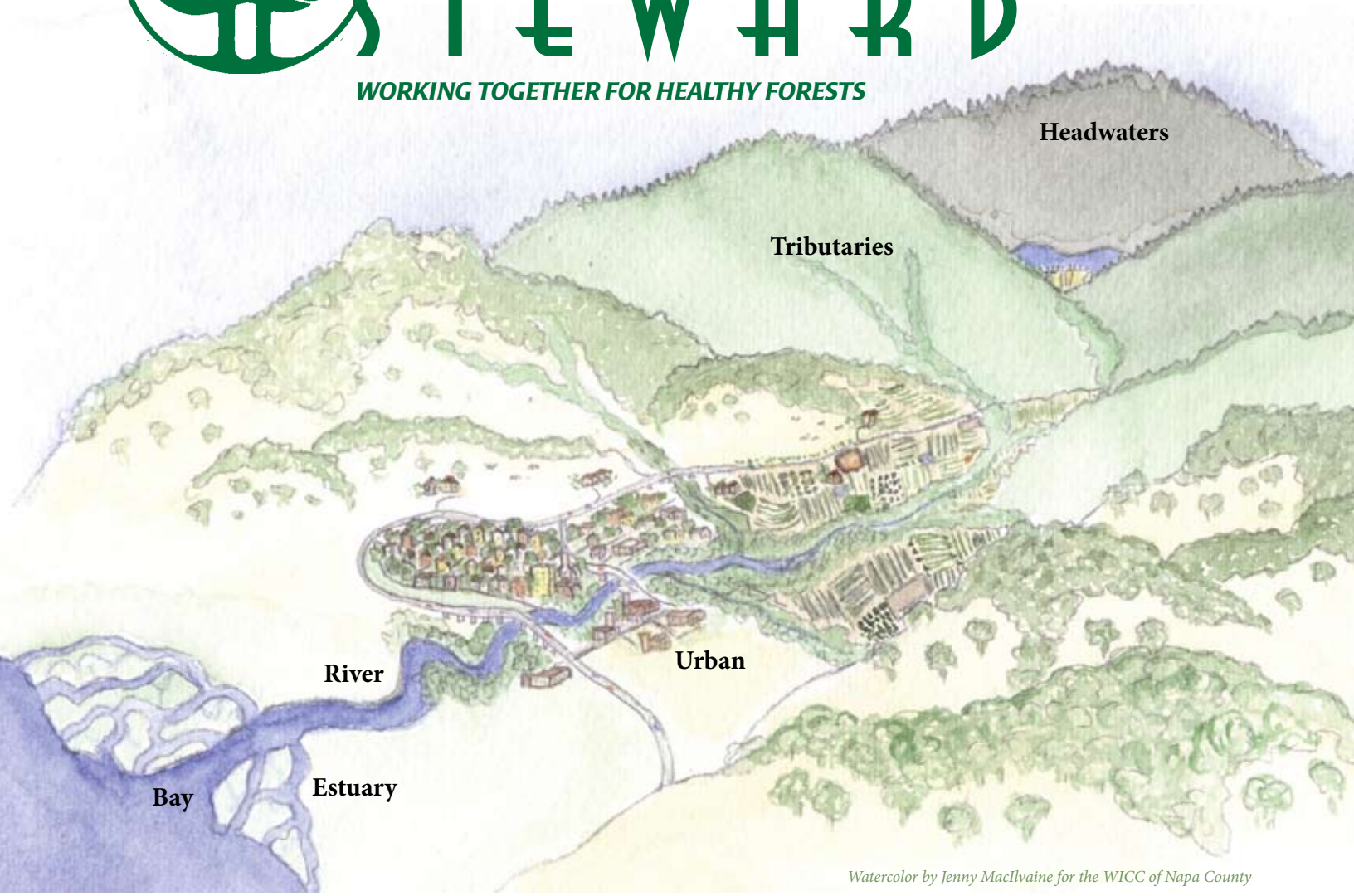
CALIFORNIA FOREST STEWARDSHIP PROGRAM FALL 2009

FORESTLAND STEWARD

WORKING TOGETHER FOR HEALTHY FORESTS



Watercolor by Jenny MacIlvaine for the WICC of Napa County

Inside

Where is your place in the watershed?

Looking at your land from a watershed perspective changes everything. You are no longer considering an isolated property or forest, rather you are part of a larger landscape with all its parts integrally connected. For better or for worse, what happens in one part of the watershed affects everyone—and everything—within it.

The definition of a watershed is quite simple: it's the area of land that drains into a common watercourse. It's the basin. But this geographical definition doesn't do the concept justice.

Watershed issues include just about everything that affects the ecosystem: water quantity and quality, air quality, soil, roads, animals and plants, and human activities.

The watershed level is a logical and natural context for considering your property. It is your neighborhood. Since small watersheds are usually part of larger watersheds, it can include other "neighborhoods" too.

Where does your property fit into the local watershed? What are the threats and concerns there and how do they affect you? What restoration or protection activities are going on and who is organizing them? How can you get involved?

Throughout California, watershed organizations, Resource Conservation Districts (RCDs), local water agencies, neighborhood associations, and various nonprofits and government agencies are working at the watershed level to improve our quality of life.

FORESTLAND STEWARD

Forestland Steward is a joint project of the CA Dept of Forestry and Fire Protection (CAL FIRE), Placer County Resource Conservation District, UC Cooperative Extension, and USDA Forest Service to provide information on the stewardship of private forestlands in California.

