

Stories and Science of Fire Resilience

A Guide for Fire Resilient Communities

This guide is funded and supported by the Santa Monica Mountains Conservancy Wildfire Prevention Early Budget Action Grant.



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Mountains Recreation &
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We acknowledge the land on which Community Nature Connection operates as the ancestral lands and home of the Tongva, Tataviam, and Chumash peoples, original stewards and custodians of this territory.

We recognize their continuing connection to land, waters, and culture, and we pay our respects to their Elders past, present, and emerging.

Want to know whose land you are on? We like to use the following map to start our research.

Native-Land.ca

MEET THE TEAM

Celeste Gasperik
(she/her)



Celeste is Community Nature Connection's Director of Training & Impact. She joined Community Nature Connection in 2018 to lead a coalition of community-based organizations in park advocacy and community engagement efforts for the County of Los Angeles. She now oversees organization-wide program evaluation efforts and manages the Training Institute program which offers workforce development opportunities to increase representation in the outdoor sector.

Rhay is the Community Nature Connection's Program Assistant for the Training Institute. She's a recent UCLA graduate where she focused on ecological research projects ranging from urban sustainability to California native plant communities and earned a B.S. in Ecology, Behavior, and Evolution. More recently, she worked on Tongva and Chumash lands for the Santa Monica Mountains Fund as a native plant seed collector.

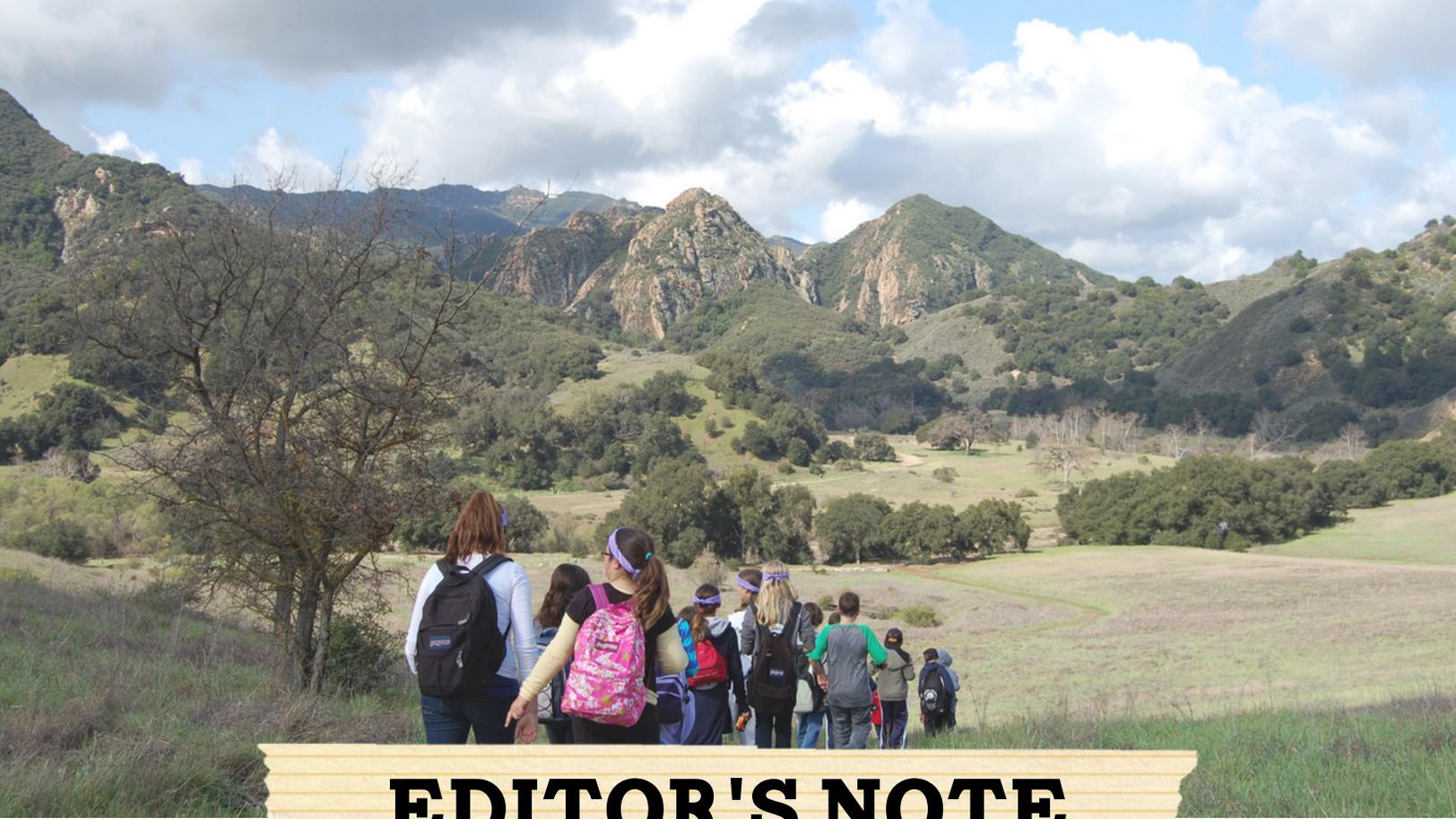


Rhay Flores
(she/her)

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EDITOR'S NOTE

In reflecting upon the realities of the climate crisis, it's all too easy to feel overwhelmed and demoralized by environmental anxiety. Reckoning with the unjust losses and degradation of natural spaces is an emotional and difficult process. While we work to recognize and accept the inevitable grief that accompanies our deep relationships with the land, we must also make space for hope.

