



CALIFORNIA FOREST STEWARDSHIP PROGRAM

Forestland Steward

SUMMER 2014

Another year of **DROUGHT**

Lake Tahoe during the last drought, May 1992
Photo: Don Owen

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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.

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The ideas contained in this newsletter are meant as general information and opinion, not management prescription.

Consult a Registered Professional Forester or a qualified technical advisor (see page 10) for management advice specific to your needs.



Drought in the forest

Drought is on everyone's mind these days. Now in our third year of significantly below-average precipitation, California forests are hurting.

In addition to the lack of precipitation, we are experiencing record high temperatures, which increases transpiration and water stress in trees. High temperatures have also resulted in a record low snowpack this year with earlier runoff so storage is reduced and less water available in the summer. The effects of the drought are widespread and growing.

Drought affects the forest in many ways and at every level. Lack of moisture in the soil impacts tree health in multiple ways; trees need water (*see page 3*). But trees are just one component of the forest ecosystem, a community of interconnected and interdependent plants and animals. What affects one individual or species has implications for the other members of the community, including wildlife (*see page 8*).

Tree pest problems intensify in a drought (*see page 6*). Many pests thrive when trees are under stress and more vulnerable to attack.

There are watershed concerns: forests need water but they are also critical for retaining water—drought affects both sides of this equation.

Finally, lack of moisture, hotter temperatures, early drying, and an increase in unhealthy and dead trees leads to wildfires. This year promises to be a long fire season.

The current drought will have many short- and long-term consequences. Even when precipitation returns to California the stressed forest communities—plants and wildlife—will continue to be affected.



The larger issue of climate change

This drought is not unexpected. Most climate models predict that California will become increasingly drier and warmer throughout most of the state over the next century. Only time will tell whether the current drought is the “new normal.”

As the climate shifts we can expect:

- Increased temperatures
- Decreased precipitation in much of the state
- Smaller snowpacks
- Longer and more common droughts
- More frequent and

severe wildfires

- Insect and disease outbreaks
- More invasive species

All of these factors have ramifications for our forests, and all are interrelated. For example, lack of moisture exacerbated by high temperatures will stress trees, making them more susceptible to insect pests (which may emerge earlier due to the high temperatures), resulting in more devastating wildfires and loss of carbon stored in the forest.

Management options

Immediate management of drought conditions are limited. We are mostly in a wait-and-see mode right now. But improving forest health in the long-term is going to be top priority for all California forests. Here are a few suggestions for now:

- Take the necessary steps to make your home and other structures fire-safe (*see page 9*).
- Consider planting more drought-tolerant trees.
- Create or update your forest management plan, including considerations of how to make your forest more resilient to long-term drought and a changing climate (*see Winter 2012 issue of Forestland Steward*).

Photo: Jack Kelly Clark, courtesy University of California Statewide IPM Program

The Physiology of Drought

The effects of drought in the forest are complex, involving the climate, characteristics of the site, individual species, forest community dynamics, past stressors, and other factors (see diagram below). Sorting it all out is a job for scientists. Forest landowners, however, also need a thorough understanding of how drought affects the forest in order to make good management decisions.

Trees need water

Let's start with the basics: trees need water. The critical process of photosynthesis, whereby trees produce energy from sunlight, requires sufficient water. Water is also necessary for cell function and growth, respiration, protein synthesis, and movement of materials throughout the tree.

Despite their passive appearance, trees are very active in their environment. During the day, they send water to their roots and out into the soil, where mycorrhizae (see Fall 2013 issue of *Forestland Steward*) use it to break down nutrients

in the top 12" of soil. In the morning, the trees suck the water back up along with the suspended nutrients. Each day this movement of water occurs in and out of the tree.