California Forest Stewardship Program
P.O. Box 944246
Sacramento, CA 94244
(916) 653-8286
Fax (916) 653-8957
ceres.ca.gov/foreststeward

This newsletter was produced under a grant from USDA Forest Service

Placer Co. RCD

Many threats and much that can be done

Watersheds in California face many challenges. There are threats from habitat loss, soil erosion, pollutants, invasive species, climate change, and numerous other factors. These threats affect everyone; we all live downstream from someone or something.

Private landowners can have a great impact on the watershed through everyday actions and restoration activities. Working to improve the watershed may also improve your property and your quality of life. Start by finding out about the issues affecting your area and learn what can be done to address them.

At the personal level, your lifestyle choices can affect watershed health. Simple actions, such as conserving water, minimizing use of chemicals that can end up in the waterways (e.g., pesticides and fertilizers), disposing of household waste responsibly, and generally being aware of your impact on the watershed can make a big difference when multiplied by many people.

As a landowner, you can be a good steward of your watershed by maintaining your roads, controlling erosion, allowing large woody debris to remain in the waterways, eradicating exotic pest plants, and practicing good forest management.

If you have done all you can as an individual, consider joining with others to implement larger projects to protect, enhance, and restore the watershed. Many of the same agencies and organizations that provide advice on forest management can help with watershed-level projects: Resource Conservation Districts (RCDs), CAL FIRE, UC Cooperative Extension, Natural Resource Conservation Service (NRCS), and local nonprofits. They can work with you and your neighbors to design and organize projects, and may even help find cost-share grants or other funding for implementation.

Current watershed threats

- **Excessive soil erosion** decreases drinking water quality, diminishes fish habitat by filling in pools, reduces insect abundance, smothers fish eggs, and reduces a stream's ability to carry flood waters. Excess sediment in the water also reduces oxygen in the water.
- **Illegal or excessive stream diversions** can reduce flows, thereby lowering the quality and the quantity of summer rearing habitat for steelhead, salmon, and other native fishes and aquatic organisms.
- **Removal of woody material** decreases cover habitat for fish and other wildlife, and can alter pool development.
- **Loss of habitat** can occur from the removal of native plants or the construction of smooth walls along streambanks that lack the benefits of riparian vegetation.
- **Impervious or hard surfaces,** such as roofs and roads, lessen the amount of water that soaks into the ground for groundwater recharge. This can increase flooding and lead to bank erosion problems.
- **Bare, unstable streambank areas** with little or no plants contribute to bank erosion and sediment, and do not provide adequate shade or wildlife cover.
- **Excess nutrients** from manure, fertilizer, or septic systems can cause algae to grow at a high rate. Too much algae can use up oxygen in the water which in turn can cause stress or death to fish.
- **Pollutants** such as metals, pesticides, sewage, medicines, oil, yard waste, trash, and other debris harm fish, wildlife, and their habitats. Excess landscape irrigation, household greywater, sodium from softened water, and swimming pool or spa water that drain into waterways are also considered pollutants.
- **Warm water** (>60˚F) can stress fish. Temperatures over 75˚F can be lethal to salmonids.
- **Invasive introduced plants**, such as giant reed (*Arundo donax*), vary the structure and function of the riparian corridor, crowding out native species and providing little habitat or shade.

—adapted from Stewardship Guide for the Russian River, **http://www.sotoyomercd.org/Stewardship-Guide.pdf**

Keep rivers functioning as they should

Clean water and cool temperatures.

© 2006 Joyce Gross

Caddisfly larva. Mayflies, stoneflies, caddisflies, dragonflies, and other insects are indicators of a healthy stream.

Many aquatic species need clean, cool water to survive. Too much sediment in the water can impair water quality, decrease the amount of dissolved oxygen in the water, increase flooding potential, and destroy fish and aquatic species.

You can:

- take steps to prevent excessive soil erosion
- retain riparian vegetation which cools the water
- learn to identify the aquatic species that are indicators of your waterway's health

Dense streamside vegetation.

Protect, enhance, and restore native riparian vegetation.

Streamside, or riparian, vegetation is extremely important to a healthy waterway and serves many purposes. Riparian vegetation stabilizes the soil, minimizing erosion. It helps shade the river, cooling it for fish and other aquatic creatures. It provides large woody debris for the waterway. Vegetation creates necessary habitat for a variety of wildlife and insect species, which in turn are food for others.

You can:

- protect riparian vegetation
- restore/enhance the waterway with native plants, which create superior wildlife habitat
- identify and remove any invasive species before they get out of control

Streambed texture.

Large woody debris is essential to a healthy waterway.

A river or stream should be complex. Large woody debris—fallen logs, stumps, branches, and other woody material—is very important for slowing water velocity, creating pools and riffles for fish and other aquatic species, providing habitat for insects and perches for birds, and adding nutrients to the water. It also creates shade that cools the water, and traps sediment and gravel needed by fish.

You can:

- leave large woody debris and rocks in the water unless removal is absolutely necessary.
- consider augmenting the amount of woody material in your stream

Sufficient summer water.

California Academy of Sciences

Salmon alvelin. Aquatic species need adequate water throughout the year.

In the summer, especially during droughts, water levels may be dangerously low for aquatic species.

You can:

- practice water conservation
- store enough water from the wetter months to provide for your use during the dry months
- use wells instead of pumping directly from river

Healthy, well-functioning river habitat requires:

- **Clean water** that includes plenty of dissolved oxygen. Cool temperatures are critical for the survival of species such as salmon and steelhead.
- **Dense streamside vegetation.** Native stream vegetation filters sunlight, reduces erosive forces, and provides food and cover for both aquatic and terrestrial wildlife species.
- **Streambed texture,** such as fallen logs, gravel and cobble, and pools and riffles, to enhance aquatic insect and fish reproduction and provide shelter, shade, and protection.
- **Sufficient summer water flow** for year round survival of aquatic species and the animals that depend on them for food.