It's crucial that we acknowledge the joy in caring for a native plant, in witnessing an oak tree's acorns, or in supporting a climate justice movement. This is how we integrate resilience into our narratives. This is how we care for the land and our communities.

In Community,
Community Nature Connection
Fire Resilience Education Program Staff



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WHO IS COMMUNITY NATURE CONNECTION?



WE ARE Community Nature Connection and our mission is to increase access to the outdoors for communities impacted by racial, social-economic, and disability injustices by eliminating existing barriers through advocacy, community-centered programming, and workforce development.

WE ENVISION a world where all communities in Los Angeles County have physical and institutional access to all local public lands, are included in all environmental programs and recreation, and are represented in outdoor careers and political decision making.

WE CARE about the communities we are a part of and are excited to work with others to support each other's liberation.

-Vianey Moreno and Krystle N Ramos

Learn more about us online:



@OutdoorEquity



@CommunityNatureConnection

Visit us at CommunityNatureConnection.org



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ABOUT THIS GUIDE

At Community Nature Connection, advancing your access to the outdoors is at the foundation of all of our work. Given the volatile and unpredictable nature of wildfire season under climate change, we want to emphasize that safety must be paramount in all of our encounters with the outdoors.

Our Fire Resilience Education program has focused on providing programming and resources, including this guide, to enhance your understanding of every aspect of wildfires and how to be ready for them.

What is Fire Resilience?



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FIRE RESILIENCE IN THE ANTHROPOCENE

Define: Anthropocene

noun

"the current geological age" -Oxford Languages Dictionary

Characterized by the word-forming element "anthropo" which means, "human being".

The **Anthropocene** is the age in geologic history that is distinguished by the ubiquitous impact of human activity on the environment.

Define: Fire Resilience

noun

The capacity of an ecosystem or community to withstand and recover from fire.

Example: The Community Nature Connection has shared several resources to help communities near the Wildland Urban Interface (WUI) enhance their **Fire Resilience**.

FIRE RESILIENCE IN THE ANTHROPOCENE

Both wildfire severity and frequency in California are cited to increase as a direct result of climate change (United States Environmental Protection Agency, 2019). Given these worsening fire regimes under climate change, **maintaining fire resilient communities is more important than ever.**



Photo by the 2020 California Adaptation Forum.

The History & Mechanisms of Wildfire in California

- History of Fire Suppression Policies
- Fire Resilience Policy Planning Today
- Ecosystem Adaptations and Responses to Wildfires in the Wildland Urban Interface (WUI)



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HISTORY OF FIRE SUPPRESSION POLICIES

Establishing the US Forest Service

The US Forest Service (USFS) was established in 1905 and its primary role was to manage protected forests. Within this role, **protecting forests from fires became a high priority** for a variety of reasons. For example, settler conservationists cited the protection of lumber resources and watersheds as justification for setting aside land parcels to be managed by the USFS.

Source: U.S. Forest Service Fire Suppression by Forest History Society



Pictured: A clear-cut forest.

Photo by Lamar University Archives and Special Collections.

