The Sierra Forest Voice
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Forest Service and SFL Conservation Partners End Decade-long Legal Challenge

On October 9, 2014 Forest Service and environmental plaintiffs signed a settlement agreement ending a decade-long legal battle over the 2004 Sierra Nevada Framework Forest Plan Amendments affecting management of the eleven Sierra Nevada national forests in California. A coalition of conservation organizations led by Sierra Forest Legacy and including the Center for Biological Diversity, Natural Resources Defense Council, Sierra Club and The Wilderness Society filed suit in early 2005 claiming the Bush Administration changes to the earlier Clinton Administration Framework plan failed to adequately protect old growth forests and associated wildlife species and was not consistent with national environmental laws. The coalition was represented by legal teams from Earthjustice and Sierra Club and SFL's long-term legal advisor, David Edelson.

In mid-2013, after years of partial victories, appeals and a voluminous court record, the Forest Service and the environmental groups began settlement discussions on key issues of conservation of at-risk species, the need for increased fire use as a part of forest management, and conservation of post-fire forest environments. The October 9, 2014 settlement agreement codifies the agreement that highlights creation and analysis of conservation strategies for the Pacific fisher and the California Spotted owl, a Memorandum of Understanding ("MOU") for the increased use of managed fire for ecological benefit, and forest plan components addressing post-fire, complex early-seral habitat.

Over the years we have found that Forest Service scientists, Forest Service leadership, and conservation groups—while not in perfect agreement—are beginning to share many of the same concerns over conservation of at-risk species, the positive role of fire as a landscape ecological disturbance process that builds resilience in forest environments, and the need to improve management of post-fire habitats. The Sierra Nevada Framework Settlement Agreement puts technical substance— and, hopefully, the best conservation thinking—on the ground, using the best available science to improve habitat resilience and habitat expansion for at-risk species.

We are concerned that the Forest Service ensure that wildlife ecologists play a key role in the finalization and implementation of the Settlement Agreement, and long term goals for resilient Sierra Nevada landscapes not override the immediate need for protection of key habitat attributes such as maintaining high canopy cover and increasing the large tree component across the range. These elements are critical for the persistence of fishers and spotted owls.

Some scientists and Forest Service specialists articulate a vision of resilient landscapes, informed by historic reconstructions, old photos and accounts from the past, that attempt to demonstrate that reduced canopy cover was a general characteristic of Sierra Nevada vegetation driven by very active fire disturbance. This vision then leads to a call for accelerated canopy reduction as the primary element of restoration action. It is usually absent the necessary conversation about the dramatic loss of large, old growth trees that were cut and hauled out of this mountain range, by every means imaginable, for a century or more. Those decaying, old growth trees supplied the habitat structures (cavities, broken tops, huge limbs and canopy cover) necessary for species’ survival. Simply reducing canopy and pretending that wildlife will have to make do with what is left in today’s landscape is a very risky and simplistic vision that we have never heard articulated by wildlife ecologists. It will take hundreds of years to replace the large, decaying old growth trees that were removed in the century-long logging “heyday” of the past. Most people don’t realize that the large trees we see on the landscape today are more youngsters compared to the size and quality of old growth forests once common in the Sierra Nevada. These trees also happen to be very fire resilient.

The reason the Settlement Agreement linked conservation of old forest species and a strategy for increased managed fire in the Sierra Nevada is that: 1) we won’t get to fire-resilient forests without a dramatically ramped up fire program that “treats” 20-30,000 or more acres/year on each forest, and 2) this scale of treatment will never be achieved via mechanical treatments alone due to steep terrain, lack of access and a clearer understanding today that regular fire delivers much more benefit than simply fuels reduction. Fire is the great stabilizer, transformer, and energizer of the ecosystem we call the Sierra Nevada, and it has been for millions of years. The fire suppression “war” we are currently conducting on this landscape is a losing battle. We can only hope attitudes inside and outside the Forest Service change sooner than later.

