RESILIENT LANDSCAPING:
Gardening in the Defensible Space Zone

Garden as if life depends on it!

For Sonoma Valley Communities

Hosted By:
FireSafe Sonoma

Presented By:
Resilient Landscapes Coalition

Funded By: County of Sonoma

September 27, 2022

Resilient
a. capable of withstanding shock without permanent damage or rupture
b. tending to recover from or adjust easily to misfortune or change

THIS IS A WEBINAR:
YOU DO NOT HAVE AUDIO OR VIDEO ACTIVATED

THIS WEBINAR IS BEING RECORDED.

QUESTIONS: WILL BE TAKEN FROM THE Q&A BOX ONLY.

(back to front)
Eriogonum umbellatum: sulfur buckwheat
Eriogonum latifolium: coast buckwheat
Monardella villosa: coyote mint

Resilient Landscapes Coalition

Our Team:

- Fire Safe Sonoma *firesafesonoma.org*
  - **Roberta MacIntyre**
  - **Marika Ramsden**
- Habitat Corridor Project *habitatcorridorproject.org*
  - **April Owens**
- Sonoma Ecology Center *sonomaecologycenter.org*
  - **Ellie Insley**
  - **Jon Kanagy**
- UC Master Gardener Program, Sonoma County *sonomamg.ucanr.edu*
  - **Mimi Enright**
  - **Jennifer Roberts**

In Partnership with:

- County of Sonoma Fire Prevention Division
- CAL FIRE & Local Fire Departments

More info at: **SonomaResilientLandscapes.com**

Outline

- **Fire Context, Ecology & Sustainability**

  Jon Kanagy (25 minutes)

- **Design and Maintenance Principles**

  Mimi Enright (25 minutes)

- **Landscape Design and Planting Examples**

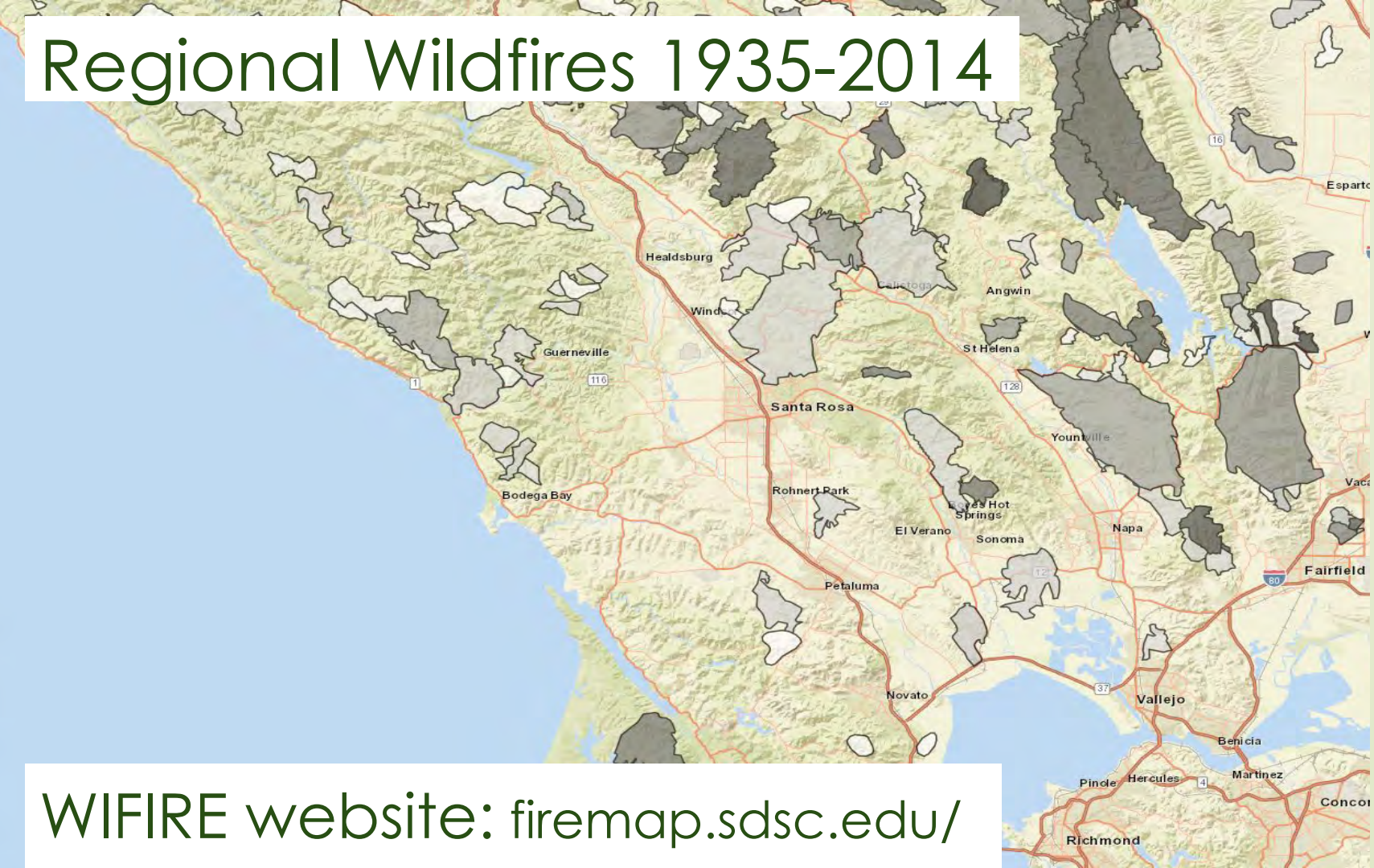
  April Owens (25 minutes)

? **Questions & Conversation** (30 minutes)

Defensible Space that is Beautiful, Sustainable, and Biodiverse

“The myth of the moonscape”