—Stewardship Guide for the Russian River

The e-version of this newsletter goes out a month earlier than the print version. Get a peek at the latest edition (with live links) by sending a note to llitman@pacbell.net. Specify whether you want the e-version **instead of** or **in addition to** the print version.

Healthy roads for healthy watersheds

Poor roads are responsible for many of the problems in watersheds. They can be a major cause of runoff that delivers sediment to waterways, impacts fish and other wildlife, changes vegetation, degrades groundwater and soil, and affects scenic values. However, with a properly designed and maintained road you can avoid many of these negative impacts, and reduce the wear and tear on your vehicle. It is your responsibility as a landowner to care for the roads on your property.

Roads are a part of your essential infrastructure and should be viewed as a capital asset. They are expensive to build, and the consequences of failure grave, so it is important to do it right the first time. It will cost you less to build roads properly than to maintain them in the long run.

Initial design is critical. Roads must be properly sited and constructed, and appropriate water crossings and culverts installed. While road design isn't rocket science, it's a highly technical undertaking and may require an engineer or road specialist to evaluate your needs, give advice, and oversee construction.

Well-designed roads move water off the road quickly and prevent sediment from going into waterways.

Continued vigilance and regular maintenance are the key to healthy roads (*see below*). Details are available in the publications to the left.

There may be cost-share funding available for road improvement projects. Contact your local Forestry Assistance Specialist (*see page 10*) for more information.

Everything you ever wanted to know about roads:

Rural Roads: A Construction and Maintenance Guide for California Landowners. Kocher, S.D. et al. University of California ANR publication 8262. **http://anrcatalog.ucdavis.edu/pdf/8262.pdf**

Handbook for Forest and Ranch Roads: A guide for planning, designing, constructing, reconstructing, maintaining, and closing wildland roads. Weaver, W.E., and D.K. Hagans, Pacific Watershed Associates for the Mendocino RCD. **http://www.mcrcd.org/publications/**

Low-Volume Roads Engineering: Best Management Practices Field Guide. G. Keller, and J. Sherar USDA Forest Service/USAID **http://ntl.bts.gov/lib/24000/24600/24650/Index_BMP_Field_Guide.htm**

Forest Stewardship Series 17: Forest Roads. Nunamaker, C. et al. **http://anrcatalog.ucdavis.edu/Forestry/8247.aspx**

Recommended Maintenance

- Perform maintenance when needed. ***Do not wait!*** The longer you wait, the more damage will occur and repairs will be more costly.
- Keep ditches and culverts free from debris but maintain an erosion-resistant surfacing such as grass or rock in the ditches. Remove debris during inspections. Also, keep overflow channels clean.
- Regrade and shape the road surface periodically to maintain proper surface drainage. Keep the road surface moist during grading. Fill in ruts and potholes with gravel or compacted fill as frequently as possible. Keep rolling dips shaped and graded. Ideally, compact the final graded road surface.
- Keep the downhill side of the road free from a berm except where the berm is intentionally constructed to control water or traffic.
- Apply a surface stabilization material (e.g., aggregate, cobblestone, pavement) to the road surface to protect roadbed from damage and reduce the frequency of maintenance needed.
- Avoid disturbing soil and vegetation unless necessary. Leave as much vegetation (grasses) in ditches, on road shoulder areas, and on cut or fill slopes (especially grasses and low growing brush) as possible. However, ensure sight distance and that the drainage systems still function properly.
- Remove slide material from the roadway or inside ditches where the material will block normal roadway surface drainage.
- Avoid widening the road or oversteepening the fill slopes formed by blading surface material off the road.
- Close the road during very wet conditions or periods of inactivity.
- Inspect the road at regular intervals, especially following periods of heavy rains.

—*from Low-volume Roads Engineering: Best Management Practices Field Guide* **http://ntl.bts.gov/lib/24000/24600/24650/Index_BMP_Field_Guide.htm**

Seasonal Stewardship

Heads up…it's another El Niño year!

Each year you need to winterize your roads to prepare for the wet season. But these tasks become even more important during El Niño years when weather conditions can bring extremely damaging rains and possible flooding.

Winterizing includes maintenance and erosion control work that ensures road surfaces drain correctly, ditches and drains remain free-flowing, and culverts are open to maximum capacity.

Take a walk around your property and look at all your roads, culverts, stream crossings, and other potential problem areas.

Check existing culverts. A good time to do this is during the first rain. Go out in your rain gear with a shovel to clear out any debris and place it where it cannot get back into the watercourse. Sediment deposits that threaten to plug culverts may need to be excavated. Bent or damaged culvert ends should be straightened and reopened. Outlets experiencing erosion can be armored or fitted with a downspout, and culverts that experience overflow problems may need a larger or second overflow pipe. These inspections should be done again during the big gully washing events. A little work with a shovel during these times can save a lot of money.

