Sustainable & Firewise Landscaping

Garden as if Life Depends On It

SONOMA ECOLOGY CENTER


Beautiful
Defensible
Wildlife friendly
Sustainable

Thanks To Annie, and Suni Levi

Our Team

Habitat Corridor Project

Sonoma Ecology Center

UC Master Gardners Program of Sonoma County

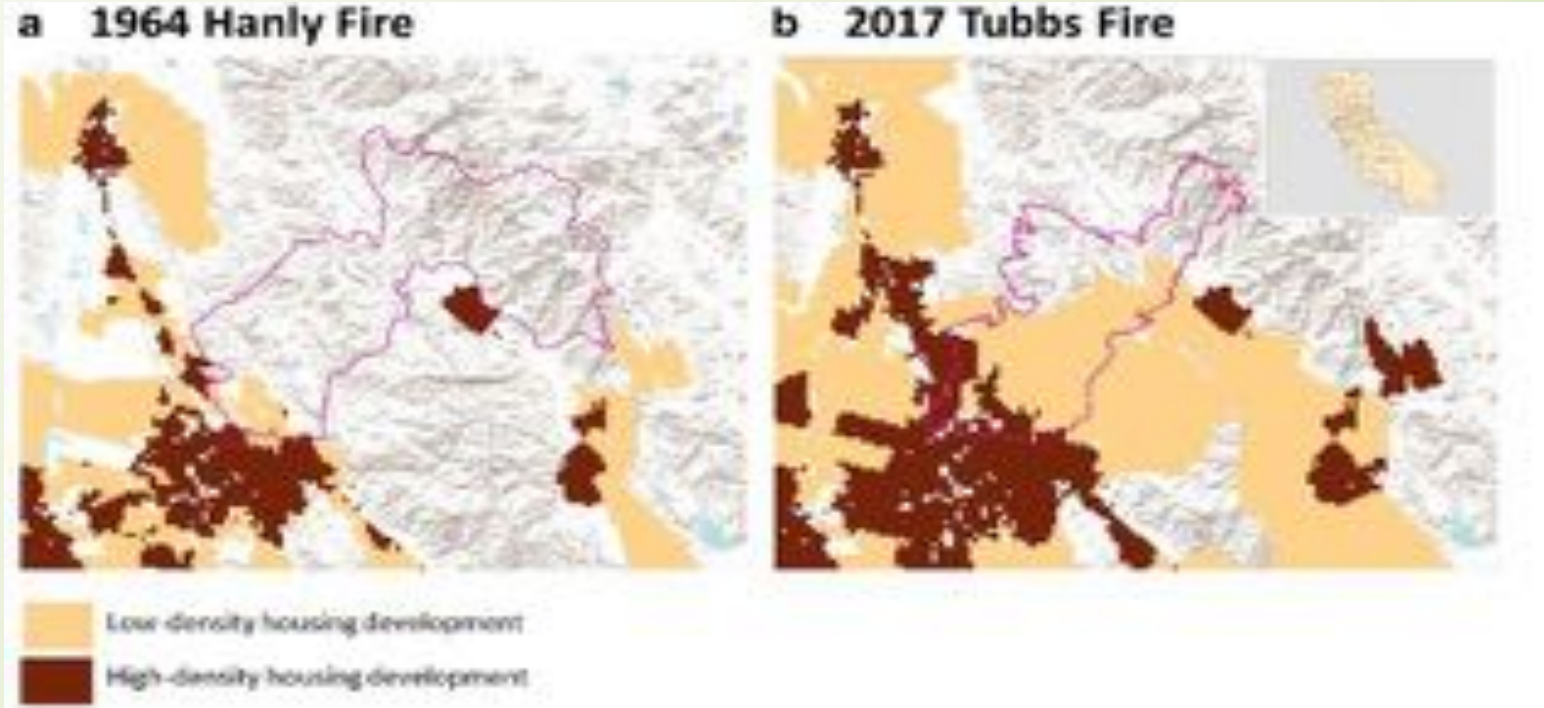
In Partnership with: FireSafe Sonoma, County of Sonoma Fire Prevention Division, Cal Fire

Agenda

- State and County Requirements & Recommendations
  - Defensible Space
  - Protect Life and Property
- Ecological Overview
  - Integrate Sustainability and Wildlife Needs
  - Coordinated with Fire Agencies
- Design and Maintenance
  - Basic Principles
  - Plant Selection Considerations
  - Mulches
  - Maintenance
  - Neighborhood Considerations

Development in the Wildland Urban Interface

- Climate Change + homes in WUI = increased fire risk
- Landscape adapted to fire
- Our Responsibility: Protect ourselves and our neighbors
- Working together in community is most effective



Ecological Perspective

Taking Care of all our Neighbors

Biodiversity - the web of life above and below ground:

- We have important choices
- We can support "Ecosystem Services"

Biodiversity Declines

- 75% decline in insects
- 29% decline in birds

- our gardens can make a difference!
- especially natives!

Oak Woodland

- Bennett Ridge is in an Oak Woodland.
- ...one of several primary native plant communities
- ...adapted to fire
- ...oak trees have highest productivity as a food factory for numerous species.

Charismatic Mega Fauna

Homes for our neighbors

How To Protect and Encourage Wildlife

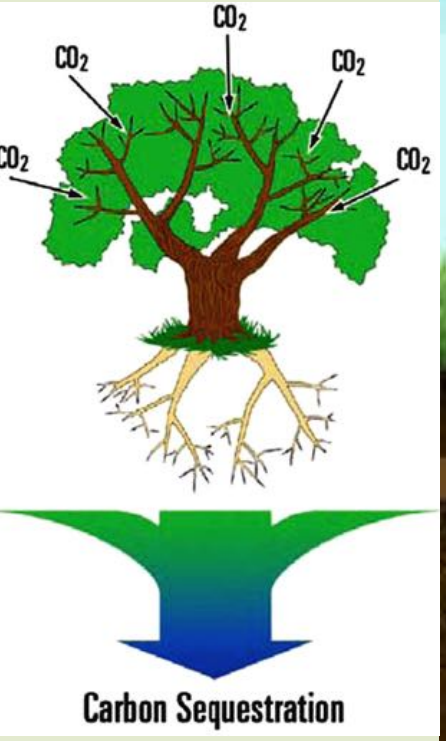
- Plant native species
- Choose and mass plants to attract beneficial insects
- Use integrated pest management
- Provide cover / nesting sites & water source
- Conserve/restore natural areas & wildlife corridors
- Eliminate high-water use lawns