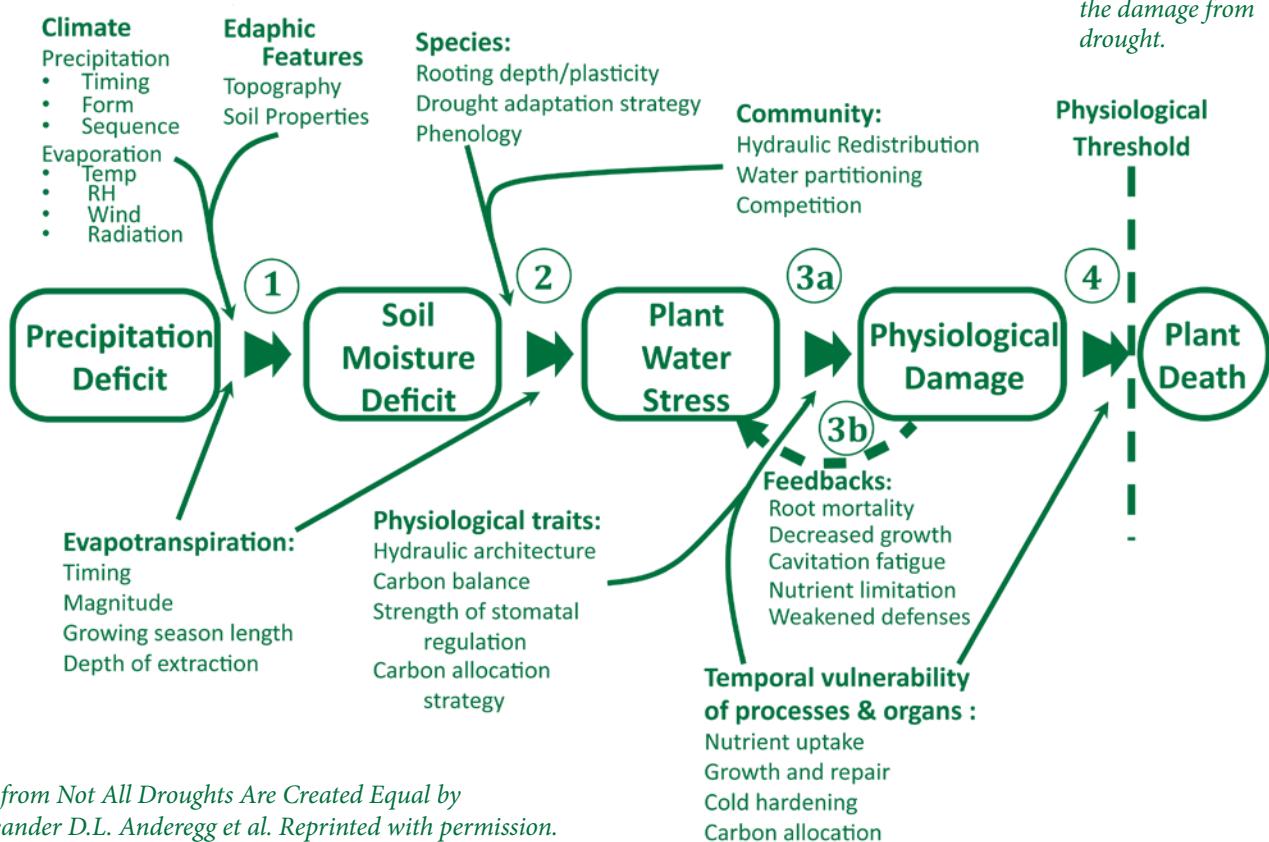
Living on a budget

When water is scarce, trees have to budget, both above and below ground. Sometimes that means cutting off important functions. One of the first responses to moisture stress is to close the stomatas, the leaf pores through which carbon dioxide enters the tree. This reduces water loss, but also affects photosynthesis, causing trees to produce less sugar, their energy supply.

Generally, a tree can function for a while with an energy deficit, since it still has stored reserves, but eventually there are trade-offs. As moisture stress continues or intensifies, the tree may be forced to take more drastic measures, reducing its growth and even metabolizing its defenses. Internal structural damage in the cells due to lack of water can reduce the trees' ability to transport nutrients and other materials. Eventually, the tree may be so compromised that death occurs.

(continued next page)

The diagram below illustrates some of the complex factors that affect a plant's response to drought. When drought (precipitation deficit) causes a soil moisture deficit, plants can be stressed in numerous ways depending on their physiology and situation in the forest. Eventually, if the stress reaches a certain threshold it may result in plant death. The characteristics of precipitation (timing, amount, rain or snow, season), features of the site (topography, soil properties), species' traits (evapotranspiration, adaptations), and forest community characteristics all combine to determine the damage from drought.



—from Not All Droughts Are Created Equal by Leander D.L. Anderegg et al. Reprinted with permission.

Videos Worth Watching

The Sonoma County Forest Conservation Working Group (SCFCWG) provides education and resources to forest landowners with the goal of protecting and sustaining healthy forests, woodlands, and watersheds in Sonoma County. SCFCWG hosts a "Brown Bag" lecture series that covers a range of forest issues. Watch the April 2014 presentations on drought (physiology and fire safety) at http://cemarin.ucanr.edu/Programs/Custom_Program97/Forest_Stewardship/SCFC_-_Brown_Bag/

Adaptations for drought

Each plant species has its own tolerance for drought, based on its ability to tolerate, avoid, or resist the effects of lack of water. There are a number of physiological adaptations that help trees and other plants through a drought period. A long taproot to reach deeper water is one adaptation. The ability to wilt, which helps plants avoid sunburn, is another. Some plants are drought deciduous (*see page 5*) and drop their leaves to minimize water loss from transpiration.

