An update from the UC ANR Fire Network

Lenya Quinn-Davidson

Director, UC ANR Fire Network

March 19, 2025

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Cleo Woelfle Hazard
Fire Advisor
Humboldt & Del Norte Counties

Lenya Quinn-Davidson
Director
Statewide, based in Humboldt County

Yana Valachovic
Forest Advisor
Humboldt & Del Norte Counties

Katie Low
Statewide Coordinator
Statewide, based in Placer & Nevada Counties

Ally Sung-Jereczek
Beneficial Burning & Tribal Land Stewardship Advisor
Lake & Mendocino Counties

Joaquin Pastrana
Staff Research Associate
Placer & Nevada Counties

Tori Norville
Fire Advisor
Marin, Napa, & Sonoma Counties

Alison Deak
Fire Advisor
Mariposa, Madera & Fresno Counties

Bella Zahra
Staff Research Associate
Statewide and North Coast

David Benterou
Staff Research Associate
Central Coast and Southern Sierra Nevada

Barb Satink Wolfson
Fire Advisor
Monterey, San Benito, Santa Clara & Santa Cruz Counties

**Hiring a new Fire Advisor*
Los Angeles, Orange, Riverside, & San Diego Counties

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Biomass Advisors
Ali Azadfar
Cindy Chen
Haris Gilani

Livestock and Range Advisors
Shelia Barry
Theresa Becchetti
Josh Davy
Morgan Doran
David Lile
Dan Macon
Fadzayi Mashiri
Chris McDonald
Devii Rao
Tracy Schohr
Laura Snell
Jeff Stackhouse
Andrea Warner
Grace Woodmansee

Forestry Advisors
Michael Jones
Susie Kocher
Ricky Satomi
Kane Russell
Yana Valachovic
Brian Woodward

ANR Specialists
Nina Maggi Kelly (*GIS at UCB*)
Paul Mayencourt (*Wood Products at UCB*)
Max Moritz (*Fire at UCSB*)
Leslie Roche (*Range at UCD*)
Dan Sanchez (*Biomass at UCB*)
Kristen Shive (*Forestry and Fuels at UCB*)
Robert York (*Forestry at UCB*)

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Inspiring and empowering

- Education & outreach
- Training & capacity building
- Research
- Policy
- Media and storytelling

Our Core Programmatic Areas

- Empowering science-informed land stewardship
- Community resilience
- Post-fire recovery and restoration
- Workforce development

Photo by Barb Satink-Wolfson

Empowering science-based land stewardship

Photo by Lenya Quinn-Davidson

Photo by Tori Norville

Areas of focus

- Beneficial fire
- Fuels treatment effectiveness
- Targeted grazing
- Restoration of fire-adapted ecosystems
- Fire science communication

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Beneficial Fire

- Nor Cal Rx Fire Council (2009)
- Bringing TREX to CA (2013)
- Bringing PBAs to CA (2017)
- CARX (2021)
- Liability and Claims Fund (2021/22)
- Private insurance options (2024)