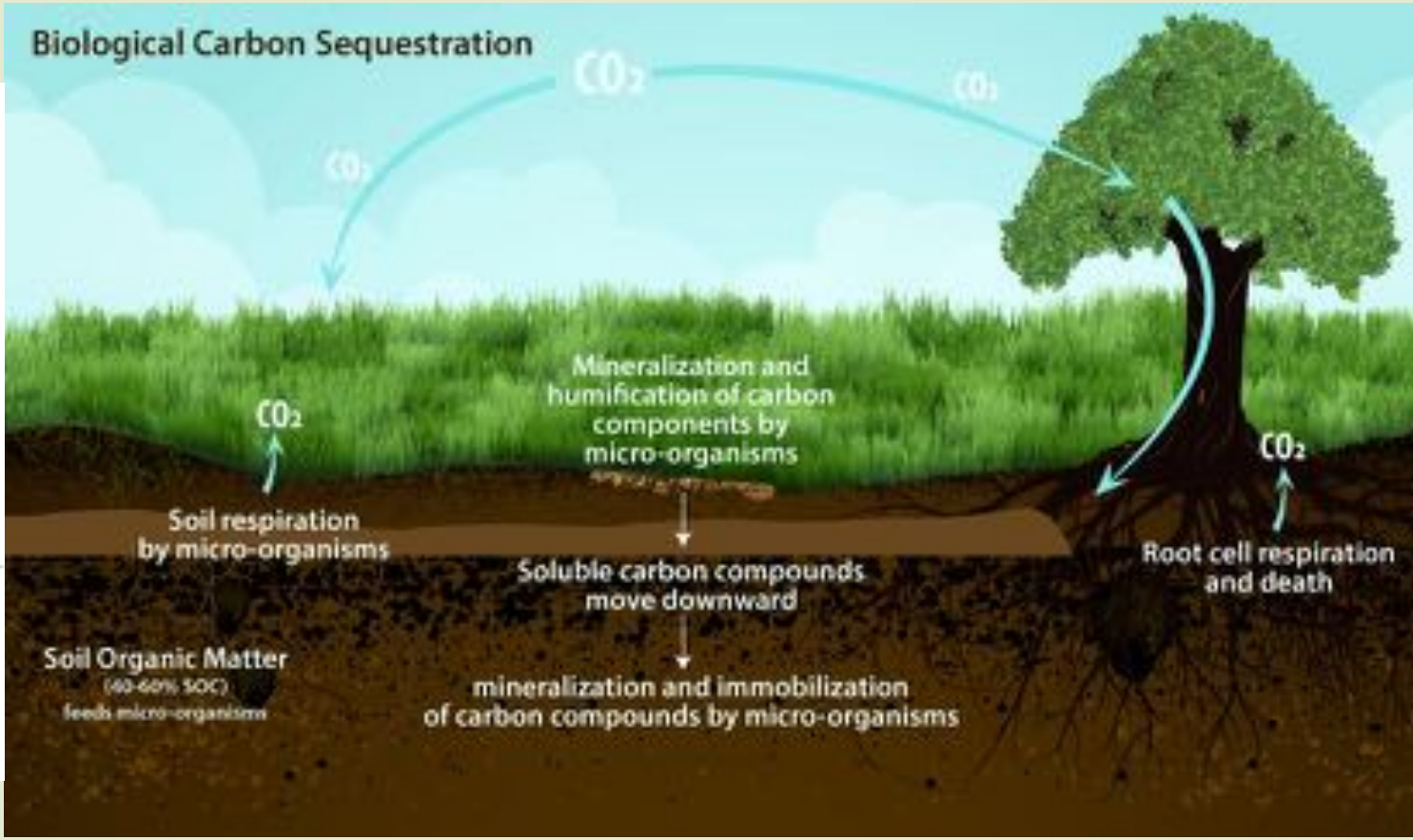
Managing Landscapes for Natural Resources

Restoring Nature's Relationships

- We ask our landscapes to be pretty but they also need to:
  - Support pollinators and other wildlife
  - Sequester carbon
  - Clean & manage water
  - Enrich soil and hold it in place

Sequester Carbon





Hold Soil in Place

Maintenance for Wildlife Values

- Timing is everything
- Avoid Overclearing
- Logs and dead wood habitat
- Keep plants hydrated