HISTORY OF FIRE SUPPRESSION POLICIES

Remembering the Great Fire of 1910

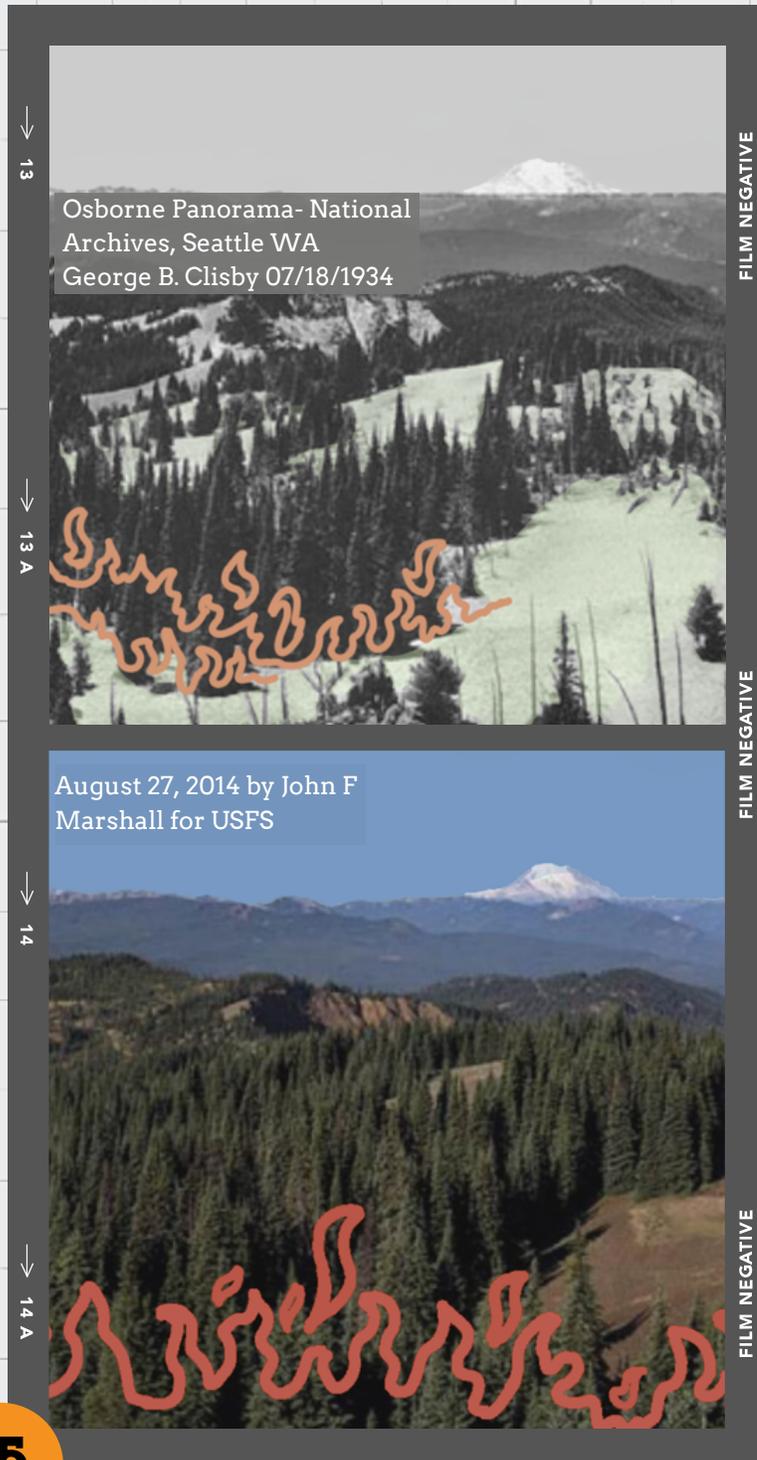


Smoke at Beaver Creek during the Great Fire of 1910.

Shortly after the USFS was established, the Great Fire of 1910 burned across Idaho, Montana, Washington, United States British Columbia, and Canada. This fire, which spread over three million acres and took almost 90 lives, is **infamous for motivating fire suppression policies amongst land managers.** This fire burned an area larger than the entire state of Connecticut in less than three days.

HISTORY OF FIRE SUPPRESSION POLICIES

Fire Suppression Policies and their Impacts on the Environment



These photos of the same landscape, taken 80 years apart, show how **forests used to be patchier and interspersed with more open space.**

These patches acted as natural fire breaks, preventing fire from moving across entire landscapes.

Denser forests are more susceptible to megafires and are a direct result of colonization and fire suppression policies.

HISTORY OF FIRE SUPPRESSION POLICIES

Fire Suppression Policies and their Impacts on the Environment (cont.)

Fire Suppression policies fail to acknowledge that **wildfires are supposed to be a natural, positive force acting on a given environment.** Removing wildfires entirely from ecosystems that require them dramatically alters healthy fire regimes, and thus the health of the ecosystem at large. The US Forest Service's fire suppression policies, Smokey the Bear campaign, and settler colonial centered narratives have significantly contributed to the decline of healthy fire regimes in their respective environments.

Maybe we shouldn't have prevented all wildfires...



Fire Poppy (*Papaver californicum*) blooming after a wildfire. Photo by: Jorgen Gulliksen, 2018.



HISTORY OF FIRE SUPPRESSION POLICIES

Origins of CalFire and Fire Suppression

CalFire was established in 1905. Similar to the origins of the USDA Forest Service, CalFire was established primarily out of concern for preserving the state's timber supply. In 1919, CalFire received funds from the state to begin enforcing fire suppression policies. These funds were used for salaries for the state's first ever forest rangers.

Source: Mark V. Thornton, Consulting Historian for CalFire in 1995.



1929 Model of a CalFire Firetruck. Photo by the Historical Society and Museum of the California Department of Forestry and Fire Protection

HISTORY OF FIRE SUPPRESSION POLICIES

Origins of CalFire and Fire Suppression (cont.)

Later, in 1933, the Civilian Conservation Corps (CCC) was established to 1) construct fire breaks, 2) develop an integrated fire detection network, and 3) build and improve upon infrastructure, including fire suppression bases. The State Forester of the time, Don Pratt, is said to have credited the CCC for advancing CalFire "twenty years ahead of itself". Modern estimates cite the CCC to have spent "nearly one million man days" working on fire prevention and suppression, establishing themselves as the most significant fire suppression force in American history.



