

A **FORESTLIFE** PUBLICATION

# LEAFLET

SCIENCE, STORIES, AND PERSPECTIVES FROM THE PACIFIC FOREST TRUST

CONSERVATION

## Shasta-Area Conservation Expands

20 SQUARE MILE WORKING FOREST CONSERVATION EASEMENT TO CLOSE

Hancock Timber Resource Group and Pacific Forest Trust are pleased to announce that their multi-year campaign to conserve a 12,805 acre timber property that borders the historic mill town of McCloud, California, has come to fruition. The McCloud Dogwood Butte Working Forest Conservation Easement is expected to close this spring, permanently protecting abundant water sources, bountiful wildlife habitat, and jobs on this sustainably managed property. Now, this forest will never be broken up or converted for other uses. Guided by the conservation easement terms, Hancock will continue to manage for ecological and economic benefits.

The conservation of this strategically located property significantly expands the protection of the McCloud River watershed. One of the state's most important sources of cold, clear water, the McCloud River flows to Lake Shasta, benefiting 25 million Californians downstream. This partnership increases the network of privately owned working forests conserved by Pacific Forest Trust in the McCloud watershed to over 30,000 acres—an area the size of San Francisco.

This property bridges a key north-south gap between two tracts of the Shasta-Trinity National Forest, securing an important migratory corridor for wildlife adapting to climate change. Through continued management and habitat enhancement, an estimated 127 species will benefit, including 10 special status species, such as the northern spotted owl and Pacific fisher. More than 35 miles of waterways fed by 78 volcanic springs will be protected, as will 766 acres of riparian habitat and 236 acres of wetlands.

Protection and enhancement of this working forest are priorities of the California Department of Fish and Wildlife. We are extremely grateful for support from a diverse coalition of funders: the Wildlife Conservation Board, the project's lead funder; the California Resources Agency Environmental Mitigation and Enhancement Program; the Department of Water Resources Integrated Regional Watershed Management Program; and a group of dedicated charities whose support made all the difference. To learn more about this project, visit: [www.pacificforest.org/McCloud-Dogwood-Butte](http://www.pacificforest.org/McCloud-Dogwood-Butte)

### National Recognition for Pacific Forest Trust

We achieved re-accreditation from the independent Land Trust Accreditation Commission, signifying that we meet the highest standards of quality in our work and robustness of our programs. We are committed to ensuring quality and permanence in our conservation of private working forests for their many benefits to the environment and the communities that depend on them.



# Promoting Water Security, Naturally

California's population is projected to hit 50 million by 2050, increasing demand for an already scarce resource—cool, clean water. This increased demand in a warmer and drier state dramatically highlights the critical need to improve the reliability of our primary water supply. To help address this, Pacific Forest Trust is working closely with California Assemblymember Richard Bloom on his pioneering legislation, AB 2480, which recognizes source watersheds as infrastructure and a critical component of the state's water system. AB 2480 also calls for a prioritized and comprehensive investment plan to restore and conserve key watersheds.



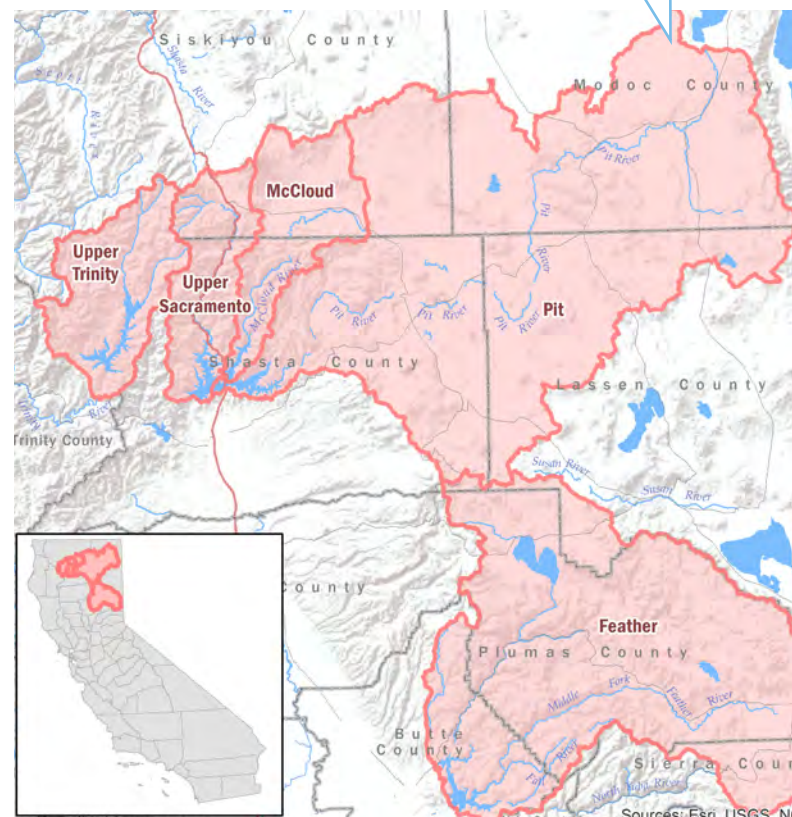
Just five source watersheds in northern California provide 80 percent of the state's reservoir capacity, supplying drinking water for over 25 million people, irrigation water to 8 million acres, and over 80 percent of the freshwater for the San Francisco Bay. These watersheds collect, treat, store, and transport water that fills our reservoirs. California has policies and systems in place that maintain our *built* water infrastructure such as dams, levees, and canals. However, the state has no policies or systems for ensuring the function of our *natural* water infrastructure, the source watersheds which are essential for dams to function.