Birds are nesting February through August

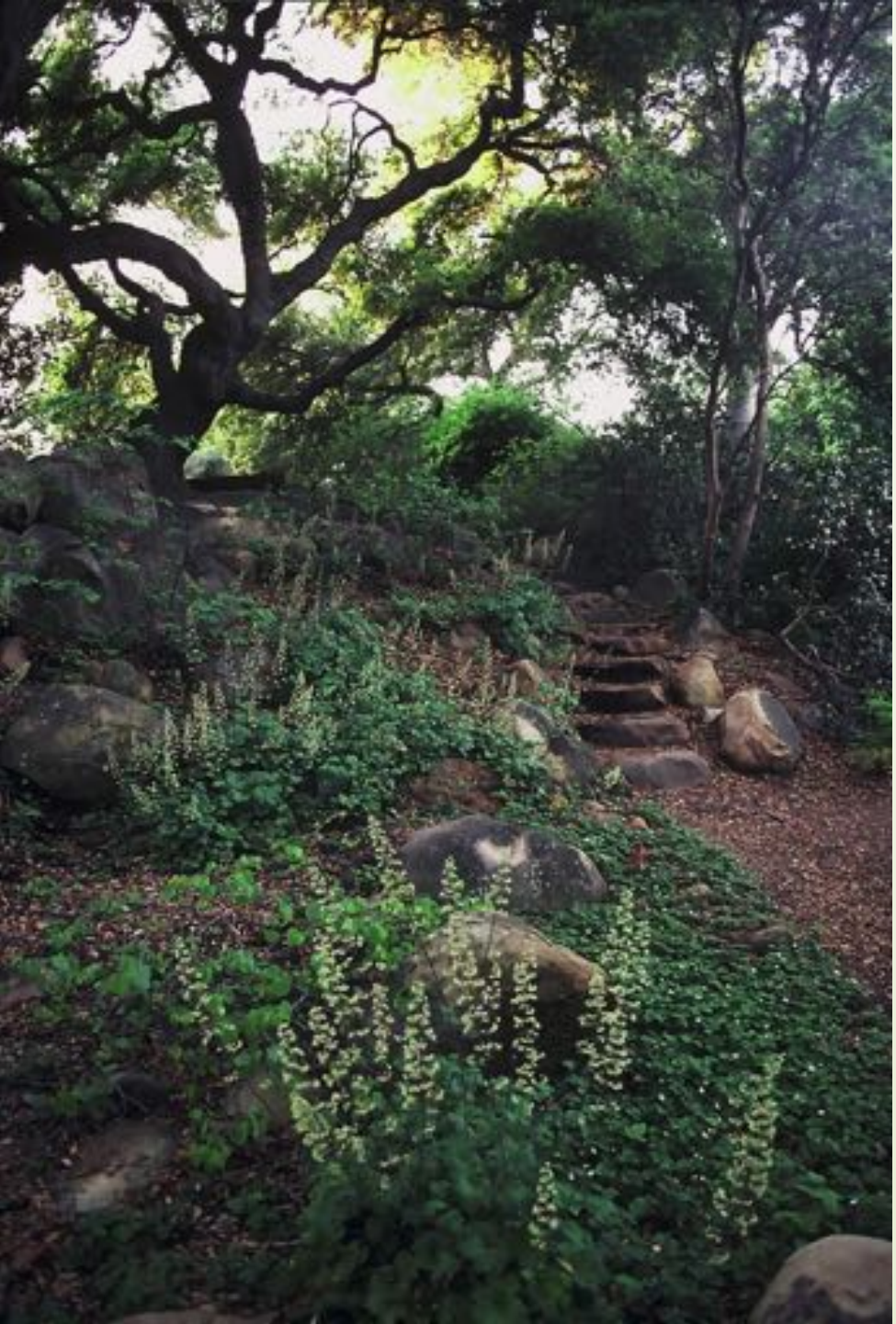
Avoid Over Clearing

Invasive Fire-Prone Weeds

Snags and Logs

Plant Selection

- Choose appropriate plants by:
  - Climate
  - Soil Type
  - Sun aspect
  - Water needs
  - Mature Plant Size
- Don’t plant invasive species
- Use all or mostly native plants 80%/20%



Back to Oak Woodlands

Protect Root System

Oak litter layer microorganisms

Tempting?

Different Kind of Lighting

There is no guarantee, however…

- There is no such thing as a fireproof home, especially in extreme conditions.
- You can reduce your risk using these science-based principles, and reap many benefits.
- It is worth the time, expense & effort to follow the principles.

Pterotus obscuripennis

Resilient California Landscapes

UC Master Gardener Program
of Sonoma County

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

Introduction

Creating a Resilent Firewise Landscape

- Fire Basics
- Designing for Fire
- Plant Selection Considerations
- Recommendations by Defensible Space Zone
- Mulch
- Maintenance

Fire Basics

- Fuel + Oxygen + Heat = Fire
  - Which of these 3 can you control?

Fuel

- Fuel is… anything that will burn
  - Dry or dead vegetation
  - Wood siding, roofing, fencing
  - Trees
  - Woody shrubs or perennials
  - Landscape mulch

Climate & Increased Wildfire

The presence and characteristics of wildfires are determined by *biophysical* factors:

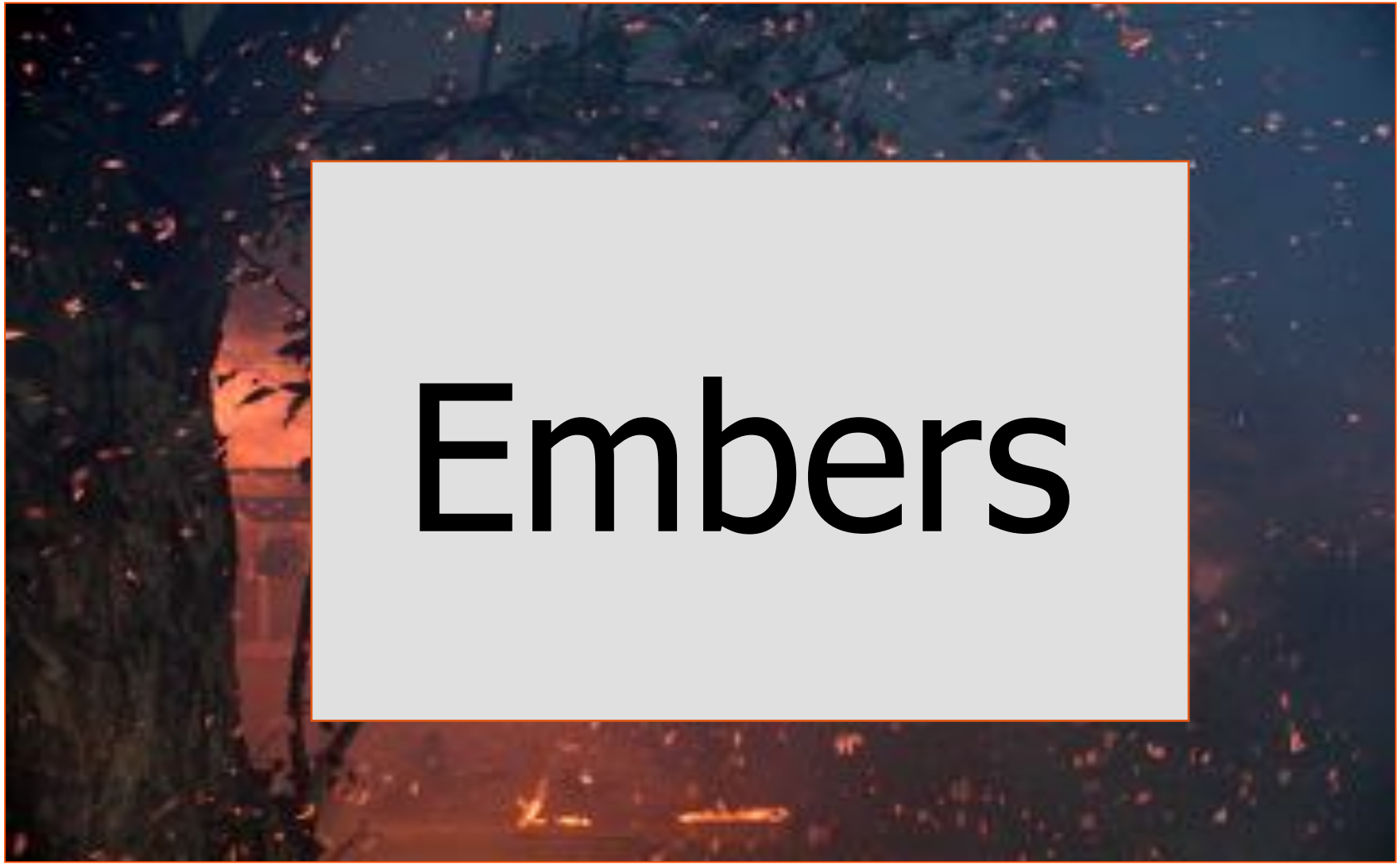
- Temperature and relative humidity (air moisture)
- Wind: The primary driver of fire behavior
- Slope (fire burns faster and stronger UP hill)
- Fuels: vegetation, buildings, etc.