CCC staff constructing a fire break in the San Bernardino National Forest in June of 1933. Photo by the Forest History Society.

Source: Mark V. Thornton, Consulting Historian for CalFire in 1995.

FIRE RESILIENCE STRATEGY AND POLICY PLANNING

California's Wildfire and Forest Resilience Action Plan



An image from California's Wildfire and Forest Resilience Action Plan of a low-intensity prescribed burn.

To address the wildfire and forest crisis in California, the Governor created a Wildfire and Forest taskforce to develop a plan. The guide recognizes the following to be true: climate change leads to increased frequency and severity of fires, California's diverse ecosystems requires tailored approaches, restoration efforts and community resilience initiative are key, Indigenous practices much be drawn upon to increase frequent low-intensity burns and strong partnerships are vital across federal, state, local, and tribal entities.

Source: California Wildfire and Forest Resilience Action Plan <https://wildfiretaskforce.org/>

FIRE RESILIENCE STRATEGY AND POLICY PLANNING

California's Wildfire and Forest Resilience Action Plan (cont.)

Goal 1: Increase the pace and scale of forest health projects

- Accelerate Restoration
- Increase prescribed fire
- Mobilize Regional Action Plans
- Reforest Burned Areas
- Improve Regulatory Efficiency

Goal 3: Manage Forests to Achieve the State's Economic & Environmental Goals

- Include Forest Management in State Biodiversity and Climate programs
- Expand recreation
- Protect and expand urban canopy

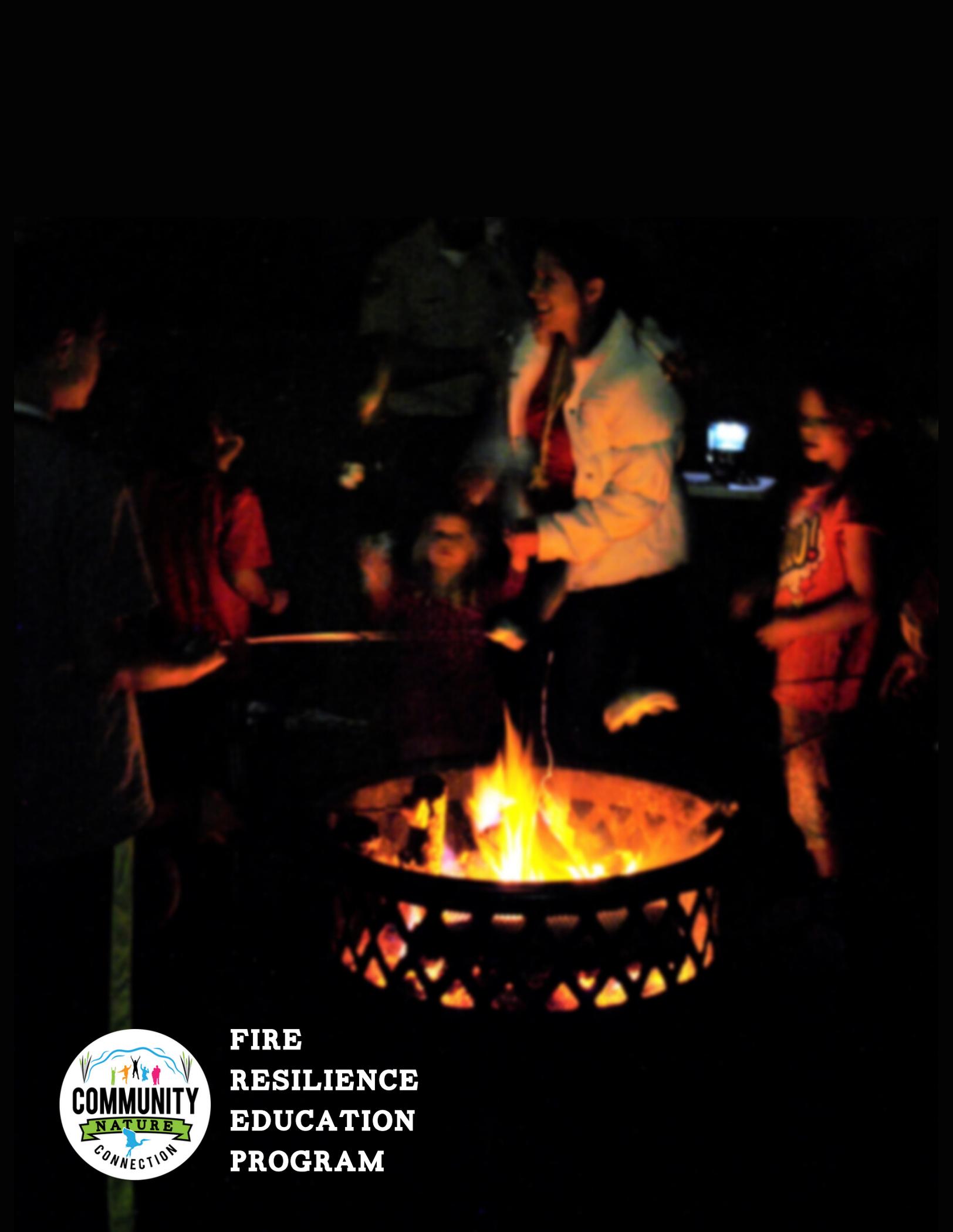
Goal 2: Strengthen Protection of Communities