The final part of the Settlement Agreement is aimed at opening up a more science-based conversation about what sort of management should follow, in particular, stand-replacing fire events when they do occur. While Forest Service attitudes are changing based on recent research looking at burned landscapes and the ecological values of complex early-seral forests, SFL and our coalition partners still struggle to change Forest Service attitudes about burned forests that were formed in the early 1900’s and still include massive salvage logging—and installation of fire-prone plantations—an acceptable practice.
Conservation Planning: Strategies for Fisher and California Spotted Owl
Now In Development

After several years of advocacy by Sierra Forest Legacy and others, the Forest Service agreed in 2012 to develop conservation assessments and strategies for California spotted owl and fisher. The persistent population declines for California spotted owl and fragile status of the fisher populations emphasize the urgency and need to complete these assessments and develop strategies to ensure their persistence.

Southern Sierra Nevada Fisher Conservation Strategy

The recent proposal by the US Fish and Wildlife Service to list fisher as threatened under the Endangered Species Act highlights the threats to this species, including timber harvest, rodenticides and other pesticides, and severe wildfire when it affects large areas. At the encouragement of the Sierra Nevada Conservancy and other stakeholders, the Forest Service convened an agency team and a technical team to begin work on developing an assessment and strategy to support fisher conservation. More detail about the formation of the team can be found at this Forest Service website.

The Fisher Technical Team (FTT), led by Wayne Spencer of the Conservation Biology Institute, is finalizing the Conservation Assessment, a peer reviewed synthesis of research on fishers in the southern Sierra Nevada. Sue Britting, SFL’s Executive Director, was invited to join the Fisher Technical Team, contributed to the assessment and is now working with other members of the FTT on the Conservation Strategy. The strategy document is designed to addresses the threats and stressors identified in the assessment and intends to provide management recommendations to stabilize and increase the numbers of fisher in this region. As required by the recent lawsuit settlement (see article above), the Forest Service is required to incorporate the recommendations from the final strategy into the forest plan revision process that is now underway on the Inyo, Sequoia and Sierra National Forests.

New Interim Guidelines for California Spotted Owl

In early 2013, a team of owl scientists led by Pete Stine, Pacific Southwest Research Station, was convened to develop an assessment and conservation strategy for California spotted owl. This team has nearly completed the assessment and plans to have the conservation strategy completed in 2016. This conservation strategy, similar to the strategy for fisher, is expected to utilize information presented in the assessment to make recommendations on actions needed to reduce threats to spotted owls and reverse the population decline.

Unfortunately, the timeline for completing the assessment concludes after the Forest Service intends to adopt revised forest plans on the Sequoia and Sierra national forests. During settlement, we brought this issue to the negotiation and convinced the Forest Service to solicit interim guidelines from owl scientists and other experts. Now as required by the settlement agreement, the Forest Service will convene a team of owl scientists and other experts to review current management and provide recommendations on necessary interim guidelines to be used until such time the Forest Service completes a conservation strategy for spotted owl. These interim guidelines would be incorporated into the forest plan revision process and in the environmental review process for project level planning.

Linking Science, Scientists and Management

We sought through the lawsuit settlement process firmly to link recent and ongoing research on these imperiled species to the forest plan revision process by obliging the Forest Service to incorporate recommendations from experts into the forest plan revision process. We are working closely with the Forest Service, scientists and other experts to implement the terms of the settlement agreement. As a result of this approach, our expectation is that the revised forest plans substantially will reverse declining trends and reduce threats to fishers and spotted owls in the southern Sierra Nevada.

News Bytes from the Front

A Future with Fire: Exploring Opportunities for a More Resilient California

Recently Sierra Forest Legacy co-sponsored and helped to plan and coordinate a two-day joint conference with the Southern Sierra Prescribed Fire Council and the Northern California Prescribed Fire Council. The conference, held December 2 and 3 in Sacramento, was focused on the challenges and opportunities for scaling up fire-based restoration in California. Over 200 participants from diverse backgrounds, including federal and state agencies, local agencies, air quality regulators, forest and fire ecology experts, air quality experts and specialists, NGOs, tribes, consultants, academia and private landowners came together to explore three major issues that present great challenges to increased
ecological burning; air quality regulations and implications of changes in the current rules; fire management planning and operations; and messaging and outreach.

