



Wildfire Resilient Garden Guide



studio pappaterra

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Reimagining Beauty and Resilience at the Wildland–Urban Interface (WUI)

Wildfire Resilient Garden Guide is a collaborative initiative led by the Resource Conservation District of the Santa Monica Mountains (**RCDSMM**) and funded by the National Fish and Wildlife Foundation (**NFWF**). Designed and developed by **studio pappaterra**, this project builds on lessons learned from recent wildfire events—most notably the **2018 Woolsey Fire**, **2024 Franklin Fire**, and the **2025 Palisades and Eaton Fires**—to envision a more resilient, ecologically grounded future for communities along the Rim of the Valley in Los Angeles and Ventura Counties, and across Southern California’s **wildland–urban interface (WUI)**.

For millennia, the Rim of the Valley and surrounding landscapes have been shaped through deep relationships between **people, climate, fire, water, and vegetation**. Long before modern development, this region supported thriving indigenous communities whose careful **tending of the land** fostered **biodiversity, resilience, and seasonal balance**. This long history of human–land interaction informs our approach, grounding the work in **place-based horticultural knowledge, adaptive stewardship, and living systems** that respond to natural cycles.

The goal of the **Wildfire Resilient Garden Guide** is to help homeowners, designers, and decision-makers visualize the potential of **regenerative landscapes** that both **reduce wildfire risk** and **restore ecological function**. The guide promotes the use of **California native and climate-adapted plants**, supports **pollinators, birds, and local wildlife**, and integrates practical strategies such as **defensible space, integrated pest management, seasonally aligned maintenance**, and **long-term landscape resilience**.

At the heart of this work is a broader shift in how we define **beauty and success** in our landscapes. Rather than viewing gardens as static or purely ornamental, the **Wildfire Resilient Garden Guide** advances a **regenerative framework** in which **beauty is understood as a measure of ecological health**. This approach values **biomimicry, re-wilding**, and **reciprocal care**, resulting in landscapes designed to work with **fire, wind, water, and soil**, while strengthening the relationship between people and the environments they inhabit.

More than a design toolkit, this guide serves as both an **educational** and **inspirational** resource. It demonstrates that **wildfire-resilient, water-wise** landscapes can be **elegant, aspirational, and ecologically restorative**. By combining **horticultural best practices**, accessible **do-it-yourself guidance**, and **regionally adapted plant palettes**, the **Wildfire Resilient Garden Guide** empowers communities to **live wisely with fire**—redefining resilience and beauty as ongoing acts of **stewardship rooted in place**.





Living Wisely Where Wildlands Meet Home

In Southern California's Wildland-Urban Interface, it's not a question of if, but when a wildfire will occur. The best approach is preparation: start with **home hardening** and establish a **regenerative, sustainable defensible space** around all structures. Our understanding of fire science continues to evolve, and recommendations may change, but the principles of defensible space remain essential.

Design your landscape in "**islands**" of vegetation, moving outward from the home: wet and sparse near structures, transitioning to drier and denser as you approach the wildlands. Use **native plants wherever possible** and maintain all vegetation in healthy, hydrated condition. Establish an **Ember Resistant Zone (Zone O)** around all structures. Zone O does not require removing healthy, mature trees—they can block embers, **maintain a cooler, wetter micro-climate, and shade out highly flammable invasive grasses**. Embers are most dangerous when landing on combustible materials near structures, such as wood mulch, dry plants, gutters, and roofs. Replace or irrigate vegetation, use rock or hardscape, and **clear debris regularly. Maintain your vegetation to eliminate ladder fuels.**

Remember: there are no truly "fire-proof" plants. Fast-burning fuels—dry grass, brittle or dead material—allow fire to spread twice as quickly. Consider using **native wildflower and perennial seed mixes** that can be mowed after seeding to control fast fuels and protect soil. Near the home, select **low-growing, high-moisture plants** with minimal resin or sap content.

Incorporate **hardscape elements** such as granite paths, stone walls, and terraces to break fire-generated winds, slow embers, and act as fuel breaks. Stabilize slopes and interrupt vegetation with **non-flammable pathways, dry creek beds, or retaining walls**. Fences near structures should be non-combustible, yet designed to allow wildlife migration.

Proper **landscape maintenance is essential**, but fire safety is only as strong as the weakest link—making community-wide engagement critical. When neighbors, agencies, and residents work together, the WUI becomes a safer, more resilient place.

Finally, embrace the joy and beauty of living in this unique wildland ecosystem. Protect it, nurture it, and it will reward you with shade, habitat, biodiversity, and a deeper connection to the land. By integrating preparation, ecological stewardship, and regenerative design, homeowners can live safely with fire while sustaining and enhancing Southern California's extraordinary landscapes.

Wildfire, Ecology, and Fire-wise Design in the WUI

Southern California has experienced increasingly destructive wildfires, resulting in loss of life, property, and habitat. According to the California Department of Forestry and Fire Protection (Cal Fire), roughly **95% of wildfires in California are ignited by human activities**, underscoring the importance of thoughtful planning, and landscape stewardship.

As development expands into fire-prone areas, wildfire has become both an ecological and community planning challenge. The **Wildland-Urban Interface (WUI)** represents heightened risk, but also an opportunity to create **fire-resilient, ecologically functional landscapes** that respond to regional climate, fire behavior, and living systems.

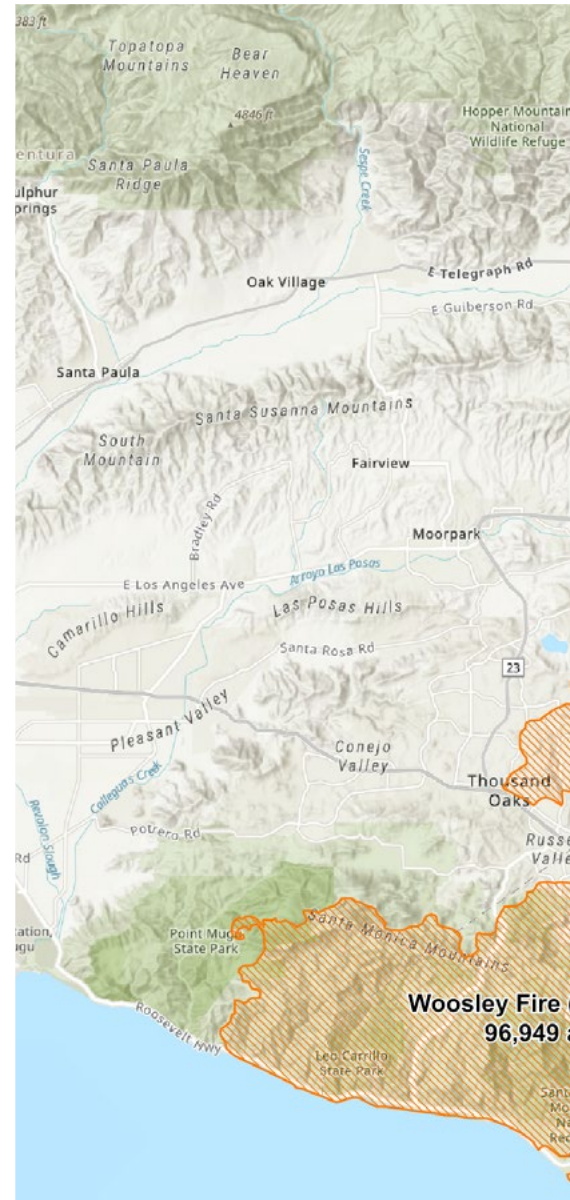
Defensible space relies on a layered approach integrating **home hardening, strategic landscape design, and ongoing plant maintenance**. This guide focuses on **landscape-based strategies** that complement a hardened home.

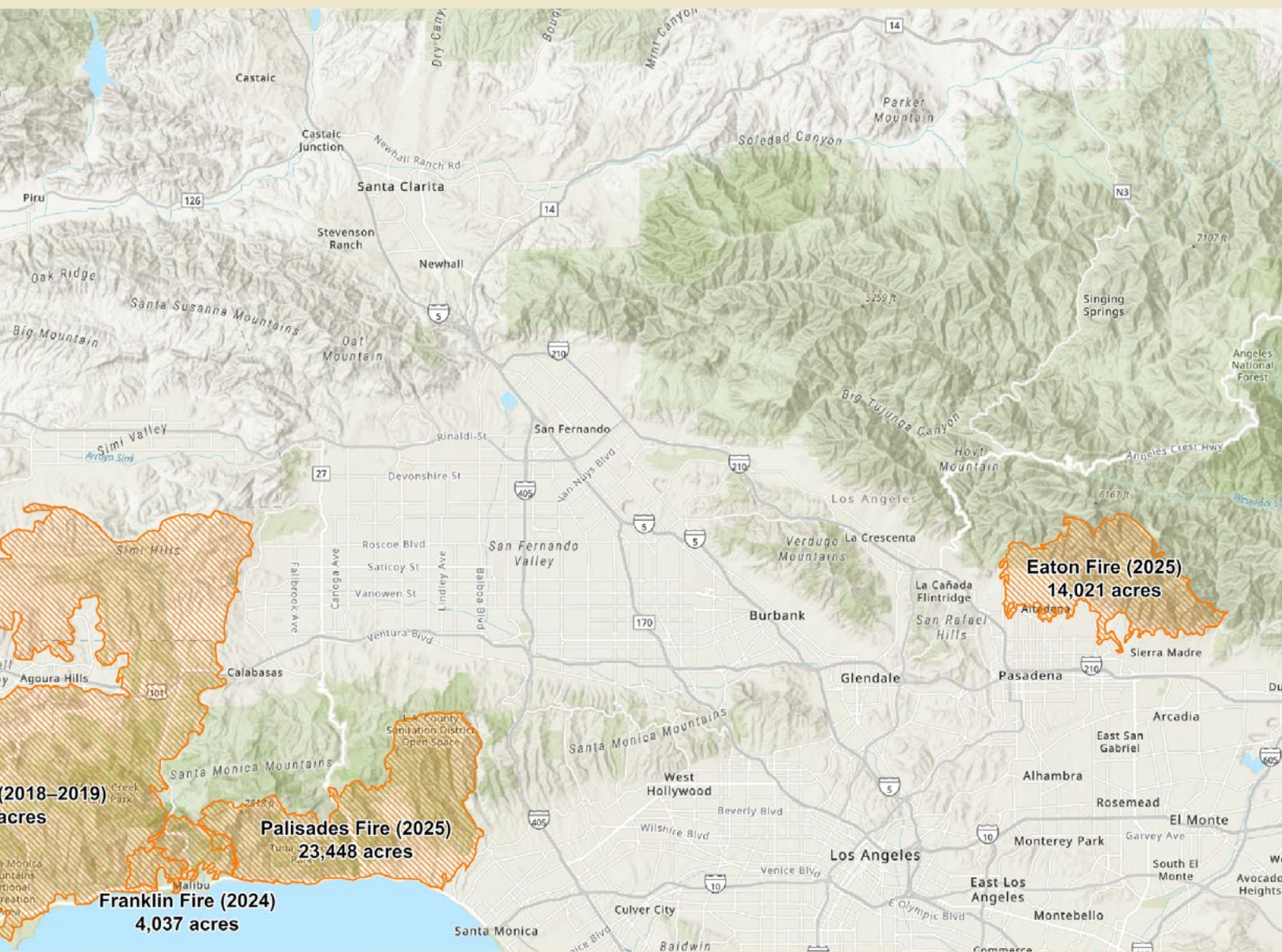
Defensible space uses **graduated planting density, appropriate plant selection, and noncombustible features**—such as stone paths, walls, or patios—to reduce fuel continuity and slow fire spread while maintaining ecological value.

Zone O, the Ember Resistant Zone, begins at the home and includes all attached structures, extending outward five feet. This zone is critical for reducing vulnerability to **wind-driven embers**, a primary cause of structure ignition.

Landscape strategies in Zone O emphasize minimizing combustible materials by removing leaf litter, wood fences, combustible furnishings, and some vegetation. Plants should be trimmed to maintain safe separation from roofs, chimneys, and structures per local fire department guidelines. Retaining **healthy canopy trees reduces heat gain and supports fire resilience and ecosystem stability**.

Beyond Zone O, the **Home Protection Zone (Zone O1)** balances fire safety with ecological integrity. **Thoughtful plant spacing, climate-adapted species, and seasonally aligned maintenance** help slow fire spread while supporting habitat, water-wise design, and the ecological richness of the **Wildland-Urban Interface**.





Study Area of Focus

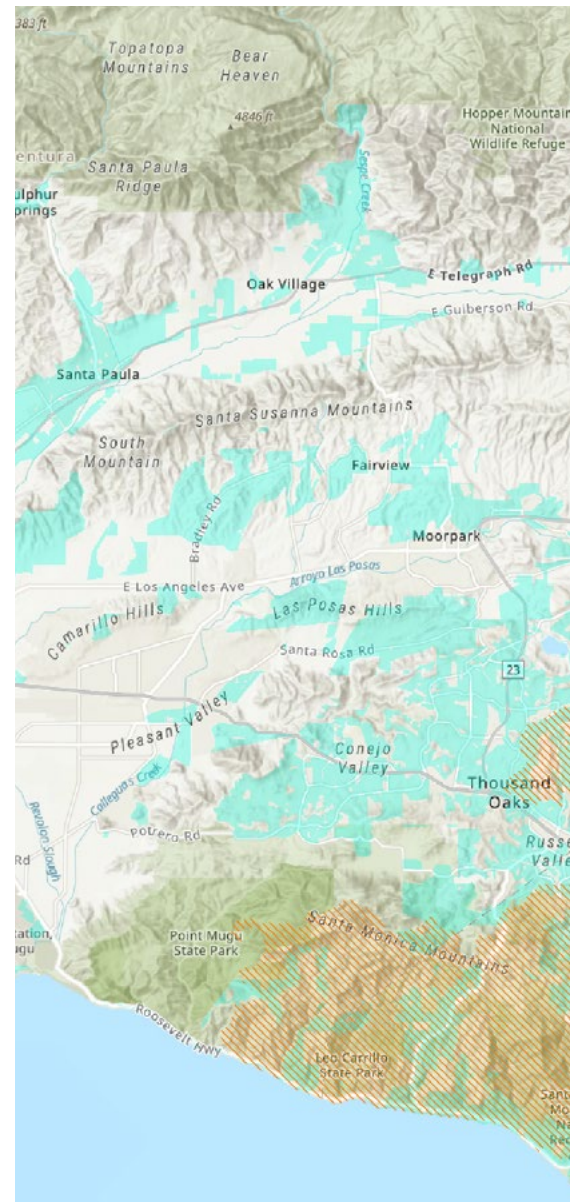
These gardens reflect a commitment to **caring for living landscapes** through thoughtful tending, regeneration, and long-term stewardship. Working with **regionally adapted plants, natural cycles, and ecological relationships**, these landscapes honor place-based knowledge and foster **resilient, regenerative gardens** that restore habitat, strengthen community safety, and connect people to the living land.

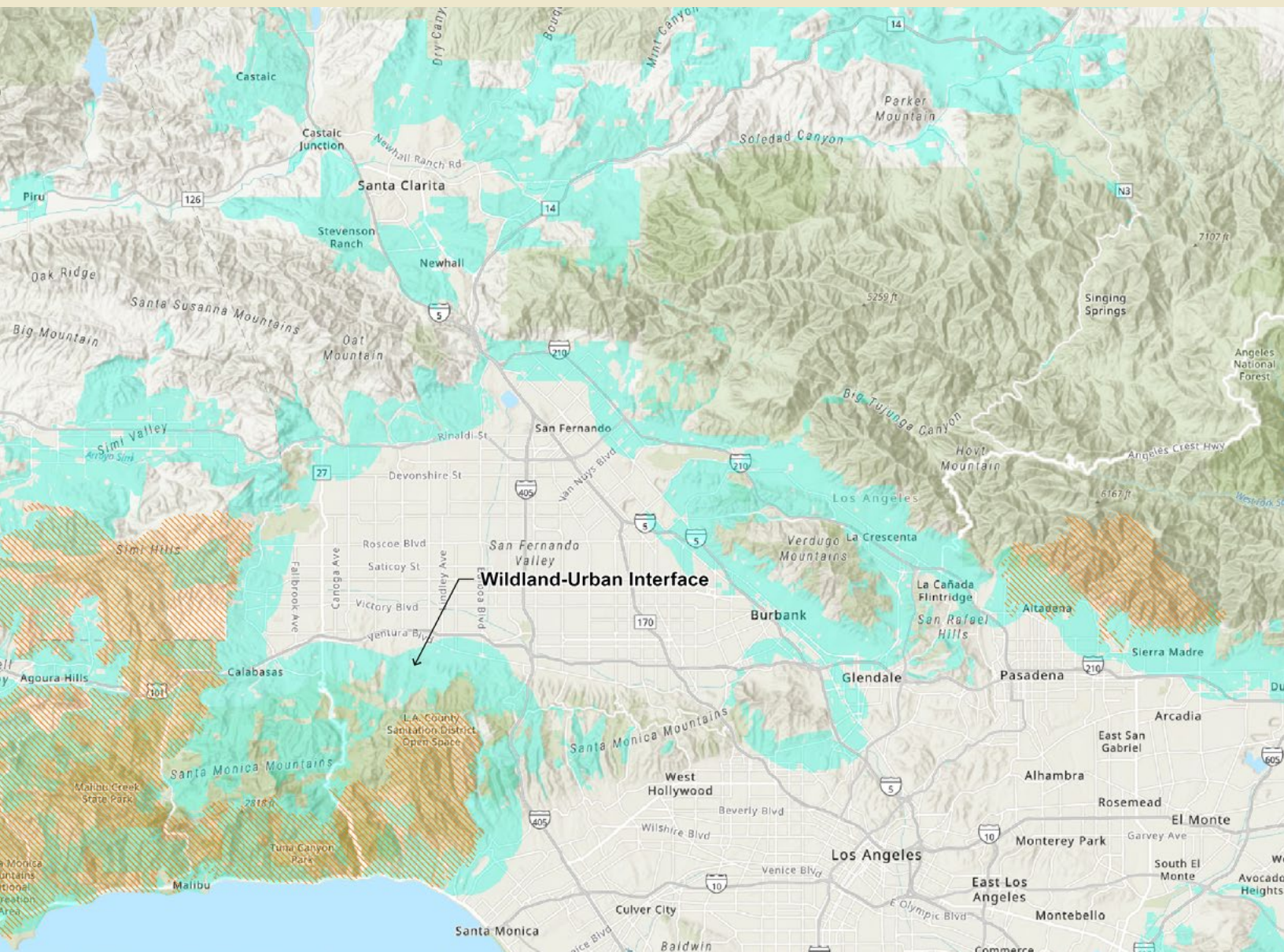
Southern California has two main seasons: the **Wet Season** (October–April) and the **Dry Season** (May–September). Aligning garden care with seasonal rhythms supports **plant health**, protects wildlife, and reduces wildfire risk.