- Support Community Planning
- Increase Fuel Breaks
- Protect Wildfire-prone homes and neighborhoods
- Improve Utility-Related Homes and Fire Risk
- Reduce Health Impacts of Smoke

Goal 4: Drive Innovation and Measure Progress

- Utilize science and accelerate applied research
- Expand and support monitoring and tools

Source: California Wildfire and Forest Resilience Action Plan <https://wildfiretaskforce.org/>



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ECOSYSTEM ADAPTATIONS AND RESPONSES TO WILDFIRES

Define: Fire Return Interval

noun

The average amount of time occurring between wildfires in a given area.

Example: The average **fire return interval** in most chaparral habitats is between 30 and 150 years (California Chaparral Institute).

Define: Fire Regime

noun

The suite of traits such as the frequency, intensity, and pattern of wildfires in a given habitat.

Example: The far-reaching effects of global climate change are altering healthy **fire regimes**, such that wildfires are occurring more frequently and severely.

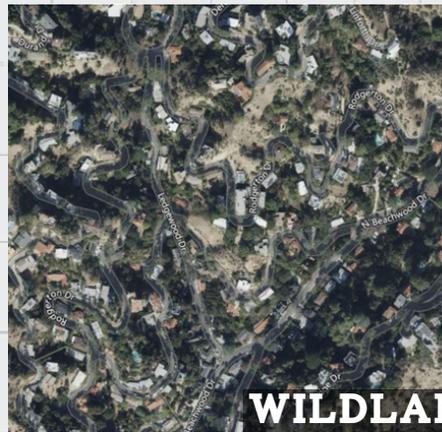
ECOSYSTEM ADAPTATIONS AND RESPONSES TO WILDFIRES

Define: Wildland Urban Interface (WUI)

noun

The space where human development and communities approach natural, open environments.

Example: In places like Southern California, there are several neighborhoods residing within the **Wildland Urban Interface** because of the appeal of living near beautiful mountain views and hiking trails.



WILDLAND URBAN INTERFACE

INTERFACE



INTERMIX



NON-WILDLAND URBAN INTERFACE

URBAN



RURAL

ECOSYSTEM ADAPTATIONS AND RESPONSES TO WILDFIRES

Fire Return Intervals and Changing Fire Regimes



Habitats that are adapted for wildfires are often characterized by **fire return intervals**. These fire return intervals in their respective habitats are determined by numerous factors such as climate patterns, fuel loads, vegetation density, and others. However, drivers of habitat loss and degradation, in addition to climate change, are **changing fire return intervals** in southern California habitats.

So, what does this mean for fire regimes?

ECOSYSTEM ADAPTATIONS AND RESPONSES TO WILDFIRES

Fire Return Intervals and Changing Fire Regimes (cont.)

Rapidly changing fire regimes pose a significant threat to their respective habitats and to any structures or communities within the wildland urban interface.

Specifically, fire regimes altered by non-native plant invasion undergo what is known as a *positive feedback loop*. To elaborate, the presence of invasive plants in Southern California habitats shortens fire return intervals due to greater amounts of drying vegetation in the plant community. In turn, these more frequent fires facilitate greater amounts of non-native plant invasion. This *positive feedback loop* is a daunting obstacle for land managers in the context of habitat restoration.



ECOSYSTEM ADAPTATIONS AND RESPONSES TO WILDFIRES

But, given that wildfire is supposed to be good for the ecosystem, how are native plants adapted to survive fire?



ECOSYSTEM ADAPTATIONS AND RESPONSES TO WILDFIRES

Fire Follower: Large Flowered Phacelia

Fire followers are plants which exhibit enhanced germination in response to fires.

Here, Large Flowered Phacelia (*Phacelia grandiflora*) is seen blanketing the landscape at Zuma canyon after the 2018 Woolsey fire.

Photo by the Malibu Post.



Facultative seeder: Manzanita

Facultative seeders can both resprout from burls and experience enhanced germination to recover after fires. A third of Manzanita species (*Arctostaphylos spp*) are facultative seeders.

Photo by Michael Kauffman.

ECOSYSTEM ADAPTATIONS AND RESPONSES TO WILDFIRES

Obligate resprouter: Coast Live Oak

Obligate resprouters recover after fires by producing new growth within their crowns. For example, Coast Live Oak (*Quercus agrifolia*) here is resprouting at the canopy after the 2018 Woolsey Fire.

Photo by Rhay Flores.



Obligate seeders: Laurel Sumac and Chamise

Obligate seeders require seed germination after fires to recover. Here, Laurel sumac (*Malosma laurina*), Chamise (*Adenostoma fasciculatum*), and other seedlings are germinating after a fire.