Photo by Lenya Quinn-Davidson

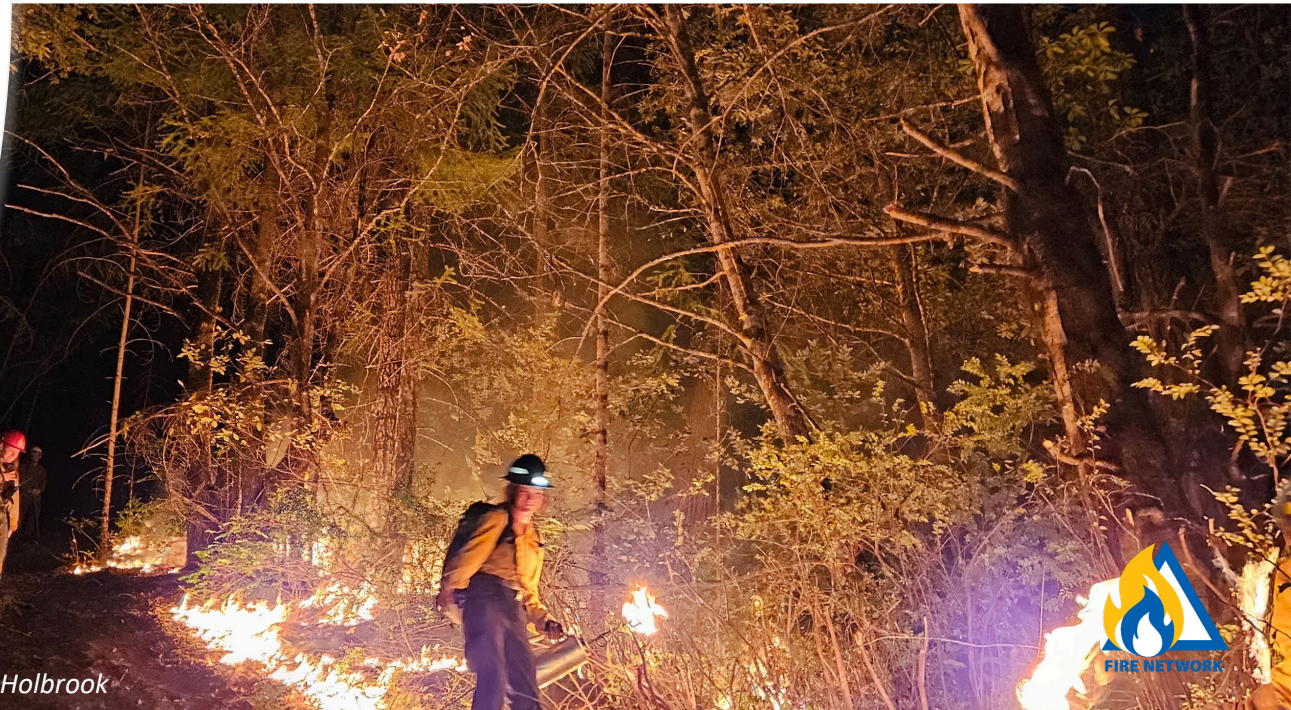

Photo by Henri Holbrook

Prescribed Burn Associations (PBAs) in CA

- UC ANR formed CA's first PBA in Humboldt County in 2017
- Currently there are 30+ across CA
- UC ANR provides statewide networking and mentoring, annual retreats, grant writing, www.calpba.org
- In 2024, UC ANR:
  - Provided primary leadership for 7 PBAs
  - Hosted 31 workshops and trainings for PBAs
  - Conducted 121 landowner site visits
  - Implemented 21 burns totaling 552 acres
  - Authored/reviewed 27 burn plans and 30 smoke management plans

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CSIRO PUBLISHING

RESEARCH PAPER
https://doi.org/10.1071/WF24178

International Journal of WILDLAND FIRE
International Association of Wildland Fire

Burning from the ground up: the structure and impact of Prescribed Burn Associations in the United States

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For full list of author affiliations and declarations see end of paper

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ABSTRACT

Background. To combat losses and threats from fire exclusion and extreme wildfire events, communities in the United States are increasingly self-organizing through locally led Prescribed Burn Associations (PBAs) to plan and implement prescribed burns on private lands. **Aim.** Our study aimed to document the expansion of PBAs and provide insight into their structure, function, and impacts. **Methods.** Leaders from 135 known PBAs across the United States were invited to participate in an online survey. **Key results.** Survey results demonstrate a widespread emergence of PBAs in the United States, successfully mobilizing thousands of volunteers to collectively burn more than 34,000 ha annually. **Conclusions.** PBAs demonstrated that they are reducing myriad barriers to prescribed burning while meeting their goals to broaden access to the use of fire using a neighbors-helping-neighbors model to provide training, pool resources, and reduce the costs of prescribed burning. By including volunteers with diverse levels of experience and backgrounds, PBAs are changing the narrative of who has access to the use of fire. **Implications.** The adaptability of the PBA model to local contexts provides an alternative model of community-led, non-agency-based fire management critical to advancing the pace and scale of restoration needed in fire-adapted ecosystems.

Keywords: beneficial burning, controlled burns, fire, organization, Prescribed Burn Association, prescribed fire, private lands, stewardship, volunteers.