and *anthropogenic* factors:

- Ignitions (can be naturally caused too)
- Development at the wildland-urban interface
- Wildfire suppression activities

Direct Flame

Radiant Heat


Embers

During wildfires, home ignition is primarily related to:

- Vulnerabilities on the structure itself
- Fuels within 100 feet

Jack Cohen, USFS

What's your goal in preparing for the next fire?

- Your family's safety
- Structure's safety
- Firefighter safety

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.

Start at the house and work OUT!

Our Basic Principles for Creating a Fire-wise & 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

To create a fire-wise landscape

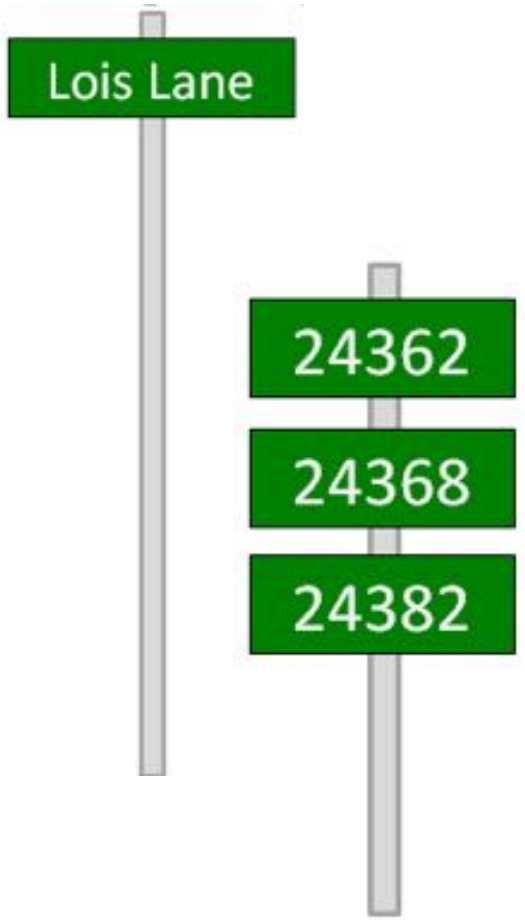
- **Choose** fire resistant landscape materials (Examples)
- **Arrange** landscape plants with spacing to disrupt a fire
- **Maintain** landscape features - keep plants well-irrigated, healthy, and well pruned

To create a fire-wise landscape

- **Avoid** planting close to structures, especially near vents, under windows or exposed eaves
- **Prune** tree limbs up at least 6’ from ground or from understory plants
- **Remove** ANY dead or dying shrubs, trees or branches

Designing For Fire

- **Street and Address Signs Required**
  - 4 inch minimum lettering on a contrasting background
  - Clearly visible from the street or access road in both directions.
  - Metal posts
- 80% of fire department responses are for medical aid…



Designing For Fire

Maintain vegetation on both sides of roads & driveway – 10’ from road edge and 15’ vertically

Designing For Fire

Consider alternatives to wood fences such as concrete or rock walls or metal

- Wire mesh fencing can reduce fuel mass while preserving views

Plant Selection Considerations

- How large will this plant grow? (affects placement, fuel load & maintenance, PGE 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)

All plants will burn!