As part of the opening address, Shawn Legarza, Regional Director of Fire and Aviation Management for Region 5, highlighted the National Cohesive Wildland Fire Management Strategy and how the Forest Service is using the national strategy to restore and maintain an active fire regime on public lands. Her speech kicked off a great day of presentations from experts, many of whom supported the need for federal, state, and local agencies to work towards agreements that will facilitate the most flexibility for sharing funds/resources and unified messaging for a more robust fire management program in California.

On day two, Rob Griffith, Assistant Director of Fire and Aviation Management for Region 5, announced the Region is in the beginning stages of developing a Fire Memorandum of Understanding. The purpose of the MOU is to support the increased application of fire for ecological benefit by supporting three main objectives:

- Engagement with a diverse group of partners;
- Addressing barriers to a more robust fire management program through improved coordination and communication; and
- Increasing capacity to implement landscape scale fire through facilitating trainings and resource sharing.

We were pleased with the depth of presentations and discussions for moving towards resilient landscapes that support an active fire regime. There was overwhelming support from several speakers to create a unified strategy to facilitate an "all lands approach," and the development of a Fire MOU will create a unified purpose across all administrative boundaries. At the close of the conference, in addition to the Fire MOU, there were several concrete actionable items identified by participants for the councils to pursue in the coming years, as well as ample opportunities to coordinate and share ideas for creating a more resilient California landscape. You can link to the conference flyer and agenda, and listing of speakers, here. A complete summary of the conference proceedings and action items will be posted on our website soon, and at both the Southern Prescribed Fire Council and Northern California Prescribed Fire Council websites.

Learning Corner

Spotlight on Species: Whitebark Pine (*Pinus albicaulis*)

Whitebark Pine, An Ecosystem in Peril © Larry and Nancy Eifert, used by permission. Download species legend here.

The synergistic effects of climate change, fire suppression, increased mountain pine beetle herbivory, introduced disease (white pine blister rust), and the legacy of inadequate regulatory mechanisms and unsustainable land management are currently being seen in the decline and endangerment of one of California’s most beautiful and ecologically significant conifer species: whitebark pine (*Pinus albicaulis*).

The U.S. Fish and Wildlife agency designated whitebark pine in 2011 as a candidate species warranted for protection under the federal Endangered Species Act. To date, the species has not yet been formally added to the list, as work priorities have precluded its listing. This is frequently the case due to chronic under-staffing at the federal agency. However, the agency has determined that the threats to the species are "of high magnitude and imminent."

In California, whitebark pine occurs from 8,000 up to 12,000 feet in mixed subalpine forest, and as
Whitebark pine is one of 52 different species of conifers in California, the most conifer-diverse state in the U.S. (Oregon, at #2, has a mere 32 species). White pines (except for singleleaf pinyon) are those which have 5 needles in each bundle. There are eight species of "soft pines" or "white pines" that include whitebark pine, sugar pine, the pinyon pines, limber pine, foxtail pine, and Great Basin bristlecone pine. Separate from its classification as a white pine, whitebark pine is also North America's only "stone pine." Stone pines are pines that are not wind dispersed. They do not have a wing attached to the seed and are dependent upon animals for dispersal.

Whitebark pine has several important ecological roles in Sierra Nevada forests, and is considered a keystone species. That is because it is one of the first species to recolonize burned forests at high elevation. It acts as a nurse crop that provides shelter and protection for establishment of other species, and captures nutrients that might otherwise be lost from run-off after snow melt. Whitebark pine provides essential food for many animals, including grizzly bears in the north, black bears, many birds, golden-mantled ground squirrels, and many other small mammals.