Introduction

Fire has influenced the evolution of humans and landscapes across the world (Bowman *et al.* 2011; Coughlan *et al.* 2018; McLauchlan *et al.* 2020). For millennia, human popula-

Photo by Lenya Quinn-Davidson

Photo by Rob York

Research highlights

- Various research projects **comparing grazing, prescribed fire, and thinning** in different parts of CA *(Deak, Bentarou, Macon, Kocher, et al.)*
- Research and policy work around **conifer encroachment in oak woodlands** and restoration maintenance with prescribed fire *(Quinn-Davidson, Valachovic, Stackhouse, Kelly, Lewis, et al.)*
- Replicating Fire and Fire Surrogate study and **testing pyrosilvicultural treatments** in coast redwood/Doug-fir forests *(York, Jones, Norville, et al.)*
- Research on **effectiveness and commercial viability of targeted grazing** in woody fuels, including post-fire areas (*Macon, Low, Schohr, Satomi, et al.)*

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Other highlights

- Statewide leadership on the **California Fire Science Consortium** *(Quinn-Davidson, Stephens)*
- **Prescribed Fire Guidebook for California** *(our full team, organized by Bentarou)*
- California's first-ever **Good Fire Fair** in Oct. 2024 *(Wolfson, Bentarou)*
- Annual **Fish & Fire Workshops** for the Salmonid Restoration Federation conference *(Quinn-Davidson)*
- **TREX for Foresters** in June 2024 *(Wolfson et al.)*

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Community resilience

Photo by Yana Valachovic

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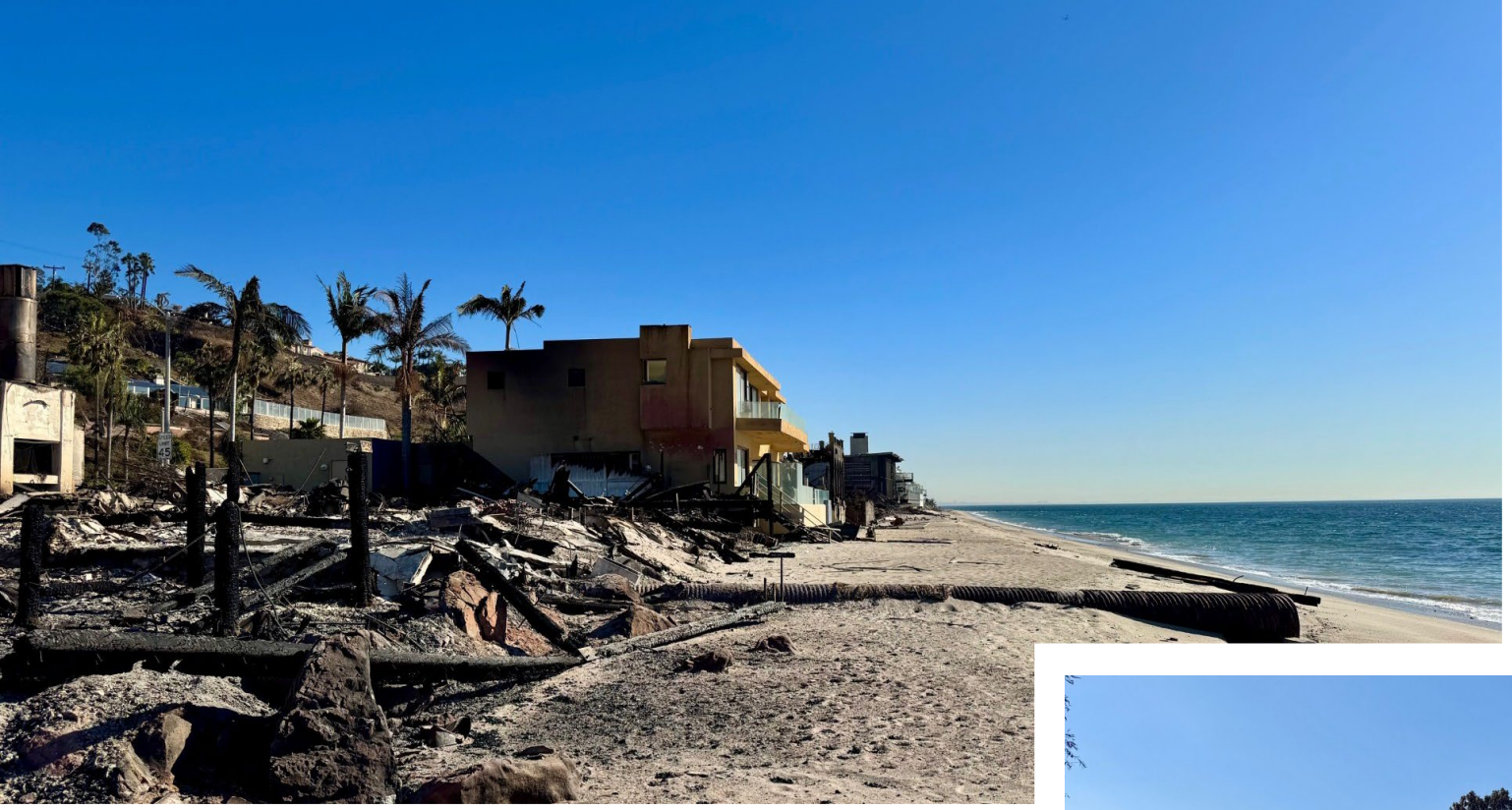