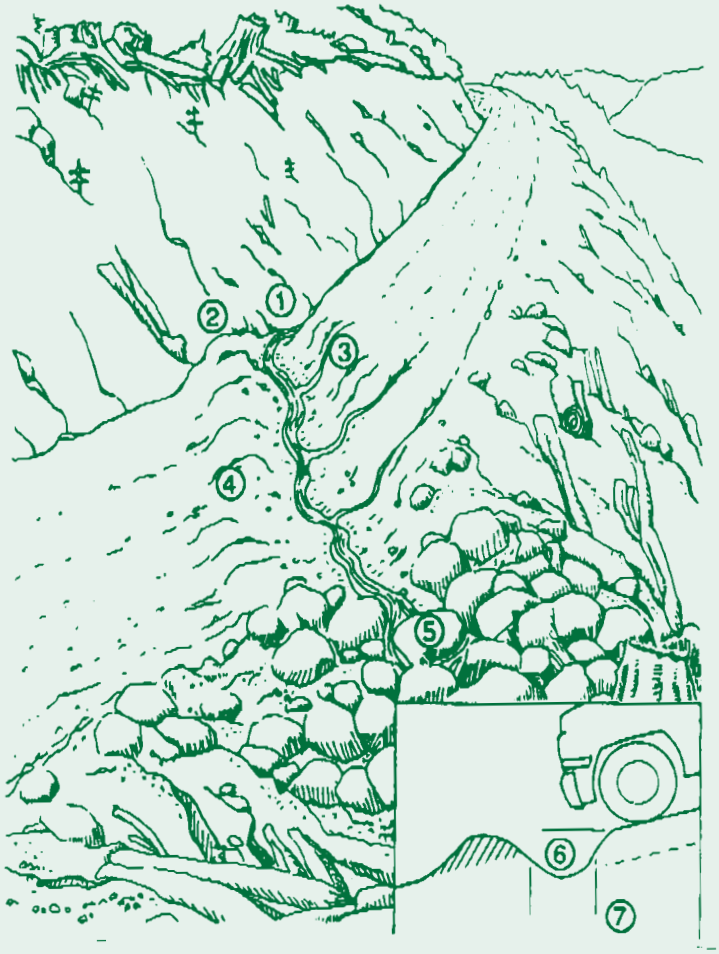
Look at the drainage of the whole road. Besides culverts, check waterbars, outsloping, and ditches for problems. Clear out trash barriers, culvert inlet basins, and pipe inlets. Ditches should be cleaned and heavy vegetation trimmed. Excavate all unstable or potentially unstable fills and sidecast.

Construct waterbars where appropriate. Waterbars can be constructed on unsurfaced roads with little or no traffic. Waterbar spacing is dictated by road gradient and soil erodibility. These high maintenance structures must be built and maintained properly (*see illustration*).

Handle spoil material appropriately. Excess material produced by maintenance activities should be stored locally or hauled away. Spoil may be feathered over the road, but excess fine material may produce unwanted muddy conditions on permanent roads after the first rain. Excess spoil should never be sidecast near streams. It should be hauled to a stable site safely distant from streams, contoured to disperse runoff, and stabilized with mulch and vegetation. Berms of excess spoil along the road shoulder should be removed or frequently breached prior to the rainy season.

Close roads. Seasonal unsurfaced roads can be badly damaged by even occasional use during wet periods when the road bed is soft. Once seasonal and temporary roads have been winterized, they should be gated and closed to nonessential traffic.

The information here is covered in great detail in the *Handbook for Forest and Ranch Roads* by Weaver and Hagans. Published by the Mendocino RCD and available for $22 at **http://www.mcrcd.org/publications/**



Waterbars are constructed on unsurfaced forest roads with little or no traffic during the wet winter period. The waterbar should be extended to the cutbank to intercept all ditch flow (1) and extend beyond the shoulder of the road. A berm (2) must block and prevent ditch flow from continuing down the road during flood flows. The excavated waterbar (3) should be skewed 30° to the ditch-line with the excavated material bermed on the downhill grade of the road (4). Water should always be discharged onto the downhill side on a stable slope protected by rip rap or vegetation (5). The cross ditch depth (6) and width (7) must allow vehicle crossover without destroying the function of the drain.

—from Handbook for Forest and Ranch Roads

Drought and Forest Health

When water is lacking in the watershed

Donald R. Owen, Forest Entomologist
California Department of Forestry and Fire Protection, Redding

During the past 3 years (2007–2009), most of California's forests have experienced below-normal precipitation, or drought.

When drought lasts more than one year, tree defenses begin to weaken and bark beetles begin attacking and killing the most susceptible trees. As bark beetle numbers increase, tree mortality increases.

For this discussion, a "healthy forest" is a forest ecosystem that can sustain itself through periods of recurring drought with minimal tree mortality.

The precipitation pattern experienced in 2007 and 2008 was particularly tough on trees because not only were these years dry, but they were especially dry during the spring. Late winter and spring precipitation is important because it provides soil moisture that helps trees make it through California's dry summer months. In the summer of 2008, the effect of this particularly severe drought pattern became apparent as bark beetles started killing what were essentially defenseless trees.

Photo by Donald R. Owen

Ponderosa pines killed by the western pine beetle.

With continuing stress and increasing numbers of beetles, tree mortality increases. This is the predicament we have been in since last year. Perhaps the only good news is that the situation could be worse. Fortunately, late winter and spring precipitation this year has been closer to normal. Tree mortality has increased through the summer of 2009, but it likely is not as high as it could have been had we had a third consecutive dry spring.

There typically is a 1–2 year lag between when drought starts and when we start seeing increased bark beetle activity. While beetle activity started to increase in 2008, aerial surveys still recorded a fairly normal amount of tree mortality. There was significant mortality in certain areas last year, but overall mortality was not high.

In contrast, when all of the survey data is in, tree mortality for 2009 will be substantially higher. When the drought does end, there also will be a lag time before beetle activity dies down. Higher than normal tree mortality is expected in 2010 even if precipitation during the upcoming water season (fall 2009–spring 2010) is above normal.