Regional Wildfires 1935-2014

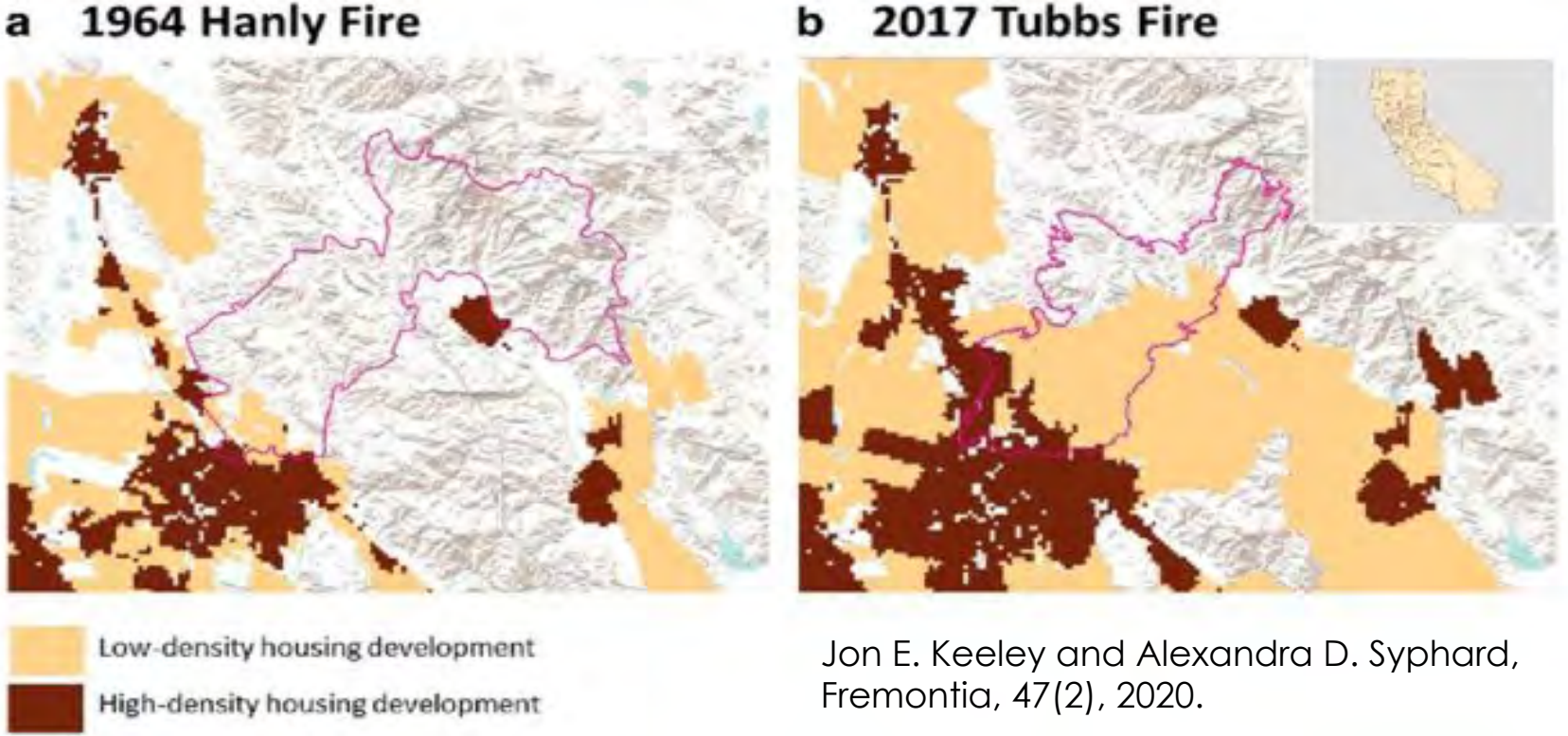


WIFIRE website: firemap.sdsc.edu/

Regional Wildfires 2015-2020

WIFIRE website: firemap.sdsc.edu/

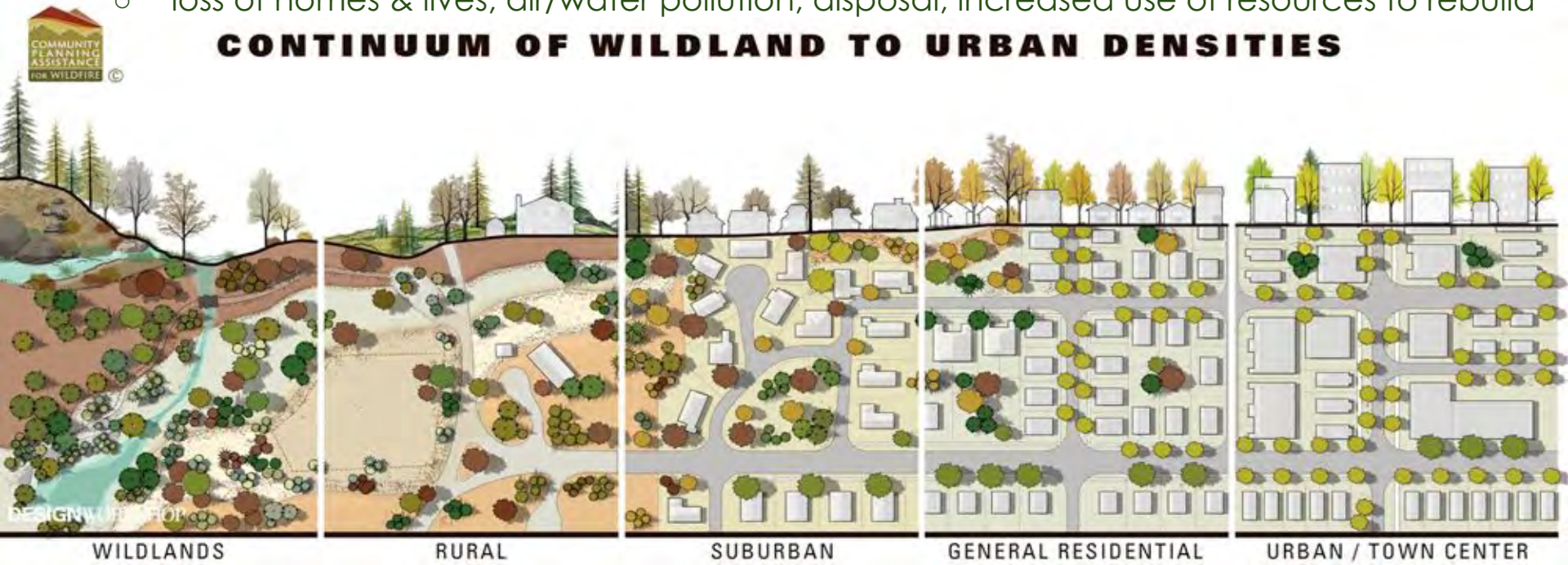
Wildland Urban Interface



Jon E. Keeley and Alexandra D. Syphard, Fremontia, 47(2), 2020.

Wildland Urban Interface

- WUI: an area where homes and associated structures are built adjacent to or among forests, shrubs, or grasslands.
- Climate change + fire suppression + increased development in wildland = <u>increased fire risk</u>
- = increased potential for catastrophic fire
  - loss of homes & lives; air/water pollution, disposal, increased use of resources to rebuild

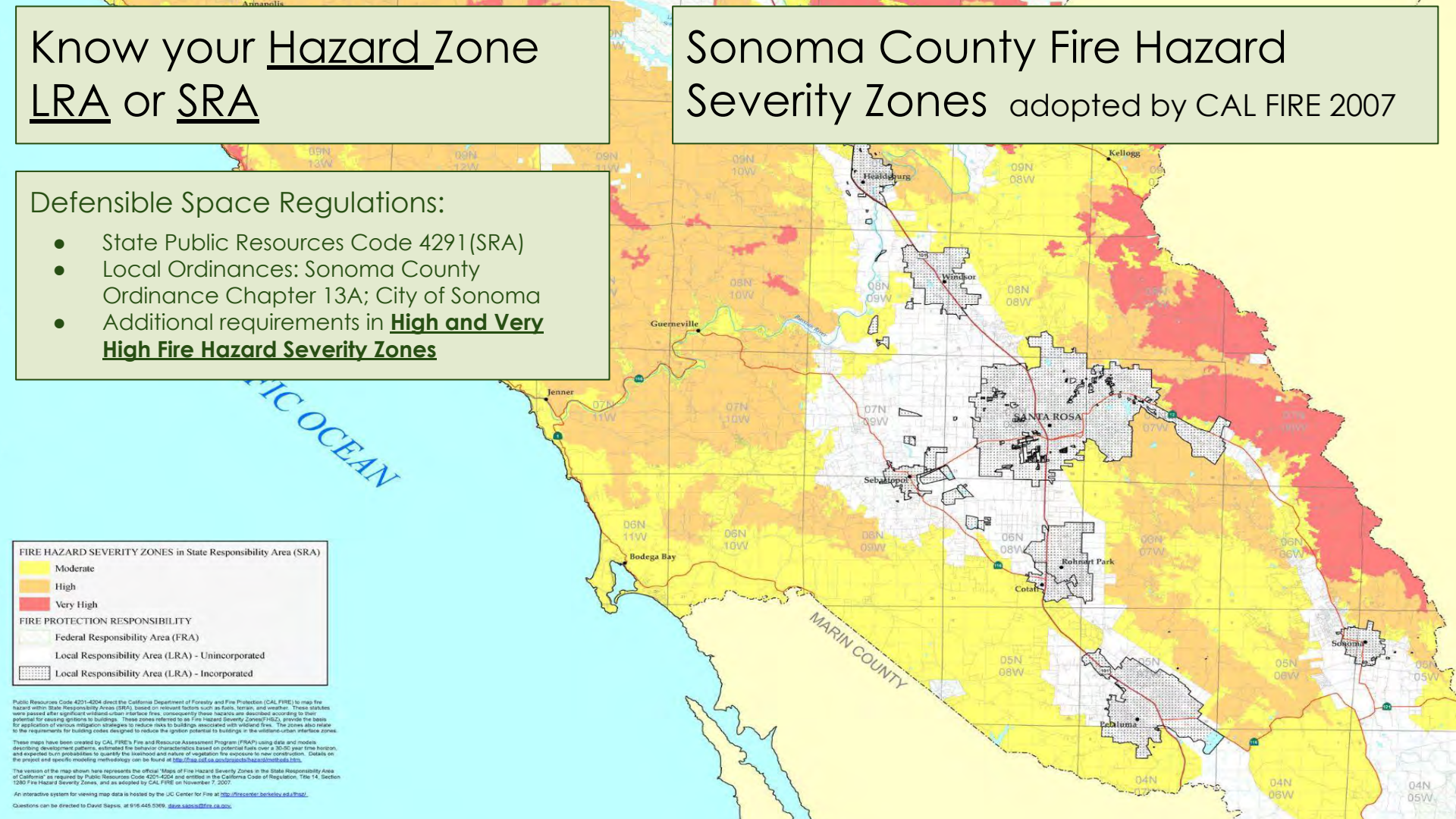


Know your Hazard Zone LRA or SRA

Sonoma County Fire Hazard Severity Zones adopted by CAL FIRE 2007

Defensible Space Regulations:

- State Public Resources Code 4291(SRA)
- Local Ordinances: Sonoma County Ordinance Chapter 13A; City of Sonoma
- Additional requirements in **High and Very High Fire Hazard Severity Zones**



Public Resources Code 4201-4204 direct the California Department of Forestry and Fire Protection (CAL FIRE) to map fire hazard within State Responsibility Areas (SRA), based on relevant factors such as fuels, terrain, and weather. These statutes were passed after significant wildland-urban interface fires, consequently these hazards are described according to their potential for causing ignitions to buildings. These zones referred to as Fire Hazard Severity Zones(FHSZ), provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires. The zones also relate to the requirements for building codes designed to reduce the ignition potential to buildings in the wildland-urban interface zones.