Wet Season: Fall and winter are ideal for **planting, soil building, and establishment**. Clear debris from roofs, gutters, and hardscape areas to reduce fire risk. Retain **deep-rooted vegetation** to prevent erosion, and apply mulch thoughtfully – **keeping wood mulch away from structures, fences, and other combustible elements**. Early spring is ideal to inspect irrigation, water deeply but sparingly, and avoid disturbing nesting wildlife or immature seed heads. Design landscapes to avoid **ladder fuels** and maintain proper spacing.

Dry Season: Late spring through early fall focuses on **fire-aware maintenance**. Avoid excessive pruning or fertilizing, maintain moisture in the **Home Protection Zone**, and replenish mulch safely. Use hardscape and plant spacing to interrupt fuel continuity. Avoid leaf blowers in planting areas to protect **soil structure, wildlife, and beneficial organisms**.

Healthy soil is the foundation of a fire-wise landscape. Building soil health improves **water retention, strengthens plants, and supports fire-resistant vegetation**. Organic matter and fungal networks create pockets that slowly release water to roots. Every 1% increase in soil organic matter can hold 10,000–20,000 gallons per acre, reducing irrigation needs. Applying a **2–4 inch layer of composted, screened wood-chip mulch** supports soil microorganisms, conserves water, and helps establish **robust, regenerative, fire-resilient landscapes** when used thoughtfully and kept outside of Zone 0.





Rim of the Valley: Protecting our Local Biodiversity Hotspot

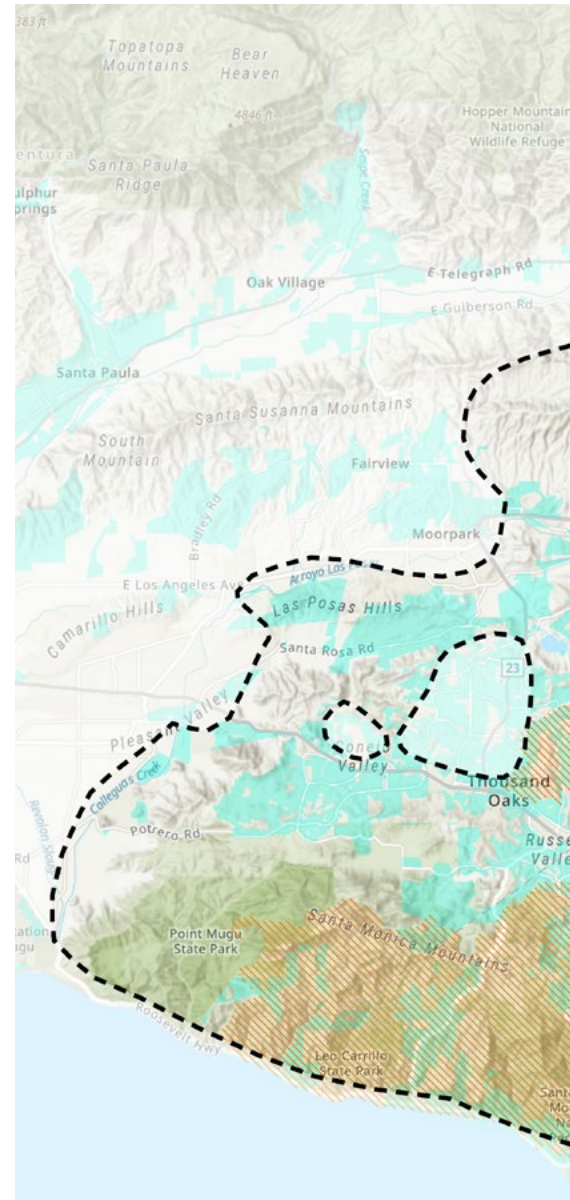
The **Rim of the Valley** is a vital wildlife corridor linking the **Santa Susana** and **Santa Monica Mountains** to the **Angeles** and **Los Padres National Forests**. It encompasses the mountains surrounding the **San Fernando, La Crescenta, Santa Clarita, Simi, and Conejo Valleys**, as well as the **L.A. River, Arroyo Seco, Griffith Park**, and other open spaces. This interconnected landscape supports a remarkable diversity of life, from rare species like the **Santa Susana tarplant** to widespread native plants such as **California sagebrush, buckwheat, and coast live oak**. Wildlife – including **mule deer, bobcats, coyotes, and mountain lions** – relies on these habitats to survive.

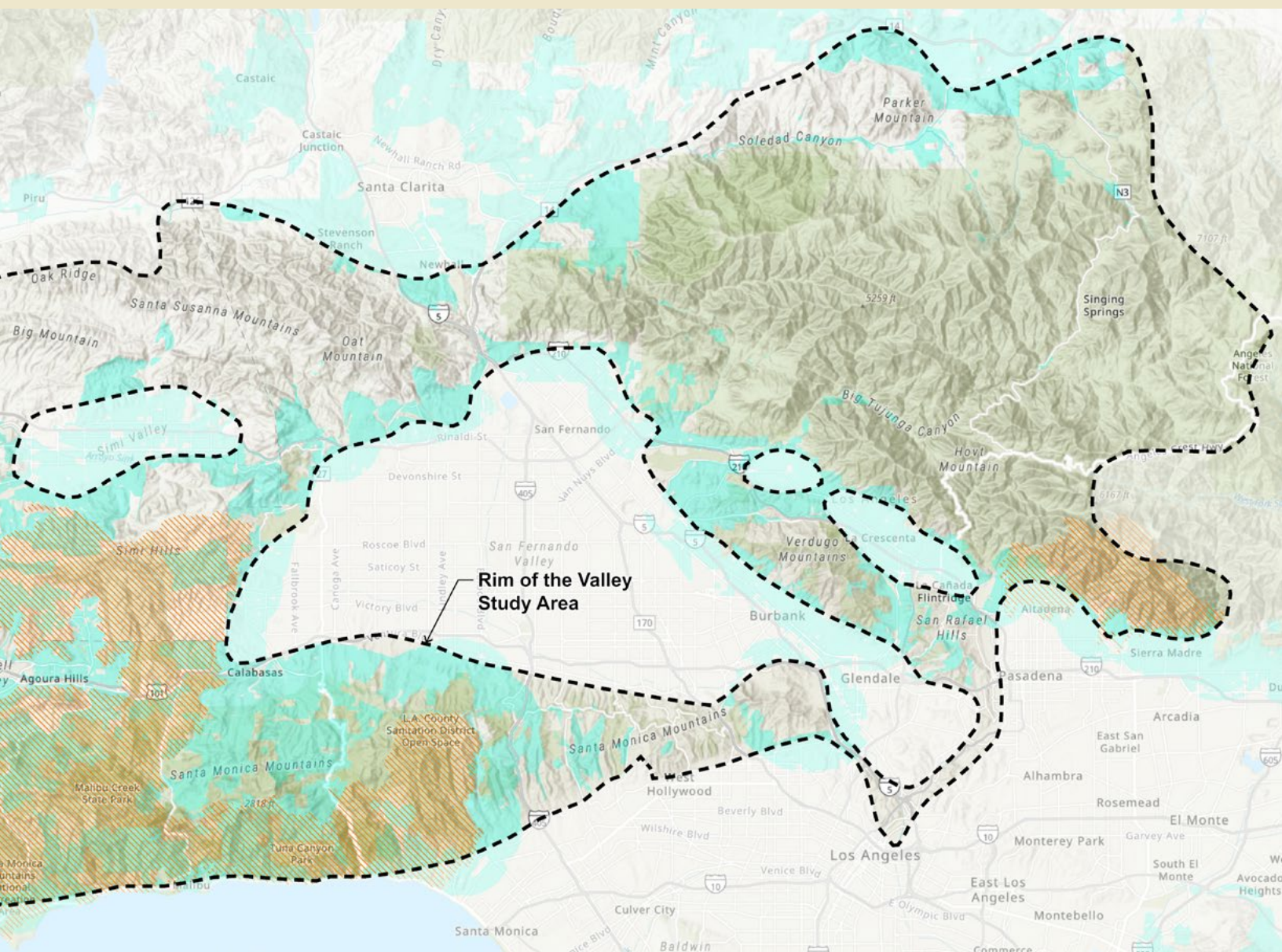
As **development and urban sprawl** reduce open land, ecosystem health and biodiversity decline. At the same time, the **variability and intensification of heat and drought events** increase wildfire risk, while ignitions – both **accidental and intentional** – and ongoing land use pressures challenge habitat resilience. In this context, **healthy native plant communities** are far preferable to **flash-fuel invasive fields**, providing **ignition resistance** and supporting **Wind & Fire Resilience** in the urban interface.

By designing **fire-wise, regenerative gardens**, homeowners can actively support wildlife, protect habitat, and **expand ecological function** in their yards, parks, and open spaces. Every garden becomes an opportunity to **support pollinators, provide shelter for native species**, and strengthen the resilience of the Rim of the Valley corridor.

The adjacent illustration highlights areas of **significant habitat loss** due to past wildfires and urban development, focusing on the intersection of the **Rim of the Valley** and its most **ecologically important, diverse habitat types**. This analysis informed the selection of **six ecotope–landscape prototypes**, designed to demonstrate how **tailored garden designs** can **reintroduce native biodiversity, reduce fire risk, and support ecosystem** function in key areas of the Rim.

Protecting this landscape is not only about safety – it is about **celebrating biodiversity, preserving wildlife**, and creating gardens that connect people to the **natural beauty and ecological legacy of Southern California**.





Flora of Fire: Ecotopes of the Los Angeles Bioregion

An **ecotope** is the smallest, ecologically distinct, and relatively homogeneous unit of a landscape. Ecotopes combine **landforms, micro-climate, and biotic characteristics** — the key building blocks of biodiversity — to differentiate subregional-scale spatial units for measuring and reporting ecological conditions.

This guide presents **six Prototype Landscape Designs** that demonstrate how beauty, safety, regenerative practices and biodiversity can coexist. Each garden celebrates the most distinctive ecotopes of the region, showing how site-specific planting and thoughtful design can protect homes while supporting habitat.

These selected ecotopes were chosen because they are **the most prominent habitats in the region and the most affected by recent fires and urbanization**. These habitats are:

Coastal Sage Scrub

A drought-tolerant shrub-land found along southern California's coastal slopes and valleys. This ecotope supports diverse wildlife, but is highly flammable.

Mixed Chaparral

Dense, woody shrub-lands on hillsides and ridges. Chaparral provides critical habitat for wildlife. The natural fire return interval for chaparral is between 30 to 150 years.

Coast Live Oak Woodland

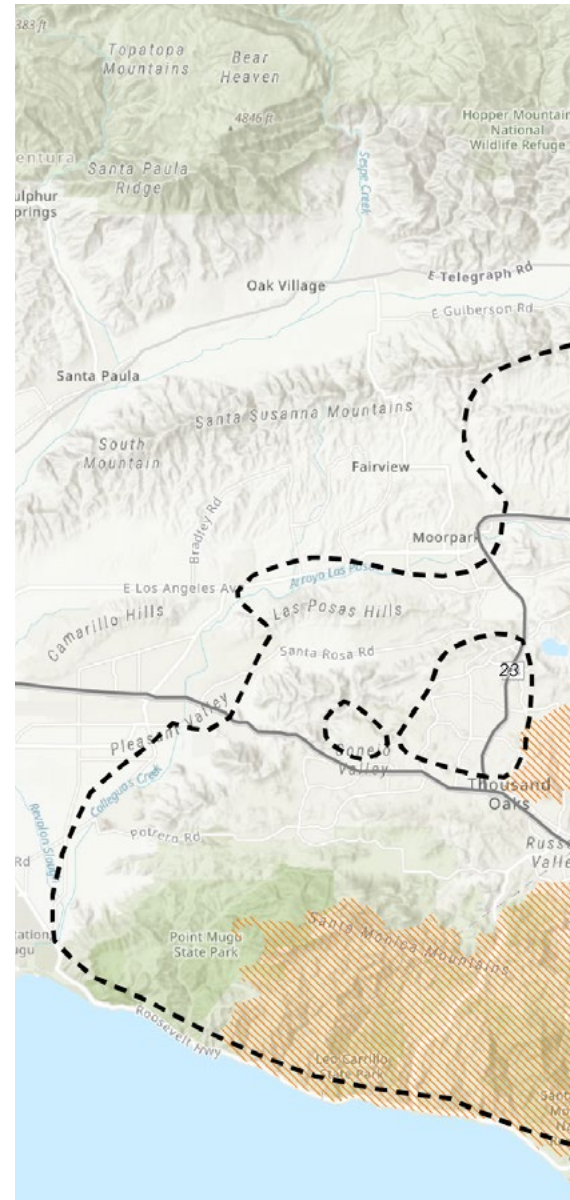
Dominated by coast live oaks and other native trees, this ecotope creates a shaded, cooler micro-climate and supports diverse wildlife. Proper management maintains fire safety.

Riparian / Stream-side Habitat

Found along rivers, creeks, and seasonal streams, these areas are lush, support wildlife, and act as natural firebreaks when maintained.

Annual Grasslands / Meadow

Open grassy areas that provide habitat for pollinators, mammals, and birds. Grasslands can carry fire quickly, making management critical.



Reference

Brown, I. (2022). *Managing Cities as Urban Ecosystems: Analysis Tools for Biodiversity Stewardship in Los Angeles* (Doctoral dissertation, University of California, Los Angeles).

Most Critically Threatened Ecotopes in the Rim of the Valley

For this guide, we selected six ecotopes within the **Rim of the Valley** that are particularly vulnerable due to urbanization and recent large-scale wildfires. The graphic in this section illustrates the impact of three major fires—the **Woolsey, Franklin, Palisades, and Eaton Fires**—which have significantly reduced habitat across these Los Angeles bioregions.

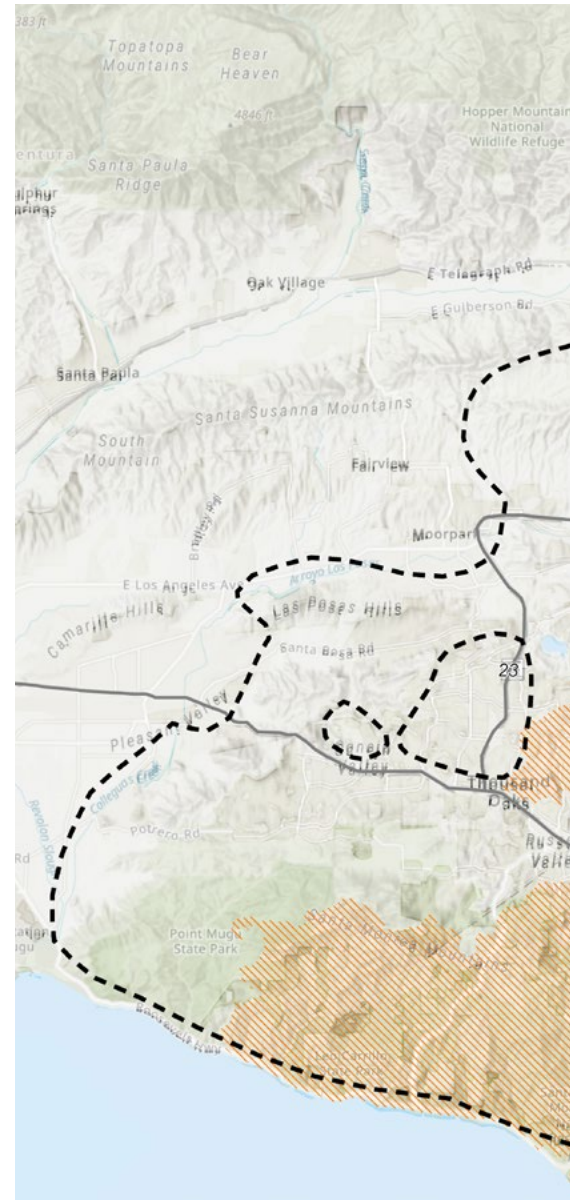
The ecotopes highlighted are:

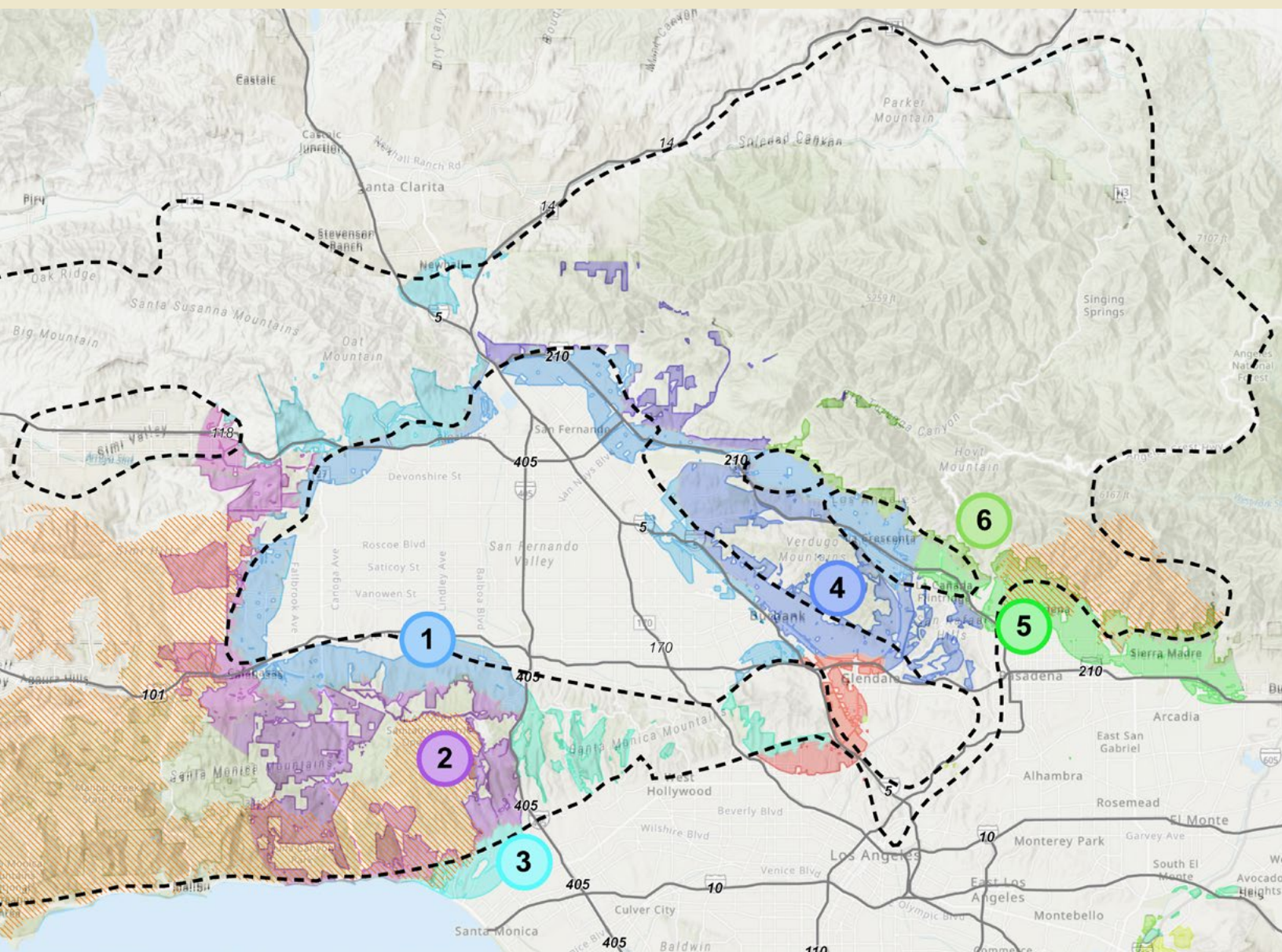
1. San Fernando Valley Terrace
2. Central Santa Monica Mountains
3. Santa Monica Terrace
4. Verdugo Mountains and San Rafael Hills
5. San Gabriel River Upper Terrace
6. Central San Gabriel Mountains

These areas were chosen because they represent both the most prominent ecological communities in the region and the ones most affected by fire and urban pressures. Each ecotope faces unique challenges in terms of vegetation loss, habitat fragmentation, and fire risk.

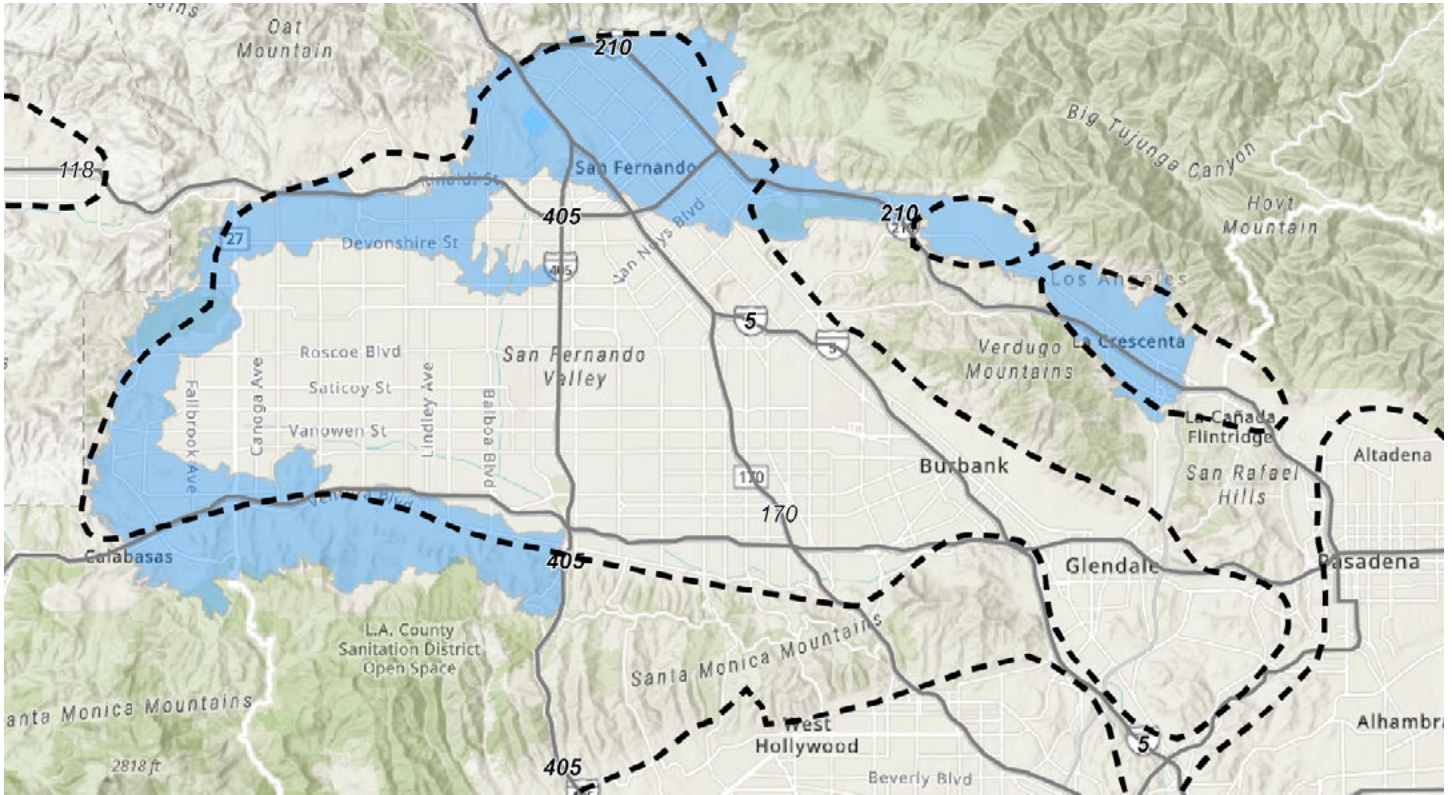
While traditional Indigenous practices offer critical insights into maintaining ecological health, **current conditions differ drastically from historical times**. Climate change has intensified drought and heat, non-native flammable species are spreading, and dense human settlement has increased the frequency of accidental ignitions. Modern management, therefore, must **adapt historic stewardship practices** to today's ecological and social realities, combining traditional knowledge with contemporary science to restore resilience, reduce fire risk, and support biodiversity.

This chapter will focus on **each individual ecotope**, exploring their characteristics, vulnerabilities, and opportunities for thoughtful landscape management that balances safety, ecological integrity, and habitat restoration.





San Fernando Valley Terrace



Overview

A broad, gently sloping terrace that forms the floor of the San Fernando Valley, shaped by alluvial deposits from the surrounding mountains. Historically covered by oak woodlands and grasslands, much of the ecotope is now urbanized. These neighborhoods occupy much of the valley floor and terrace areas, which are heavily developed but still retain pockets of oak woodland and riparian habitat.

Neighborhoods / Cities:

Van Nuys, North Hollywood, Woodland Hills, Reseda, and Sherman Oaks—primarily along their northern and western edges, bordering the Santa Monica Mountains and the Simi Hills.

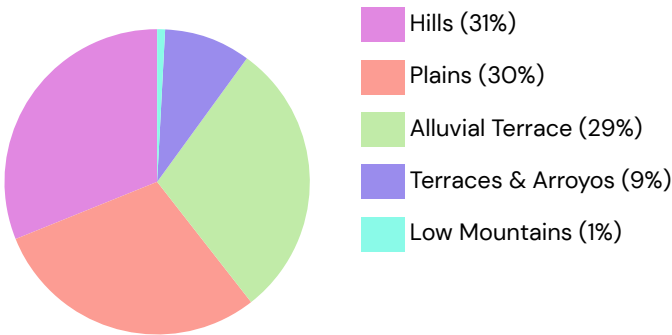
Key Characteristics

- Composed of fertile soils with intermittent riparian corridors.
- Historically supported Valley oak, sycamore, and Riversidean sage scrub. Currently estimated natural habitats are Annual Grassland (4.5%) and Coastal Sage Scrub (2%)
- Patchwork of remaining natural areas mixed with suburban and industrial development.

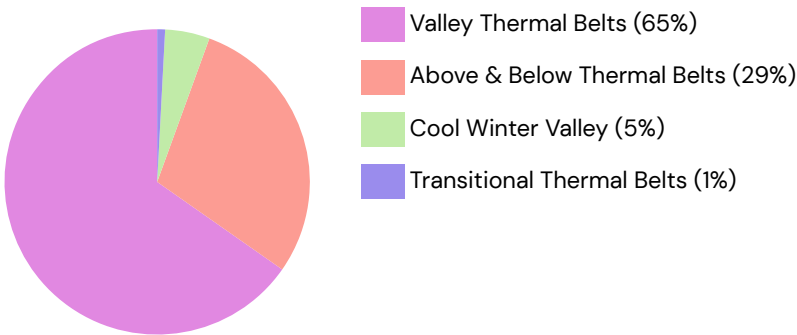
Fire Vulnerability

- Fragmented vegetation creates isolated fuel patches that can ignite easily.
- Drought stress on remnant native vegetation increases flammability.
- Wildland-Urban Interface poses high risk for property and habitat damage.

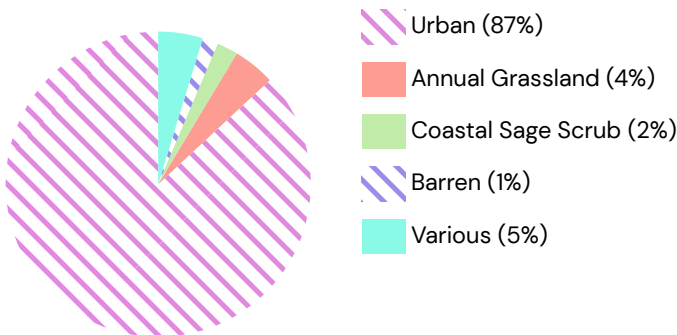
Landform



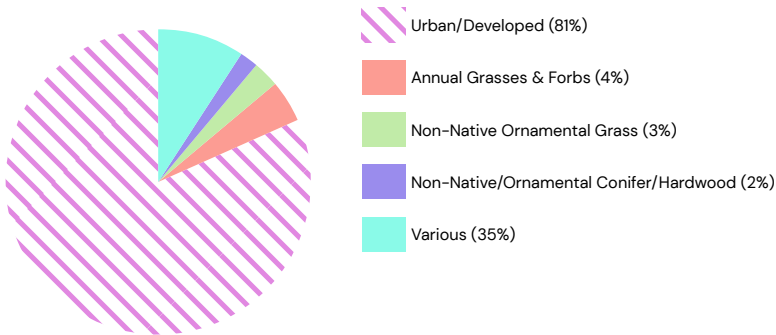
Microclimate



Wildlife Habitat Relationship



Vegetation Alliances



San Fernando Valley Terrace



Heteromeles arbutifolia



Platanus racemosa



Quercus agrifolia



Quercus berberidifolia



Salix laevigata



Rhus ovata



Baccharis pilularis
'Pigeon Point'



Ericameria linearifolia



Frangula californica 'Leatherleaf'



Malacothamnus fasciculatus



Peritoma arborea



Rhus integrifolia



Achillea millefolium



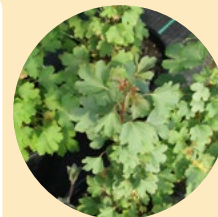
Nemophila menziesii



Salvia mellifera 'Terra Seca'



Calystegia macrostegia



Ribes aureum var. *aureum*



Salvia spathacea



Artemisia douglasiana



Diplacus grandiflorus



Epilobium canum



Lupinus albifrons



Mimulus aurantiacus



Dudleya pulverulenta



Eschscholzia californica



Layia platyglossa



Agrostis pallens



Carex pansa



Festuca californica



Festuca microstachys



Koeleria macrantha



Melica californica



Melica imperfecta



Muhlenbergia rigens



Stipa lepida



Opuntia littoralis



Type	Botanical Name	Winter		Spring			Summer			Fall			Win.	Water Use
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
TREES	Heteromeles arbutifolia													Very Low, Low
	Platanus racemosa													Medium+
	Quercus agrifolia													Very Low, Low
	Quercus berberidifolia													Very Low, Low
	Salix laevigata													Medium, High+
SHRUBS	Baccharis pilularis 'Pigeon Point'													Low
	Ericameria linearifolia													Very Low
	Frangula californica 'Leatherleaf'													Very Low+
	Malacothamnus fasciculatus													Low
	Peritoma arborea													Very Low
	Rhus integrifolia													Low
	Rhus ovata													Very Low+
	Ribes aureum var. aureum													Low
	Salvia spathacea													Low
G. C.	Achillea millefolium													Very Low
	Nemophila menziesii													Low, Medium
	Salvia mellifera 'Terra Seca'													Very Low
VINES	Calystegia macrostegia													Very Low+
PER.	Artemisia douglasiana													Very Low, Low
	Diplacus grandiflorus													Low
	Epilobium canum													Very Low
	Lupinus albifrons													Very Low
	Mimulus aurantiacus													Low
ANN.	Eschscholzia californica													Medium
	Layia platyglossa													Very Low, Low
GRASS	Agrostis pallens													Medium
	Carex pansa													Medium+
	Festuca californica													Very Low+
	Festuca microstachys													Very Low+
	Koeleria macrantha													Low
	Melica californica													Very Low
	Melica imperfecta													
	Muhlenbergia rigens													Low
	Stipa lepida													Very Low
SUCC.	Dudleya pulverulenta													Very Low
CACTI	Opuntia littoralis													Very Low



Month of Bloom / Color



Flowers, Fruits, Foliage

+ Extra in Summer

San Fernando Valley Terrace

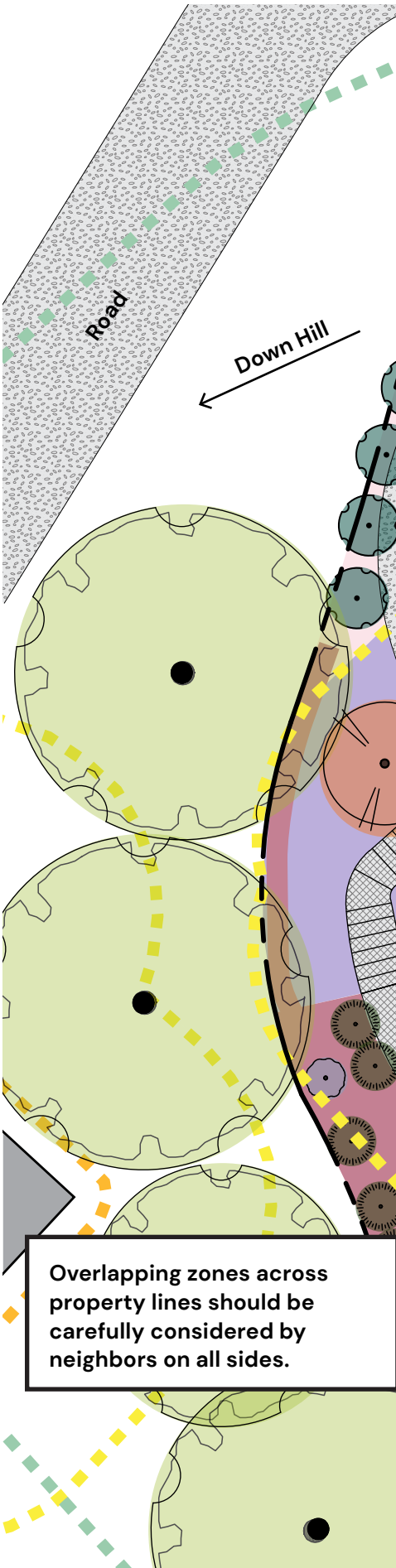
LEGEND

Defensible Space Zones

-  Structure
-   Zone 0: Ember-Resistant Zone (0-5 ft)
-   Zone 1: Home Protection Zone (5-30 ft)
-   Zone 2: Thinning Zone (30-100 ft)

Key

- | | |
|--|--|
|  Seasonal Pollinator Meadow
<i>(Annuals & Grasses)</i> |  Existing Mature Tree |
|  Gravel |  Coast Live Oak |
|  Water |  Tree |
|  Wet Lawn Meadow Moat |  Hedge |
|  Dry Rock Garden
<i>(Succulents & Cacti)</i> |  Shrub 1 |
|  Vegetated Soil Mound |  Shrub 2 |
|  Rain Swale/ Garden |  Shrub 3 |
|  Groundcover |  Perennial 1 |
|  Paving |  Perennial 2 |

