

Living with Fires: Old and New Approaches

by Melanie Loo

Old, numbered irrigation standpipes along the trails in the Nature Study Area (NSA) remind us that fire suppression has been a concern ever since the NSA was first established. Reflecting even further back, it is clear that Californians have had a long and sometimes complicated history with fire.

For thousands of years California Indigenous peoples have recognized the dangers and benefits of fire. They harnessed fire to clear living areas, used it to manage surrounding land, and treated it with respect. Tribes had fire practitioners who passed on knowledge of how to use fire safely and in accordance with cultural principles. Annual cultural burns at specific times and places kept fires at a low intensity and safe from spreading dangerously. The burns reduced unwanted vegetation and insect pests, making tubers, acorns, and other desired plants easier to gather; they also encouraged the growth of shoots for basketry materials. Some studies estimate that before the 1800s California natives managed the burning of about 4 million acres of land each year.

Cultural burning decreased markedly in the 1800s when settlers took over native lands and suppressed all native cultural practices and issued a bounty on practitioners. In the early 1900s state and federal agencies banned the use of cultural and other low intensity burns to manage wildlands (forests, grasslands, woodlands, and other non-residential lands), and encouraged settlers to shoot so called “arsonists” on sight! They aimed to preserve lands in their “wild” state, not realizing that what they were perceiving as “wild” was the product of centuries of tending by native peoples. The US Forest Service led in promoting the aim of rapidly extinguishing all wildfires. In the 1960s multiple ecological studies noted that National Parks ecosystems were being degraded by fire suppression. Along with other studies of worsening state park ecosystems, these resulted in Sequoia-Kings Canyon National Park and some California parklands being treated with controlled burns. By 1996 ecologists and fire scientists were recommending an end to the strict goal of rapid-fire suppression in all wildlands.

After almost a century of fire suppression, layers of brush, grass, and debris had accumulated in wildlands. Temperatures and periods of drought were also increasing due to climate change, and human habitations were moving closer to the Wildland-Urban Interface (WUI). These conditions greatly increased the risks and intensity of wildfires.



A standpipe that can be accessed to shoot water onto a fire in the NSA. Photo © Melanie Loo.



UC Davis students, academics and members of the local Native American community take part in a collaborative cultural burn at the Tending and Gathering Garden at the Cache Creek Nature Preserve in Woodland. Photo © Alysha Beck/UC Davis



All fires require an ignition source, combustible material, and oxygen. Wildfire ignition sources are sometimes difficult to pinpoint. However, in the 2020s organizations like the Western Fire Chief's Association, Earth.org, and the PBS Newshour attributed 85-95% of wildfires to human activities. Campfires, downed power lines, sparks from machinery, matches, and smoking materials are common igniters of wildfires; lightning is responsible for starting the remaining cases.

Readily combustible materials (AKA fine fuels) include dried brush, grass, and dead vegetation, which are increased by drought and heat, and which can spread fire to more substantial structures like trees and houses. High winds both provide more oxygen for hotter fires and spread fires by moving sparks and embers around. With shorter rainy seasons and warmer temperatures, fire season, which used to be from May-October, is now almost year-round in California. Wildfires have been reliably recorded since 1932, and eight of the ten largest (measured in acres burned) wildfires in California occurred in the last seven years. Besides destroying vegetation, these fires severely damaged buildings, human lives, air and water quality, habitat available to wildlife, and species moving too slowly to escape the fire's path. Billions of dollars have been spent on fighting and remediating the effects of wildfires.

Last May, 2023 during Wildfire Preparedness Week the Governor's Office announced new funding to address fires in the state and published the "Top 6 Ways California is Preparing for Wildfires." New funding included investing \$2.7 billion in hiring more firefighters, acquiring more aircraft dedicated to firefighting, and continuing to improve cooperative efforts at the state and federal levels. The funding also supported educating communities about how to create defensible spaces around buildings, which retard the spread of fire, and completing fuel reduction projects, to remove highly flammable vegetation and debris in wildlands.

In addition, the Governor established the California Wildfire and Forest Resilience Task Force, which includes a Prescribed Fire Work Group. The Task Force and Work Group include representatives from federal, state, local, tribal, and private entities, and aim to increase the coordination and communication of efforts among stakeholders. Cited as two of the "key elements" in the Task Force's Strategic Plan are providing state financial support to reviving tribal cultural burning programs and establishing a Prescribed Fire Training Center. A goal is to have 400,000 acres per year treated with cultural and prescribed burning by 2025.



Part of a herd of goats reducing easily combustible vegetation on the slope above the Bluff Trail in the NSA. Photo © Melanie Loo.



Marti Ikehara and Ed Smith cut away dead branches that might serve as ladder fuels, allowing a ground fire to move up into tree tops. Photo © Melanie Loo.



Since the prescribed and cultural burning programs are still in their reborn infancy, the Effie Yeaw Nature Center (EYNC) has not yet benefited from them. The last reported fire at EYNC was in July of 2019, when a spark from a mower blade striking a rock ignited a small fire off of the main trail. This fire was extinguished by a helicopter hauling water from the river. More recently, the EYNC has benefited from Sacramento County's Fire Fuel Reduction Action Plan. In summer of 2023 an area between the Bluff Trail and Palm Drive was treated by a herd of goats. Over about a week the goats were guided into fenced off areas and overseen by goatherds on ATV's, as they consumed star thistle, other brush and dried grasses. They easily navigated the uneven slope, which would have been more difficult for human workers. Additionally, the goats provided entertaining sights and sounds for onlookers.

Another approach to preparing for fires is currently being spearheaded by Ed Smith, an EYNC board member, forester, and volunteer with the Habitat Restoration Team (HRT). Under the leadership of Ed Smith and Brian Newman-Lindsay, who works at the California Department of Conservation and also volunteers with HRT, a volunteer group worked on removing ladder fuels around large trees in the NSA. Ladder fuels are dried vegetation that can allow a ground fire to move up into the canopy of trees, where fire becomes more deadly and capable of spreading. The aim is to keep a clear vertical

space between combustible material on the ground and the lowest branches of the tree, keeping in mind that a flame may leap up to 3 times the height of the burning material. Since the NSA is an area where dead branches also provide habitat for many critters, the ladder fuels are moved to more open areas, away from the dripline of the trees. There, they can still act as food and sheltering sites without promoting the movement of groundfire high into the trees. Removal of ladder fuels will be an ongoing project of the HRT.

You can do your part to reduce fire risks in your community, parklands and wildlands by reducing fuels around your home and following posted rules about using fire. At EYNC open fires and smoking are not allowed. In Sacramento County Parks smoking is only allowed in picnic areas, on asphalt surfaces, on golf courses, and on tops of levees. Open fires are not allowed and cooking fires are only permitted in designated picnic areas. If you live next to a park or wildland you can find out how to prepare your property to reduce fire risks at the [Sacramento Regional Parks Fire Reduction web site](#).

Melanie Loo, Ph.D. is a retired Professor of Biological Sciences at CSU Sacramento and volunteers at EYNC as a trail steward and a member of the Habitat Restoration Team



A group of EYNC volunteers—Robyn Fields, Brian Newman-Lindsay, Jude Mateo, Andrea Mina, Ed Smith, Marilyn Mitchell, and Marti Ikehara—celebrate their collective effort of moving a large piece of ladder fuel. Photo © Melanie Loo.