These maps have been created by CAL FIRE's Fire and Resource Assessment Program (FRAP) using data and models describing development patterns, estimated fire behavior characteristics based on potential fuels over a 30-50 year time horizon, and expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure to new construction. Details on the project and specific modeling methodology can be found at http://frap.cdf.ca.gov/projects/hazard/methods.html.

The version of the map shown here represents the official "Maps of Fire Hazard Severity Zones in the State Responsibility Area of California" as required by Public Resources Code 4201-4204 and entitled in the California Code of Regulation, Title 14, Section 1280 Fire Hazard Severity Zones, and as adopted by CAL FIRE on November 7, 2007.

An interactive system for viewing map data is hosted by the UC Center for Fire at http://firecenter.berkeley.edu/fhsz/

Questions can be directed to David Sapsis, at 916-445-5369, dave.sapsis@fire.ca.gov.

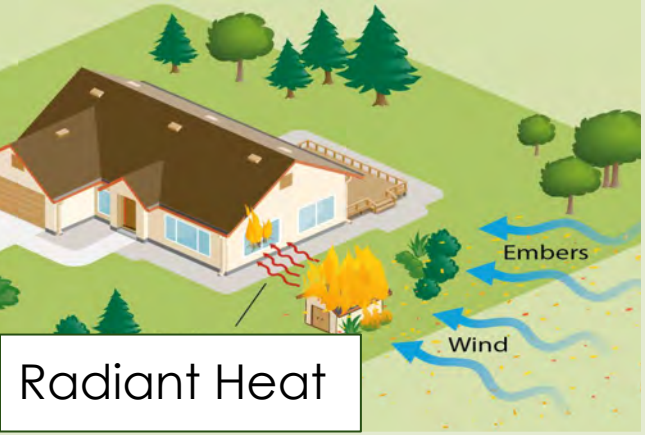
Assessment of Risk

Ask yourself:

- What are the vegetation patterns in the broader landscape around my community, and how do they contribute to potential fuels?
- What are the resources and conditions in my neighborhood?
- What are the conditions on my own property, including the topography? Has the house been assessed? Have home hardening practices been completed? If so, what steps should be taken working out into the landscape?
- What is my own personal perspective on risk? How will I balance risk and other factors such as sustainability, aesthetics, and home improvement costs?
  - Public Resources Code (PRC) 4291
    - "The amount of fuel modification necessary shall consider the flammability of the structure as affected by building material, building standards, location, and type of vegetation."

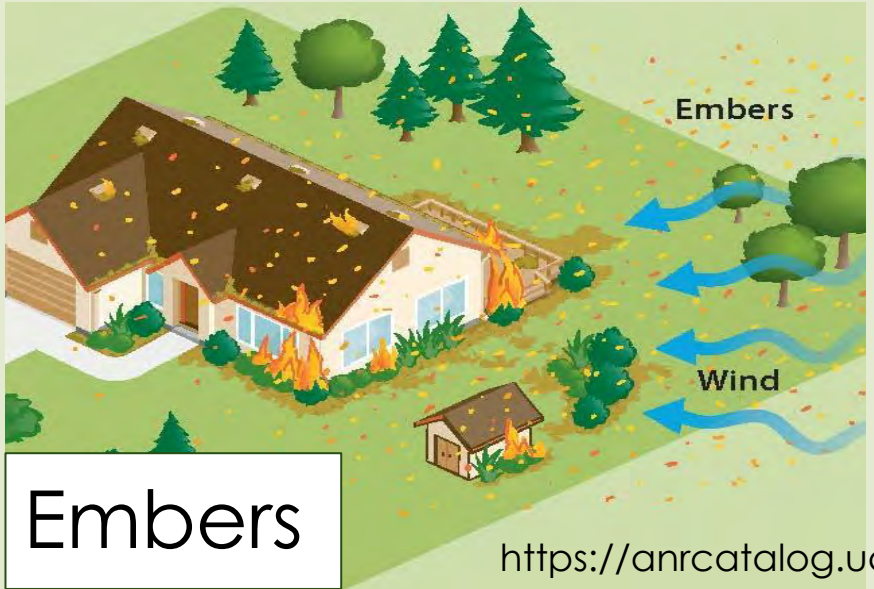
- Each individual must assess their own personal risk and tolerance, but:
- Your risk decisions intersect with those of your neighbors!

Three types of Fire Exposure



Radiant Heat

Direct Flame Contact



Embers

https://anrcatalog.ucanr.edu/pdf/8695.pdf

The greatest cause of structure ignition

Your house <u>may</u> be the greatest fire threat to your neighbors!

Ecology and Sustainability in the Defensible Space Zone:

Taking Care of **All** our Neighbors

- We have an important role in protecting homes, habitat, …
- "For the first time in history…gardeners have become important players in the management of our nation's wildlife." - Douglas Tallamy

Defensible Space:
Ecosystem Services

- Shade (air conditioning)
- Aesthetics
- Enrich soil and hold it in place
- Clean & manage stormwater (slow it, spread it, sink it, store it)
- Sequester carbon
- Support birds and other pollinators (biodiversity)

Defensible Space: Supporting Biodiversity

Biodiversity: the web of life above and below ground, is declining alarmingly.

Defensible Space:

Biodiversity = Redundancy

- Choose native species, at least 70%-80% - native pollinators prefer them
- Consult Calscape.org for appropriate plants and the habitat they provide
- Plant islands for bird and butterfly food and shelter
- Use integrated pest management
- Provide a water source

Defensible Space:

Supporting Biodiversity

- Keep all plants healthy (appropriate **mulch** and irrigation)
- A healthy plant is also more fire resistant.
- Oak trees have highest food productivity (acorns, caterpillars)
- Leaf litter supports insects, birds, microorganisms and roots

Defensible Space: Supporting Sustainability

- Avoid over-clearing to protect soil, streams, and fish, and reduce flammable invasive plants

Defensible Space:

Supporting Biodiversity

- Timing of vegetation management is important
- Birds nest March-August
- Trim and prune Sept-February (when most plants are dormant)

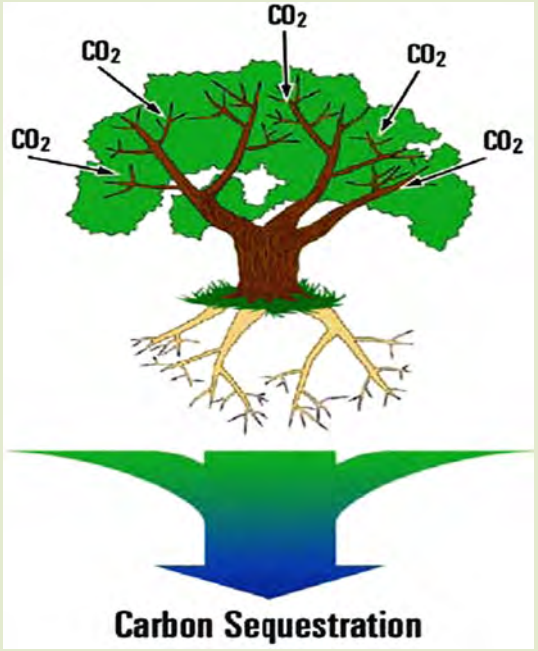
Defensible Space:

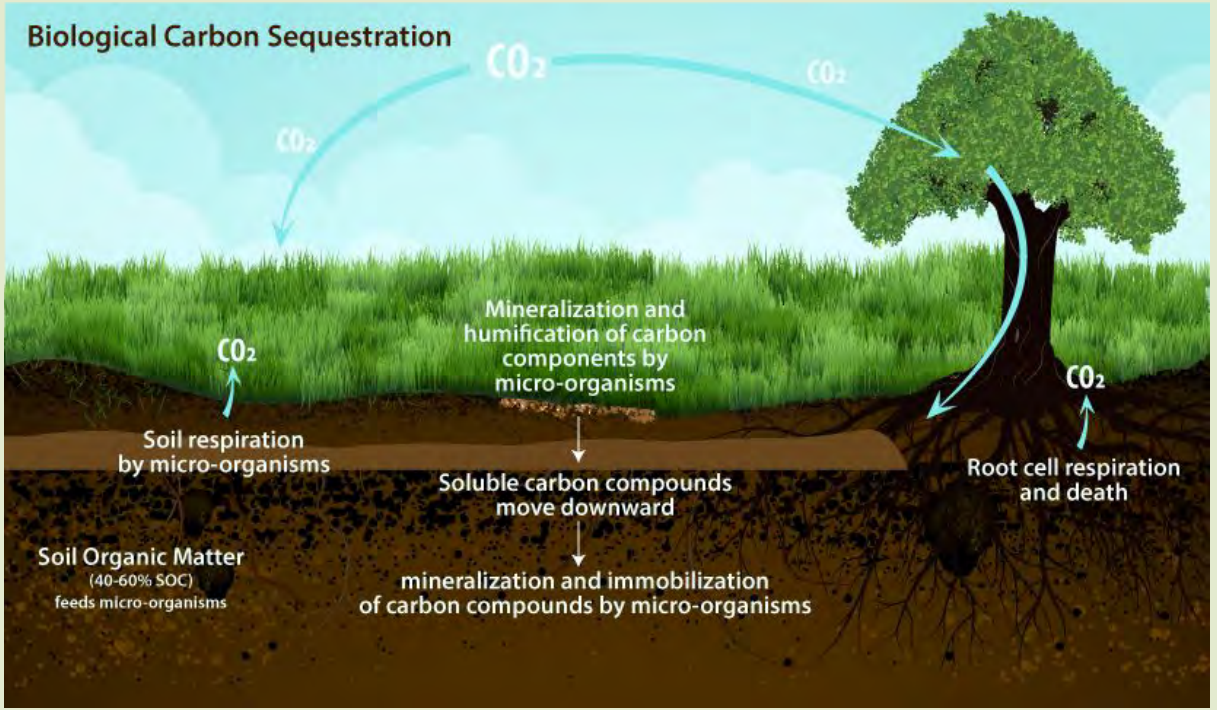
Supporting Sustainability

- Enrich soil and hold it in place
- Carbon sequestration
- Encourage water to infiltrate
- Protect water quality

Defensible Space: Sequestering Carbon

- Healthy soil sequesters more carbon, retains moisture and supports a healthier, more fire resistant landscape





Defensible Space: Nurturing soil

Soil is a complex network that includes plant roots, insects, fungi, and organic matter supplied by fallen leaves and organic mulch.

- Retain and incorporate organic matter
- keep soil covered with plants, mulch, and leaf litter where appropriate
- avoid synthetic fertilizers

Defensible Space: Clean and manage water

Keep water on your property: slow it, spread it, sink it, store it!

Credit: April Owens Design

Find resources at:
dailyacts.org/savewater

We encourage you to become more intimate with your garden and your wildlife neighbors, while reducing fire risk and enhancing biodiversity.

It is worth the time & effort!

RESILIENT LANDSCAPES

University of California
Agriculture and Natural Resources

UCCE Master Gardener Program
Sonoma County

Creating a Firewise & Sustainable Landscape

- Basic Principles
- Recommendations by Defensible Space Zone
- Maintenance & Mulch
- Recap

Homeowner action is key.

- There is no such thing as a fireproof home, especially in extreme conditions, but you can reduce your risk.
- Increasingly, there is more fire than there are firefighters.

YOUR WORK will be the most effective defense for your home.

Sacramento Bee image from Kincade Fire (no copyright infringement intended)

Fire and Fuels

Fuel + Oxygen + Heat = Fire

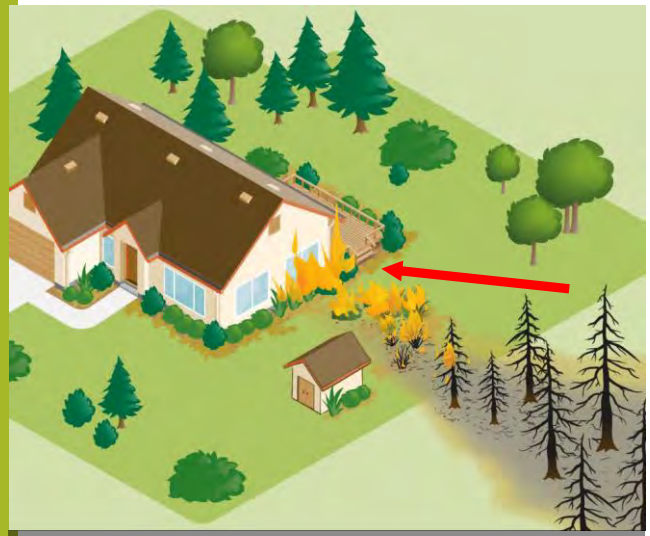
Fuel + Weather + Topography= Fire Behavior

Fuel is… anything that will burn

- Vegetation (trees, woody shrubs, perennials)
- Landscape mulch
- Fencing, roofing, decks
- Lawn furniture
- Arbors, trellises, planter boxes

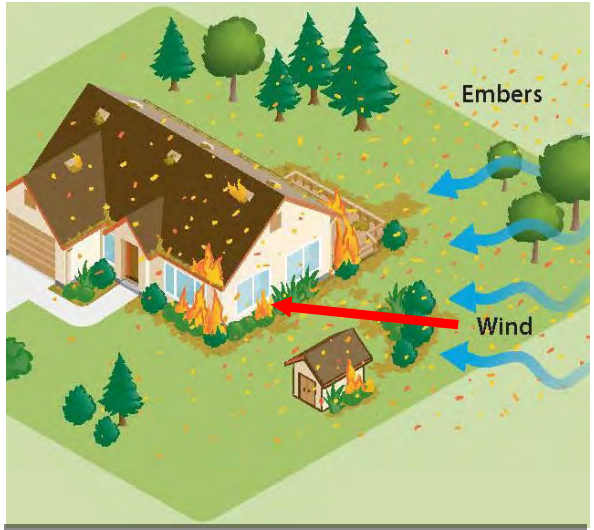
Techniques to reduce exposures

Direct flame contact



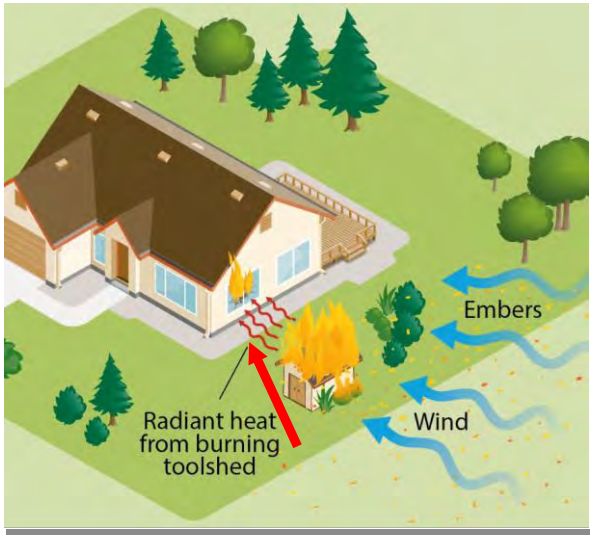
Defensible space implementation interrupts fire pathways and reduces the potential for direct flame contact

Embers



Home hardening with defensible space can help mitigate ember exposure

Radiant heat



Home hardening and fuel reduction can address potential radiant heat exposure

Our Basic Principles for Creating a Firewise & Sustainable Landscape

- All plants in your landscape should be selected & placed carefully and should be regularly maintained & hydrated
- Design for ease of maintenance!
- Each home and landscape is unique and must be considered individually
- Do what is required by law
- Use science to inform your decisions – most of this information is science based but research is ongoing

Fire-wise Landscape Design & Maintenance Basics

Remove ALL dead or dying plants and branches and remove ladder fuels

Create islands of plantings with non-combustible paths between to interrupt the path of fire