Cone crop

This year does not appear to be a good one for cones. Conifers require good nutrition and water to produce a large cone crop. When trees are stressed, reproduction suffers.

Sometimes, a highly stressed tree may put a last burst of energy into producing a large number of buds, a last-ditch effort to reproduce when the future looks bleak. However, this doesn't necessarily ensure a good cone crop. These buds have a long way to go to become viable cones. First of all, the pollen has to be released at the same time the female flowers are receptive. That's usually a short 1- to 3-week window. Weather is a critical factor. During that period, if there is too little or too much wind or an unexpected rainstorm, there may be little fertilization. Even if fertilization occurs, a late frost can wipe out all the developing cones.

Long-term consequences of drought

Drought effects can last for years. How a tree allocates its energy sources during the drought can determine future growth. Pines, for example, set their needles according to last year's rainfall. When there is inadequate rain, the needles are stunted the following year.

After a drought there may be irreversible damage from the breakdown of tissues and other "choices" made by the tree. Before it can get back to normal a tree needs to allocate resources to repair, defense, and growth. In addition, trees may come out of the drought period in a weakened state, more vulnerable to the next stressor, be it disease, insect attack, frost, or the next drought.

Changing forests

Knowing the drought tolerance of the native trees in your forest will help you make better decisions about what species to plant and where to site them. Some of the more drought-tolerant trees include grey pine, ponderosa pine, blue oak, and live oak.

If drought conditions continue we can expect drought-tolerant trees to expand their ranges while less drought tolerant species contract. But there are many other factors at play. An extended drought, with its associated insect, disease, and wildfire impacts, could change our forests in profound ways.



Photo: Don Owen

Dead trees along the shoreline of Lake Tahoe after the 1992 drought.

Blue oaks: Not dead, drought deciduous



350-year old blue oak at Sequoia National Park.

Photo from Stahle et al., "The Ancient Blue Oak Woodlands of California: Longevity and Hydroclimatic History," Earth Interactions, August 2013 <http://journals.ametsoc.org/doi/abs/10.1175/2013EI000518.1>.

Blue oaks have evolved the ability to withstand years of little rain and high temperatures. While other oaks are resistant to drought, few combine all the mechanisms of conservation, tolerance, and resiliency that are present in the blue oak.

The leaves of blue oaks are moisture conserving by their nature. They are covered on the upper surface by a waxy coating that gives the tree its characteristic bluish cast. Also, the canopy of leaves remains proportionately smaller in blue oaks than in other less drought-tolerant species.

When water from the soil becomes very scarce, blue oaks exhibit a remarkable array of drought-coping behaviors. Leaves become reinforced with cellulose and lignin (the chemical component of wood) to withstand stresses imposed by the progressive dehydration. Photosynthetic cells adjust their internal salt content so that wilting is prevented even if the leaves lose up to 30% of their water to the bone-dry atmosphere. This surpasses the ability of some desert trees, such as the mesquite and ironwood.

As summer temperatures heat up, water demands increase. Vessels that conduct water in the stems and roots must be able to withstand

great internal tensions, just as a drinking straw must withstand the vacuum created by sucking a thick drink. As summer drought progresses, newly formed vessels become progressively thicker, harder, and more compact, decreasing the likelihood of collapse as roots withdraw the last droplets of soil-bound moisture.

Finally, if water becomes too scarce, blue oaks simply drop their leaves, a condition known as drought deciduous.

Drought-deciduous leaves are a common feature of chaparral and desert shrubs, but are rare among oaks and trees in general. Yet in extremely hot and dry years, blue oaks resort to such dormancy. They may look skeletal, but they are merely dormant, and they continue to fill their acorns with previously stored food. Most of the trees do not resume growth with arrival of fall rains, but wait until spring to produce a new crop of leaves.

This ability to endure allows blue oaks to dominate nearly half of all oak-covered lands in California.

—adapted from California Oak Foundation, <http://www.californiaoaks.org/ExtAssets/BlueOaksAdapt.pdf>

Oak Blog (abridged)

Given the very low rainfall this year it may be prudent to give a valued oak a “deep watering.” This can be accomplished by moving a hose around under the tree’s canopy for a day or two at a low flow or trickle, such that the water percolates into the soil. Water a few feet from the base of the tree [at the dripline] to avoid inviting damage from crown rot caused by the fungi *Phytophthora cinnamomi*. Water-saturated soil increases the chances of infection of the tree trunk.