Photo by Richard W. Halsey.

ECOSYSTEM ADAPTATIONS AND RESPONSES TO WILDFIRES



So, what's going on
in the Wildland
Urban Interface?

ECOSYSTEM ADAPTATIONS AND RESPONSES TO WILDFIRES

IMPORTANCE OF THE WILDLAND URBAN INTERFACE

Because of the WUI's characteristic proximity to vegetation, and thus the fuels and debris that feed wildfires, these areas are at the **highest risk of wildfires in the state.** According to the USDA Forest Service, in 2019, California had more buildings destroyed by wildfire than **all other states combined.**



"Hollywood Cove" is a cul-de sac with houses designed and/or built by Michael E. Arth, adjacent to Runyon Canyon Park and the Hollywood Hills. Photo taken by Michael E. Arth in 1994.



Photo of the Woolsey fire, taken on November 9th, 2018 by Peter Buschmann.

According to the Theodore Payne Foundation, over a quarter of Californians reside within these fire-prone WUI areas.



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Given the high-risk nature of residing in the Wildland Urban Interface, it's crucial that community members are aware of the resources at their disposal to enhance wildfire resilience.

Preparation & Planning for Wildfire Season

- What is Home Hardening?
- Recreating Safely During Fire Season



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HOME HARDENING & RESOURCES



Sustainable Defensible Space

Eco-appropriate Homescaping for Wildfire Resilience



WILDFIRE RISK TO COMMUNITIES

Wildfire Risk to Communities (wildfirerisk.org) describes Home Hardening as "modifying the building materials and design features of the home for wildfire resistance." Check out the following resources:

THEODOREPAYNE.ORG/LANDSCAPING-FOR-WILDFIRE-RESILIENCE/

LAFD.ORG/HOME-HARDENING

WILDFIRERISK.ORG/REDUCE-RISK/HOME-HARDENING/

DEFENSIBLESPACE.ORG/HOUSE/



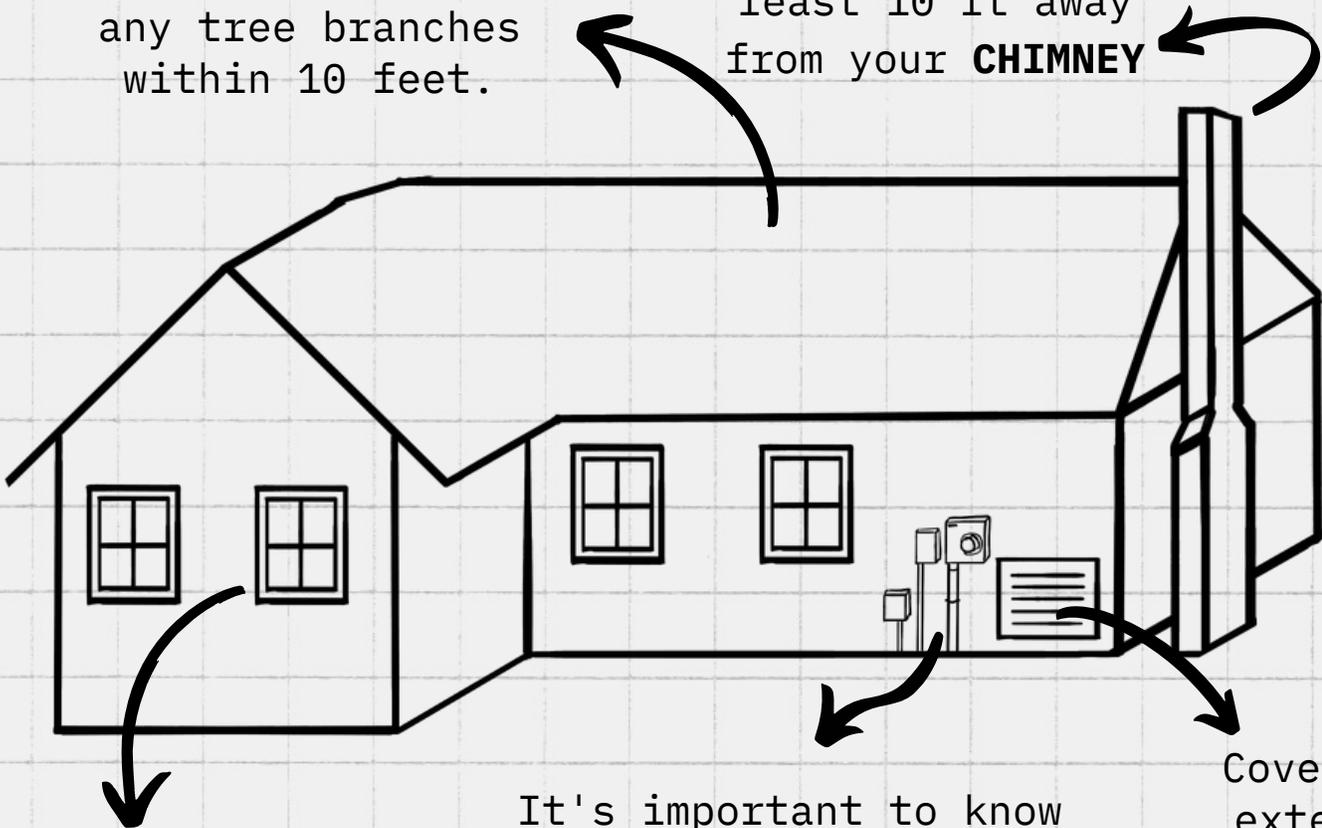
PREPARE FOR WILDFIRE
**HARDEN
YOUR HOME**