Avoid planting or mulching close to structures

Prune tree limbs up at least 6' (or 1/3 of tree height) from ground

Gates & Fencing

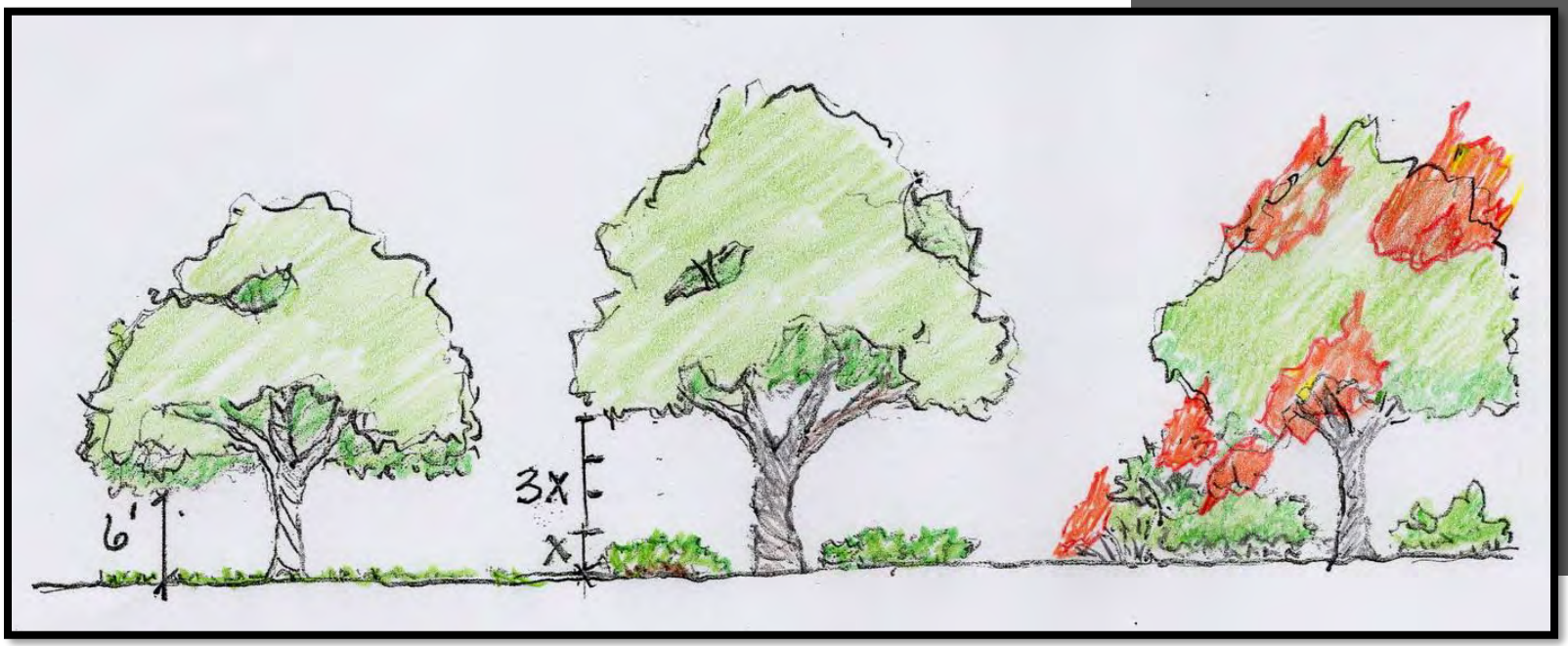
- Consider alternatives to wood fences such as concrete or rock walls or metal fences
- Wire mesh fencing can reduce fuel mass while preserving views
- Gates made from organic material should not attach to the house

Coffey Park, Tubbs Fire 2017

Photo courtesy of Institute for Business & Home Safety

Eliminate Ladder Fuels

- Allow 3 times the height of the shrub to the lowest tree limb
- Keep fire from moving from ground into trees
- Limb up all trees at least 6’ or 1/3 height of tree



drawing courtesy of Ellie Insley

← Ladder Fuels: Before

Ladder Fuels: After →

Photos courtesy of Ellis Insley

Firewise Plant Selection Considerations

- **How large** will this plant grow? (affects placement, fuel load & maintenance, PG&E lines)
- **Will it thrive** where it will be planted? (affects health & vigor and flammability)
- Will it require more **maintenance** than can be provided now or in the future? (affects fuel load)
- Is it **invasive**? (affects fuel load over wide areas)
- Consider how a plant changes over it's **lifespan** (affects fuel load)

Where to not to plant

- 0-5’ out from the house
- Under vents and eaves
- In front of windows or combustible siding
- Under or near decks
- Inside corners

Start at the house and work out!

Zone Zero - 0-5': Ember defense zone

- Optimally **no** combustible materials in this zone!
- Minimize/remove planting here especially:
  - Under vents and eaves
  - In front of windows or combustible siding
  - Under or near decks

Photo by Mimi Enright and Garden Design: April Owens

Zone 0: 0’-5’ Ember defense zone

- Roof litter maintenance critical!
  - Maintain tree limbs 6’ above roof
- County Code mandates cutting tree limbs 10’ from stove pipe or chimney outlet
  - MAINTAIN YEAR ROUND!

Photo by Mimi Enright

Zone 1 - 5-30′ Home defense zone

- Plant in "islands" separated by non-combustible pathways
- Use smaller shrubs and groundcovers (to 3′) & herbaceous perennials
- Trees are OK if they're green & free of dead plant material

Photo & garden design April Owens

Zone 1 - 5’-30’ Home defense zone

Low growing, mostly perennial

Low fuel = Well Maintained

Great place for hardscape close to house

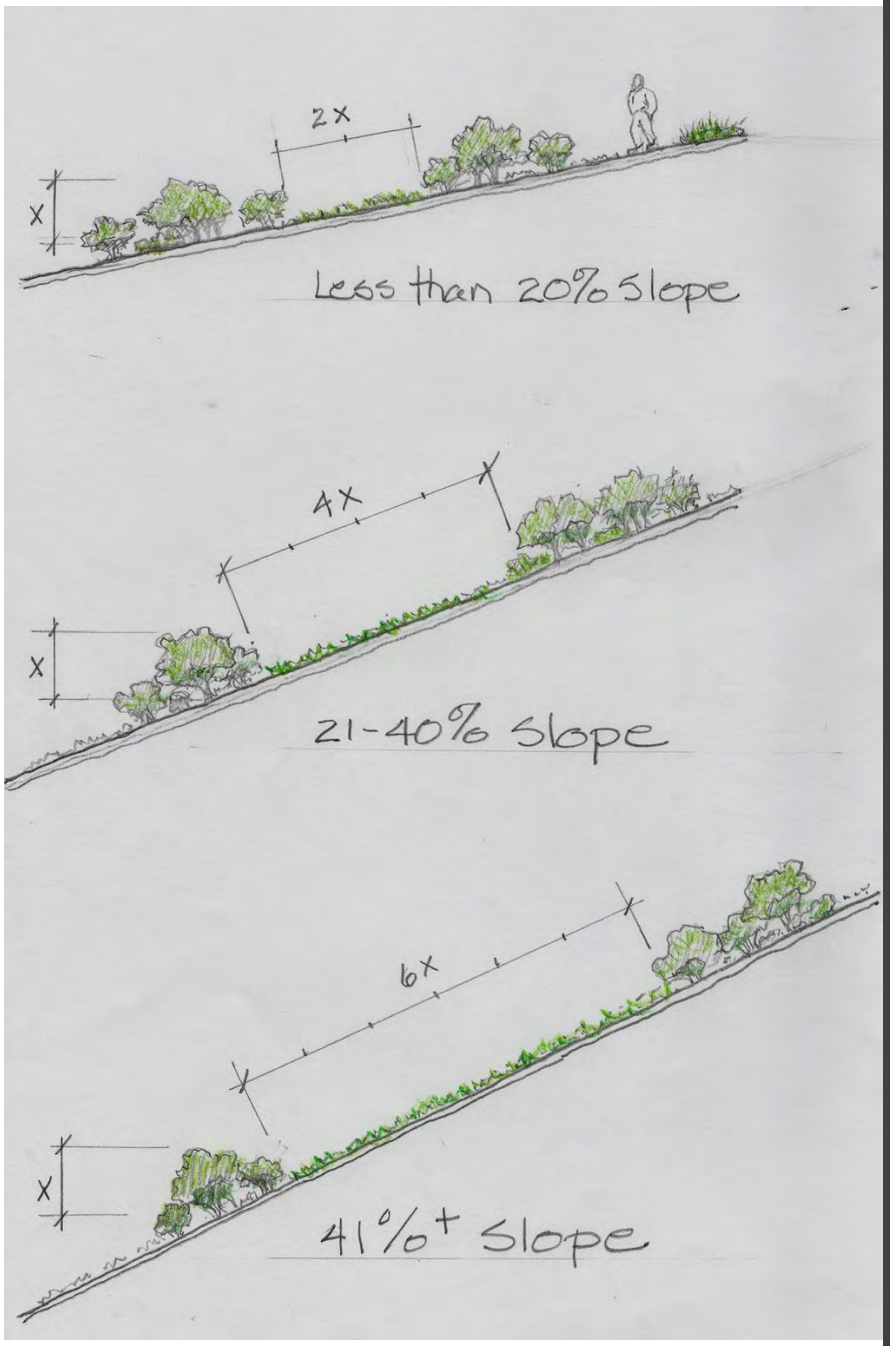
Make sure you can access all plants for maintenance