Reproductive strategy, as many of the seeds will not be eaten and whitebark seeds lack a wing to facilitate wind dispersal, and cling inside the cone, animals are essential to aid reproduction of this species. Burying the seeds helps to prevent them from drying out, and this may be important for survival as our planet warms and rain and snow are reduced. However, while Clark's nutcrackers are considered essential for reproduction of whitebark pine, if the pine seed crop is insufficient due to white pine blister rust infection and branch die-back, the nutcrackers will leave and find another locality for the season where they can survive on other food sources.

**Principle Threats in the Sierra Nevada**

**White pine blister rust**

White pine blister rust (Cronartium ribicola) is a non-native fungal pathogen accidentally introduced to North America in the early 1900s. It has spread rapidly from the coast to the mountains throughout western North America, infecting sugar pine, western white pine, and whitebark pine, and it is thought to have arrived in the Sierra Nevada approximately 40 years ago. The complex life cycle of white pine blister rust requires two hosts: a white or 5-needle pine, and an intermediate host (usually, but not exclusively, a member of the genus Ribes—gooseberry or currant). The spores that initiate disease in pines are produced from a rust infection on Ribes. When infected, the pines respond with a blister-like canker on the branches, ultimately killing the branches and tops of trees, or eventually, the whole tree. Bright orange spores are released from the blisters which in turn re-infect Ribes species, thus completing the cycle. As branches die, seed cone production is greatly reduced, which in turn reduces the ability of the trees to attract Clark's nutcrackers.

Infected trees produce more sugar in response to the infection, which makes them more attractive to herbivorous insects and chewing rodents. Weakened trees are in turn more susceptible to mountain pine beetle attack.

**Mountain pine beetle**

Mountain pine beetle (Dendroctonus ponderosae) is a native beetle that is currently on the increase throughout the west. In recent decades it has killed millions of hectares of forest in British Columbia, Colorado, Wyoming, Montana, Idaho, California, and throughout the pine forests of the west. It's natural distribution ranges as far south as Baja California and east to the Black Hills of South Dakota. It's primary host in the west is lodgepole pine, sugar pine, whitebark pine, and ponderosa pine.

The female beetles burrow into the bark to the phloem, creating vertical galleries and laying eggs. After the larva hatch, they eat horizontal galleries in the phloem that eventually cut off the tree's vascular system. The female also injects blue stain fungus that she carries in her mouthpart, which effectively blocks the ability of the tree to defend itself with resin.

The epidemic nature of the outbreak is thought to be primarily due to the synergistic effects of forest management practices including fire suppression and climate change. Normally, these beetles play an important role in attacking weak trees, and facilitating the production of snags and other structures that provide habitat and food for a variety of forest species. The beetles may also play a role in the periodic,
but infrequent, stand-replacing fires that are key to species regeneration at high elevation.

**Altered Fire Regime**

Modern methods of fire suppression have left high elevation forests out of sync with natural fire regimes, as is the case throughout the conifer belt in the west. Fire suppression has produced forests that are unnaturally dense, and drought has left trees weakened as they compete for limited water and resources. Climate change exacerbates this sequence by contributing to higher temperatures and drought conditions, further weakening susceptible trees. Normally, two years are required at high elevations for the beetles to complete their life cycle, but if temperatures are high enough, mountain pine beetles may complete their life cycle in just one year, thereby contributing to higher reproduction rates for the beetles.

**Conservation and Restoration**

Throughout the species’ range, restoration efforts are primarily focused on identifying the factors for rust resistance, and planting rust-resistant seedlings. Researchers in the Sierra Nevada are also investigating the role for early bud-set phenotypes that initiate winter dormancy early in August, thus preventing rust spore inoculation. Researchers have noted that stands growing at the higher elevations in granitic rock substrate are more resistant to rust infection as well. Soils which are wetter and deeper appear to support more rust infection than occurs among stands growing in drier, less productive sites.