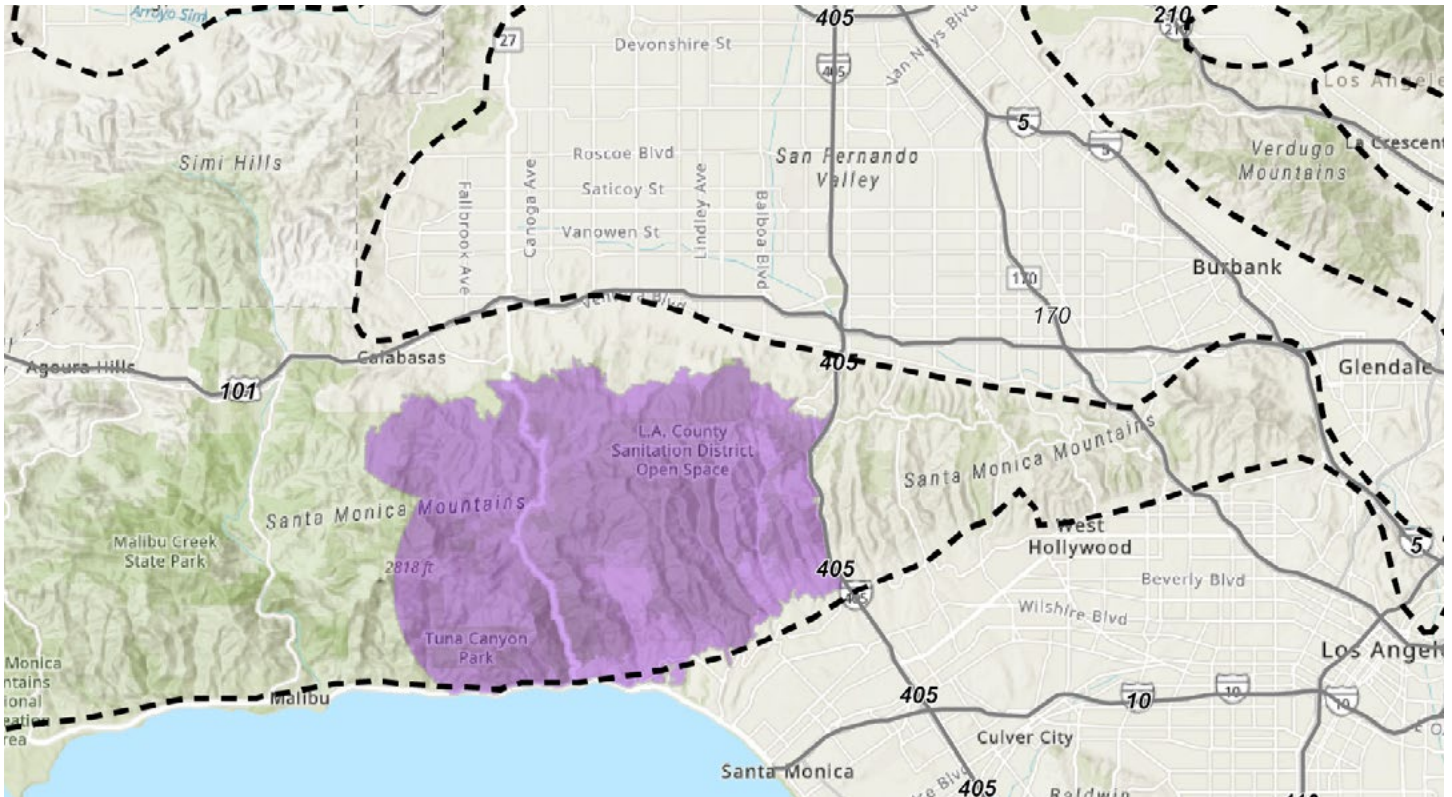




Scan / Click for More



Central Santa Monica Mountains



Overview

This ecotope encompasses the mid-elevation ridges and slopes of the Santa Monica Mountains, extending from Malibu Canyon to Topanga Canyon. It is characterized by rugged topography and diverse native plant communities. Urban development is mostly confined to canyon bottoms and ridge-adjacent areas, with dense chaparral and oak woodlands surrounding residential zones.

The area experienced extensive impact during the **Woolsey & Franklin Fires**, which burned across Malibu and central ridges, and significant damage along western ridges and canyon slopes near Brentwood from the **Palisades Fire**.

Neighborhoods / Cities:

Malibu, Topanga, Calabasas (some southern portions), Brentwood (hillside sections).

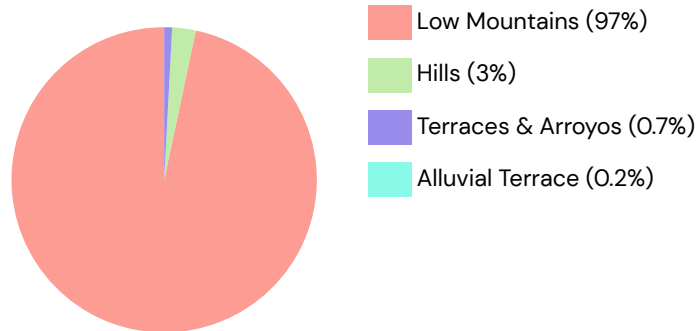
Key Characteristics

- Vegetation includes predominantly Mixed Chaparral (62%), Coastal Sage Scrub (7%), and Coast Oak Woodland (7%).
- Microclimates vary with slope aspect, exposure, and proximity to the coast.
- Provides critical habitat for endemic wildlife, including mountain lions and numerous bird species.

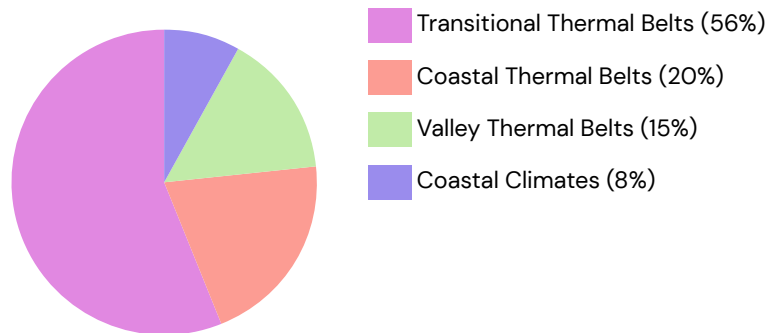
Fire Vulnerability

- Steep slopes and dense chaparral create high-intensity fire conditions.
- Fires can spread rapidly during Santa Ana wind events.
- Wildfire history indicates frequent burns over the past century, stressing recovery.

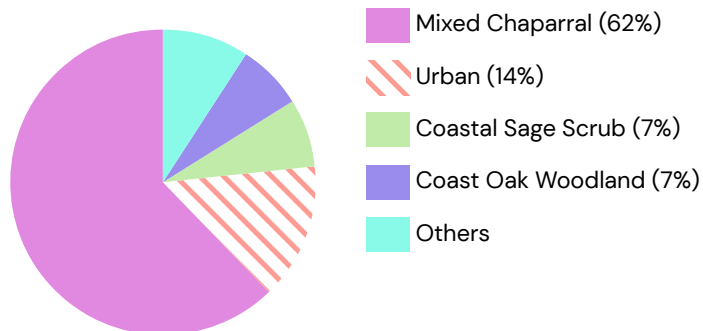
Landform



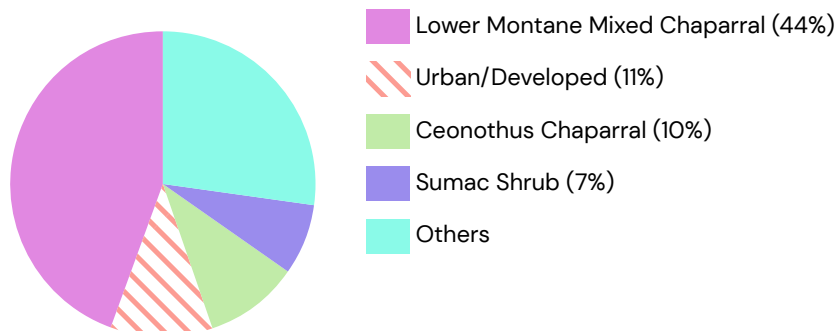
Microclimate



Wildlife Habitat Relationship



Vegetation Alliances



Central Santa Monica Mountains



Heteromeles arbutifolia



Prunus ilicifolia ssp. *ilicifolia*



Quercus agrifolia



Umbellularia californica



Adenostoma fasciculatum



Arctostaphylos glauca



Ceanothus spinosus



Eriogonum parvifolium



Frangula californica



Lonicera hispidula



Malacothamnus fasciculatus



Peritoma arborea



Rhus integrifolia



Ribes aureum var. *aureum*



Ribes malvaceum



Salvia apiana



Salvia leucophylla



Salvia mellifera



Carex praegracilis



Artemisia douglasiana



Epilobium canum



Penstemon heterophyllus



Sisyrinchium bellum



Salvia spathacea



Carex spissa



Festuca microstachys



Koeleria macrantha



Melica imperfecta



Stipa lepida



Stipa pulchra



Clinopodium douglasii



Salvia mellifera 'Terra Seca'



Lupinus succulentus



Phacelia parryi



Salvia columbariae



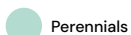
Dudleya pulverulenta



Trees



Shrubs



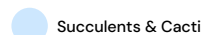
Perennials



Annuals



Grasses



Succulents & Cacti



Groundcover & Vines



Scan / Click for More

Type	Botanical Name	Winter		Spring			Summer			Fall			Win.	Water Use
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
TREES	Heteromeles arbutifolia													Very Low, Low
	Prunus ilicifolia ssp. ilicifolia													Low
	Quercus agrifolia													Very Low, Low
	Umbellularia californica													Medium
SHRUBS	Adenostoma fasciculatum													Very Low
	Arctostaphylos glauca													Very Low
	Ceanothus spinosus													Very Low
	Eriogonum parvifolium													Very Low
	Frangula californica													Very Low
	Lonicera hispidula													Very Low
	Malacothamnus fasciculatus													Very Low
	Peritoma arborea													Very Low
	Rhus integrifolia													Very Low
	Ribes aureum var. aureum													Very Low
	Ribes malvaceum													Very Low
	Salvia apiana													Very Low
	Salvia leucophylla													Very Low
	Salvia mellifera													Very Low
	Salvia spathacea													Very Low
PER.	Artemisia douglasiana													Very Low, Low
	Epilobium canum													Very Low
	Penstemon heterophyllus													Low
	Sisyrinchium bellum													VL
G. C.	Clinopodium douglasii													Low, Mediu,
	Salvia mellifera 'Terra Seca'													Very Low
GRASS	Carex praegracilis													Medium
	Carex spissa													Medium
	Festuca microstachys													Very Low+
	Koeleria macrantha													Low
	Melica imperfecta													Low
	Stipa lepida													Very Low
	Stipa pulchra													Very Low
ANN.	Lupinus succulentus													Medium
	Phacelia parryi													Very Low
	Salvia columbariae													Very Low Low
SUCC.	Dudleya pulverulenta													Very Low



Month of Bloom / Color



Flowers, Fruits, Foliage

+ Extra in Summer

Central Santa Monica Mountains

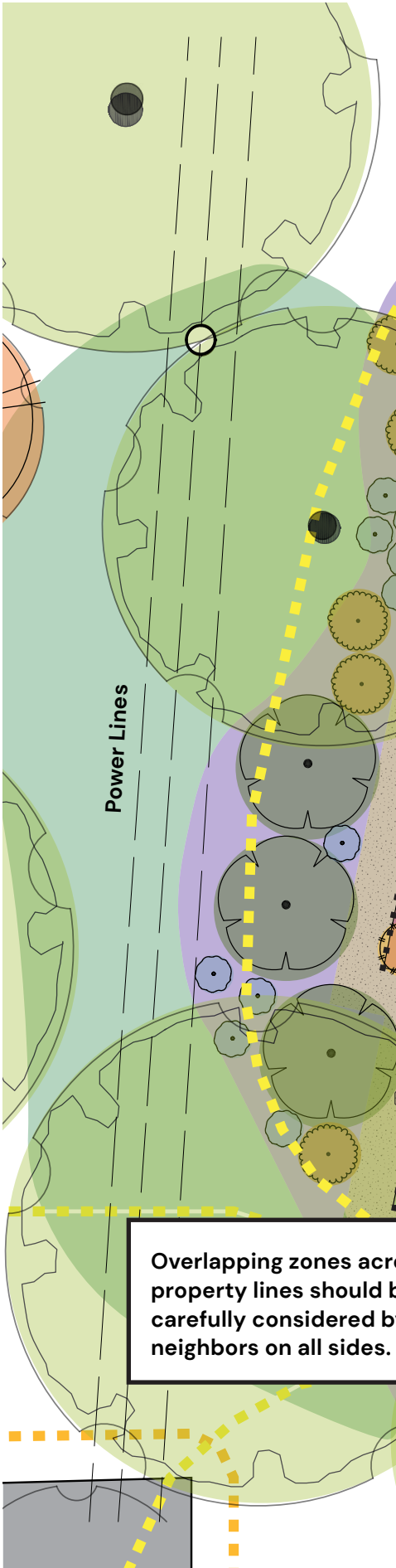
LEGEND

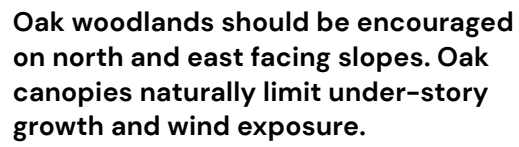
Defensible Space Zones

- Structure
- Zone 0: Ember-Resistant Zone (0-5 ft)
- Zone 1: Home Protection Zone (5-30 ft)
- Zone 2: Thinning Zone (30-100 ft)

Key

- | | |
|--|----------------------|
| Seasonal Pollinator Meadow
(<i>Annuals & Grasses</i>) | Existing Mature Tree |
| Gravel | Coast Live Oak |
| Water | Tree |
| Wet Lawn Meadow Moat | Hedge |
| Dry Rock Garden
(<i>Succulents & Cacti</i>) | Shrub 1 |
| Vegetated Soil Mound | Shrub 2 |
| Rain Swale/ Garden | Shrub 3 |
| Groundcover | Perennial 1 |
| Paving | Perennial 2 |





Layered screening of individual tall shrubs should be spaced 2x height on slopes < 20%, and farther apart on steeper slopes.

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Overview

Santa Monica Terrace



Overview

Coastal and gently sloping terraces that transition from bluffs to flatlands near the Ballona Wetlands and LAX dunes. Urbanization is nearly complete, leaving only small, fragmented patches of coastal sage scrub and dune habitat near wetland areas. The **Palisades Fire** caused moderate fire spread into remaining vegetation fragments along the bluffs.

Neighborhoods / Cities:

Santa Monica—primarily the **northern and eastern areas** where the city meets the **Santa Monica Mountains**—with the **Ballona Wetlands** representing a unique coastal **WUI element** for **Marina del Rey** and **Playa Vista**.

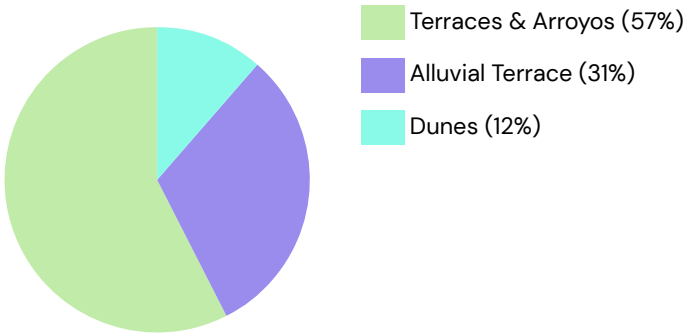
Key Characteristics

- Dominated by Coastal Sage Scrub with very limited remaining natural areas (>1%), as well as Coastal Strand (1%), and Annual Grassland (>1%).
- Influenced by marine air, leading to fog and cooler conditions, but with some interior zones experiencing urban heat island effects.

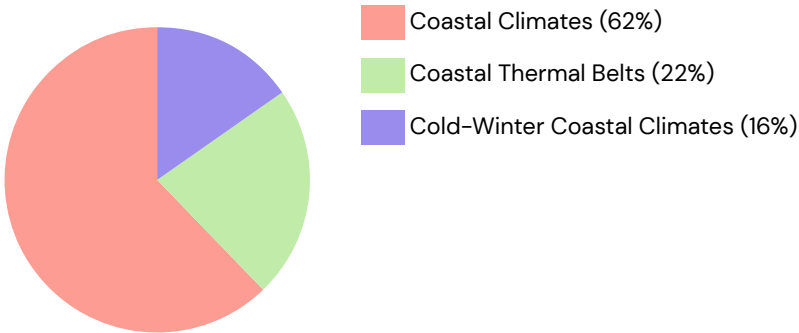
Fire Vulnerability

- Despite proximity to the ocean, urban development and historically converted dunes have made this ecotope vulnerable to fire spread in the remaining vegetated areas.
- Some restoration efforts are ongoing, but vegetation is highly fragmented and susceptible.