Photo courtesy of Clio Tarazi

Zone 2 - 30’–100’ : reduced fuel zone

- Regularly remove dead plant material
- Keep annual grasses mowed to 4”
- 4-5’ wide walkways can help separate planting areas & act as fire breaks

Suggested Spacing Guidelines (within 100' of buildings)



Graphic courtesy of Ellie Insley

Ideal Spacing Guidelines (within 100’ of buildings)

0% to 20% slope

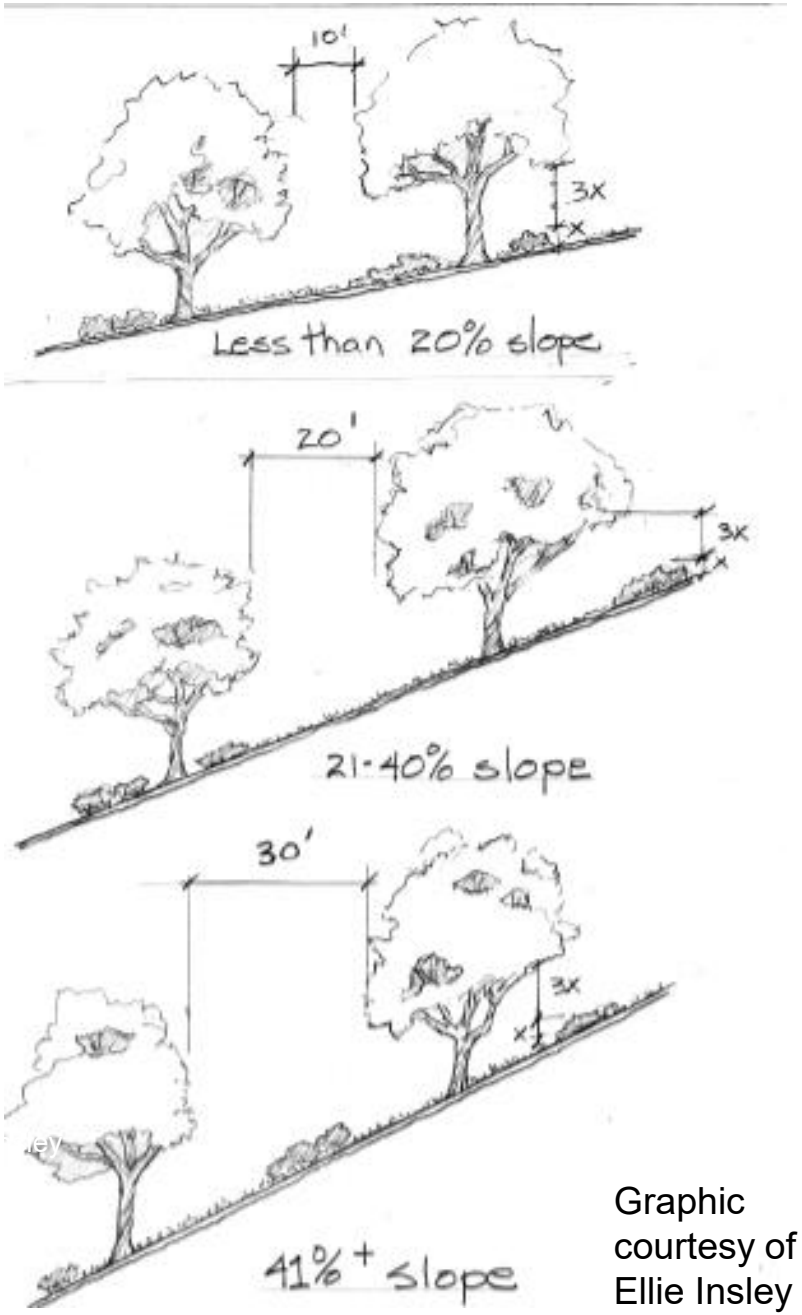
- Trees spaced 10’ apart
- Shrub separated by a space 2 times the height

21% to 40% slope

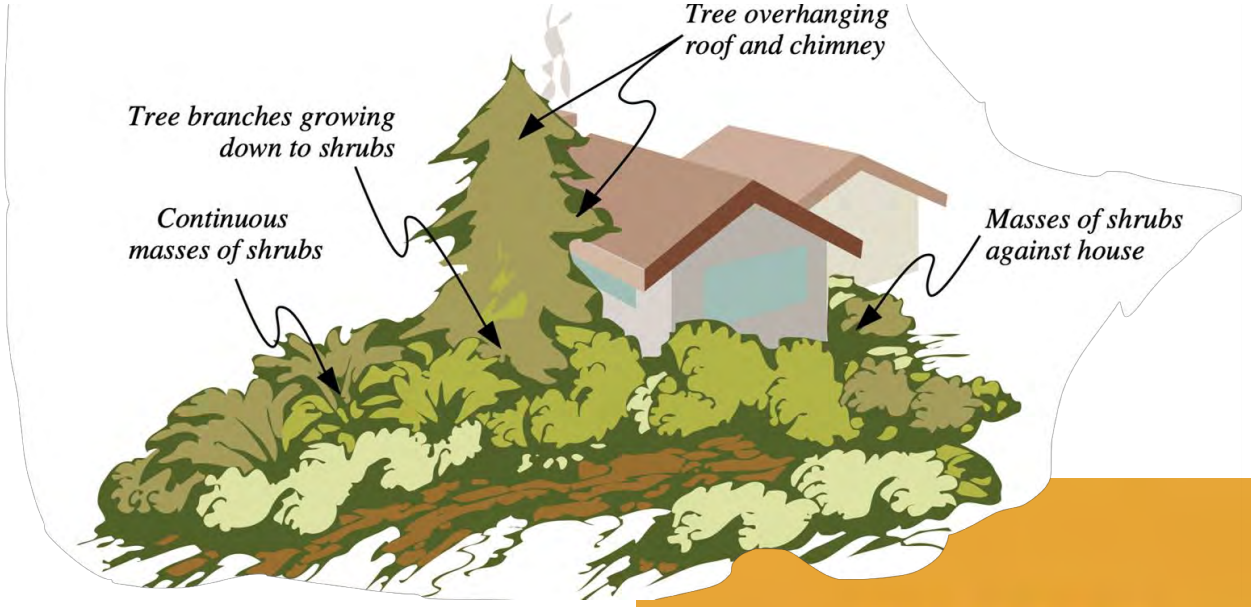
- Trees spaced 20’ apart
- Shrubs separated by a space 4 times the height

41% slope or more

- Trees spaced 30’ apart
- Shrubs separated by a space 6 times the height



Graphic courtesy of Ellie Insley



Before

After

Access Zone

- Maintain vegetation on both sides of roads & driveway – 10’ from road edge and 15’ vertically
- Maintain 12’ of unobstructed pavement for passage of vehicles

Neighborhood Considerations

- Start with your house & defensible space zones. Then talk with your neighbors! Work together to develop a fuel reduction plan for the entire neighborhood.
- Watch for maintenance needed -- debris accumulating on a neighbor's roof, uncovered woodpiles, unmown tall weeds.
- What is total volume of vegetation in area? Any ladder fuels?

Shaded fuel break

- Control fire behavior by reducing ladder fuels
- Open the canopy
- Maintain ground fuels
- Facilitates fire suppression (ground and air attack)

Work with your neighbors!

