up by hanging something outside the window, such as windsocks, plants, feeders, plastic owls, or outdoor blinds.
- *Domestic dogs and cats*  
Large dogs and free-roaming cats, especially those abandoned or feral (gone wild), are prime threats to birds.
- *Natural predators*  
Brush piles near feeders and water sources allow for quick escape from predators.





The California foothills provide a beautiful place to live, but with a few dangers. Chapter 5 describes some things of which to be aware.



## CHAPTER 5

### DANGERS & FIRST AID

Living in the foothills can be a wonderful experience. Each day there is the opportunity to appreciate distinct plant and animal life unique to the area. Among the special characteristics found within the ecosystem are a few dangers you and your family should be aware of. This chapter briefly outlines some of the concerns you may want to research and discuss.

#### Mountain Lions

The foothills were home to Mountain Lions long before humans joined them. California Mountain Lions are powerful creatures that typically prey upon large animals, such as deer. Generally, Mountain Lions prefer to avoid conflict with their human neighbors, however it is important to stay mindful of their presence. Keep an eye out for Mountain Lion paw prints and activity. Make a habit of sharing any Mountain Lion sightings with neighbors. Educate yourself about the wildlife in your area to stay safe. The Department of Fish and Game recommends the following Mountain Lion Safety Tips:

- Do not hike alone.
- Keep children close to adults.
- Never approach a Mountain Lion.
- Never run from a Mountain Lion.
- Do not bend or crouch down.
- Make yourself appear large.
- Fight back if attacked.



#### Resource:

*To learn more about how to keep your family and pets safe, read the California Department of Fish and Game's Living with California Mountain Lions.*  
[www.dfg.ca.gov/lion/](http://www.dfg.ca.gov/lion/)





## Rattlesnakes

Rattlesnakes are active from spring to fall, usually seen while migrating to and from their winter homes. They are not aggressive and will only strike when they feel threatened. Because most snakes are beneficial for rodent control, it is important to distinguish a rattler from other snakes. A rattlesnake has a powerful body, thin neck and well defined triangular or heart shaped head. By comparison, non-poisonous snakes do not share the distinctive “neck” of the rattlesnake. Rattlesnakes hunt at night and remain inactive and out of sight during the day.

To prevent snakebites, stick to well used trails and wear over-ankle boots and loose fitting pants. Do not step or put your hands where you can not see. Remember rattlesnakes hunt at night, so do not wander around in the dark. Step on logs or rocks, not over them. Keep your yard free of debris that could be potential homes for snakes. Do not leave pet food outside, as it will attract rodents, which in turn will attract snakes.

If a bite does occur keep the victim calm, cool and quiet. Do not panic. Gently wash the bitten area with soap and water. Apply a cold, wet cloth over the bite and seek immediate medical attention.

*Newborn rattlesnakes are about 10 inches long and have very potent venom making them extremely dangerous. They are unable to produce a rattling sound and will strike repeatedly when disturbed.*

### For More Information:

*The California Poison Control System provides free treatment, advice and assistance.*

*California Poison Control hotline:*

*(800) 876-4766*

*Information materials:*

*(800) 582-3387 or [www.calpoison.org](http://www.calpoison.org)*



## Rabid Animals

Occasionally, raccoons, bats, skunks, and other animals living in the foothills have been infected with rabies. Rabies is a viral infection found in the saliva of infected animals. Typically transmitted by bites, rabies can be fatal. All warm-blooded animals are susceptible to rabies. Vaccinating pets and livestock is the most effective way to prevent disease in these animals and subsequent human exposure.

Symptoms of infected animals include bold, friendly or apparently tame behavior of wild animals, daytime activity of animals normally active at night, and difficulty walking, drinking, or eating. Avoid all contact with potentially infected animals and report suspected animals to your local animal control service.

Protect your family and pets from rabies by vaccinating pets and livestock. Secure trash and pet food stored outdoors in a manner that will not attract animals. Remove heavy brush and piles of debris from around your home.

If bitten by a potentially rabid animal wash the wound thoroughly with warm soapy water. Confine the animal if possible. Kill it only as a last resort, making sure not to damage its head. Seek medical attention immediately.

### For More Information:

*Find information on bites and rabies at [www.calpoison.org/public/rabies.html](http://www.calpoison.org/public/rabies.html)*



DANGERS & FIRST AID





*If you find Poison Oak on your property contact a tree/landscaping service to remove it for you. Do not burn it. Poison Oak smoke is very dangerous.*



### **Poison Oak**

Poison Oak can be found throughout California, especially in wooded slopes below 5,000 feet in elevation. The perennial shrub or vine contains oil that can be extremely irritating to the skin. Both root and leaves of the plant are toxic. Once exposed to Poison Oak, symptoms may vary from a skin rash to severe swelling.

The best treatment for Poison Oak is prevention of exposure. Learn to recognize the plant. Poison Oak is characterized by alternate leaves with three or five-veined shiny leaflets. Wear protective clothing when in wild areas, and prevent pets from running through Poison Oak areas.

#### **For More Information:**

*Find information on Poison Oak at [www.calpoison.org/public/poak.html](http://www.calpoison.org/public/poak.html)*

If you are exposed to Poison Oak you should immediately wash the area with soap and water. Change clothes as soon as possible and handle contaminated clothing carefully. Hydrocortisone creams, and antihistamines have both been found to offer some relief.