A deep watering followed by soil drying for a month or two should not harm the tree. In fact, this may be the best recommendation for invigorating your thirsty oak, thus providing some insurance that the tree will survive the current drought.

Early browning and leaf fall is simply the tree’s way of conserving water when soil moisture is low. Unless the tree is severely weakened by some other cause, it will leaf out normally the following spring.

—Bill Tietje, http://ucanr.edu/Drought_825/?blogtag=oaks&blogasset=64830

RESOURCES (see page 10):

- CA Forest Pest Conditions 2013
- Forest Stewardship Series: Forest Pests and Diseases
- Tree Notes

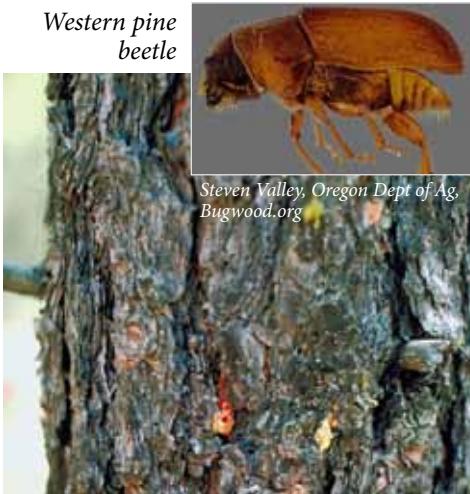


5-spined Ips beetle, a cause of pine mortality during drought.

Don Owen, CAL FIRE



Sign of red turpentine beetles, a good stress indicator. Once they move in, other beetles may follow.



Little holes in the bark and pitch tubes are signs of the western pine beetle.

Photo: Don Owen, CAL FIRE, Bugwood.org

Photo: Kenneth E. Gibson, USDA FS, Bugwood.org

Party time for pests

A healthy tree is usually able to produce enough pitch to repel attack by bark beetles and other pests. One of the consequences of drought, however, is that pitch production declines and trees are less able to fend off attack. This allows forest pests to thrive.

In addition to water stress, the higher temperatures and mild winters we've been experiencing allow insects to emerge and start flying earlier in the season. If warm temperatures continue into the fall, some species may even squeeze in an extra generation for the year. Pest populations can explode, especially during multi-year droughts.

This is not really unusual—Insects are known to experience “boom-and-bust” cycles, with

populations growing seemingly unchecked when circumstances allow, then crashing when their levels are no longer sustainable or when natural enemy populations increase in response to the abundant food source. What is unusual is the severity of this drought and the fact that we don't know when it will end.

Some beetles are attracted to stressed and dying trees by sight and smell. Upon finding a good host, individuals will emit a pheromone that can attract other beetles in great numbers. Large populations can cause widespread tree mortality, usually only in small areas, but if the drought continues this could change.

Bark beetles are probably the biggest threat to California conifers (see Tree Note 19: *Managing Bark Beetles in Urban and Rural Trees*). If you live in the ponderosa

pine area you will likely see western pine beetles.

Although bark beetles usually choose stressed trees to attack, some can even kill healthy trees when population numbers build up to outbreak levels. *Ips* beetles often build up on fresh slash and then can move to healthy trees (see Tree Note 28: *Ips Beetles in California Pines*). After *Ips* have successfully infested a tree it can't be saved.

You are limited in what you can do to protect your forest from bark beetles during drought. You can't water the whole forest or spray effectively for these types of pests. However, it may be beneficial to treat individual high-value trees with infrequent deep watering in the summer only (see sidebar page 5) and mulching, and in some cases proper pesticide application. These treatments only work if you do them before the tree is attacked.

Generally, you'll have to wait out the drought, secure in the knowledge that pest populations are sure to crash eventually. Be aware that these populations take time to decrease just as they took time to reach high levels. You can expect elevated beetle activity to extend over to the following year after the drought is over.

The best preventive measure is, of course, to make your forest as healthy and resilient as possible. This could include thinning, prescribed burns (in non-drought years), increased diversity (species, age, size class, etc.), lopping and scattering slash, minimizing activities that damage trees or disturb the soil, and other good forest management practices. Keep in mind that forest health is a long-term project, not limited to times of drought.

EVEN PESTS HAVE A ROLE: Insects and pathogens play a major role in the forest ecosystem, and are necessary for a healthy forest. These “pests” are the agents that weed out weak and sick trees, that help recycle materials and nutrients back to the soil for use by plants and trees, and that serve as food for a broad range of birds, mammals, and other creatures. Even in the midst of drought, it's important to remember that insects, fungi, and pathogens are valued members of the forest ecosystem.