Photo: Mimi Enright

Ongoing Maintenance

- Remove dead plants & dead branches from trees and shrubs
- Remove vines from trees & shrubs

Annually before fire season:

- Mow annual grasses & weeds to 4" tall or less
- Cut back woody perennials & shrubs as needed
- Thin overgrown vegetation
- Consider timing of plant removals/cutbacks based on wildlife cycles
- Move woodpiles to 30+ feet from buildings, or cover with fire resistant tarps and clear surrounding vegetation

Every few years as needed:

- Thin & reduce tree canopies to remove twiggy growth, maintain separation between trees & reduce overall fuel load
- Keep lowest branches of trees pruned up at least 6’ from ground
- Cut back groundcovers & vines to remove build up of dry stems & dead leaves
- Cut back shrubs to renew

Mulch

Large sized composted arbor mulch are the best options in 30-100’ zone (NO “gorilla hair”)

Image courtesy of Fire Safe Marin

Mulch

Separate mulched areas (2-3" deep) with non-combustible materials where possible, especially in 5-30'

Photo: Mimi Enright

Photo: Clio Tarazi

Mulch

No organic mulch in the 0-5’ zone

Defensible Space Zone Design Recap

- 0-5' zone from house: No organic materials if possible. Use inorganic materials such as gravel or stepping stones.
- 5-30' zone from house: Plant in "islands" with materials such as low herbaceous perennials, grasses or succulents, and specimen (or individual) shrub or tree are optimal.
- 30-100' zone from house: Same basic principles as the 5-30' zone, but you can include shrub and tree groupings in widely spaced groups separated by areas that break up the spread of wildfire.

Resilient Landscaping

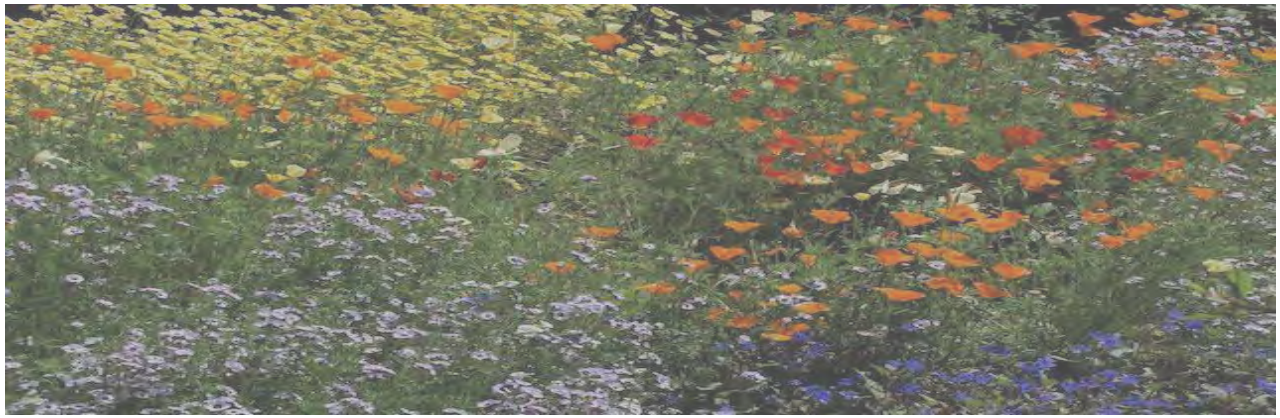
Ongoing maintenance is essential!

- Remove dead or dying branches from trees and shrubs regularly
- Prune out any dead material from the interior of shrubs if possible
- Remove any ladder fuels – prioritize removing any shrubs planted directly under trees

More Resources

For more resources go to the UC Master Gardener Program of Sonoma County web page: **http://sonomamg.ucanr.edu/**

Or send an email to our Information desk at **mgsonoma@ucanr.edu**

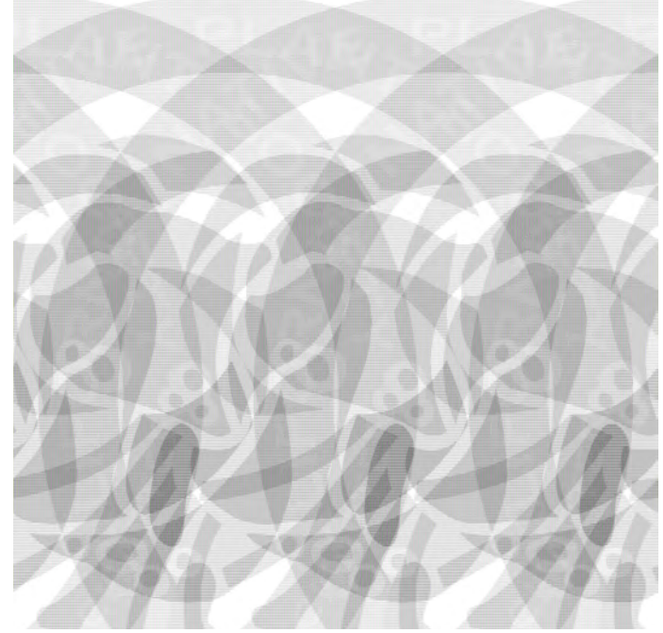


California Resilient Landscapes - Sonoma Valley

Biodiverse, Drought Resistant, Fire-wise and Beautiful

Van Hooser Preserve

habitat corridor project



Mission

To conserve California native plants and their natural habitats, and increase understanding, appreciation, and horticultural use of native plants.

https://milobaker.cnps.org/

April Owens Design, LLC

AprilOwensDesign.com

B-Corp that funds HCP

Mission

To create and promote California native plant restoration gardens in the urban environment.

HabitatCorridorProject.org

Resilient Landscapes

Systems Thinking

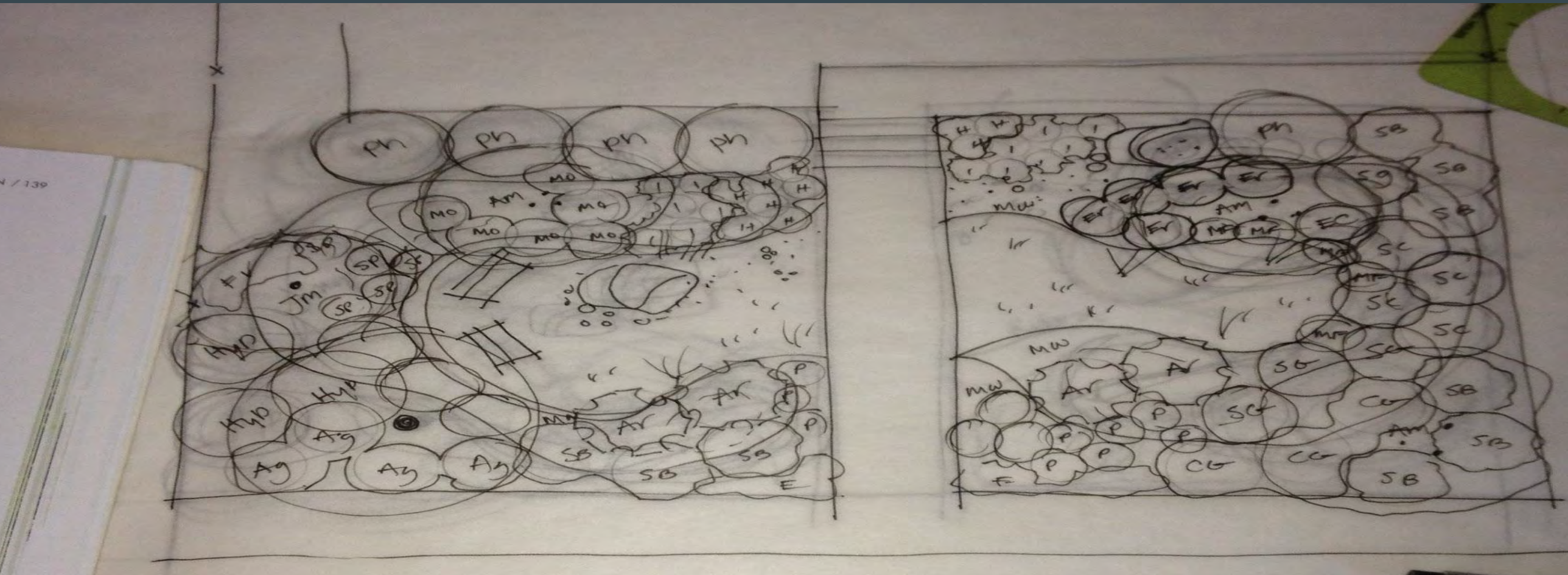
Resilient landscapes consider drought, fire, development and biodiversity as they are designed.

Designing in Sustainability

Iroquois definition: The Seventh Generation Principle is based on the ancient philosophy that the decisions we make today should result in a **sustainable** world seven generations into the future.

Consider:

- keeping water on site with swales and water gardens
- permeable surfaces to let the water sink into your garden hydrating the soil and aquifer
- local materials that do not strip the environment
- water-wise hydration of plants / plant community of your landscape



Design 0’-5’

TIP: Steel edging is a long lasting material rather than plastic.