Preparing communities and homes for wildfire

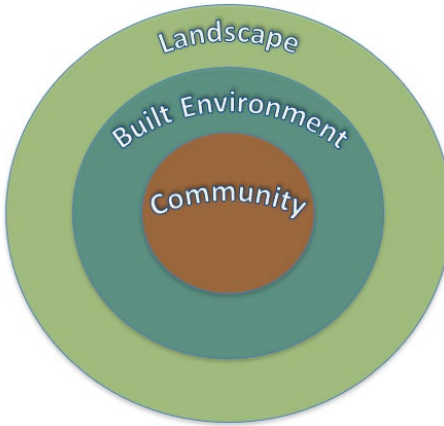
- Workshops, webinars, trainings, and fact sheets on home hardening and defensible space
- Research on plant flammability *(Moritz, Carmignani)*
- Leveraging ANR's 9000+ Master Gardener volunteers to help teach fire concepts *(Valachovic, Quinn-Davidson, Low, Gable, et al.)*

Photos by Yana Valachovic

Planning and preparing for wildfire

- Zone 0 educational campaign *(Valachovic)*
- Contributing to the public wildfire catastrophe model strategy group *(Valachovic)*
- Regional Wildfire Mitigation Program *(Moritz)*
- Statewide engagement: WMAC, Wildfire and Forest Resilience Task Force WGs, Science Advisory Panel, etc.
- Local service: FSCs, Firewise, local NGOs and community groups

Photos by Yana Valachovic



“I strongly recommend that ranchers take the time to get their Livestock Pass. As a ranch, I can’t think of a worse agony than being denied access to your livestock during a fire. The Livestock Pass is a simple way to help ensure this nightmare doesn’t happen.” – Tim Nielsen, Siskiyou Pass Holder

Photo by Grace Woodmansee

Helping farms and ranches prepare for wildfire

- Ranchers’ Fire Academy *(Macon, Low, and local partners)*
- ANR-led Ag/Livestock Pass Programs served ~375 ag. producers in 2024 *(Macon, Schohr, Stackhouse, Holbrook, Valachovic, Woodmansee, et al.)*
- Ranch/farm hardening webinars, workshops, and fact sheets