Storage and Forbearance: Innovative solution to a major challenge

One of the many consequences of drought is water shortage. This has major implications to humans, trees, plants, and wildlife.

The Mattole River headwaters began experiencing severe seasonal water shortages in 1999. The Water Shortage and Forbearance Program that was developed as a response offers a model for other areas facing similar problems.

Summertime low flows in the Mattole River headwaters caused the river to dry up in some reaches, with disconnected pools contributing to poor water quality in others. This caused great hardships to both residents and fish.

Three native salmonid populations—Chinook, coho, and steelhead—are impacted as the river dries. They become easy prey trapped in small pools or die as the pools disappear. In other cases fish are weakened by poor water quality and low oxygen levels, making them less likely to survive to adults.

Local residents who pump their water from the river are also impacted. In the driest years, some families completely ran out of water, vegetable gardens had to be abandoned, and water quality diminished to cause health concerns even to those who still had water. Some residents were able to truck water in, but the expense or lack of access precluded others from this solution. This led to tensions and conflict in the community.

To resolve the problem, a local forum was held in 2002. Out of this came a hydrological study in 2004 and a report, *Options and Obstacles: Living with Low Water Flows in the Mattole River Headwaters*. The study found that halting water withdrawals could triple flows during the dry season.

Community members suggested a “storage



Photo: Sanctuary Forest

Storage tanks like this are available to families in critical reaches of the Mattole who agree to not pump water during the low-flow season.

and forbearance” approach, which was further developed by Sanctuary Forest, a nonprofit land trust whose mission is to conserve the Mattole River watershed.

The Storage and Forbearance Program is a creative solution that provides large storage tanks to families in critical reaches of the Mattole who agree to forbear from pumping during the low-flow season, approximately August through mid-November. The landowners are able to store enough winter water in the tanks to last through the low summer flows.

The voluntary, legally binding 15-year forbearance agreement clarifies responsibilities and protects all parties. Landowners participate by checking valves and equipment, monitoring tank volumes, and maintaining water use records to ensure supplies will last.

To date, the program has installed tanks on 18 properties of willing landowners along two key stretches of the Upper Mattole main stem (including Whitethorn Elementary School), and has secured funding for three more.

—*information and documents about Sanctuary Forest’s water programs at <http://sanctuaryforest.org/water-stewardship/>*

Today’s water scarcity challenges us to recognize the preciousness of water and learn how to steward this resource for the benefit of people and all other living things.

— *Options and Obstacles: Living with Low Water Flows in the Mattole River Headwaters*

Sanctuary Forest Water Stewardship Program <http://sanctuaryforest.org/water-stewardship/>

Resilience in a Time of Drought: A Transferable Model for Collective Action in North Coast Watersheds
<http://sanctuaryforest.org/wp-content/uploads/2014/02/Resilience-in-time-of-drought.pdf>



Steelhead.

Gerald and Buff Corsi © California Academy of Sciences

How can you help wildlife?

Trees aren't the only casualties. Fish and wildlife are also struggling in this unprecedented drought. With water sources drying up and vegetation withering, wildlife is increasingly at risk.

As the drought continues and deepens, we will see even more wildlife effects. There are critical times when adequate water must be available—especially reproductive periods and certain lifecycle stages.

Drought has an effect on the entire food web. When the habitat dries out there is less forage and herbaceous cover. This in turn means fewer rodents, which are the food of larger carnivores.

Some animals may have to migrate to find new sources of water. This is a risky undertaking as migration brings animals into new unknown territories.

In addition, when there are fewer watering spots, birds, deer, and other wildlife gather in larger groups, which makes them easy prey for predators. These gatherings are also prime breeding areas for disease, which can devastate waterfowl and other bird populations.

Predators, such as mountain lions and bears, may be more likely to come in close contact with human habitations in search of food and water.

For some species, especially endemics with small ranges, appropriate habitat is already very limited. They may have nowhere else to go. This is also true of threatened and endangered species, which are already on the brink from other stressors. Their ability to rebound from the drought remains to be seen.



Tiger Salamander.

Here are ways to help wildlife during a drought:

1. Conserve water! This will help maintain reservoir water levels and allow more water to reach rivers, springs, and bays. These resources are critical to wildlife survival.

2. Wildlife-proof your home. Wildlife will come closer to homes in search of water and food. Inspect your property for potential wildlife entry points and properly seal them.