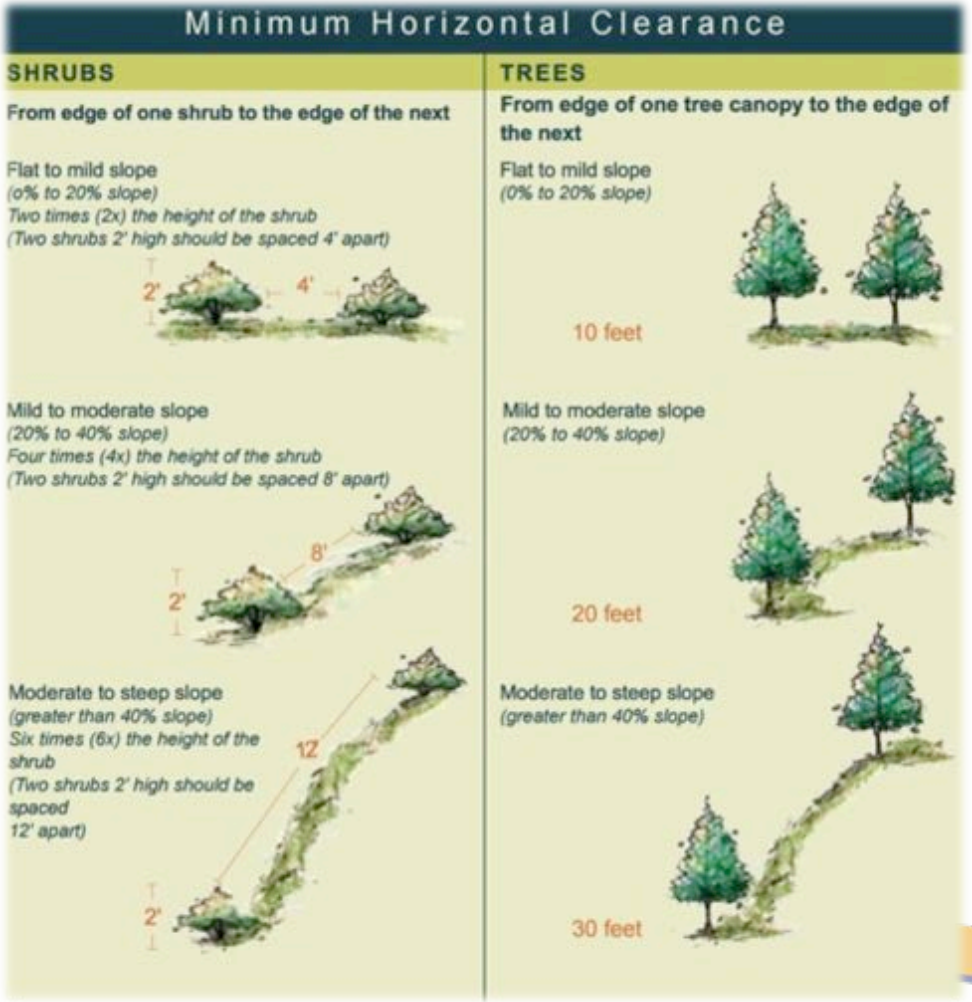
Even “Fire Safe” plants

Be sure to keep all of your landscape plants healthy with appropriate watering, proper pruning and upkeep to reduce risk