Drought always seems to take us by surprise, but in fact it is a recurring natural part of California's climate that is closely aligned with the oceanic and atmospheric weather cycle known as the El Niño-Southern Oscillation (ENSO).

While drought can have a significant negative impact on trees, it is a phenomenon that our forests have evolved with and we, as stewards of the forests, must live with. When dealing with drought, tree stress, and bark beetles, the keyword for maintaining forest health is *prevention*.

How one defines or perceives forest health depends on individual perspective. For this discussion, I am simply defining a "healthy forest" as a forest ecosystem that can sustain itself through periods of recurring drought with minimal tree mortality.

There are many factors that govern the pattern of tree mortality that emerges during drought. A common question is "why are trees dying here, but not over there?" The answer to this question can be complex and sometimes may not be very apparent. It typically hinges on the quality of a particular site for growing certain types of trees, which beetles and what numbers of beetles are available to attack the trees, and whether or not other significant stressors are present, such as overstocking and disease. Through forest management, we endeavor to match the appropriate tree species to the site, maintain a stocking level that is sustainable over

the life of the stand, and employ practices that discourage disease. Maintaining forest health is an ongoing effort.

One of the most common misconceptions about forest health is that more trees are better. Reducing competition among trees through stocking control (thinning) is the best way to protect a stand of trees from the effects of drought.

There is, however, an important caveat to this recommendation: thinning is best done during non-drought years. This allows the trees to adjust to and take advantage of the added space before drought stress hits.

Photo by Donald R. Owen

Thinned stand of Jeffrey pine.

Thinning during drought can actually create additional stress on residual trees. It may also create conditions that promote the buildup of bark beetle populations in the thinned area, potentially exposing residual trees to beetle attack. If you must thin during drought, it is best to do it in the late summer and fall, a time when beetle activity is waning for the year.

For individual high value trees, supplemental watering and application of pesticide sprays can be viable options for protecting trees from bark beetle attack during drought. These measures can help trees survive stress of limited duration, but are not practical for long-term use or for large numbers of trees.

A common recommendation that is often heard during periods of drought is to cut down and remove beetle-killed trees before the beetles have the chance to fly to adjacent live trees and kill them. This is a good recommendation in theory, but one that can be difficult to apply in practice. For beetles with multiple generations per year, such as the western pine beetle, it is very difficult to identify and remove beetle-infested trees before the beetles fly. By the time the foliage of a dying tree begins to fade (change color), beetles may already have begun to leave the tree or may be mostly gone. The technique works best on trees that are infested by beetles that have a one-year life cycle. Infested trees can often be identified in the late winter and spring before beetle emergence, although accumulated snow and weather conditions at these times can hinder the effort.

There are many different types of beetles that attack living forest trees. Some are aggressive tree killers, some only kill trees that are severely stressed, and others principally attack trees that are dying.

Not all tree killers are bark beetles—some wood borers are also capable of killing entire trees or portions of trees. Additionally, when a tree is killed, many different beetle species will colonize the tree at the same time. To better manage forest stands and effectively respond to beetle outbreaks, it is important to understand which beetle or beetles are most important and how these differ for each tree species.

Photo by Donald R. Owen

Mountain pine beetle attacking lodgepole pine. A healthy tree may be able to "pitch out" invaders.

Tree Notes and other resources

Tree Notes, a series of publications from the CA Department of Forestry and Fire Protection (CAL FIRE), provides information on bark beetles, other forest pests, and how to identify dead and dying trees. These can be accessed at the web address: **http://ceres.ca.gov/foreststeward/html/treenotes.html**.

Information is also available on the Forest Health Protection website of the USDA Forest Service: **http://www.fs.fed.us/r5/spf/fhp/index.shtml**.

Additionally, CAL FIRE Pest Specialists can provide assistance with insects, diseases and other forest health issues on private forestland:

Jack Marshall (Ukiah) 707-362-5886 jack.marshall@fire.ca.gov

Tom Smith (Sacramento) 916-623-9476 tom.smith@fire.ca.gov

Kim Camilli (Paso Robles) 808-550-8583 kim.camilli@fire.ca.gov

Don Owen (Redding) 530-224-2494 don.owen@fire.ca.gov

Think: Partnership

Partnerships are a key to getting financial assistance from NRCS and other grantees. You can work with nonprofit groups or agencies in your area. Start by contacting your local NRCS, CAL FIRE, UC Cooperative Extension, or RCD office. These agencies are there to help and are knowledgeable about the priority concerns in the watershed, current projects, potential sources of funding, and can help you apply for assistance.

New goodies to help forest landowners in the 2008 Farm Bill

The new Farm Bill provides additional technical and financial assistance opportunities for nonindustrial private forestland owners. A variety of practices, including forest stand improvement, firebreaks, riparian forest buffers, windbreaks, trees and shrubs, and others, may be covered. All programs are administered by the Natural Resource Conservation Service (NRCS).

Conservation Stewardship Program (CSP): This is a new program that replaces the Conservation Security Program. The Conservation Stewardship Program encourages conservation activities, including activities related to conservation research and demonstration/pilot testing of new technologies or innovative conservation practices. Nonindustrial private forestland qualifies.

Environmental Quality Incentives Program (EQIP): EQIP offers financial and technical assistance to farmers and ranchers who face threats to soil, water, air, and related natural resources on their land. The program now includes a new emphasis on forest management and energy conservation, and practices related to organic production and fuels management. Applicants must develop either a Forest Stewardship Plan or other approved plan.

Forest and Ranch Lands Protection Program (FRPP): The FRPP provides matching funds to help purchase development rights to keep productive lands in agricultural use. The Farm Bill expands the FRPP criteria to include forestland, provided it contributes to the economic viability of an agricultural operation or serves as a buffer to protect an agricultural operation from development.