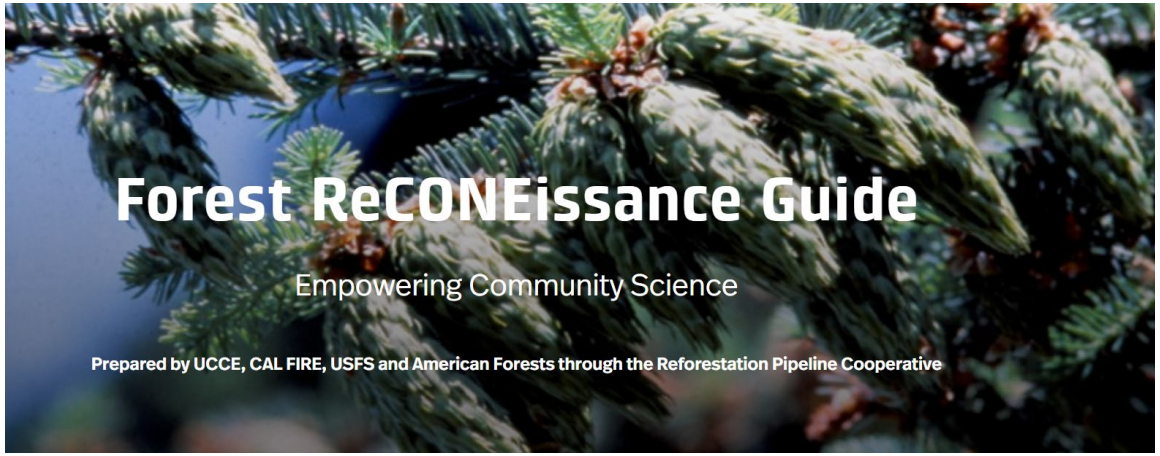
Photo by Tracy Schohr

Post-fire recovery and restoration

Photo by Lenya Quinn-Davidson

Forest Stewardship and Post-Fire Forest Resilience *(Kocher and team)*

- Forest Stewardship Workshops—549 participants, 106 site visits
- Post-Fire Forest Resilience Workshops—234 participants since 2022
- Tree School events—2 last year, more planned for 2025



Post-Fire Reforestation

- Emergency Forest Restoration Teams (EFRT) *(Kocher, Wade, et al.)*
- Cone Survey Tool—citizen science for seed collection *(Satomi and partners)*

Research highlights: giant sequoia

- Mechanisms of survival following high-severity fire *(York, Shive)*
- Effectiveness of point protection in tree survival *(York)*
- Post-fire regeneration in areas burned at high severity *(York, Shive)*

Photos by Rob York

Post-fire resources for LA and beyond

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After The Fire: Backyard Chickens and Egg Safety

Introduced pollutants after urban wildfires can impact the safety of eggs produced by backyard chickens. The chicken's exposure to these contaminants may compromise eggs and post health risks to humans if consumed. By learning about potential hazards and taking appropriate precautionary steps to evaluate and reduce your flock's exposure, backyard chicken owners can better protect themselves and increase the likelihood of producing safe, nutritious eggs in a post-fire environment.

Are Eggs from Your Backyard Safe to Eat Post-Fire?

After a wildfire, harmful contaminants are left behind in the soil and water. These contaminants can be ingested by backyard chickens and later be found in the edible portions of their eggs. **Out of an abundance of caution, do not eat the eggs from chickens that have foraged in burnt areas.**

How Do Contaminants Transfer into My Chickens and Eggs?

Urban wildfire debris often contains concentrated levels of heavy metals (e.g., cadmium, lead, and mercury), household chemicals, and ash which are byproducts of burned structures, vehicles, and other urban materials. Chickens are especially prone to ingesting these contaminants through directly inhaling or ingesting toxic particles, ingesting contaminated soil with their feed, or drinking contaiminated water sources (Figure 1). Overtime, the repeated ingestion of contaminated material can lead to the buildup of toxins in their bodies.

Figure 1: Through foraging, chickens may ingest soil with their feed.

As chickens ingest toxins from contaminanted soil, these substances will eventually appear in the edible portions of their eggs in levels that exceed the recommended thresholds of consumption per day.[1] **Note that it is also normal for chickens to stop laying eggs after a traumatic event like a wildfire**, with no set recovery time. Additionally, shorter days in the winter can trigger a 8-to-12-week molt, which naturally haults egg production. As for the safety of their meat, healthy birds should be safe to consume, however organs that filter toxins (e.g., liver, kidneys) should be avoided.

Evaluating Chickens' Risk to Contaminants

To evaluate the risks of contaminants after a wildfire, it is important to know the quality of soil and water in your chickens' foraging area. **Testing the soil and water where your chickens forage and their eggs will inform you of the toxicity levels present and the safety of the eggs the chickens produce.** Soil quality can be professionally assessed using the California Environmental Laboratory Accreditation Program (ELAP; https://www.waterboards.ca.gov/drinking_water/oertlic/labs/). UC ANR's Healthy Soils for a Healthy California website (https://ucanr.edu/sites/soils/) also includes several resources about soil health and soil testing. Water quality can be assessed using water quality testing kits, which are widely available in stores and online. Egg testing can be completed through UC Davis' California Animal Health Food and Safety Lab (CAHFS), where

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After The Fire: Home Garden and Fruit Tree Safety