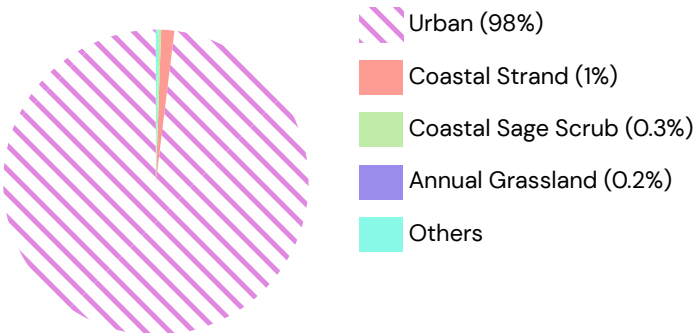
Landform



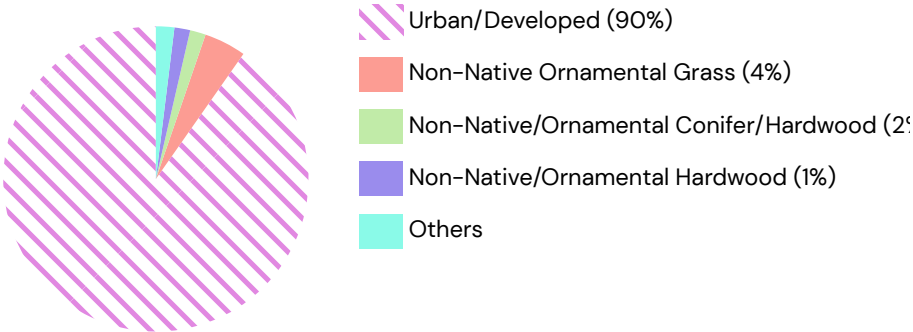
Microclimate



Wildlife Habitat Relationship



Vegetation Alliances



Santa Monica Terrace



Heteromeles arbutifolia



Platanus racemosa



Populus fremontii



Prunus ilicifolia ssp. *ilicifolia*



Quercus agrifolia



Salix laevigata



Arctostaphylos glauca



Atriplex lentiformis



Baccharis pilularis 'Twin Peaks'



Encelia californica



Eriogonum parvifolium



Umbellularia californica



Frangula californica



Frangula californica 'Mound San Bruno'



Lupinus arboreus 'Coastal Yell'



Populus trichocarpa



Rhamnus californica 'Eve Case'



Rhus integrifolia



Ribes 'Pulborough Scarlet'



Ribes aureum var. *aureum*



Salvia apiana



Salvia leucophylla



Salvia mellifera



Salvia spathacea



Achillea millefolium



Camissonia cheiranthifolia



Datura wrightii



Erigeron glaucus



Clarkia unguiculata



Gilia capitata



Sisyrinchium bellum



Carex praegracilis



Carex spissa



Juncus acutus



Melica imperfecta



Stipa pulchra



Scan / Click for More

Type	Botanical Name	Winter		Spring			Summer			Fall			Win.	Water Use
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
TREES	Heteromeles arbutifolia													Very Low, Low
	Platanus racemosa													Medium+
	Populus fremontii													Low-High+
	Populus trichocarpa													Medium, High
	Prunus ilicifolia ssp. ilicifolia													Low
	Quercus agrifolia													Very Low, Low
	Salix laevigata													Medium, High+
	Umbellularia californica													Medium
SHRUBS	Arctostaphylos glauca													Very Low, Low
	Atriplex lentiformis													Very Low
	Baccharis pilularis 'Twin Peaks'													Very Low, Low+
	Encelia californica													Low+
	Eriogonum parvifolium													Very Low, Low
	Frangula californica													Very Low
	Frangula californica 'Mound San Bruno'													Very Low+
	Lupinus arboreus 'Coastal Yell'													Low
	Rhamnus californica 'Eve Case'													Very Low+
	Rhus integrifolia													Low
	Ribes 'Pulborough Scarlet'													Low
	Ribes aureum var. aureum													Low
	Salvia apiana													Very Low
	Salvia leucophylla													Very Low
	Salvia mellifera													Very Low, Low
	Salvia spathacea													Low
PER.	Sisyrinchium bellum													Very Low
G. C.	Achillea millefolium													Very Low
	Camissonia cheiranthifolia													Very Low, Medium+
	Datura wrightii													Low
	Erigeron glaucus													Low+
GRASS	Carex praegracilis													Medium
	Carex spissa													Medium
	Juncus acutus													Medium+
	Melica imperfecta													
	Stipa pulchra													Very Low
ANN.	Clarkia unguiculata													Medium
	Gilia capitata													Low



Month of Bloom / Color



Flowers, Fruits, Foliage

+ Extra in Summer

Case Study

Santa Monica Terrace

LEGEND

Defensible Space Zones

- Structure

Zone 0: Ember-Resistant Zone (0-5 ft)

Zone 1: Home Protection Zone (5-30 ft)

Zone 2: Thinning Zone (30-100 ft)
- ### Key
- Seasonal Pollinator Meadow
(Annuals & Grasses)

Existing Mature Tree

Gravel

Coast Live Oak

Water

Tree

Wet Lawn Meadow Moat

Hedge

Dry Rock Garden
(Succulents & Cacti)

Shrub 1

Vegetated Soil Mound

Shrub 2

Rain Swale/ Garden

Shrub 3

Groundcover

Perennial 1

Paving

Perennial 2
-
- 34



Scan / Click for More



Oak woodlands should be encouraged on north and east facing slopes. Oak canopies naturally limit under-story growth and wind exposure.

Residence

Road

an
water
void
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Overview

Verdugo Mountains & San Rafael Hills



Overview

A series of low- to mid-elevation hills northeast of the Los Angeles Basin, forming a transitional zone between urbanized valleys and higher mountain ranges. These ridges are heavily developed along canyon corridors, though chaparral remnants persist on steeper slopes. **The Eaton Fire** caused moderate impact, burning chaparral on ridges—particularly in the La Cañada Flintridge and Glendale foothills.

Neighborhoods / Cities:

Glendale, Eagle Rock, La Cañada Flintridge, Burbank (hilly areas), Pasadena (west foothills).

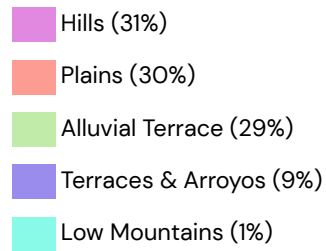
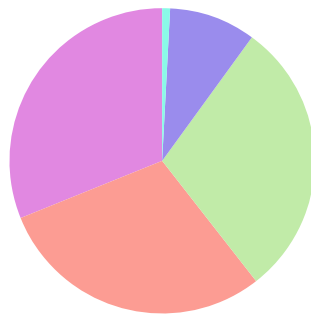
Key Characteristics

- Vegetation includes Mixed Chaparral (38%), Coastal Sage Scrub (12%), and scattered Coast Oak Woodland (4%).
- Varied topography creates small canyons and ridge habitats.
- Important wildlife corridors connect larger natural areas in the region.

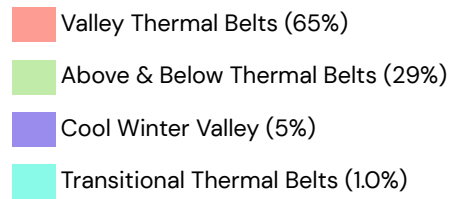
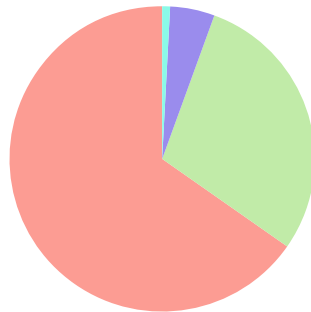
Fire Vulnerability

- Proximity to urban development increases risk of ignition.
- Steep slopes and dense chaparral promote rapid fire spread.
- Past fires have repeatedly reduced habitat connectivity and stressed native plant communities.

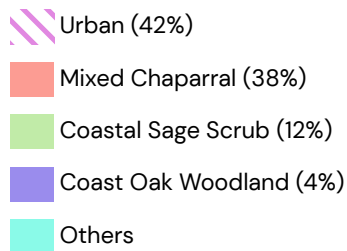
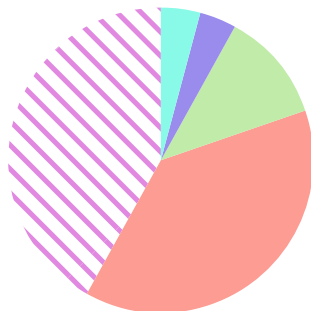
Landform



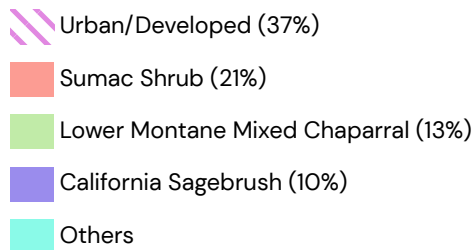
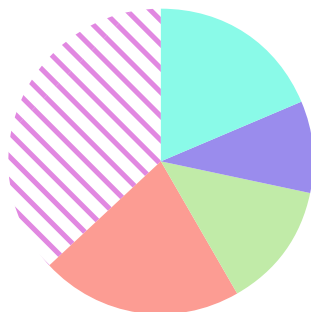
Microclimate



Wildlife Habitat Relationship



Vegetation Alliances



Verdugo Mountains & San Rafael Hills



Heteromeles arbutifolia



Platanus racemosa



Prunus ilicifolia ssp. *ilicifolia*



Quercus agrifolia



Quercus engelmannii



Umbellularia californica



Baccharis pilularis 'Pigeon Point'



Baccharis sarothroides



Ceanothus cyaneus



Frangula californica



Fremontodendron californicum



Hesperoyucca whipplei



Aralia californica



Mimulus aurantiacus



Penstemon heterophyllus



Arctostaphylos glauca



Rhamnus crocea



Rosa californica



Sisyrinchium bellum



Viola pedunculata



Phacelia cicutaria



Datura wrightii



Salvia mellifera 'Terra Seca'



Corethrogyne 'Silver Carpet'



Acmispon glaber



Festuca californica



Festuca microstachys



Juncus balticus



Melica imperfecta



Muhlenbergia rigens



Clarkia botata



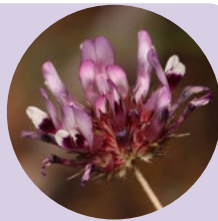
Collomia grandiflora



Phacelia tanacetifolia



Salvia columbariae



Trifolium willdenovii



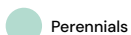
Stipa lepida



Trees



Shrubs



Perennials



Annuals



Grasses



Succulents & Cacti



Groundcover & Vines



Type	Botanical Name	Winter		Spring			Summer			Fall			Win.	Water Use
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
TREES	Heteromeles arbutifolia													Very Low, Low
	Platanus racemosa													Medium+
	Prunus ilicifolia ssp. ilicifolia													Low
	Quercus agrifolia													Very Low, Low
	Quercus engelmannii													Very Low, Low+
	Umbellularia californica													Medium
SHRUBS	Arctostaphylos glauca													Very Low, Low
	Baccharis pilularis 'Pigeon Point'													Low
	Baccharis sarothroides													Very Low, Low
	Ceanothus cyaneus													Very Low, Low
	Frangula californica													Very Low
	Fremontodendron californicum													Very Low
	Hesperoyucca whipplei													Very Low
	Rhamnus crocea													Very Low
	Rosa californica													Medium+
PER.	Aralia californica													Medium
	Mimulus aurantiacus													Low
	Penstemon heterophyllus													Low
	Phacelia cicutaria													Very Low
	Sisyrinchium bellum													Very Low
	Viola pedunculata													Medium, High
G. C.	Corethrogyne 'Silver Carpet'													Low+
	Datura wrightii													Low
	Salvia mellifera 'Terra Seca'													Very Low
GRASS	Acmispon glaber													
	Festuca californica													Very Low+
	Festuca microstachys													Very Low+
	Juncus balticus													Very Low, High+
	Melica imperfecta													
	Muhlenbergia rigens													Low
	Stipa lepida													Very Low
ANN.	Clarkia bottae													Medium
	Collomia grandiflora													Medium
	Phacelia tanacetifolia													Very Low
	Salvia columbariae													Very Low, Low
	Trifolium willdenovii													Low-High



Month of Bloom / Color



Flowers, Fruits, Foliage

+ Extra in Summer

Verdugo Mountains & San Rafael Hills

LEGEND

Defensible Space Zones

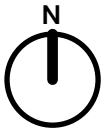
-  Structure
-   Zone 0: Ember-Resistant Zone (0-5 ft)
-   Zone 1: Home Protection Zone (5-30 ft)
-   Zone 2: Thinning Zone (30-100 ft)

Key

- | | | | |
|---|--|---|----------------------|
|  | Seasonal Pollinator Meadow
<i>(Annuals & Grasses)</i> |  | Existing Mature Tree |
|  | Gravel |  | Coast Live Oak |
|  | Water |  | Tree |
|  | Wet Lawn Meadow Moat |  | Hedge |
|  | Dry Rock Garden
<i>(Succulents & Cacti)</i> |  | Shrub 1 |
|  | Vegetated Soil Mound |  | Shrub 2 |
|  | Rain Swale/ Garden |  | Shrub 3 |
|  | Groundcover |  | Perennial 1 |
|  | Paving |  | Perennial 2 |

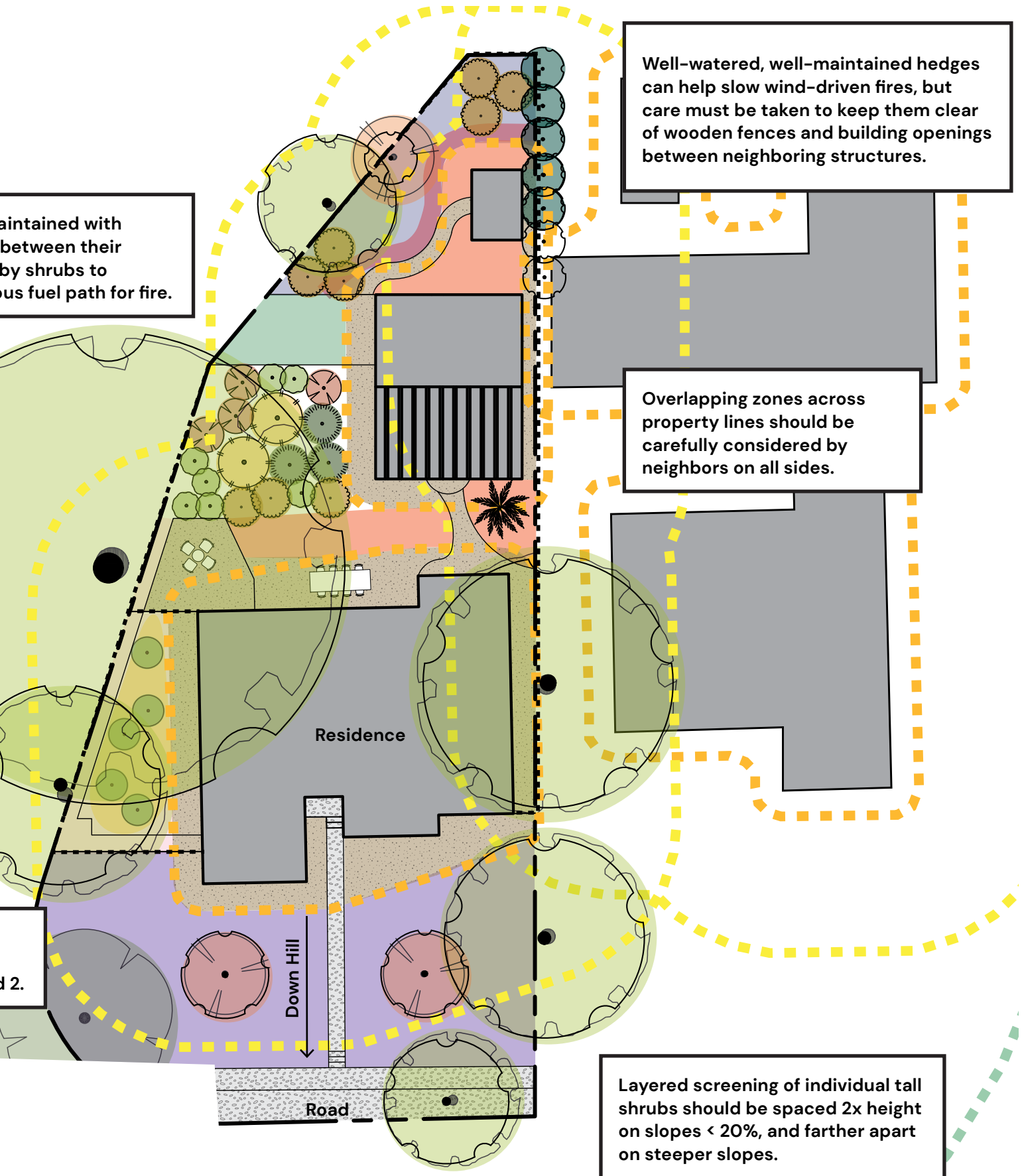
Trees should be maintained with adequate spacing and near canopies and near prevent a continuous

Hardscape paths can act as firebreaks within the boundaries of Zones 1 and 2



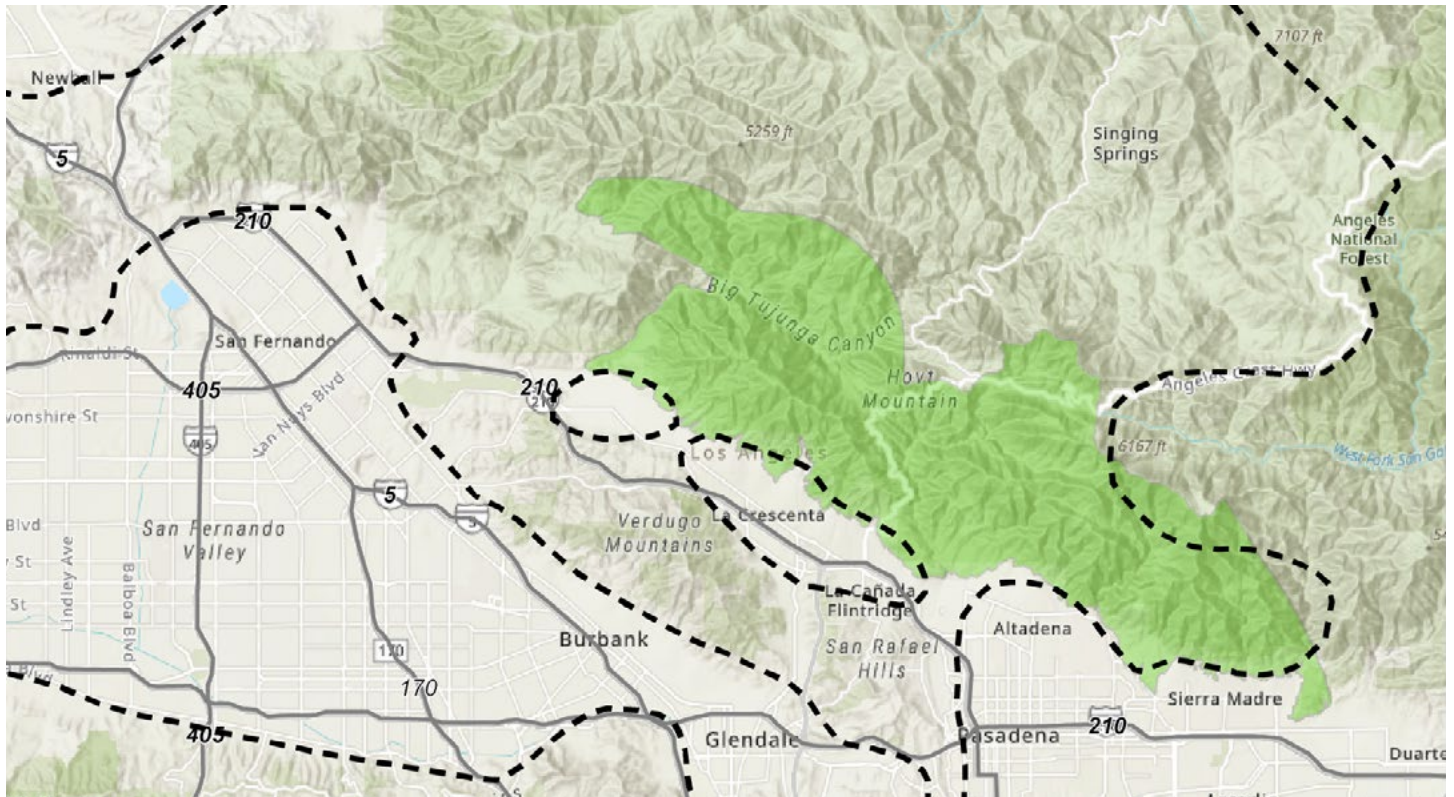


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Overview

San Gabriel River Upper Terrace



Overview

Located below the San Gabriel Mountains, this ecotope consists primarily of alluvial fans and terraces formed by erosion and sediment deposition from mountain runoff. Urban expansion has fragmented native vegetation, leaving small patches of oak woodland and Riversidean sage scrub along terraces and arroyos.