Healthy Forest Reserve Program (HFRP): This voluntary program was established to restore and enhance forest ecosystems to: 1) promote the recovery of threatened and endangered species, 2) improve biodiversity, and 3) enhance carbon sequestration. HFRP now has a new permanent conservation easement option in addition to the traditional program options of 10-year, 30-year, or 99-year easements. The deadline for proposals for 2010 is November 1.

Wetlands Reserve Program (WRP): This program provides technical and financial assistance to private landowners to restore, protect, and enhance wetlands in exchange for retiring eligible land from agriculture. There are 3 enrollment options: 1) permanent easement, 2) 30-year easement, 3) restoration cost-share agreement without an easement.

Wildlife Habitat Incentives Program (WHIP): WHIP provides technical assistance and up to 75% cost-share assistance to establish and improve fish and wildlife habitat on non-industrial private forestland. Contracts are from 1–10 years. National priorities are:

- Promote the restoration of declining or important native fish and wildlife habitats
- Protect, restore, develop, or enhance fish and wildlife habitat to benefit at-risk species
- Reduce the impacts of invasive species on fish and wildlife habitats
- Protect, restore, develop, or enhance declining or important aquatic wildlife species' habitats.

For more details on each of these programs, specific management practices covered, selection criteria, application process, etc., go to the NRCS website at **http://www.nrcs.usda.gov/programs/** or contact your local NRCS office.

CAL FIRE offers assistance after wildfire

CAL FIRE has programs for forest landowners affected by wildfires, including technical assistance from Forestry Assistant Specialists and seedlings for reforestation through the CAL FIRE Nursery Program (*page 11*).

The Nursery Program has a staff of foresters who can provide free reforestation advice to landowners.

Joseph O'Brien, USDA Forest Service, Bugwood.org

Additionally, CAL FIRE has Forestry Assistant Specialists at many local Unit Offices who can offer free reforestation advice or direct individuals to professional consultants. These specialists also can provide information on State or Federal cost-share funding.

Salmonids are struggling in California

This year, once again, salmon season was restricted because Sacramento River fall Chinook salmon, which make up the bulk of salmon caught off the California coast, had the lowest return rate on record. Many of the state's other native salmon populations are listed as threatened or endangered because numbers are so low. Why are salmon populations in trouble and what can be done?

The lifecycles of anadromous salmonids are complex to say the least. They live part of their lives in freshwater streams, part in estuaries, and part in the open ocean. This requires major physiological changes and different habitat needs at each stage. And in each habitat they encounter different threats, which makes it difficult to determine the causes of their dramatic decline.

Salmon in freshwater streams are extremely vulnerable to a number of threats. They face unsuitably warm waters and insufficient flow, poor water quality, entrainment in water diversions, predation, disease, and lack of food.

In the ocean, salmonids find another set threats. These include ocean temperatures, lack of food, disease, natural predation, fishing, and changes in the strength and timing of upwelling. (Upwelling brings nutrients up from the ocean floor, causing plankton blooms. Plankton are eaten by the small fish that are eaten by salmon. Upwelling is typically weakest in El Niño years). Recent studies suggest that poor ocean conditions may be the primary cause of salmon decline. Even so, the threats in all habitats must be addressed to bring back healthy salmon populations.

In California there are four species of anadromous fish—Chinook salmon, Coho salmon, steelhead trout, and coastal cutthroat trout—plus about a dozen resident (non-anadromous) species of trout.

Some of the best salmonid habitat goes through forested land. If you are lucky enough to have a salmon stream on your property, you have the opportunity to be part of the solution.

In order to make your stream hospitable to salmonids, it must meet their basic needs. Look over the list above. Can your stream provide all of these elements? If one or more are lacking, this is the place to focus your attention.

For example, if the water temperature is too warm, you may need to restore or enhance the riparian vegetation. Dense vegetation near to and overhanging the stream can help cool the water.

René Reyes, Bureau of Reclamation

What do Salmon and Steelhead Need?

Clear, cold water. Temperatures between 55°F and 60°F are preferred. Temperatures over 75°F can be lethal to salmonids.

Adequate flows for upstream and downstream migration. Sufficient flows at the right times are necessary for moving to and from the ocean.

Protection from predators. Tree trunks and other large pieces of wood are extremely important, especially for Coho salmon.

Clean, sufficient spawning gravels. Fine sediment in the gravel restricts the flow of oxygen to the eggs. Watershed changes in flows or sediment delivery can cause spawning gravel to be washed away or buried under fine particles.

Access to habitat. Poorly designed culverts, road crossings, and/or dams can prevent adult salmon and steelhead from reaching historic spawning areas, or juvenile fish from safely moving through the stream.

Deep, cool pools for rearing. Young Coho salmon and steelhead spend at least one summer in the stream before returning to the ocean. Most Chinook return to the sea the same year they were hatched.

Clean water. Water conveys everything it touches into creeks and rivers. Stormwater flows can carry everything from excess sediment to pesticides to motor oil into our waterways. Wastewater discharges from treatment plants are regulated, but can still carry pathogens and nutrients into rivers and may hold undegraded medicines and household chemicals that resist breakdown. All the organisms in a watershed depend on water that is free from unnatural contaminants.

—from Stewardship Guide for the Russian River

Large woody debris provides all kinds of benefits, including shade, cover, and protection for fish. Large wood offers places to hide from predators and also leaches nutrients into the waterway, which feed the insects and small fish eaten by salmon.