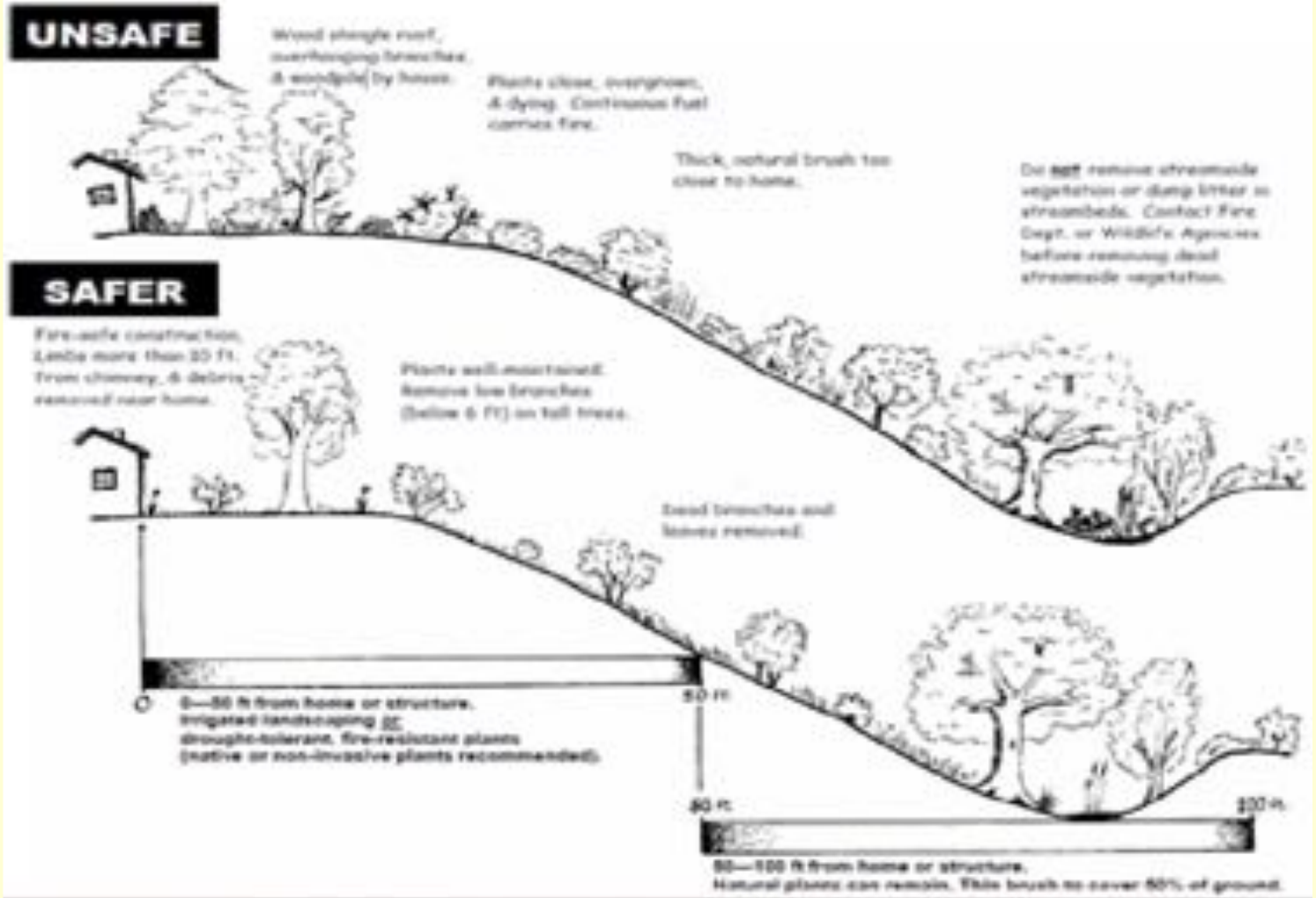
Eliminate Ladder Fuels

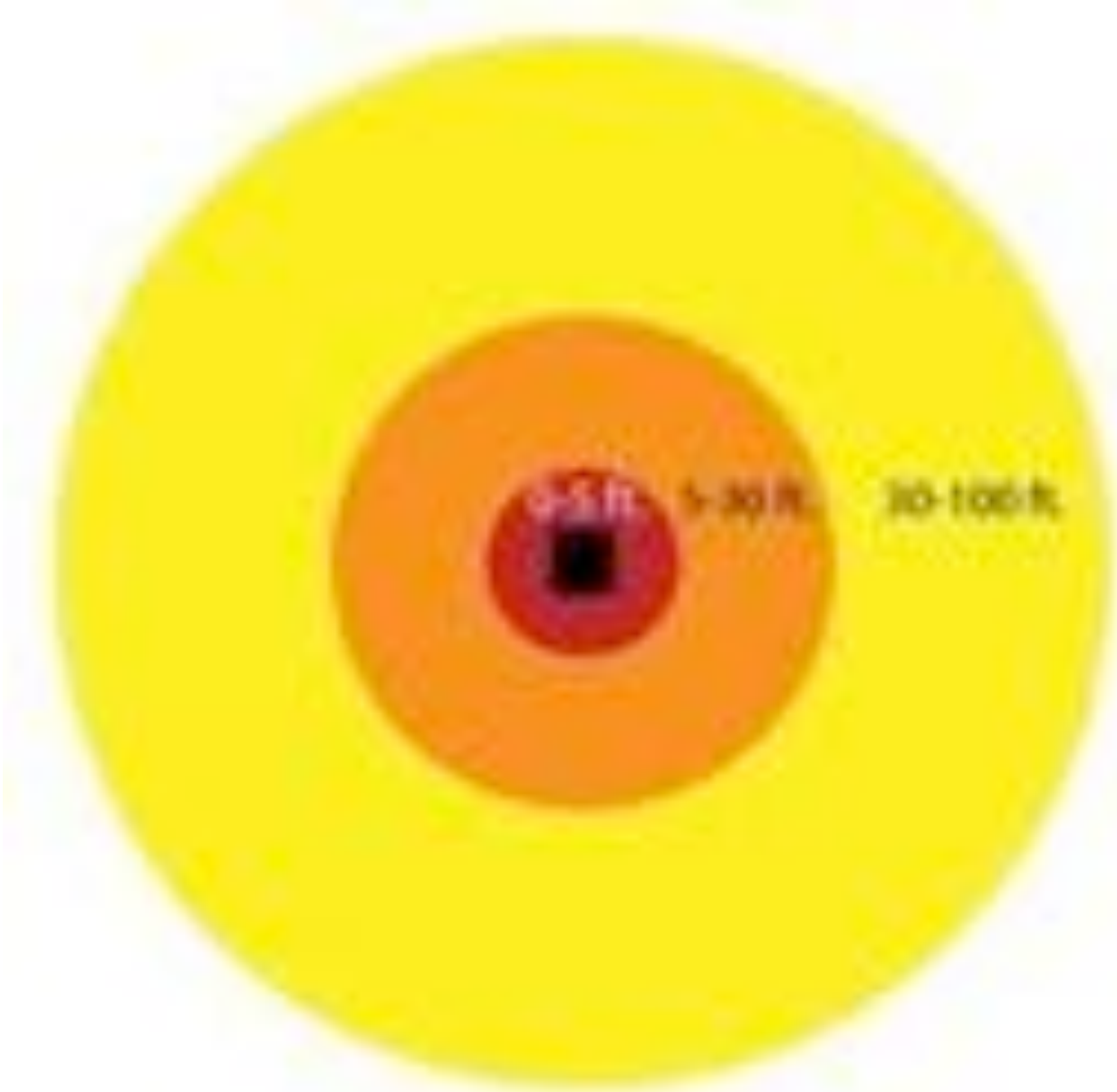
- Reduces the possibility of having fire move from low grasses and groundcovers into larger shrubs and trees
- Avoid placing shrubs and tall grasses under trees or larger shrubs
- Allow at least 10’ or 3 times the height of the shrub between it and the lowest tree limb

Ideal Spacing Guidelines (within 100’ of buildings)



- ❑ **0% to 20% slope**
  - ❑ Trees spaced 10’ apart
  - ❑ Shrub separated by a space 2 times the height
- ❑ **20% to 40% slope**
  - ❑ Trees spaced 20’ apart
  - ❑ Shrubs separated by a space 4 times the height
- ❑ **40% slope or more**
  - ❑ Trees spaced 30’ apart
  - ❑ Shrubs separated by a space 5 times the height


UNSAFE
Wood shingle roof, overhanging branches & woodpile by house.
Plants close, overgrown, & dying. Continuous fuel carries fire.
Thick, natural brush too close to home.
Do not remove streamside vegetation or dump litter in streambeds. Contact Fire Dept. or Wildlife Agencies before removing dead streamside vegetation.
SAFER
Fire-safe construction. Lawns more than 30 ft. from chimney. & debris removed near home.
Plants well-maintained. Remove low branches (below 6 ft) on tall trees.
Dead branches and leaves removed.
0
0—30 ft from home or structure. Irrigated landscaping or drought-tolerant, fire-resistant plants (native or non-invasive plants recommended).
30 ft
60 ft
100 ft
30—100 ft from home or structure. Natural plants can remain. Thin brush to cover 50% of ground.