Deck
Concrete Step
Bluestone Pavers (24” x 36”)
⅜” Sierra Tan Pebbles
Steel Edging
⅜” Drain Rock

Design 0’-5’

TIP: Use Compacted Base Rock instead of landscape fabric under pebbles.

Small and Medium Cobble with 1 ½” Pebble Source: SBI

Drain Rock
Driveway
Trinity Pebble and
Juncus Patens

Design 0’-5’

Flagstone Set on Compacted Base Rock
1 1/2 “ Sierra Tan Pebbles

Well Maintained Island and Hardy Board Construction

Cobble mix
Site Boulders
Arbor Mulch

Design 0’-5’

Easy fix: Take out mulch and add pebble

Swale=a low place or depression in the landscape- drain away from home.

Dymondia Groundcover -
not native, but well behaved.

Dudleya spp..
Chalk Dudleya
with Boulders

Design 5’ - 30’

Tip: Native turf options are wonderful but need a significant water allowance to get established.

Bentgrass Native Turf
Source: Delta Bluegrass Company

Concrete Pavers with Trinity Crushed Rock

Design 5’-30’

Diplacus aurantiacus (Sticky Monkeyflower)

Eriogonum fascicularis (Buckwheat)

Flagstone Pavers
on Base Rock
With Crushed Rock
Joints

Design 5’ - 30’

TIP: In this zone use a bit more water to keep plants optimally hydrated. You will save in the other zones.

Plant Community Counts - Local to your site = less resources used and more biodiversity support.

-Oak Woodland
-Oak Savannah
-Chaparral

Salvia sonomensis (Sonoma Sage) and cultivars

Salvia ‘Bee’s Bliss’ and pathways

Design 5’ - 30’

TIP: Calscape.org

Rosa californica (Wild Rose)

Gray Hairstreak

Strymon melinus

Variable Checkerspot

Euphydryas chalcedona

Hoary Comma

Polygonia gracilis

White-lined Sphinx

Hyles lineat

Design 5’ - 30’

2’ x 2’ Pavers with
No-Mow Fescue Turf

Decomposed Granite
Pathway with Binder

Fieldstone From Site

Bennett Ridge

Design 5’-30’
Sink It.

Rain Garden= a place where the water can collect so it can seep into the soil and feed your well or the aquifer.

Tie in downspouts or not.

Arctostaphylos ‘Howard McMinn’ (McMinn Manzanita) and Pea Gravel

Inexpensive Pathways

Tip: drain rock as pathway and break between plant islands - economical, sustainable and beautiful.

Before and After (new install)

Photo by Ellie Insley
Design by Sonoma Ecology Center (Jon Kanagy)

Smaller Spaces

California Natives:
Salvia clevelandii
(Cleveland's Sage)

Penstemon heterophyllus
(Foothill Penstemon)

Epilobium canum
(California fuchsia)

Aster 'Pt St George' (Cal. Aster)

Design 30’-100’ -

Tip: Create Landing Pads:
Groupings of 3-5 plants
of one species

Islands Separated by
Rock Walls

Design 30’-100’ -

Larger Groups of Shrubs - Cover.

Sambucus mexicana (Elderberry)

California Native Shrubs- Toyon (Heteromeles arbutifolia)

Ribes sanguineum (California Currant)

Coffeeberry (Frangula californica)

What to use between the islands of plants?

Arbor Mulch or Compost-
hydrate on red flag days

Gravel/ Crushed Rock / Pebble

Festuca rubra (Red Fescue)
Carex pansa (Meadow Sedge)

Mowed California Native Bunch Grasses / Well Maintained Groundcover

Phyla nodiflora (Lippia) Supports the Common Buckeye Butterfly

Hydrating Native Plants

Drip

Tip: check out our free plans
LivingLearningLandscapes.com

Or Hunter MP Rotators

Or hand water with a low sprinkler.

Food, Cover, Water

Tip: Leave passive water throughout the garden wherever possible or install a habitat fountain.

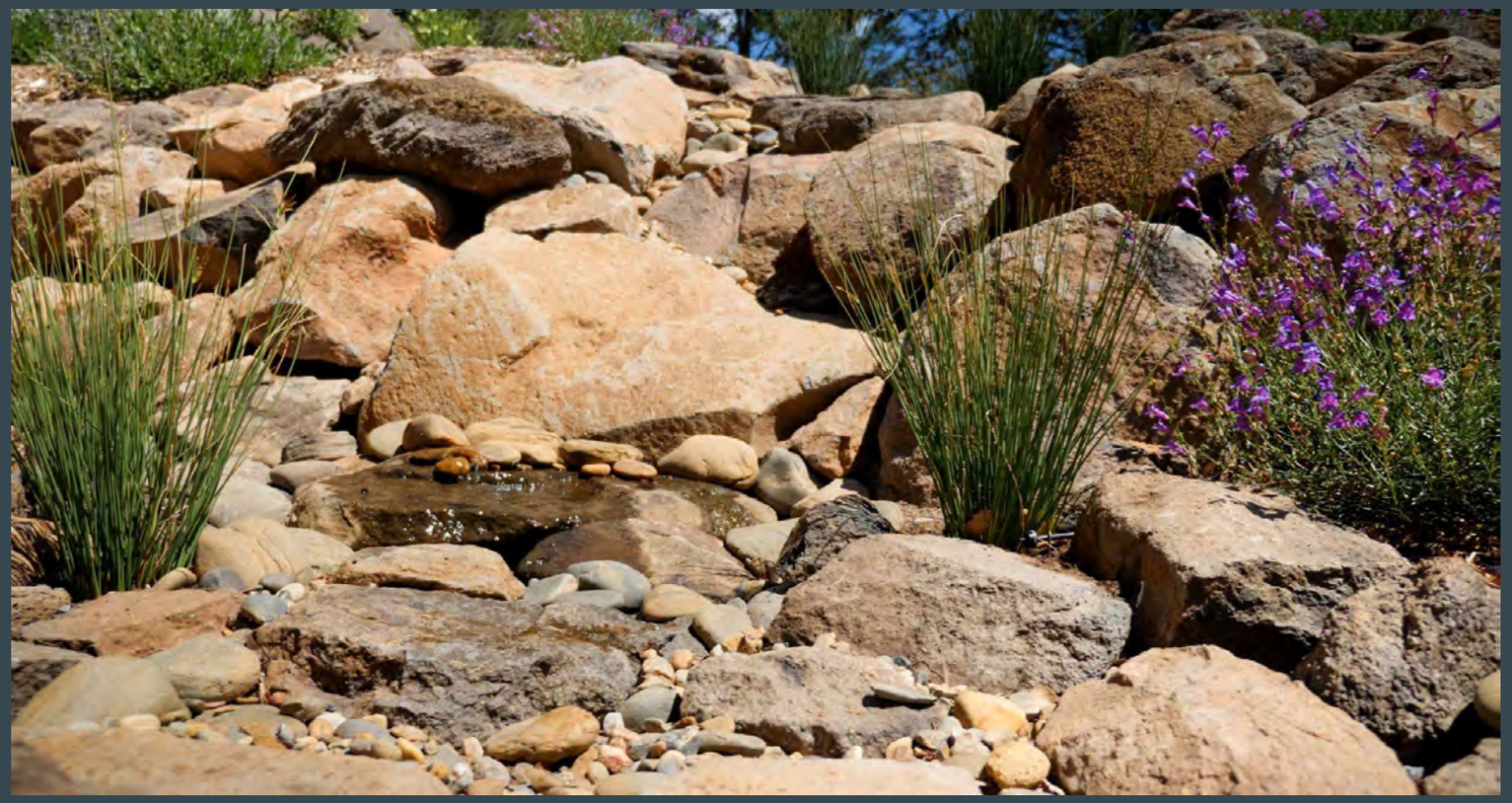


Photo Credit: Alex Roa

Tips for Successful Habitat Planting

Many Types of Flowers - long tubular and Aster type

Large Groupings - Pollinator Targets

Flowering at Different Times

Plants that Provide Both Nectar and Pollen Sources

WOOLY SUNFLOWER
(ERIOPHYLLUM LANATUM)

Wait for the Delight

Tip: Find the best place for your native plant the first time - they don't like to be moved (their roots grow too fast!).

Western Redbud (Cercis occidentalis)

SonomaResilientLandscapes.com

http://sonomamg.ucanr.edu/

FiresafeSonoma.org

SonomaEcologyCenter.org

Other:

CNPS.org

LivingLearningLandscapes.com

Get in touch:
Resilientlandscapescoalition@gmail.com

Aristolochia californica (Dutchman’s Pipe) and the
Pipevine Swallowtail Caterpillars