Roads and culverts can be impassible barriers to fish in their journey between the stream and ocean and back again. Proper design will help keep excessive sediment from entering the waterway and allow fish to migrate (*see pages 4 and 5*). Pumps on fish-bearing streams or rivers should be screened, if possible.

The resources to the right will give you an understanding of salmonid biology and actions you can take to help them in their travels.

Forest Stewardship Series 12: Fish and Fish Habitat. Kocher and Harris. **http://anrcatalog.ucdavis.edu/pdf/8242.pdf**

Living among the Fish: A Guide to Conservation of Fish Habitat in the Developed Landscape. S.D. Kocher et al. 25 pp. **http://anrcatalog.ucdavis.edu/Items/8279.aspx**

Resources

More about watersheds

Sotoyome RCD has several watershed-related publications for landowners. Find them at **http://sotoyomercd.org/library.html**

- Stewardship Guide for the Russian River
- Guide to Watershed Project Permitting for the State of California
- Homeowner Guide to Septic System Operation
- Management Tips to Enhance Land & Water Quality for Small Acreage Properties
- The Grazing Handbook

There are so many excellent resources for watershed information that it's hard to single out a few to recommend.

Want to know about projects underway in your area? The Natural Resource Projects Inventory is a database of over 6,000 natural resource projects including watershed conservation and acquisition, restoration and noxious weed eradication, assessment, planning, and scientific studies. From the homepage at **http://www.ice.ucdavis.edu/nrpi/** you can find projects and places using criteria on the mapping tool or queries pages.

Another place to learn about your watershed is Surf Your Watershed, a project of the Environmental Protection Agency (EPA), where you can find data about each watershed in California and a listing of watershed groups **http://cfpub.epa.gov/surf/state.cfm?statepostal=CA** .

Many Resource Conservation Districts (RCDs) are active in watershed restoration and protection. Contact your local RCD to find out if there is information available about your watershed, threats to it, and projects that are addressing those concerns. You may find activities you want to be part of. Start at the California RCD website **http://carcd.org/directory.php** .

Many local water agencies and nonprofit watershed groups have created publications that cover their areas. A few examples of local watershed materials:

- Stewardship Guide for the Russian River **http://sotoyomercd.org/Stewardship-Guide.pdf**
- Placer County RCD Stream Care Guide: Management Tips for Streamside Property Owners **http://www.placercountyrcd.org/streamcare/guide.php**
- Carlsbad **http://www.carlsbadwatershednetwork.org/**

The Forest Stewardship Series by UC Cooperative Extension includes several watershed-related publications including Forest Streams, Riparian Vegetation, Forest Water Quality, Fish and Fish Habitat, Exotic Pest Plants, and Forest Roads. All are available for download at **http://anrcatalog.ucdavis.edu/Items/8323.aspx** .

Technical Assistance

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

California Stewardship Helpline
1-800-738-TREE; ncsaf@mcn.org

California Dept of Forestry & Fire Protection
Forest Landowner Assistance Programs
Jeffrey Calvert
916-653-8286; jeff.calvert@fire.ca.gov

Forestry Assistance Specialists
Guy Anderson (Mariposa/Madera/Merced) 209-966-3622 x218
Jan Bray (Amador) 530-647-5212
Herb Bunt (Redding) 530-528-5108
Jill Butler (Santa Rosa) 707-576-2935
Ed Crans (Placer/Yuba/Nevada) 530-889-0111 x128
Brook Darley (Tehama/Glenn) 530-528-5199
Mary Huggins (S. Lake Tahoe) 530-541-1989
Patrick McDaniel (El Dorado) 530-647-5288
Dale Meese (Plumas) 530-283-1792
Alan Peters (San Luis Obispo) 805-543-4244
Jim Robbins (Fortuna) 707-726-1258
Tom Sandelin (Fresno/King) 559-243-4136

California Association of RCDs
916-447-7237; staff@carcd.org

California Dept of Fish & Game
Tina Bartlett
916-653-9834; tbartlett@dfg.ca.gov

U.C. Cooperative Extension Advisors/Specialists
Mike DeLasaux, Plumas-Sierra counties
530-283-6125; mjdelasaux@ucdavis.edu

Greg Giusti, Mendocino-Lake counties
707-463-4495; gagiusti@ucdavis.edu

Susie Kocher,
530-542-2571; skocher@nature.berkeley.edu

Gary Nakamura, Natural Resources Advisor
530-224-4902; nakamura@nature.berkeley.edu

Bill Stewart
510-643-3130, stewart@nature.berkeley.edu

Yana Valachovic, Humboldt-Del Norte counties
707-445-7351; yvala@ucdavis.edu

USDA Forest Service
Gary Thompson
707-562-9167; gthompson03@fs.fed.us

Calendar

October 13–15, 2009
New Economic Times: Managing Dollars & Sense
Location: South Lake Tahoe
Sponsor: CA-Nevada-Hawaii Forest Fire Council
Website: http://www.cnhfire.org/

October 16, 2009
Balancing Wildlife Needs, Forest Health, and Fire Hazard Reduction in Mixed Conifer Forests
Location: Georgetown, 8am–5pm
Sponsors: UC Coop Extension; CAL FIRE Forest Stewardship Program; Placer, Nevada and El Dorado Co RCDs; CDFG; and USFWS
Cost: $15 includes lunch and materials.
Topics: Wildlife Management Principles, Wildlife Habitat (emphasis on Mixed Conifer), Plant Identification and Sensitive Plants, Vegetation Management. Plus a field trip
Contact: Sherry Cooper, 530-224-4902
Notes: Pre-registration required—space limited

October 23, 2009
Balancing Wildlife Needs, Forest Health, and Fire Hazard Reduction in Mixed Conifer Forests
Location: Nevada City, 8am–5pm
See October 16 details above.