University of California
Agriculture and Natural Resources
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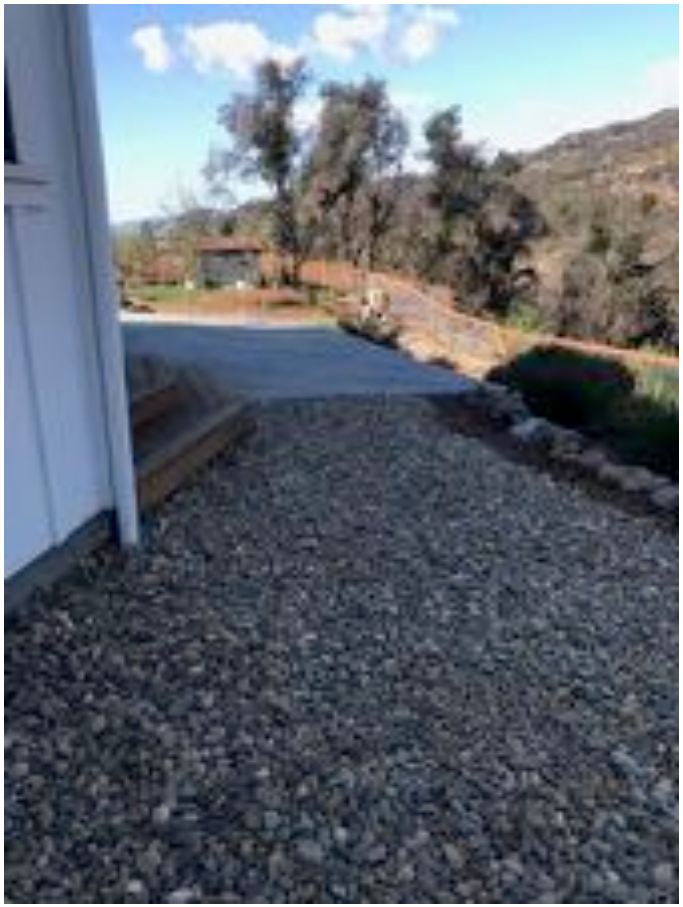
0’ – 5’ Ember Defense Zone

0’ - 5’ Ember Defense Zone

- NO combustible materials in this zone!!!
  - Use non-flammable mulch such as gravel or stone
- Remove or replace any flammable fencing material attached to house



0’ - 5’ Ember Defense Zone

- Remove any dead branches & limb up existing tree limbs – keep limbs 6’ above roof
- Roof litter maintenance is critical!
- Code mandates cutting tree limbs 10’ from stove pipe or chimney outlet

0-5’ Ember Defense Zone Maintenance

- Clean up & dispose of leaves, pine needles, and other plant litter in 0-5’ zone
- Remove debris from roof & gutters
- Climbing vines must be free of dead or dying material in 0-30’ zone OR remove them from any trees or structures

5’ – 30’ Home Defense Zone

LEAN, CLEAN AND GREEN!

5’ – 30’ Home Defense Zone

- Plant in “islands” separated by hardscape
- Low groundcover such as mown native grass, herbaceous perennials & succulents are optimal
- Water plants to maintain health & regularly maintain to remove dead/dry material

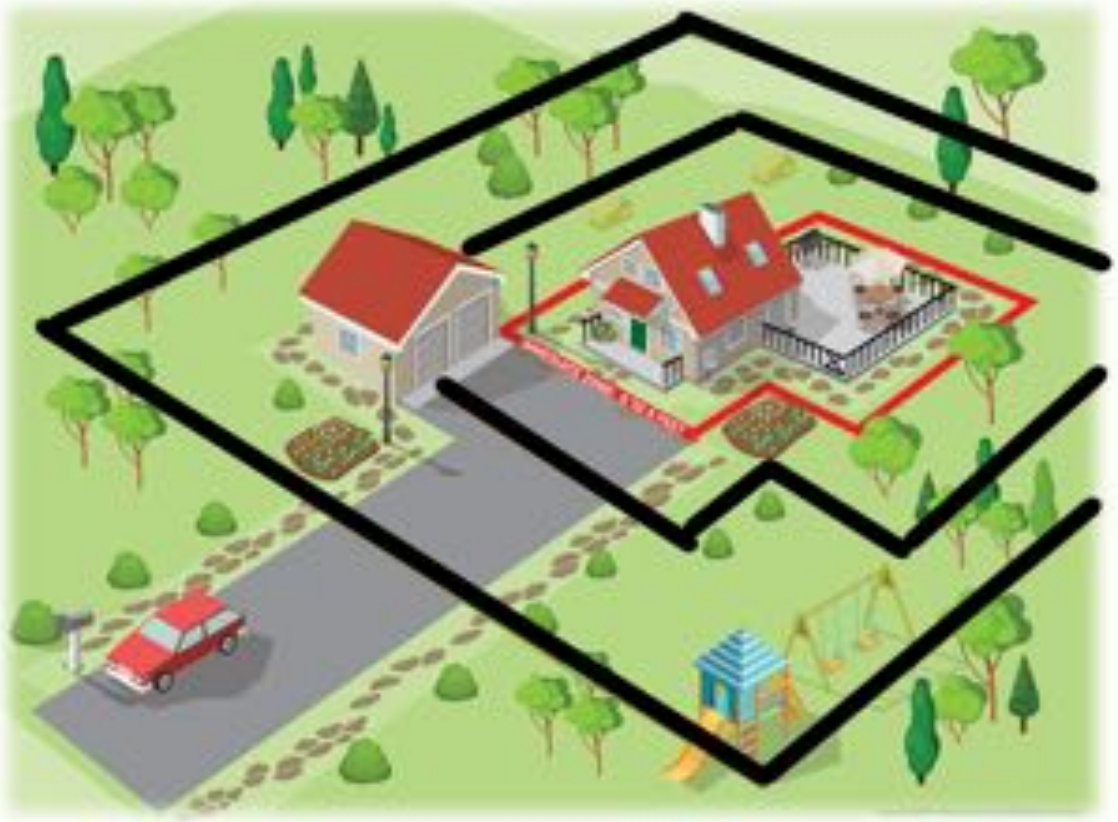
Photo: Washington State University Extension

5’ – 30’ Home Defense Zone

- Good place for hardscape such as a pool, brick patio or paving stones, dry creek bed, boulders, etc.
- Shrubs, trees & small shrub or tree groupings can be used if pruned, properly irrigated & horizontally separated from other plant groupings

Photo courtesy of EBMUD

30’ – 100’ Reduced Fuel Zone



30’ – 100’ Reduced Fuel Zone

- Goal is to slow the fire or interrupt its path – keep flames smaller and low to ground
  - Ladder fuel removal very important in this zone!
- Larger shrubs & trees should be planted in widely spaced groups separated by areas that break up the spread of wildfire.
  - Ensure you have access for maintenance.
  - Separate tree canopies/masses by 10’.