Neighborhoods / Cities:

Azusa, Glendora, Covina (western edge), West Covina (northern foothills), Baldwin Park (near mountain runoff areas)

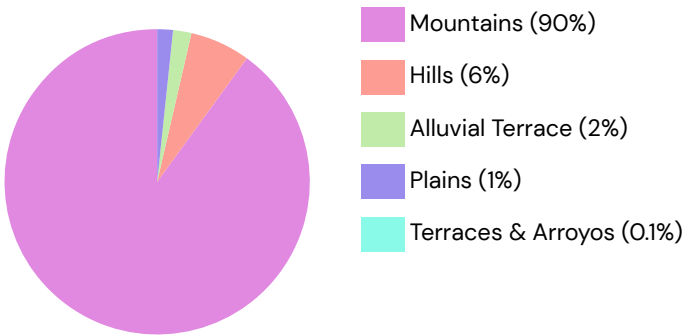
Key Characteristics

- Highly urbanized, but still supports Mixed Chaparral (66.99%), Montane Hardwood (8%), Montane Hardwood-Conifer (7%), Oak Woodlands, and some Riparian habitats.
- High variability in soils and terrain near arroyos.

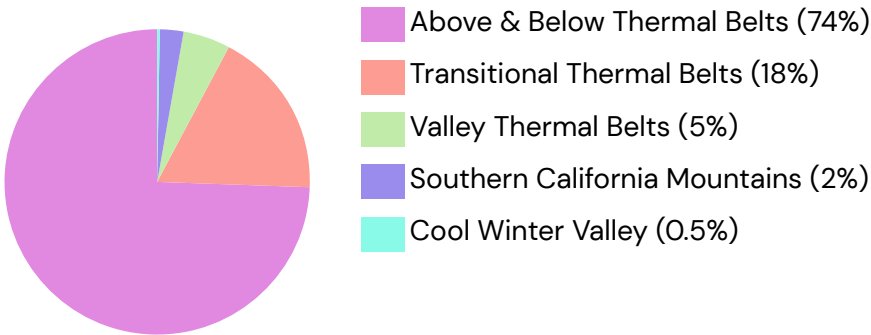
Fire Vulnerability

- Coarse, dry soils near mountain slopes and historical flood zones make it prone to dry conditions and vegetation stress, increasing fire risk.
- Remaining natural pockets are fragmented, making recovery and resilience more difficult.

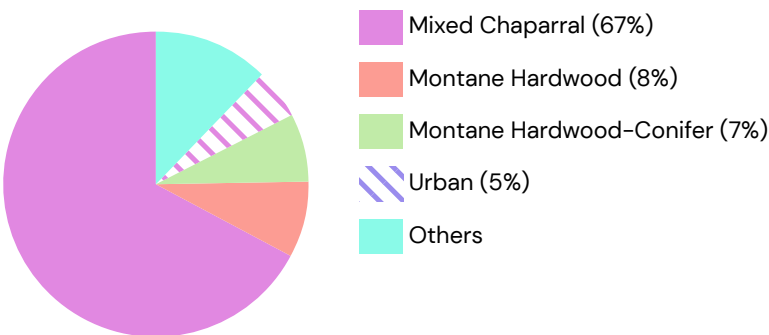
Landform



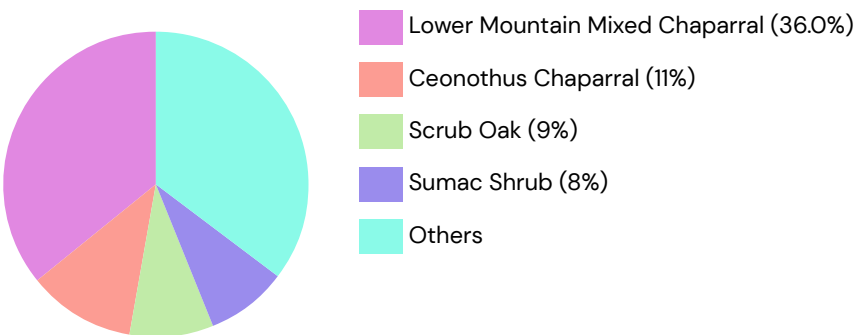
Microclimate



Wildlife Habitat Relationship



Vegetation Alliances



San Gabriel River Upper Terrace



Cercocarpus betuloides



Juglans californica



Platanus racemosa



Quercus agrifolia



Quercus chrysolepis



Quercus engelmannii



Ceanothus cyaneus



Ceanothus megacarpus



Encelia farinosa



Malacothamnus fasciculatus



Eriogonum fasciculatum



Umbellularia californica



Frangula californica



Hesperoyucca whipplei



Ribes speciosum



Salvia apiana



Solanum umbelliferum



Trichostema lanatum



Aquilegia formosa



Asclepias eriocarpa



Epilobium canum



Asclepias fascicularis



Eriophyllum confertiflorum



Penstemon spectabilis



Eschscholzia californica



Lasthenia californica



Lupinus bicolor



Salvia columbariae



Dipterostemon capitatus



Oenothera californica



Carex praegracilis



Festuca californica



Juncus balticus



Muhlenbergia rigens



Polypodium californicum



Nemophila menziesii



Scan / Click for More

Type	Botanical Name	Winter		Spring			Summer			Fall			Win.	Water Use
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
TREES	Cercocarpus betuloides													Very Low
	Juglans californica													Medium
	Platanus racemosa													Medium+
	Quercus agrifolia													Very Low, Low
	Quercus chrysolepis													Very Low, Low
	Quercus engelmannii													Very Low, Low+
	Umbellularia californica													Medium
SHRUBS	Ceanothus cyaneus													Very Low, Low
	Ceanothus megacarpus													Very Low, Low+
	Encelia farinosa													Low
	Eriogonum fasciculatum													Very Low, Low
	Frangula californica													Very Low
	Hesperoyucca whipplei													Very Low
	Malacothamnus fasciculatus													Low
	Ribes speciosum													Very Low+
	Salvia apiana													Very Low
	Solanum umbelliferum													Very Low, Low
	Trichostema lanatum													Very Low
G. C.	Nemophila menziesii													Low, Medium
	Oenothera californica													Low+
PER.	Aquilegia formosa													Medium+
	Asclepias eriocarpa													Low
	Asclepias fascicularis													Very Low, Low
	Epilobium canum													Very Low
	Eriophyllum confertiflorum													Very Low, Low+
	Penstemon spectabilis													Low
ANN.	Eschscholzia californica													Medium
	Lasthenia californica													Low
	Lupinus bicolor													Medium
	Salvia columbariae													Very Low, Low
GRASS	Carex praegracilis													Medium
	Festuca californica													Very Low+
	Juncus balticus													Very Low, High+
	Muhlenbergia rigens													Low
BULB	Dipterostemon capitatus													Medium
FERN	Polypodium californicum													Medium

San Gabriel River Upper Terrace

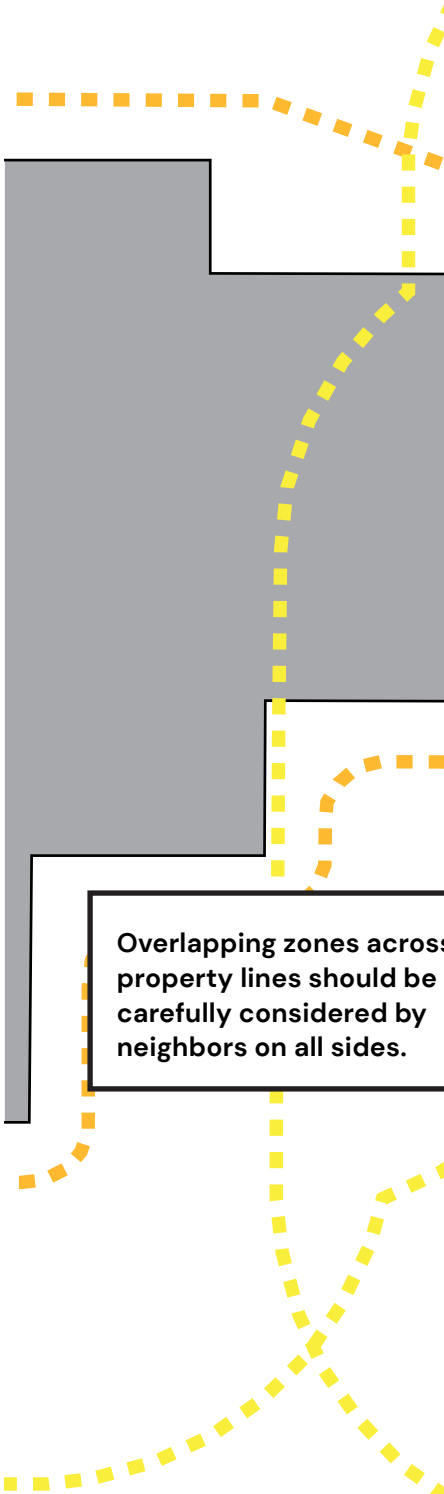
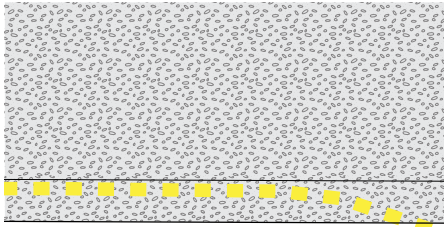
LEGEND

Defensible Space Zones

-  Structure
-   Zone 0: Ember-Resistant Zone (0-5 ft)
-   Zone 1: Home Protection Zone (5-30 ft)
-   Zone 2: Thinning Zone (30-100 ft)

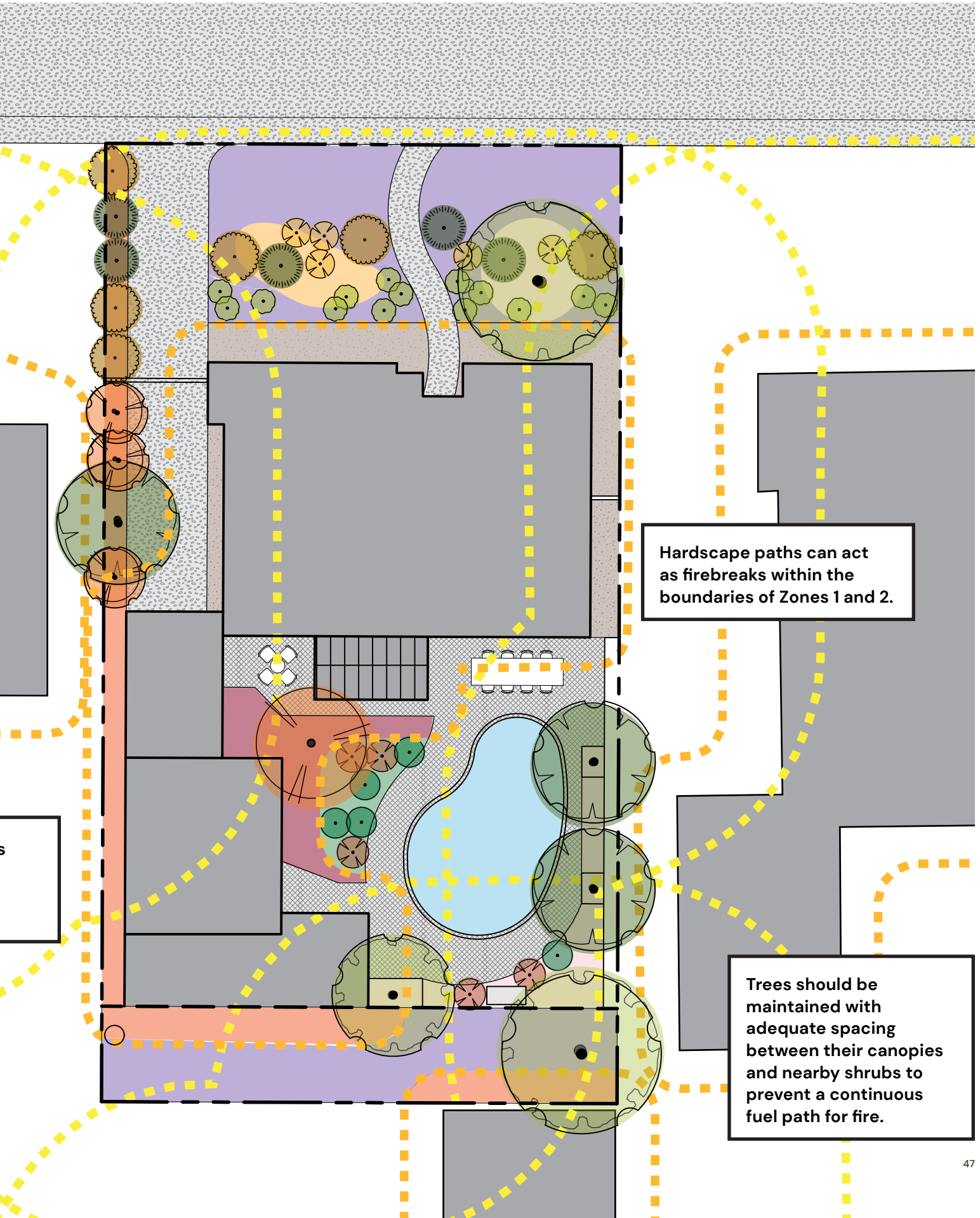
Key

- | | |
|--|--|
|  Seasonal Pollinator Meadow
<i>(Annuals & Grasses)</i> |  Existing Mature Tree |
|  Gravel |  Coast Live Oak |
|  Water |  Tree |
|  Wet Lawn Meadow Moat |  Hedge |
|  Dry Rock Garden
<i>(Succulents & Cacti)</i> |  Shrub 1 |
|  Vegetated Soil Mound |  Shrub 2 |
|  Rain Swale/ Garden |  Shrub 3 |
|  Groundcover |  Perennial 1 |
|  Paving |  Perennial 2 |



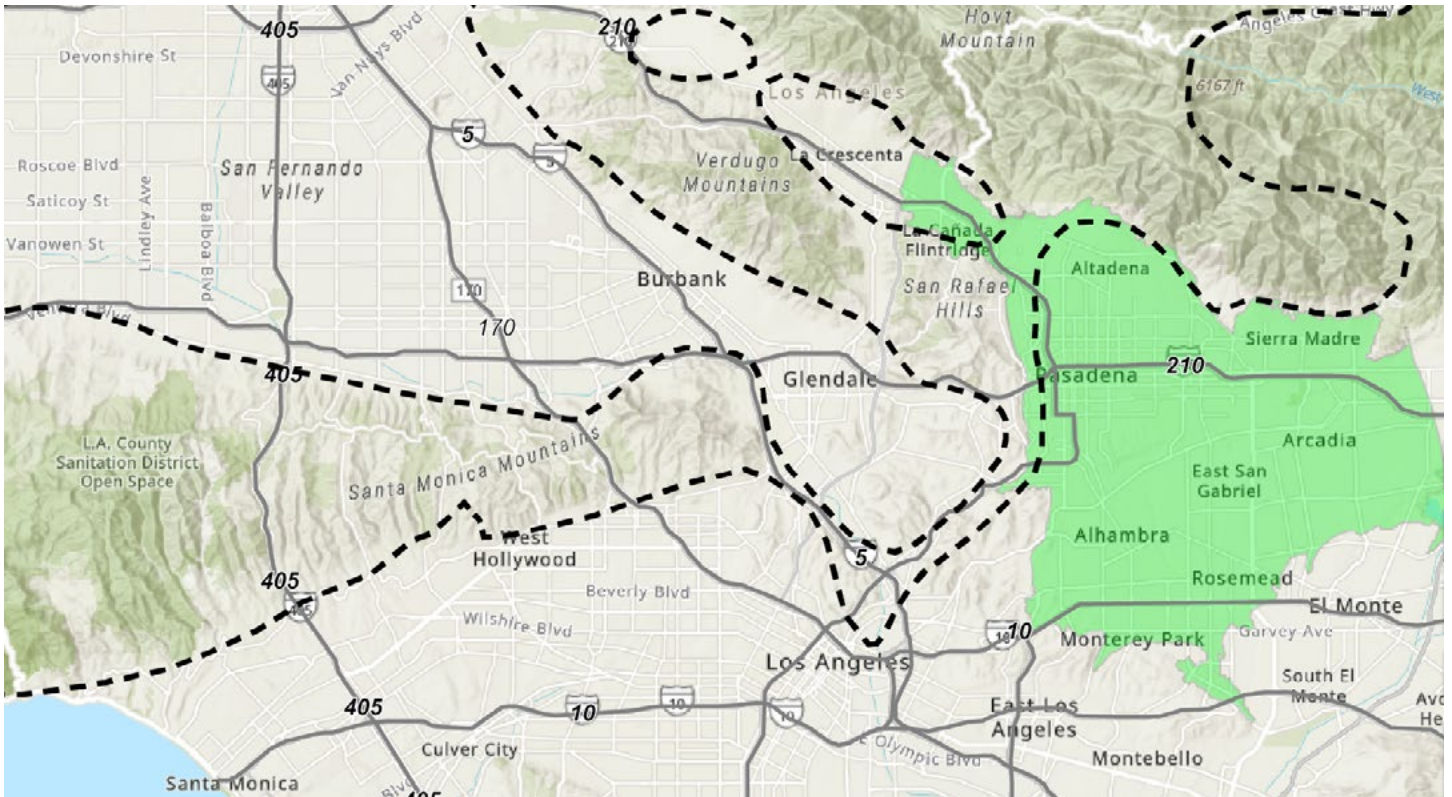


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Overview

Central San Gabriel Mountains



Overview

This ecotope encompasses the highest terrain in the region, including Mount Lukens, and forms part of the rugged Transverse Ranges. Most of the area is mountainous and steep, with limited urban development concentrated in foothill communities adjacent to the valley. Extensive impacts occurred on upper slopes and mid-mountain chaparral during the **Eaton Fire** and **Bobcat Fire (2020)**.