ReadyforWildfire.org

HOME HARDENING AT A GLANCE

THE ROOF is the most vulnerable part of the home. Make sure to clean gutters frequently and to cut any tree branches within 10 feet.

Make sure to keep tree branches at least 10 ft away from your **CHIMNEY**



Minimize the amounts of vegetation facing your **WINDOWS** and install an outer pane of tempered glass.

It's important to know how to shut off your gas, electricity, and water during a natural disaster. Make sure everyone living in the household knows how to shut off your **UTILITIES**.

Cover any exterior **VENTS** with non-flammable 1/4 inch wire mesh.



How can we stay safe when we venture away from our homes?



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RECREATING SAFELY DURING FIRE SEASON

The bottom line:

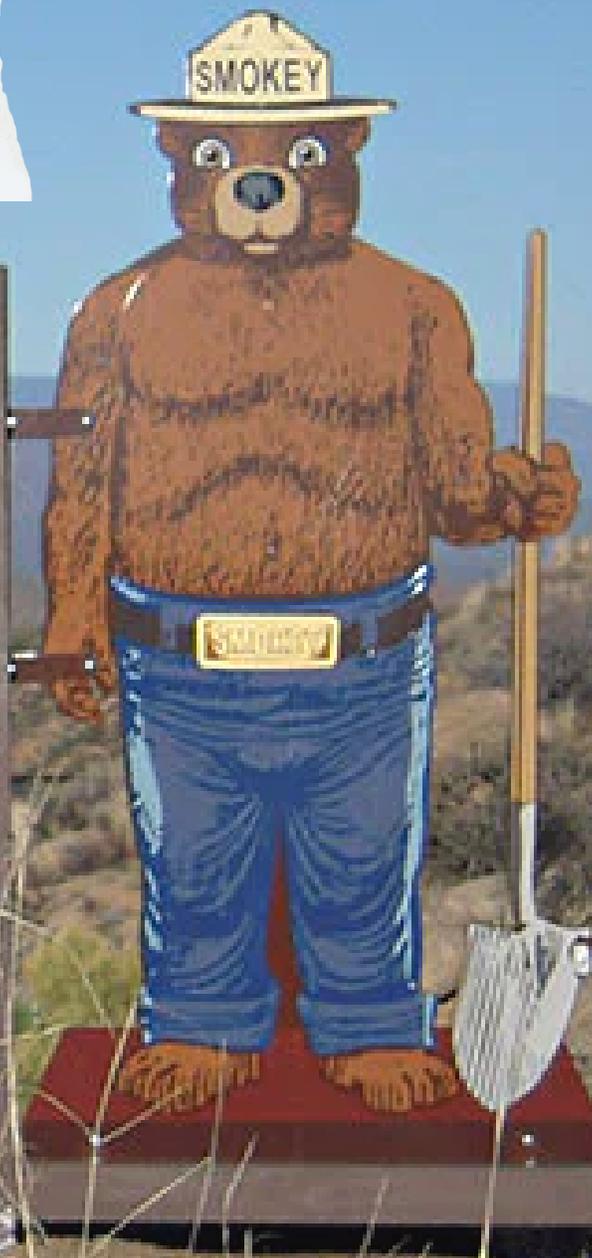
"The best way to survive a fire while recreating outdoors is to avoid it"

-Brooke Ortel on
*Managing Risk
Outdoors:
Backcountry
Wildfires*

RECREATING SAFELY DURING FIRE SEASON

Common sense and best practices:

- Avoid recent and active burn areas
- Follow land management regulations
- Learn how to safely start and put out campfires
- Be aware of the dangers of smoke





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Traditional Ecological Knowledge

- Indigenous Stewardship Today
- Cultural Burning in Practice



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INDIGENOUS STEWARDSHIP TODAY



Indigenous people have **thousands of years of experience** of a mutually beneficial, working relationship between fire and land.



Throughout Southern California, the following tribes continue to actively steward their ancestral lands:

- Tongva (Gabrieleno)
- Kizh (Gabrieleno)
- Chumash
- Fernandeno Tataviam
- Yuhaviatam/Maarenga'yam (Serrano)
- Nicoleño
- Acjachemen (Juaneño)
- Payómkawichum (Luiseño)
- Kitanemuk

Learn more about whose ancestral lands you reside on at:

native-land.ca

INDIGENOUS STEWARDSHIP TODAY

Indigenous people make up less than 5% of the global population, but steward over half, 80%, of the world's biodiversity. (National Geographic, 2018)

KCET's Tending Nature special has been publishing resources since 2018. These articles and videos strive to elucidate the impact and significance of indigeneity on land stewardship. Additionally, PBS and KCET's Tending the Wild documentary features indigenous educators such as Ron Goode, Nicholas Hummingbird, and others.