November 3–4, 2009
California Board of Forestry Meeting
Location: Sacramento
Contact: 916 653-8007
Website: http://www.bof.fire.ca.gov/

December 8–9, 2009
California Board of Forestry Meeting
Location: Sacramento
Contact: 916 653-8007
Website: http://www.bof.fire.ca.gov/

January 29–30, 2010
NorCal SAF winter meeting
Location: Sacramento

February 9–11, 2010
Pre- and Post-Wildfire Forest Management for Ecological Restoration and Fire Resiliency
Location: Wildland Training and Conference Center, Sacramento, California
Sponsors: USDA Forest Service and UC
Contact: Richard R. Harris, 707-678-3504; Mike Chapel, 916-498-5323; Sherry Cooper, 530-224-4902
Notes: Information relevant to forest management before and after wildfire with a focus on conifer forests common to the Sierra Nevada and Trinity-Klamath Region. Information will have application to similar forest types in other regions.

Order seedlings for burned lands now!

CAL FIRE has assistance programs for forest landowners affected by fires. The Tree Seedling Nursery Program grows and sells tree seedlings for reforesting burned-over lands of small forest ownerships.

Because of last year's exceptionally severe fire season, demand may outpace supply. Therefore, it is advisable for landowners to check with nursery staff to determine what seedlings are available and submit their orders early. The nursery starts accepting orders on November 1st on a first-come, first-served basis. CAL FIRE staff also can direct landowners to private nurseries that may have appropriate planting stock.

Seedling prices vary by age (one or two year old), how they are grown (bare root or in containers), and by quantity purchased. The majority of California's timberland conifer species and a few hardwoods and non-native species are grown to meet landowner objectives. All seedlings are from seed that is well adapted to the various climate zones, growing conditions, and elevations found within the state. Seedlings are grown at the Magalia Reforestation Center east of Chico.

The 2009-2010 order form and price list are available online or by request after October 15, 2009. For more information, please contact the Magalia Reforestation Center at 6640 Steiffer Road, Magalia, 95954, Phone: (530) 872-6301, email: cdfnursery@fire.ca.gov.

To order online, go to www.fire.ca.gov [Resource Management: State Nurseries]. To find a Forestry Assistance Specialist in your area click on [Forestry Assistance: Contact a Forest Advisor].

How can Forestland Steward newsletter serve you?

I'd like to see more information on _____

_____

My suggestions are _____

_____

❑ Add me to the mailing list / ❑ Change my address:

Name_____

Organization_____

Address _____

City, Zip_____ Phone_____

e-mail _____

❑ To save on printing costs and paper, we encourage you to get the internet version of Forestland Steward. Check here for an email copy of each issue instead of a hard copy.

Fill out this box and send it to CAL FIRE, Forestry Assistance, P.O. Box 944246, Sacramento, CA 94244-2460. Fax: (916) 653-8957; email: jeff.calvert@fire.ca.gov
For address changes, please send this box or contact Jeff Calvert via e-mail, standard mail, or fax…be sure to reference Forestland Steward newsletter.

CAL FIRE & Placer County RCD
Forest Stewardship Program
c/o P.O. Box 162644
Sacramento, CA 95816

ADDRESS SERVICE REQUESTED

Jane LaBoa
The new voice of the Forest Stewardship Helpline

In Spring 2009 I took over the Forest Stewardship Helpline (Helpline) from the capable hands of Heather Morrison. Heather is now the executive director for the California Licensed Foresters Association.

The Helpline and my associated duties with the Forest Stewardship Coordinating Committee are a result of a contract with the Northern California Society of American Foresters (NorCal SAF) and CAL FIRE (soon to be a direct contract with the U.S. Forest Service). The other part of my duties is serving as executive director for NorCal SAF, an organization I've been with for many years.

Jane LaBoa

I came to the job after retirement from the U.S. Forest Service. My last FS job was District Ranger on the Amador Ranger District of the Eldorado National Forest. Prior to that, I had a career in timber, land management planning, and silviculture, all in various parts of California. In addition, I spent five years with the Bureau of Reclamation in Folsom working on water and recreation issues.

My undergraduate degree is from Cal and I did graduate studies in forest management at Humboldt State University. I still do the occasional fire assignment as a public information officer.

My husband, Raymond, is also a retired district ranger, forester, and CA Registered Professional Forester (RPF). We live on a small ranch near Auburn, where we raise a variety of livestock and enjoy working in our garden and orchard. We have two married children and three grand-dogs.

The Helpline reminds me of my time as silviculturist with the Tahoe National Forest. I received many calls from the public with questions about their trees and forest management practices.

The purpose of the Helpline is to provide current information about these topics, as well as overall forest stewardship practices and cost-share programs. I provide referrals to state and federal agencies and other organizations such as Fire Safe councils, and send hard copy and electronic information as requested. Most callers are forest landowners, but many calls are from the general public, educators, or contractors.

People contact me through the Helpline toll-free number (1-800-738-TREE) or the NorCal SAF e-mail address (ncsaf@mcn.org).

The Helpline gives people a way to connect with a RPF who can sort out their questions and concerns, provide immediate answers, written publications, or referrals to specific experts. People are very grateful for a human voice on the phone and a quick call back. I spend time with the callers and often we discuss related topics, such as defensible space and best management practices. Resource professionals appreciate the Helpline because it reduces their workload and focuses the referral calls they receive.

Be sure to spread the word about the important service the Forest Stewardship Helpline provides to Californians.