In the Tahoe Basin, the most recent (November, 2013) revised Land Management Plan identifies “Species Refuge Areas” for whitebark pine and other federally listed, candidate, or proposed listed species (link to map, here). The plan also includes a commitment to develop a conservation strategy for whitebark pine in the Lake Tahoe Basin Management Unit.


In the preface to his book *Conifers of California,* author and forest research scientist Ronald Lanner summarized the synergy between fire, and animal and plant diversity in California, writing:

“California is conifer country...Many of California’s conifers can only be described by superlatives. Sugar pine—the world’s largest pine; redwood—the world’s tallest tree; giant sequoia—the world’s most massive tree; Great Basin bristlecone pine—the world’s longest-lived tree; and the list goes on. California has more conifers that depend on fire for their regeneration than any other state or foreign nation. It has more pines whose seeds are dispersed by animals than any other state or nation except Mexico.”

So the next time you are heading out to explore the high country, you might want to stop and pay your respects to the many species of conifers you may encounter along the way, and especially take note of whitebark pine. You can see it in Yosemite, at Tioga Pass; in the Tahoe Basin on the summits at 9,000-10,000 feet. At Lassen Volcanic National Park, it is the dominant tree at timberline. It is also found at many locations in the mountains of the Eastern Sierra.

For further exploration:

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**References:**


Books by Ronald Lanner [link to website].


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Forest Facts:

Krummholz (From German, "Krumm"-bent, twisted, crooked; and "holz"-wood) is a term used to describe conifers growing in the subalpine zone that are shaped by continual exposure to extreme weather, including especially strong winds and snow. Their trunks become gnarled and bent with the wind and snow, and are reduced in height.

Approximately 1.8 million hectares (4.44 million acres) burned annually in California (pre-1800 (Stephens et al. 2007) in an era that we tend to call pristine and fire resilient.

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Sierra Forest Legacy Bookshelf

Secrets of the Oak Woodlands - Plants and Animals Among California's Oaks by Kate Marianchild. Illustrations by Ann Meyer Maglilite. Heyday, Berkeley, California

This delightful walk in the woods—the oak woodlands, that is—will enrich your knowledge about California’s most representative native landscape: the oak woodland. Written by Kate Marianchild and beautifully illustrated by Ann Meyer Maglilite, it is guaranteed to surprise you with new facts about this familiar plant community. For example, did you know that California quail embryos talk to each other through their egg shells? Or that woodrats build five foot tall lodges with many rooms? These amazing rodents build complex mansions with multiple levels, corridors, and terraces that contain specialized spaces for sleeping, food storage, and latrines. Some of these lodges may remain in use for 60 years or more, passing from one generation to the next. The chapter on this species may be of special interest to SFL readers, as the dusky-footed woodrat is an important prey species for the endangered California spotted owl.

The 202 page book contains chapters on 22 different species, including the familiar acorn woodpecker, two types of butterflies, coyotes, mushrooms, oak galls, poison oak, manzanita, Western fence lizard, oak titmouse, as well as California quail and woodrats. Each chapter contains a fact-rich summary of the ecology of each species, and a narrative filled with anecdotal and frequently humorous observations. The illustrations will be familiar to those of us that make our homes in the oak woodlands.

As many of our readers know, oak woodlands are seriously threatened throughout California. It is surprising, when you stop to think about it, that only now—in 2014—has the story of this wondrous plant community been brought to light in a format that will appeal to a wide audience. This book will be appreciated by anyone with a love for nature who also enjoys good nature writing.

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Help Protect Our Sierra Nevada Forests

The work we do to protect the forests, with all of their unique and rare plants and animals, and the many wild places of the Range of Light cannot be done without the generosity of our supporters. Please help us to keep up our efforts. You can make a safe and secure donation from this website. Thanks to all who have so generously supported our work - together we form a multitude of voices. Join us in saying, "Si, se puede" on behalf of the wild forests of the Sierra Nevada.

"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it does otherwise."

~Aldo Leopold

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