3. Drive carefully and watch for wildlife. In a drought, wildlife will be moving around more than usual. Animals crossing roads are at risk both day and night. Nocturnal animals may be out during the day, and daytime animals may have to travel long distances to find enough food/water.

4. Keep cats indoors and dogs on leash. Desperate for food, predators may take a domestic pet. Birds that have migrated thousands of miles will be exhausted and depleted—they need every chance to make it. This includes not being attacked by well-fed pets.

5. Provide moist, cool housing for amphibians. Set out upside-down terracotta pots with a hole/door cut in the side where condensation from air conditioners drips onto the ground. This will allow sensitive amphibians such as frogs and salamanders to survive.

6. Use waste water to keep garden plants watered. Collect “gray water” (nothing soapy) to keep shrubs and plants watered. The plants will provide habitat and moisture for animals, and flowering plants will keep insects and

hummingbirds healthy. Otherwise “lost” water, such as a water wasted while waiting for hot water in the shower, can maintain resources for wildlife.

7. Cover swimming pools to prevent attracting animals. Covering your swimming pool prevents animals from being attracted to your yard for water. A cover has the added benefit of decreasing evaporation.

8. Plant native plants. Native California plants tend to be drought-resistant and require considerably less water than nonnatives and exotics. Take a critical look at your yard and replace water-intensive plants with California natives to make your yard an oasis for wildlife.

9. Think creatively in your garden! Water-conserving garden practices, such as using mulch to cover garden beds, not only help protect your garden but also support insects, worms, and other invertebrates which in turn provide sustenance for larger animals.

10. Do not provide supplemental food or water. During a drought, a water or food source (even a bird bath, pool, or bucket full of water) will draw animals to the vicinity. Having unnatural numbers of wildlife congregating in a small area can attract predators and cause disease outbreaks. When animals are stressed and/or weakened by starvation and dehydration they are more susceptible to disease. Drought conditions also create perfect conditions for some toxins, such as botulism, to proliferate.

—adapted from Wildcare, <http://www.wildcarebayarea.org/drought>

Wildfire Safety Tip:

Start at the house and work out

The fire season came early in 2014, as the new year began with tinder-dry forests following two years of drought. Between January 1 and June 7, CAL FIRE responded to over 2,100 wildfires that charred over 17,000 acres. In an average year, CAL FIRE typically responds to about 1,250 wildfires that burn just over 10,000 acres in that same time period.

Fire is a huge concern during a drought—for forests, people, and wildlife. With little precipitation, forests dry out earlier and the fuel ignites more easily. Now in our third year of drought, our forests are primed to burn.

The drought simply exacerbates an already dangerous situation. We have excluded fire from California's forests for decades and now our forests are overcrowded with brush and small trees. Add to this a growing population in the wildlands (Wildland-Urban Interface, or WUI) and fire issues become very complicated.

Prepare for fire

One thing is certain: Fire is an integral part of California's forests and they are going to burn. We can't prevent fire in our forests, we can only prepare for it. You can do this at several levels.

The first consideration should be your home itself. Have you taken the necessary steps to make your house fire-safe enough to withstand a wildfire? Embers are the number one cause of home ignitions. Look for ember entry points

in your home and make them secure. Look at all the possible areas that can burn, including the stuff around your house (brooms, furniture, firewood). These are steps you can take immediately and there are many resources to help you. Talk to your local Fire Safe Council, CAL FIRE Forestry Assistance Specialist, or UC Extension advisor.

Defensible space

Defensible space around your home and structures is the law; it's also the smart thing to do. It's critically important to remove the ladder fuels and lift up and separate vegetation that could ignite your home. More information on defensible space can be found at http://www.readyforwildfire.org/defensible_space.