Check out the following resources:



[Watch Tending Nature Here](#)

[Watch Tending the Wild Here](#)



INDIGENOUS STEWARDSHIP TODAY

Check out these additional resources:

Cultural Burns by the North Fork Mono Indians of California



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[LINKED HERE](#)

Recording available on YouTube, [linked here.](#)

INTERPRETING TONGVA CULTURE



June 9 5pm with Josh Andujo



TRAINING INSTITUTE

AS LONG AS GRASS GROWS



NO DAPL

THE INDIGENOUS FIGHT FOR ENVIRONMENTAL JUSTICE FROM COLONIZATION TO STANDING ROCK

DINA GILIO-WHITAKER

Tending Nature Environment

Why Integrating Indigenous Voices is Key in Tackling Ecological Problems

By Paige Laduzinsky

November 1, 2018



The art of fire: reviving the Indigenous craft of cultural burning

Indigenous Peoples have managed their lands with fire since time immemorial. But colonizers criminalized the practice, leading to a loss of culture and an increase in the risk of wildfires. Now, a small but mighty group of people is revitalizing the craft



By Kelly Boutsalis

Sept. 20, 2020 16 min. read

[LINKED HERE](#)

[LINKED HERE](#)

NATIONAL BESTSELLER

A hymn of love to the world.
—ELIZABETH GILBERT

BRAIDING SWEETGRASS



Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants

ROBIN WALL KIMMERER

INDIGENOUS STEWARDSHIP TODAY

Co-Management of Wildfire Risk in Southern California Ecosystems

Southern California's distinct forest types have required different care from Indigenous stewards than our forests to the north. Kevin Nunez, an elder of the Gabrielino-Tongva Tribe, which has been indigenous to the Los Angeles Basin for 7,000 years shared that "(the tribe) did not practice controlled burns in the San Gabriel mountains of our territory." Nunez works for the City of Azusa and is his tribe's liaison to the Forest Service. "The Tongva Tribe are supporters of fire breaks and of fire prevention mitigation in populated areas by removal of ground and debris and ladder growth. At this time, we are not supporters of controlled burns, both because of ecological impact as well as culturally." Nunez said.



Canyon City Environmental Project and the Gabrielino Tongva San Gabriel Band of Mission Indians volunteers doing a fire mitigation prevention clean up at Crystal Lake on Oct 25, 2020. Photograph courtesy of Kevin Nunez Facebook

CULTURAL BURNING IN PRACTICE

In 2022, we hosted Richard Bugbee of the Payoomkawish (Juaneño/Luiseño), from northern San Diego County, with the Training Institute.

In his training, listen as he describes the landscape and practices of cultural burns and his work. Mr. Bugbee uses his Ethnobotanical and Ethnoecological knowledge to reintroduce Cultural Burns and other traditional practices to land management agencies.

Watch the training, linked here.



Cultural Burning Practices in ⋮
California



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Organizations Working Towards Fire Resilience



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CLICK ON THE IMAGE TO CHECK OUT THE ORGANIZATION



A Volunteer Program
of Malibu/Lost Hills Sheriff's Station
ARSON WATCH
Serving the communities of Agoura Hills,
Calabasas, Chatsworth, Cornell, Malibu,
Malibu Lake, Monte Nido, Topanga



Cultural
Fire
Management
Council



CAL FIRE

KCET ORIGINAL

TENDING THE WILD



California Department of
Parks and Recreation

Mountains Recreation &
Conservation Authority



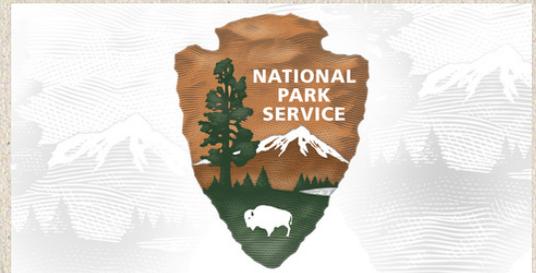
**CALIFORNIA
STATE PARKS
FOUNDATION**



National
Interagency
Fire Center



CALIFORNIA NATIVE PLANT SOCIETY
Calscape
Restore Nature One Garden at a Time



County of Los Angeles
**FIRE
DEPARTMENT**



Northfork
Rancheria of
Mono Indians

CLICK ON THE IMAGE TO CHECK OUT THE ORGANIZATION



Northwest Fire
Science
Consortium



Sustainable
Defensible
Space



Theodore
Payne
Foundation



United States
Dept. of
Agriculture
Forest Service





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To access the resources we've cited in Spanish, we encourage you to download a web browser that can automatically translate web pages, as not all of the mentioned sources have been translated to date.

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