Neighborhoods / Cities:

La Cañada Flintridge (upper slopes), Mount Wilson area, Altadena (foothills), parts of Glendora and Pasadena foothills.

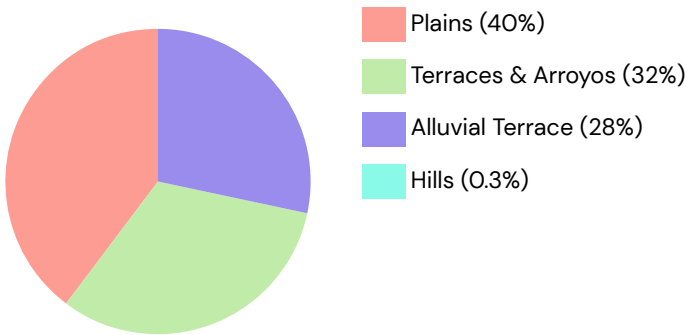
Key Characteristics

- Features some of the steepest mountain slopes in the country.
- High elevation and diverse topography create numerous microclimates and extremely diverse vegetation.
- Vegetation ranges from Coastal Sage Scrub, Coast Oak Woodland (>1%) to Montane Conifer Forests, with Desert Wash (1%) riparian woodlands in canyon bottoms.

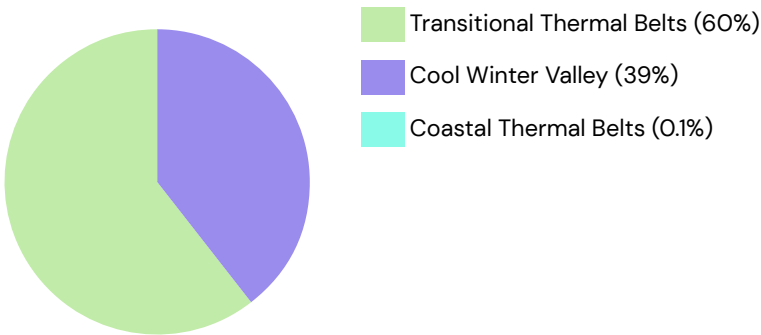
Fire Vulnerability

- Frequent landslides and wildfires due to steep, dry slopes.
- Communities at the foot of slopes are exposed to these frequent hazards.
- High species diversity, including montane habitats, is at risk.

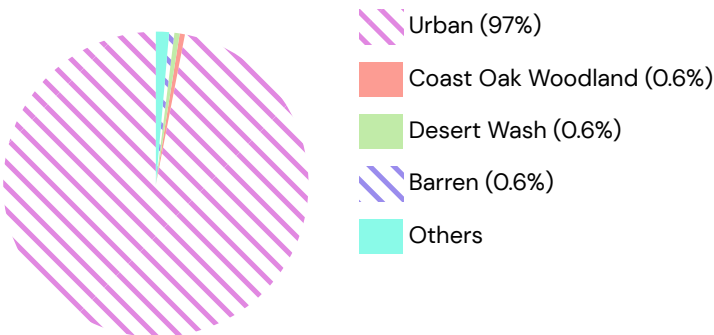
Landform



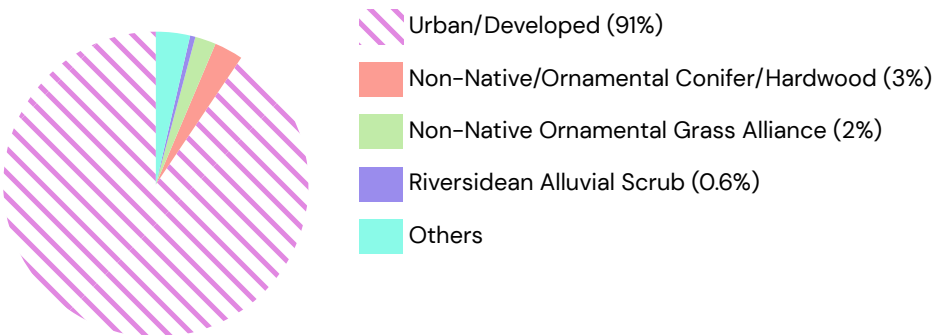
Microclimate



Wildlife Habitat Relationship



Vegetation Alliances



Central San Gabriel Mountains



Cercocarpus betuloides



Quercus agrifolia



Quercus berberidifolia



Quercus chrysolepis



Quercus dumosa



Quercus engelmannii



Baccharis pilularis
'Pigeon Point'



Ceanothus leucodermis



Eriogonum fasciculatum



Frangula californica
'Mound San Bruno'



Hesperoyucca whipplei



Umbellularia californica



Keckiella cordifolia



Malacothamnus fasciculatus



Quercus durata



Ribes aureum var. *aureum*



Ribes malvaceum
'Dancing Tassels'



Salvia apiana



Asclepias eriocarpa



Asclepias fascicularis



Salvia mellifera



Salvia spathacea



Solanum umbelliferum



Solanum xanti



Diplacus grandiflorus



Epilobium canum



Keckiella antirrhinoides



Mimulus aurantiacus



Penstemon heterophyllus



Penstemon spectabilis



Lessingia flaginifolia
'Silver Carpet'



Salvia mellifera 'Terra Seca'



Muhlenbergia rigens



Woodwardia fimbriata



Collinsia heterophylla



Lupinus succulentus



Type	Botanical Name	Winter		Spring			Summer			Fall			Win.	Water Use
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
TREES	Cercocarpus betuloides													Very Low
	Quercus agrifolia													Very Low, Low
	Quercus berberidifolia													Very Low, Low
	Quercus chrysolepis													Very Low, Low
	Quercus dumosa													Very Low, Low
	Quercus engelmannii													Very Low, Low+
	Umbellularia californica													Medium
SHRUBS	Baccharis pilularis 'Pigeon Point'													Low
	Ceanothus leucodermis													Low+
	Eriogonum fasciculatum													Very Low, Low
	Frangula californica 'Mound San Bruno'													Very Low+
	Hesperoyucca whipplei													Very Low
	Keckiella cordifolia													Low
	Malacothamnus fasciculatus													Low
	Quercus durata													Low, Medium
	Ribes aureum var. aureum													Low
	Ribes malvaceum 'Dancing Tassels'													Very Low, Low+
	Salvia apiana													Very Low, Low
	Salvia mellifera													VL, L
	Salvia spathacea													Low
	Solanum umbelliferum													Very Low, Low
	Solanum xanti													Very Low, Low
PER.	Asclepias eriocarpa													Low
	Asclepias fascicularis													Very Low, Low
	Diplacus grandiflorus													Low
	Epilobium canum													Very Low, Low
	Keckiella antirrhinoides													Very Low, Low
	Mimulus aurantiacus													Low
	Penstemon heterophyllus													Low
	Penstemon spectabilis													Low
G. C.	Lessingia filaginifolia 'Silver Carpet'													Medium
	Salvia mellifera 'Terra Seca'													Very Low, Low
GRASS	Muhlenbergia rigens													Low
FERN	Woodwardia fimbriata													Medium
ANN.	Collinsia heterophylla													Low, Medium+
	Lupinus succulentus													Medium



Month of Bloom / Color



Flowers, Fruits, Foliage

+ Extra in Summer

Central San Gabriel Mountains

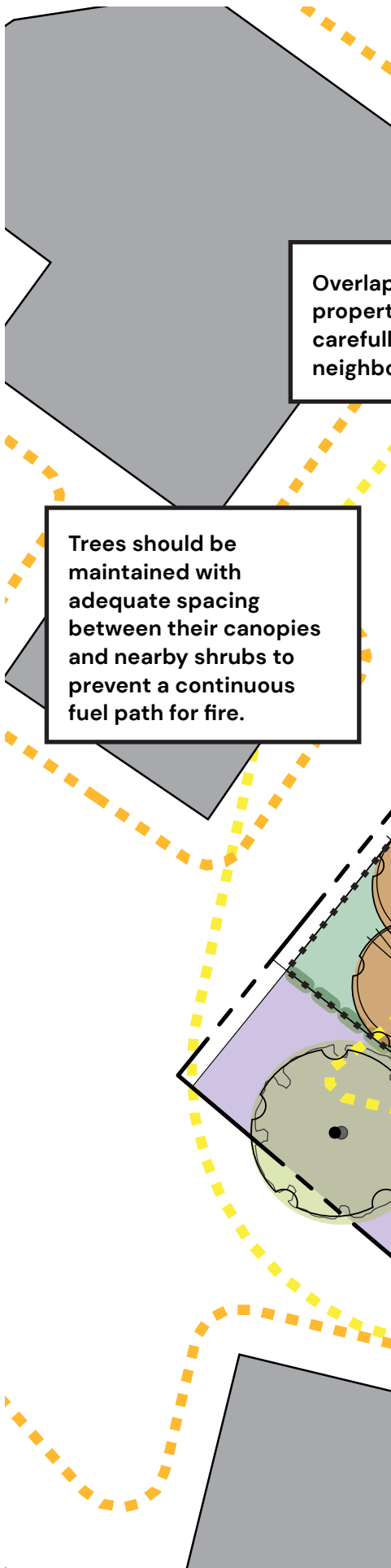
LEGEND

Defensible Space Zones

-  Structure
-  Zone 0: Ember-Resistant Zone (0-5 ft)
-  Zone 1: Home Protection Zone (5-30 ft)
-  Zone 2: Thinning Zone (30-100 ft)

Key

- | | |
|---|--|
|  Seasonal Pollinator Meadow (<i>Annuals & Grasses</i>) |  Existing Mature Tree |
|  Gravel |  Coast Live Oak |
|  Water |  Tree |
|  Wet Lawn Meadow Moat |  Hedge |
|  Dry Rock Garden (<i>Succulents & Cacti</i>) |  Shrub 1 |
|  Vegetated Soil Mound |  Shrub 2 |
|  Rain Swale/ Garden |  Shrub 3 |
|  Groundcover |  Perennial 1 |
|  Paving |  Perennial 2 |





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Native Plants



Cercis occidentalis



Platanus mexicana



Quercus tomentella



Arctostaphylos 'Emerald Carpet'



Arctostaphylos 'John Dourley'



Arctostaphylos densiflora 'Howard McMinn'



Arctostaphylos manzanita 'Dr. Hurd'



Ceanothus 'Concha'



Ceanothus 'Joyce Coulter'



Ceanothus 'Ray Hartman'



Ceanothus gloriosus 'Anchor Bay'



Monardella villosa



Salvia clevelandii 'Allen Chickering'



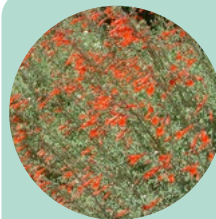
Salvia clevelandii 'Winnifred Gilman'



Salvia leucophylla 'Bees Bliss'



Solanum xanti



Epilobium canum 'Catalina'



Penstemon het. 'Margarita B.O.P.'



Romneya coulteri



Salvia clevelandii 'Pozo Blue'



Salvia pachyphylla



Sphaeralcea ambigua 'Louis Hamilton'



Verbena lilacina 'De La Mina'



Achillea millefolium



Buchloe dactyloides 'UC Verde' Buffalo



Ceanothus griseus hor. 'Yankee Point'



Festuca rubra



Fragaria chiloensis



Lessingia filaginifolia 'Silver Carpet'



Salvia mellifera 'Terra Seca'



Agrostis densiflora



Agrostis pallens



Carex pansa



Carex praegracilis



Juncus patens 'Elk's Blue'



Native Mow Free



Type	Botanical Name	Winter		Spring			Summer			Fall			Win.	Water Use
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
TREES	Cercis occidentalis													Very Low
	Platanus mexicana													Medium+
	Quercus tomentella													Low Medium+
SHRUBS	Arctostaphylos 'Emerald Carpet'													Very Low, Low+
	Arctostaphylos 'John Dourley'													Very Low
	Arctostaphylos densiflora 'Howard McMinn'													Low
	Arctostaphylos manzanita 'Dr. Hurd'													Low
	Ceanothus 'Concha'													Low
	Ceanothus 'Joyce Coulter'													Low+
	Ceanothus 'Ray Hartman'													Low+
	Ceanothus gloriosus 'Anchor Bay'													Very Low+
	Monardella villosa													Very Low
	Salvia clevelandii 'Allen Chickering'													Low
	Salvia clevelandii 'Winnifred Gilman'													Very Low+
	Salvia leucophylla 'Bees Bliss'													Low
	Solanum xanti													Very Low, Low
PER.	Epilobium canum 'Catalina'													Medium+
	Penstemon het. 'Margarita B.O.P.'													Low
	Romneya coulteri													Very Low
	Salvia clevelandii 'Pozo Blue'													Very Low
	Salvia pachyphylla													Low+
	Sphaeralcea ambigua 'Louis Hamilton'													Low
	Verbena lilacina 'De La Mina'													Very Low+
GROUND COVER	Achillea millefolium													Very Low
	Buchloe dactyloides 'UC Verde/Bufalo'													Very Low, Low
	Ceanothus griseus hor. 'Yankee Point'													Low
	Festuca rubra													Medium+
	Fragaria chiloensis													Medium+
	Lessingia filaginifolia 'Silver Carpet'													Medium
	Salvia mellifera 'Terra Seca'													Very Low
GRASS & HERBACEOUS PLANTS	Agrostis densiflora													Medium
	Agrostis pallens													Medium
	Carex pansa													Medium+
	Carex praegracilis													Medium
	Juncus patens 'Elk's Blue'													Low, Medium
	Native Mow Free													Medium+



Climate Adapted Plants



Aloe 'Hercules'



Arbutus 'Marina'



Citrus sinensis



Dracaena Draco



Eriobotrya japonica



Furcraea foetida



Banksia praemorsa



Carissa macrocarpa
'Green Carpet'



Correa 'Ivory Bells'



Crassula arborescens



Olea europaea 'Wilsoni'



Parkinsonia 'Desert
Museum'



Eremophila g. s. carnosa



Leucadendron salignum



Leucospermum cordifolium



Myrtus communis
'Compacta'



Salvia greggii
'Rose Pink'



Santolina
chamaecyparissus



Dianella revoluta
'Little Reva'



Kniphofia uvaria



Xerophyllum tenax



Teucrium fruticans 'Azure-
um'



Westringia fru. 'Grey Box'



Calendula officinalis



Bulbine frutescens
'Tiny Tangerine'



Calandrinia grandiflora



Lippia nodiflora



Sedum x rubrotinctum



Trachelospermum
jasminoides



Lomandra longifolia 'Breeze'



Agave attenuata



Aloe vera



Hesperaloe p.
'Perpa' Brakelight



Kalanchoe beharensis



Portulacaria afra



Muhlenbergia dubia



Scan / Click for More

Type	Botanical Name	Winter		Spring			Summer			Fall			Win.	Water Use
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
TREES	Aloe 'Hercules'													Low
	Arbutus 'Marina'													Low
	Citrus sinensis (all varieties)													Medium
	Dracaena draco													Very Low
	Eriobotrya japonica													Low
	Furcraea foetida													Very Low
	Olea europaea 'Wilsoni'													Low
	Parkinsonia 'Desert Museum'													Very Low
SHRUBS	Banksia praemorsa													Low
	Carissa macrocarpa 'Green Carpet'													Low
	Correa 'Ivory Bells'													Very Low+
	Crassula arborescens													Low
	Eremophila g. s. carnosa Winter Blazea													Very Low, Low
	Leucadendron													Very Low
	Leucospermum cordifolium													Low
	Myrtus communis 'Compacta'													Low
	Salvia greggii 'Rose Pink'													Medium+
	Santolina chamaecyparissus													Low
	Teucrium fruticans 'Azureum'													Low
	Westringia fru. 'Grey Box'													Very Low+
PER.	Dianella revoluta 'Little Reva'													Low, Medium+
	Kniphofia uvaria													Low
	Xerophyllum tenax													Low, Medium
G. C.	Bulbine frutescens 'Tiny Tangerine'													Low
	Calandrinia grandiflora													Very Low, Low
	Lippia nodiflora													Low
	Sedum x rubrotinctum													Low
	Trachelospermum jasminoides													Low, Medium
GRASS	Lomandra longifolia 'Breeze'													Low
	Muhlenbergia dubia													Very Low
ANN.	Calendula officinalis													Medium
SUCC.	Agave attenuata													Low
	Aloe vera													Low, Medium
	Hesperaloe p. 'Perpa' Brakelight													Very Low
	Kalanchoe beharensis													Very Low, Low
	Portulacaria afra													Low

Rooted in Wisdom, Shaped by Fire. Our Oaks Endure

Mature oaks—**Coast Live Oaks**, **Live Oaks**, and **Scrub Oaks**—play a critical and often under-recognized role in **wildfire-resilient landscapes**. Evidence from post-fire studies across Southern California shows that **vegetation presence alone is not a primary driver of structure loss**, and that well-managed oak woodlands can coexist with, and even support, home survival in the **WUI**.