Thin when the time is right

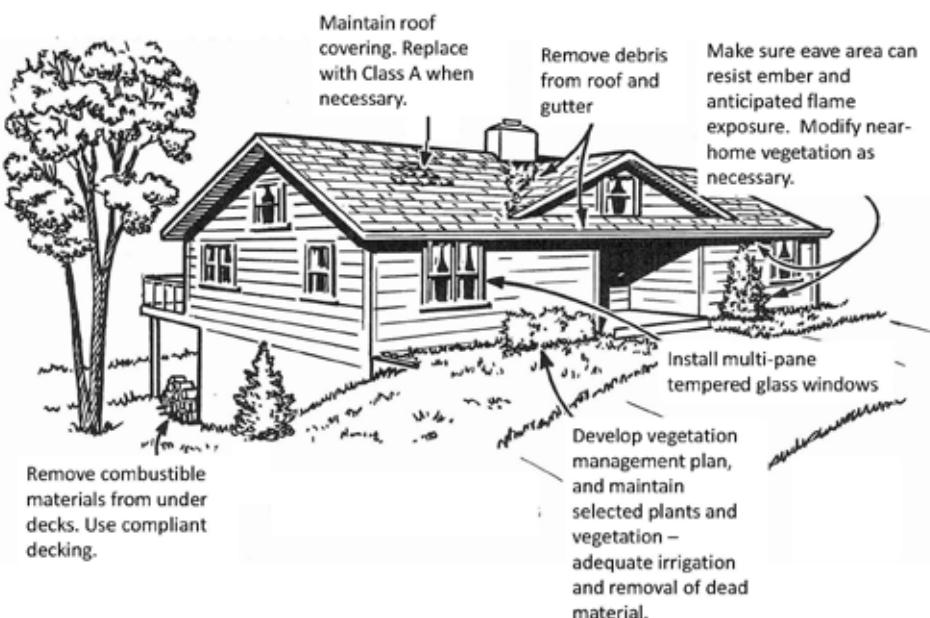
If your forest is overcrowded with trees and brush, thinning can help relieve competition and provide more water for those trees that remain, and also decrease the fire risk. But thinning in the middle of a drought could make matters worse by attracting bark beetles that put the remaining trees, already stressed and vulnerable, at risk of attack. If you must thin right now it is imperative to treat the slash by chipping it and/or completely covering the piles in clear plastic. Thinning the forest the correct way will help build your healthy forest.

Can your home withstand a wildfire?

For much more detail on how to harden your home to wildfire, see the excellent publication, *Home Survival in Wildfire-Prone Areas: Building Materials and Design Considerations*. Pay special attention to the following:

- Roof covering
- Skylights
- Roof Edge
- Rain Gutter
- Vents: Attic & Crawl Space
- Eaves & Overhangs
- Windows
- Window Screens
- Decks
- Deck Enclosure
- Exterior Siding
- Fire-Retardant Treatments and Coatings

—from Home Survival in Wildfire-Prone Areas: Building Materials and Design Considerations
<http://anrcatalog.ucdavis.edu/pdf/8393.pdf>



Resources

Emergency Water Conservation Regulations for Timber Harvesters

In light of the unprecedented drought, the California Board of Forestry and Fire Protection adopted emergency regulations to conserve water for fish habitat and drinking water. These regulations became effective June 19. <http://www.ca.gov/drought/news/story-56.html>

Tree Notes

Tree Notes is a series of short papers that provide information on pests and threats to forests, including many of the beetles that are common during drought: *western pine beetle* (#13), *bark beetles* (#19), *ips* (#28), and even a paper on *Identifying Dead and Dying Conifers* (#30). Produced by CAL FIRE, you can find the entire set at <http://ceres.ca.gov/foreststeward/treenotes.html>.

Forest Pests and Diseases

One of the Forest Stewardship Series from UC Extension, this publication covers a whole range of forest pests, including ticks and mammals. <http://anrcatalog.ucdavis.edu/pdf/8246.pdf>

California Forest Pest Conditions 2013

http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3791835.pdf

Home Survival in Wildfire-Prone Areas: Building Materials and Design Considerations

The way you build your house can make the difference between a cozy home and a heap of rubble when disaster strikes. Learn about

design methods and building materials to help your home survive a wildfire. <http://anrcatalog.ucdavis.edu/pdf/8393.pdf>

Home Landscaping for Fire

Incorporating fire safe concepts into your landscape is one of the best ways to help your home survive a wildfire. Learn how to establish and maintain defensible space at <http://anrcatalog.ucdavis.edu/pdf/8228.pdf>. There is also a Tree Note, #17 Fire Safe Landscaping at <http://ceres.ca.gov/foreststeward/pdf/treenote17.pdf>.

Doing the right thing the wrong way?

If you live in a wildland area you need to use all equipment responsibly. Learn more at <http://www.preventwildfireca.org/Equipment-Use/>.

Red Flag Warnings and Fire Weather Watches

A Red Flag Warning is the highest alert, when extreme caution is urged by all because a simple spark can cause a major wildfire. A Fire Weather Watch is one level below a warning, but fire danger is still high. http://calfire.ca.gov/communications/communications_firesafety_redflagwarning.php

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

Stewardship Forester
Stephen Smith; stephen.smith@fire.ca.gov

Forestry Assistance Specialists

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530-647-5200

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Rick Standiford, Specialist
510-643-5428; standifo@berkeley.edu
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Yana Valachovic (Humboldt, Del Norte)
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USDA Forest Service

Dan McKeague, Forest Landowner Asst Programs
707-562-8875; dmckeague@fs.fed.us

Calendar

August 22–23

NorCal and SoCal Society of American Foresters Winter Meeting: Economic and Environmental Impacts of Large Wildfires

Location: Tuolumne, CA

Contact: Kevin Locke, ncsaf@mcn.org; 800-738-TREE)

Registration: Early registration is \$95/\$125/\$40 (special rates for guests). Deadline for early registration is August 16. <https://www.eventbrite.com/e/norcalsocal-society-of-american-foresters-2014-summer-meeting-tickets-11831623705>

Notes: Saturday is an all-day field trip centered on the Rim Fire.