Chemicals and particulate matter in wildfire smoke are associated with short- and long-term health effects. This is mainly caused by long-term exposure to particulate matter, or "PM".[1] When wildfires burn homes and buildings, harmful compounds and heavy metals are released during the combustion of materials such as plastics, petroleum, asbestos, and batteries.[2] These contaminants in wildfire ash can coat garden produce and enter soils and water sources, potentially harming people through food and drinking water contamination.[3] **After wildfires, there are simple precautions you can take to reduce your exposure to potential contaminants in your garden.**

How Food Becomes Contaminated

During wildfires, plants accumulate chemicals and metals in numerous ways, including through deposits of ash on leaf surfaces (Figures 1, 2) or soil-root uptake.[4,5] Plant characteristics also affect the ways these potential contaminants become stored on and within the plant. For example, root vegetables directly contact soil contaminants, while large leaves collect airborne PM (like smoke and ash) and soil splash. Woody plants, such as fruit trees or cane berries, are less likely to pass soil contaminants touching roots into edible plant parts, but all plants can absorb airborne surface deposits through leaves. Smooth fruits, like tomatoes, squash, apples, pears, and berries, likely uptake the least compounds from airborne PM.[2,5] A smoke impact study during an urban wildfire surprisingly found minimal leafy vegetable contamination and therefore a low expected increase of health risk.[4] Rinsing vegetables works to reduce overall contaminants, and can effectively remove certain contaminants (e.g. lead and cadmium) from leaf surfaces, although adequately removing trace contaminants depends on the crop species, soil type, and PM size.[6] Remembering to be mindful while gardening and harvesting helps to limit your exposure to potential contaminant hazards.

Figure 1. Inspect produce for heavy layers of ash or dust. Discard produce with burns, soot, or fire suppression chemical residue.

Minimizing Risks While Gardening During and After Wildfires

Humans are most exposed to wildfire contaminants directly from their environments, particularly from inhaling smoke, contacting contaminants with bare skin, and ingesting contaminants from hand to mouth. Eating produce from smoky gardens carries minimal risk.[2,4] Those at greatest risk of health impacts are older adults, children, individuals who are pregnant, have cardiac or respiratory conditions, work outdoors, or are lower economic status, which relates to residential condition and access to nutrition and healthcare.[1,7] **Limiting time outside and contact with contaminants reduces one's overall risk, especially for people with additional health concerns.**

Figure 2. A scorched fruit tree indicates exposure to heat and potentially harmful particulate matter. Photo: Yana Valachovic.

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After the Fire: Home Garden Soil Management

After a wildfire, soils can be impacted in a number of ways, including chemical and heavy metal contamination, alteration of nutrients, organic matter content, and pH, an increase in erosion hazard, and altered water holding capacity. The cumulative effects of these changes can modify soil productivity and biological diversity, as well as pose health risks to humans and animals. Urban soils are at an increased risk for chemical and heavy metal contamination post-fire because urban environments tend to have features and materials that release these contaminants when burned. **After a wildfire, assess, test, and remediate your home garden soils to reduce the likelihood of exposure to potentially harmful contaminants.**

Step 1: Understand Your Site History

When evaluating your soil post-fire, the first thing to do is understand the history of your site. Visually inspect the area for evidence of impacts. For example, if the site is next to buildings built before 1978, lead may be a potential hazard, especially if you see that the paint is chipped or peeling. Additionally, past land use of the site can be accessed through public records, consulting Sanborn maps or past aerial photographs, or asking neighbors who may have been there before you. If surrounding hazardous materials are identified as potentital sources of contamination, obtaining a soil sample for chemical analysis will help determine the severity of the contamination.

Step 2: Test Your Soil

Testing is critical to understanding how wildfire may have affected your soil. Laboratory soil testing is recommended, especially if the soil is currently being used or is going to be used for urban agriculture. Residents directly impacted by fire can access post-fire soil test results from their clean-up contractor or seek out testing themselves. **DIY soil testing kits are not recommended** for this kind of testing because they cannot test for many contaminants or heavy metals that are of concern post-fire. To learn more about soil testing options, visit UC ANR's Healthy Soils for a Healthy California website (https://ucanr.edu/sites/soils/), the California Environmental Laboratory Accreditation Program (ELAP; https://www.waterboards.ca.gov/drinking_water/oertlic/labs/), or contact your local Master Gardeners program.