Multiple analyses demonstrate that **structure characteristics and ember exposure**—not nearby vegetation—are the dominant determinants of home loss. Studies of the **Cedar, Thomas, and Woolsey Fires** found that vegetation immediately adjacent to homes was weakly predictive, or not predictive at all, of structure loss (Alexandre et al., 2016; Uribe, 2021; Mockrin et al., 2023). In the Woolsey Fire specifically, **proximity to the nearest building** was far more strongly correlated with loss than surrounding vegetation, which failed initial statistical significance screening (Mockrin et al., 2023).

Importantly, **oak woodland presence near homes does not increase loss probability**. In Ventura County, Uribe (2021) found that oak woodland or other vegetation within 0–5 feet of structures did not increase structure loss likelihood, **whereas wood fences in that same zone** were identified as a significant hazard. Similarly, Syphard et al. (2014) showed that **vegetation management**—rather than vegetation elimination—within 32–65 feet of structures reduced loss, explicitly allowing trees, including oaks, provided **canopies did not overhang roofs**.

Oaks contribute to protection by **moderating wind, intercepting embers, and suppressing fine, flashy fuels** such as grasses through **year-round canopy shading and moisture retention**. These functions directly address **ember-driven ignition**, the dominant cause of home loss, while avoiding the ecological and fire-spread risks associated with large areas of exposed, combustible grassland.

Once mischaracterized as inherently “fire-prone,” oak woodlands are now recognized as **compatible with fire-safe communities** when paired with **home hardening, leaf-litter management, and defensible space** that emphasizes maintenance over removal (Syphard & Keeley, 2019). **Retaining and caring for mature oaks** supports biodiversity, ecosystem stability, and a **regenerative approach to fire resilience**, demonstrating that resilient landscapes protect homes not by erasing nature, but by **working with it**.





Check List for Living Landscapes in the WUI

Zone 0: Ember-Resistant Zone (0–5 Feet)

- ☐ Include the footprint of any deck or attached structure within this zone.
- ☐ Replace organic mulch with a non-combustible alternative.
- ☐ Keep the surrounding area of the house clear of combustible materials.
- ☐ Limit plants in this area to low growing, non-woody, properly watered and maintained plants.
- ☐ Remove all dead and dying weeds, grass, plants, shrubs, trees, branches, and other vegetative debris.
- ☐ Prune or manage trees to prevent fire laddering by reducing fuel continuity—except for oak species, whose naturally low, spreading branches should not be trimmed.
- ☐ Maintain healthy, mature trees at least 5 feet from structures and 10 feet from chimneys.

Zone 1: Home Protection Zone (Extends 30 Feet Outwards, 50 Feet on Slopes)

- ☐ Plan your landscape as vegetation “islands” surrounded by hardscape features (such as paving and walls).
- ☐ Keep the vegetation lean, green, and well irrigated.
- ☐ Remove all dead plants and grasses.

Zone 2: The Thinning Zone (Extends 100 Feet Outwards)

- ☐ Consider native plants for slope stabilization.

Common to Zone 1 & Zone 2

- ☐ Maintain proper horizontal and vertical spacing between plants, and inspect vegetation to remove ladder fuels.
- ☐ Plant primarily native plants to support local ecosystems.
- ☐ Remove invasive species, especially annual dry grasses.
- ☐ Maintain your landscape following seasonal maintenance recommendations.
- ☐ Do NOT remove vegetation down to bare soil, and do not destabilize hillsides by using heavy equipment; soil erosion and mudslides can result.



For more information, visit:

<https://defensiblespace.org/>

<https://rcdsmm.org/wildfire-resilience/>

<https://www.studiopappaterra.com/>

Zone 0 Defensible Space Code Revisions

On August 19, 2026, the California Board of Forestry and Fire Protection approved the nation's first Zone 0 defensible space regulations. These apply to all homes in State Responsibility Areas (SRA) and Very High Fire Hazard Severity Zones (VHFHSZ) within Local Responsibility Areas — covering most Wildland–Urban Interface communities across Southern California, including Los Angeles County.

The regulations now await Office of Administrative Law review and a five-day public comment period before final Secretary of State filing.

The information, research, and design presented in this guide was created prior to these most recent code revisions and is presented as one of many available resources. As more information is learned, best practices and code may continue to be updated. Make sure to always consult the current code in your local jurisdiction.

What is Zone 0?

Zone 0 is the five-foot perimeter immediately surrounding a structure. Research consistently identifies this as the most critical vulnerability zone: embers accumulate here, ignite dead leaf litter, mulch, wood fencing, and gutter debris, and then fire moves to the house. The regulation addresses this zone with specific, science-based requirements.

What is Prohibited?

- Bark mulch, wood chips, and wood-based ground covers
- Firewood storage
- Dead leaves and dead or dying vegetation
- Debris in gutters and on roofs
- New combustible fences (existing fences may be repaired, not replaced with combustible materials)
- Combustible gates (must be replaced)
- Sheds or outbuildings without non-combustible roofing and walls

The Two Nested Zones Within Zone 0

The regulation establishes two sub-areas within the five-foot perimeter:

1. Non-Combustible Safety Zone (Innermost Buffer)

This zone must be entirely vegetation-free and non-combustible. Its width adjusts based on eave dimensions, but at minimum:

- At least 1 foot from the structure (or to eave edge, whichever is greater)
- 2 feet from windows, doors, and vents
- 5 feet from attached decks



Zone 0 Defensible Space Code Revisions

2. Low-Combustibility Zone (Remaining Outer Portion of Zone 0)

Limited, carefully selected planting is permitted here under the conditions described below.

What is Allowed (With Maintenance Conditions)

Within the Low-Combustibility Zone (Outer Portion of Zone 0):

- Well-maintained herbaceous plants and flowers in spaced groupings
- Non-woody plants: succulents, bulbs, poppies, petunias, creeping thyme, moss, and similar low-growing plants
- Maintained lawns and grass
- Potted plants in movable, non-combustible containers

Trees are permitted throughout Zone 0 but must be maintained as follows:

- Branches at least 10 feet from chimneys
- Branches at least 5 feet above the roofline
- No branches under eaves
- Lower limbs removed — bottom 6 feet for large trees; lower one-third for smaller trees

The Living Rim: What Research and Practice Taught Us

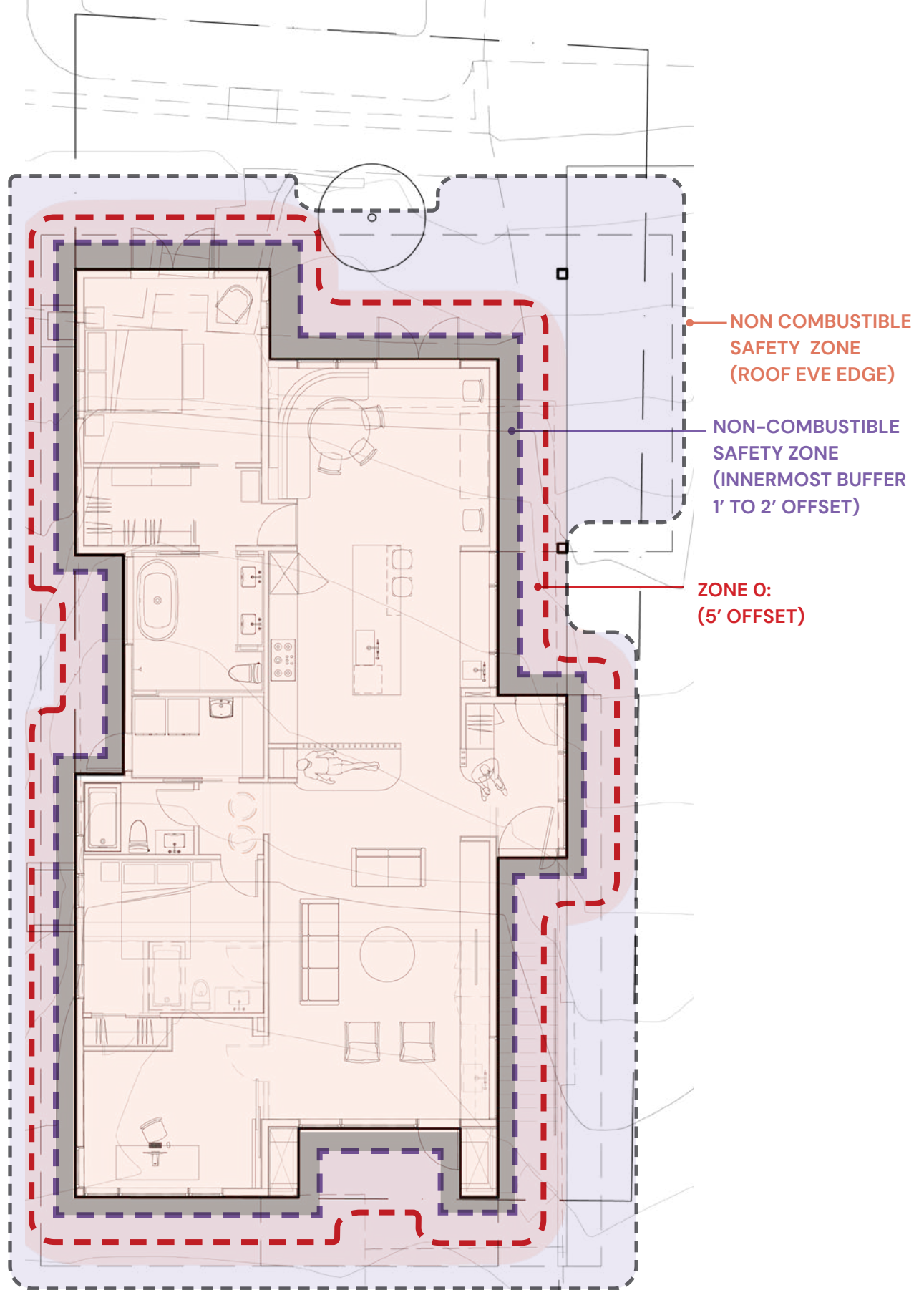
The new Zone Zero defensible space regulation confirms that care and maintenance of plants are vitally important.

The code permits fire-wise, climate-adapted plants within Zone 0. What it prohibits is dead material, combustible mulch, and flammable structures, not living, well-maintained planting. A Zone 0 designed with intention and appropriately cared for seasonally is fully code-compliant, is far more ecologically valuable, and far more attuned to this land than bare gravel.

The regulation sets a legal floor. This guide offers something different: a vision of stewardship that goes beyond compliance. The real work is not about meeting a minimum. It is about reimagining what the edges of our homes can be, not buffers against nature, but thresholds into it. Landscapes that hold water, shelter wildlife, cool the air, and resist fire. Landscapes that reflect the ecology of the Living Rim.

The communities that rebuild after 2025 have a rare opportunity to choose differently, to plant with knowledge and to design with the fire and water cycles. To create neighborhoods where ecological resilience and human habitation are not in opposition, but mutually supportive—where the garden is part of the solution and part of the community's assets.

This is what the Wildfire Resilient Garden Guide is for: to deepen your attunement to one of the most biodiverse, fire-shaped landscapes on earth.



Gratitude, Guidance, and Stewardship: Honoring the Land and Its Wisdom

Our understanding of fire science continues to evolve, informed by research on home losses in wildfires. Recommendations in this guide align with local regulations at the time of publication but may change as new research emerges. We are a non-regulatory landscape architecture firm; homeowners are responsible for complying with building codes, land use regulations, and protected tree ordinances.

No plant is fireproof. Fire-resistant plants are those that do not readily ignite or contribute significantly to a fire's intensity. Factors such as **moisture content, age, total volume, chemical composition, and maintenance** all influence flammability. A well-maintained, irrigated plant that might otherwise be considered flammable can pose less risk than a neglected "firesafe" species.

Plants most vulnerable to burning often include those that produce **dry leaf litter or duff**, retain clusters of **dead branches or leaves**, have **peeling or dry bark**, or go **dormant in summer** without irrigation. **Dry grasses** and **drought-stressed vegetation** are also higher-risk.

To reduce ignition risk, select plants with **high moisture content, low sap or resin, flexible or thick leaves, low fragrance, or silver/gray foliage**. Proper **placement, pruning, and seasonal care** are essential. Large, healthy trees such as **coast live oaks** can act as **shields against flying embers** while supporting **biodiversity and ecosystem stability**. Regular maintenance, including **removing dead material, thinning crowded branches, and monitoring plant health**, is key to keeping landscapes **resilient**.

These recommendations apply only to **vegetation within properties required to maintain defensible space**. **Native vegetation** is often legally protected. Do not remove **unmodified habitat** without consulting your local County planning department regarding specific limitations. If your property borders a **State Park** or other protected area, you may apply for a **Boundary Vegetation Modification Right of Entry (BVMROE) permit**, which allows access to State Park land to trim vegetation within the **defensible space surrounding your home**. For more information, contact **California State Parks at info@parks.ca.gov**.

As you apply these principles, we encourage you to **work with the land, observe seasonal rhythms, tend plants thoughtfully**, and create landscapes that are **resilient, regenerative, and inspired by our natural world**. By combining **careful horticulture, biomimicry, and stewardship**, homeowners can reduce wildfire risk while supporting **habitat, water retention**, and the **ecological richness of the Rim of the Valley**.



Who We Are



National Fish and Wildlife Foundation

The **National Fish and Wildlife Foundation (NFWF)** is the nation's largest private conservation foundation, advancing **practical, science-based solutions** to help people and nature thrive. Established by Congress in 1984, NFWF partners with **public agencies, nonprofits, communities, and the private sector** to protect and restore fish, wildlife, plants, and habitats nationwide.

NFWF focuses on **measurable conservation outcomes**, funding over 23,000 projects—from large-scale ecosystem restoration to locally led initiatives. The Foundation prioritizes **on-the-ground results** and long-term environmental resilience. By convening diverse stakeholders, NFWF has generated more than **\$11 billion in conservation investments**, supporting wildlife habitat, water resources, working landscapes, and climate and fire resilience.

For the *Wildfire Resilient Garden Guide*, **NFWF provided critical funding**, enabling the creation of a resource grounded in **science, collaboration, and practical application**. Their commitment to partnership-driven conservation directly supports the guide's goal of helping communities create landscapes that are both **ecologically healthy** and **wildfire resilient**.



Resource Conservation District of the Santa Monica Mountains

The **Resource Conservation District of the Santa Monica Mountains (RCDSMM)** is a public agency dedicated to **protecting natural resources** and promoting **land stewardship**. Part of a statewide and national network of RCDs, RCDSMM addresses **soil, water, habitat, and wildfire resilience challenges** at the local level.

RCDSMM works collaboratively with **homeowners, communities, nonprofits, and public agencies** to translate research and planning into **practical, site-specific solutions**. While not a regulatory body, the District connects communities to **conservation resources**, providing guidance, education, and habitat restoration support.

As the **grant recipient and project sponsor** for the *Wildfire Resilient Garden Guide*, RCDSMM secured funding, guided project goals, and ensured the guide reflects **current science and local conditions**. Their mission—to advance **land stewardship, ecological research, planning, restoration, and education**—aligns directly with the guide's intent: empowering residents to create landscapes that are **resilient, regenerative**, and rooted in the region's **natural systems**.

studio pappaterra

studio pappaterra is a Southern California–based landscape architecture and design firm specializing in **fire–resilient, ecologically grounded landscapes** within the **Wildland–Urban Interface (WUI)**. Founded in 2022 by Elisa Read, an award–winning, licensed landscape architect with expertise in fire ecology and horticulture, the studio brings a research–driven, design–forward approach to wildfire resilience.

Elisa Read Pappaterra combines interdisciplinary training in architecture and landscape architecture—including a master’s degree in Metropolitan Research and Design from SCI–Arc (2001) and early professional experience in architectural practice—with deep expertise in fire–wise landscape design. This integrated background ensures that building performance and landscape systems work together to reduce wildfire risk and support long–term ecological health.

The studio focuses on defensible space, native and climate–adapted planting, soil health, and landscape stewardship to reduce wildfire risk while supporting biodiversity, habitat connectivity, and water–wise design. Projects are guided by current fire science, regional ecology, and best practices in home hardening and landscape maintenance.

studio pappaterra provides full–service landscape architecture services, including site analysis, design development, permitting, bidding, construction administration, and long–term landscape management. The firm is recognized within the landscape, nursery, and horticultural communities for its botanically rich, environmentally sensitive designs.

Since 2020, Elisa Read has focused on fire–wise landscape research, education, and implementation. Through professional collaboration with the **Resource Conservation District of the Santa Monica Mountains and CAL FIRE**, she contributed to the development of **DefensibleSpace.org**, a public education platform promoting sustainable wildfire resilience in Southern California. She also provides consultations, technical guidance, and training through conferences, symposia, and speaking engagements for homeowners, professionals, and communities—including **PCBC, USGBC, and AIA**—in fire–prone regions of Southern California.

This combination of **design excellence, scientific grounding, regional leadership, and a commitment to sharing knowledge and empowering communities** is why studio pappaterra developed the *Wildfire Resilient Garden Guide* for Los Angeles, in collaboration with RCDSMM and funded by the National Fish and Wildlife Foundation (NFWF), providing tools to educate residents and foster greater land stewardship.



NFWF

studio pappaterra