August 26–27

Board of Forestry Meeting

Location: Sacramento, CA

Website: <http://bofdata.fire.ca.gov/>

September 4

Sierra Nevada Adaptive Management Project (SNAMP) Water Team meeting

Location: Merced, CA

Contact: Kim Ingram, kcingram@ucanr.edu

Website: <http://snamp.cnr.berkeley.edu/events/>

Sept 30–Oct 1

Board of Forestry Meeting

Location: Sacramento, CA

Website: <http://bofdata.fire.ca.gov/>

October 8–11

Cal-IPC 2014 Symposium: Weeds and Water

Location: CSU Chico, CA

Website: <http://www.cal-ipc.org/symposia/index.php>

October 28–29

Aspen Ecology and Restoration Management in California Workshop

Location: South Lake Tahoe

Registration: <http://www.cafiresci.org/cafiresci/aspen/>

Note: Limited to 40 participants.

November 3–6

California Oak Symposium

Location: Visalia Convention Center, Visalia

Website: <http://ucanr.edu/sites/oaksymposium>

November 4–5

Board of Forestry Meeting

Location: Sacramento, CA

Website: <http://bofdata.fire.ca.gov/>

November 6

Sierra Nevada Adaptive Management Project (SNAMP) Annual Meeting

Location: McClellan Wildlife Training Center, CA

Contact: Kim Ingram, kcingram@ucanr.edu

Website: <http://snamp.cnr.berkeley.edu/events/>

November 12–13

Annual Meeting of the California Forest Pest Council

Location: Wildland Fire Training & Conference Center, McClellan, CA

Contact: Katie Palmieri at kpalmieri@berkeley.edu

Website: <http://caforestpestcouncil.org/>

December 2–3

Scaling Up: Exploring managed wildfire and landscape-scale prescribed fire in California

Location: Lions Gate Hotel, McClellan, CA

Sponsors: Southern Sierra Prescribed Fire Council and Northern California Prescribed Fire Council

Website: <http://www.sosierrapfc.org/calendar-of-events>

December 9–10

Board of Forestry Meeting

Location: Sacramento, CA

Website: <http://bofdata.fire.ca.gov/>

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Stewardship News



Kudos to Jeff!

Jeff Calvert, CAL FIRE Chief of Forestry Assistance Programs, received the 2014 National Conservation Excellence Award for his exceptional leadership in managing the California Forest Legacy Program. Scott Stewart, National Forest Legacy program manager, presented the award at the recent national meeting (above).

In addition, Jeff has been promoted to Manager of Forestry Assistance Programs.

Welcome, Steve

We are happy to report that **Stephen Smith** is the new CAL FIRE State Stewardship Forester. Steve comes to CAL FIRE from the Natural Resources Conservation Service (NRCS), where he has been the State Forester for many years.

As one of his many areas of responsibility, Steve will oversee the production of *Forestland Steward* newsletter. In addition, he will be reinvigorating the State Seed Collection program, which has been underfunded for the past five years.

Steve started his professional work as a field forester for the Stewardship/California Forest Improvement Program (CFIP) when it first began at the Department of Forestry and Fire Protection. This new position brings him full circle in his career.



New voice on the Helpline

Kevin Locke is the new voice behind the Forest Stewardship Helpline, which is managed by the Northern California Society for American Foresters. The Helpline is available to answer all of your forest-related questions.

Kevin is a Registered Professional Forester (RPF) with over 25 years of extensive forestry experience. He worked for the US Forest Service for about 14 years, as a forest property appraiser for the State Board of Equalization for 5 years, and retired from CAL FIRE as a Division Chief after 16 years. He lives in Calaveras County but has had experience all over northern California.

The Forest Stewardship Helpline can help forest landowners, free of charge, with advice and resources. Kevin doesn't do house calls but can point you in the right direction if you need information about tree health, fuels and fire, how to find an RPF, and other issues.

Call or email the Helpline at 800-738-TREE (8733) or ncsaf@mcn.org.