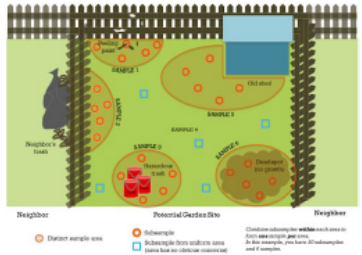

Figure 1: Sampling Plan Map for soil sampling. *PC: Los Angeles County Department of Public Health*

When collecting soil samples for testing, take separate samples from locations with different characteristics throughout the property (Figure 1). Label each sample bag and map sampling locations for your records. This sampling methodology can help determine if any potential contaminants found are localized or widespread across the site. Each bagged sample should be composed of 15-20 subsamples collected throughout your

Workforce development

Photo by Kai Ostrow

California State-Certified Burn Boss (CARX)

- Mandated by legislation in 2018, rolled out in 2021
- ~55 burn bosses now certified, 100+ others in process
- UC ANR hosted first 3 CARX classes and every refresher

Forestry and Natural Resources Career Mentorship Program

(Low, Satomi)

- Emphasis on early-career professionals, including under-represented groups

- Provides workshops and training focused on professional development skills, career path exploration, and professional networking

Photo by Henri Holbrook

WTREX

- Started in California in 2016
- Focused on training, mentorship, support networks, diversifying fire workforce and leadership
- Grew internationally in 2023
- 12 events in 5 US states and 4 other countries
- ~600 participants from 35+ US states, 30+ countries, and 6 continents

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WTREX

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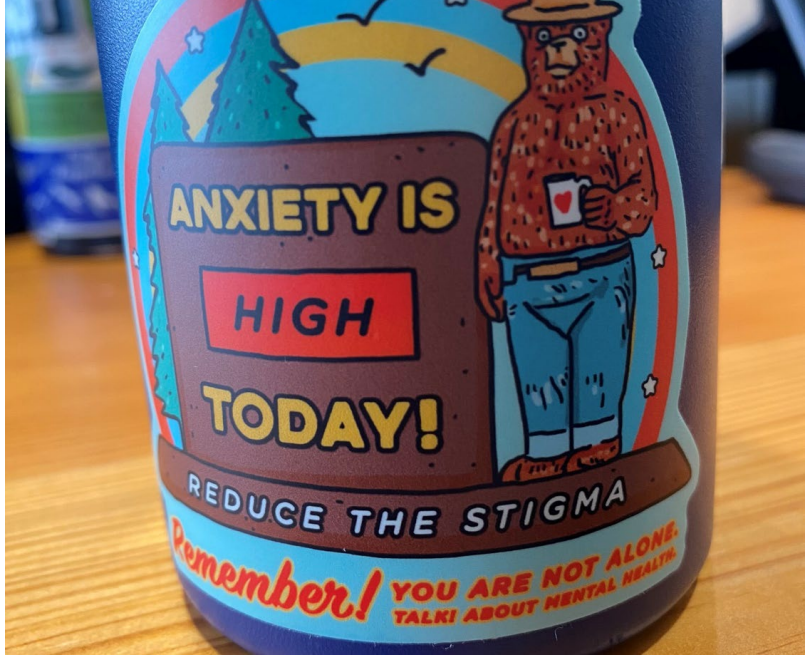

NATIONAL

This training program is helping get women into firefighting

SEPTEMBER 16, 2024 · 5:51 PM ET

HEARD ON ALL THINGS CONSIDERED

By Brian Beach

4-Minute Listen + PLAYLIST TRANSCRIPT ···

Upcoming WTREX events

- Australia, May 2025
- Colombia, September 2025
- US (location TBD), spring 2026
- Germany, spring 2026

Photo by Lenya Quinn-Davidson

Photo by Henri Holbrook

Other upcoming events

- **Pile Burning 101,** Mariposa, March 22
- **National Cooperative Extension Fire Workshop**, Yosemite, April 15-17
- Statewide ranch/farm hardening **webinar for Farm Bureau employees**, April 18
- **Fish & Fire Workshop** at Salmonid Restoration Federation annual conference, Santa Cruz, April 30
- **Legislative Town Hall events,** southern CA, May 16 and June 20
- **CARX refresher,** Sept. 16
- **Good Fire Fair #2**, Henry Cowell State Park, Oct. 11
- **TREX for Foresters**, Blodgett Forest, October (dates TBD)
- Association for Fire Ecology **International Fire Congress**, New Orleans, December 1-5

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Thank you!

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