These primary source watersheds are in sub-optimal condition and increasingly threatened by climate change, fragmentation, and other stressors that reduce watershed function. Fortunately, this is a reversible trend. It is well documented that watershed restoration and conservation can increase water quality and quantity, as well as improve flow regulation—both reducing peak flooding and holding water later into summer seasons.

AB 2480 is the first step in putting together a comprehensive system to reduce these risks and promote water security and adaptation under climate change. Watershed conservation is one of the most cost-effective things we can do for greater water security, quantity, and quality—a complementary and least cost approach to other water treatment and development.

Without these source watersheds, our dams cannot provide the water we rely on. The northern California region in which they are found is projected to remain far cooler and wetter than the rest of the state under climate change. As a result, our dependence on these source watersheds is likely to increase. Just like dams, levees, and canals, natural watershed infrastructure needs repair and maintenance. Now is the time to make a focused investment to ensure its restoration and protection, building climate resilience and enhancing our water security.

These five watersheds—the Trinity, McCloud, Feather, Pit, and Upper Sacramento—provide 80 percent of the state's reservoir capacity.



WATER & WILDLIFE

# Welcoming Home the Salmon

Walking along the sides of Squaw Creek in the California van Eck redwood forest this winter, we found a number of coho salmon nests and other welcome signs that this stream is home to these magnificent fish.

Each spring, coho salmon emerge from pea-sized eggs laid together in a nest, called a redd. Salmon are the most vulnerable at this stage. At first, these tiny hatchlings, or alevins, rely on food from their yolk sacs, which remain attached to their bodies for up to ten weeks. In addition, early spring temperature shifts can cause the fish to freeze and disturbances in their habitat can stir up too much silt or wash away gravel and protective structures.

**To safeguard these tiny and growing salmon, Pacific Forest Trust is working to restore and protect their habitats.**

Each fall, three years after they left, salmon return to spawn in the clean waters of the van Eck forest. They leave the Pacific ocean and re-enter the Mad River just north of Arcata, California. They swim upstream, returning to the waterways in which they hatched. Within this working redwood forest, we have 200-foot wide buffers around all fish-bearing streams, in which we focus our activities on restoration, seeking to promote salmon habitat. We also collaborate with neighboring landowners to restore adjoining habitat degraded or lost through past management.

As a result, these riparian forests are beginning to recover their more natural structure and composition, shading and enriching the streams that flow through them. The waterways in and around these forests are also known to support Chinook and steelhead salmon as well as coastal cutthroat trout, which also benefit from these restoration efforts.

Working with the California Forest Improvement Program, we're developing plans to restore more natural stream contours and reestablish pools and refuges for coho salmon.

Coho salmon are listed as threatened under both the California and federal Endangered Species Acts. Since we began restoring habitat for salmon in the van Eck forests, we have observed young coho salmon, redds (nests), and adults in the streams running through the property.

This will restore more natural function to the waterways impacted when the area was converted to pasture and a rail line put in, in the early 1900s. This is crucial for coho salmon recovery. It helps them when they are most vulnerable and allows them to grow big enough to make the journey to the sea and begin their upstream swim again.

To learn more about the van Eck forests and how you can help, visit: [www.pacificforest.org/van-eck-forests](http://www.pacificforest.org/van-eck-forests)

When salmon eggs hatch, the young fish, called alevins, remain attached to their yolk sacs for up to ten weeks. They are largely immobile and stay in their nests until their yolks are absorbed.



# Signs of the Times

## INDICATORS OF CLIMATE CHANGE IN CALIFORNIA

Animals and even plants are on the move due to climate change, according to the report, *Indicators of Climate Change in California*, a compilation of research from universities, state and federal agencies, and other research institutions.

Like us, plants and animals need specific things in order to survive in a given area. They depend upon specific temperatures, sources of food and water, and amounts of sunlight. As these conditions continue changing in California due to hotter and drier climatic trends, the survival of many species will be increasingly threatened. The *Indicators of Climate Change in California* report details effects we're already seeing, such as alterations in the timing of life cycle stages, movement of species to higher elevations to find habitat that meets their needs, and increases in vulnerability to stress factors.



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The golden-mantled ground squirrel is one of ten small mammal species that experienced a reduction or narrowing in the elevation of its habitat. This was revealed through repeated surveys of 28 small mammal species in Yosemite National Park spanning 100 years.

Decreases in water availability combined with increases in temperature are direct causes of stress in our forests and other habitats. While drought may be the proximate reason for recent increases in tree mortality, the longer-term climate change trend is also impacting lower elevation conifer forests. According to the report, over the last 60 years, the lowest edges of forests dominated by conifers in the Sierra Nevada shifted upslope to higher elevations where temperatures are cooler. This not only affects vegetation patterns and the composition of the forests, it impacts all the animals and plants that rely on them.

Repeated surveys spanning nearly 100 years in Yosemite National Park revealed that distributions of small mammal populations are shifting, with most of the changes involving movement to cooler, higher elevations. While scientists found several factors influence this, increased temperatures played a major role. Movement may not be an option for all small mammals as those at the top of the mountains have nowhere left to go. And, if contractions in range and shifts to higher elevations continue, species like the golden-mantled ground squirrel (pictured), will eventually run out of places to live.

If we address the underlying stresses on our forests, we can ensure that they are more resilient to the effects of climate change. We envision a carbon-rich, resilient landscape where California's forests are managed to promote wildlife adaptation, increase carbon storage, improve water quality and availability, and sustain forest communities and economies. Learn more about our vision for carbon-rich, resilient landscapes at: [www.pacificforest.org/climate-policy](http://www.pacificforest.org/climate-policy)

*Indicators of Climate Change in California*, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency (2013)



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