30’ – 100’ Reduced Fuel Zone

4-5’ wide walkways can help separate planting areas & simplify maintenance.

- Optimally gravel, brick, decomposed granite or irrigated native mown grass strip, but wood mulch is OK in this zone.

30’ – 100’ Reduced Fuel Zone

- Good zone for drought-tolerant groundcovers and low shrubs on irrigation.
- Keep grasses or groundcovers low to the ground

30’ – 100’ Reduced Fuel Zone

Remove invasive plants which can spread to neighboring properties!

Photo courtesy UCANR

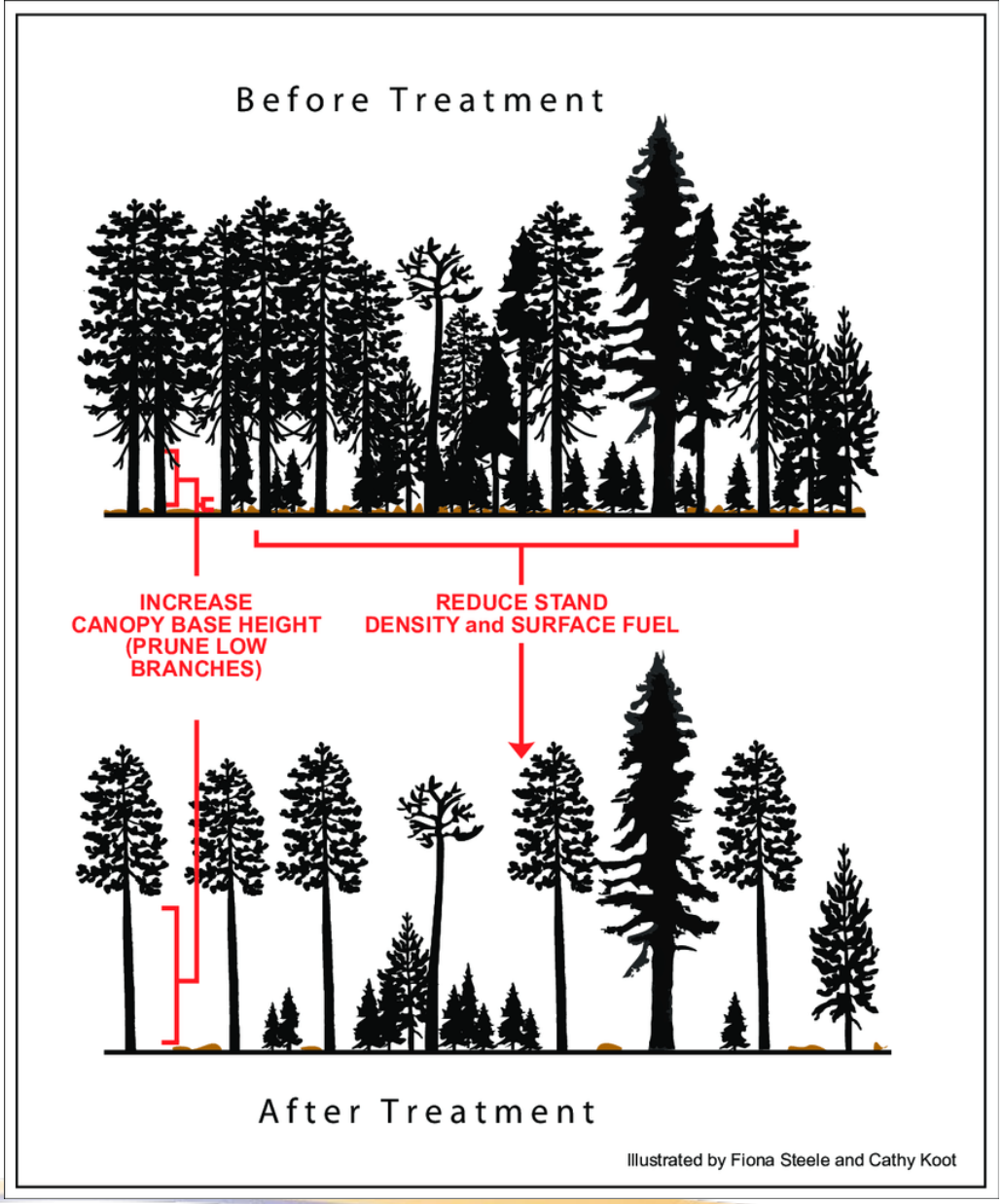
Continuous Tree Canopy

Carefully planned thinning of dense tree cover and the removal of underlying brush so fire does not easily move from ground to tree canopy

- Prune lower branches of trees to a height of 6-15’ from the top of vegetation below, or 1/3 to ½ of the tree height for trees under 30’
- Thin smaller trees
- Remove ladder fuels
- Remove any dead materials such as branches

Shaded Fuel Break Goals

- Controlling fire behavior by reducing ladder fuels
- Opening the canopy
- Treating ground fuels
- Facilitate fire suppression (ground and air attack)


Before Treatment
INCREASE
CANOPY BASE HEIGHT
(PRUNE LOW
BRANCHES)
REDUCE STAND
DENSITY and SURFACE FUEL
After Treatment
Illustrated by Fiona Steele and Cathy Koot

Shaded Fuel Break Ecological Considerations

Forest structures provide important ecological services (wildlife habitat, nutrient cycling, soil & water quality)

- Ensure retention of some standing dead trees (snags) and course woody debris on the forest floor


30'
30' - 100'
100' - 200'
STRUCTURE IGNITION ZONE

30’ – 100’ Reduced Fuel Zone

When necessary, work with neighbors to create 100’ of defensible space

Photo courtesy of MAST
San Bernadino County

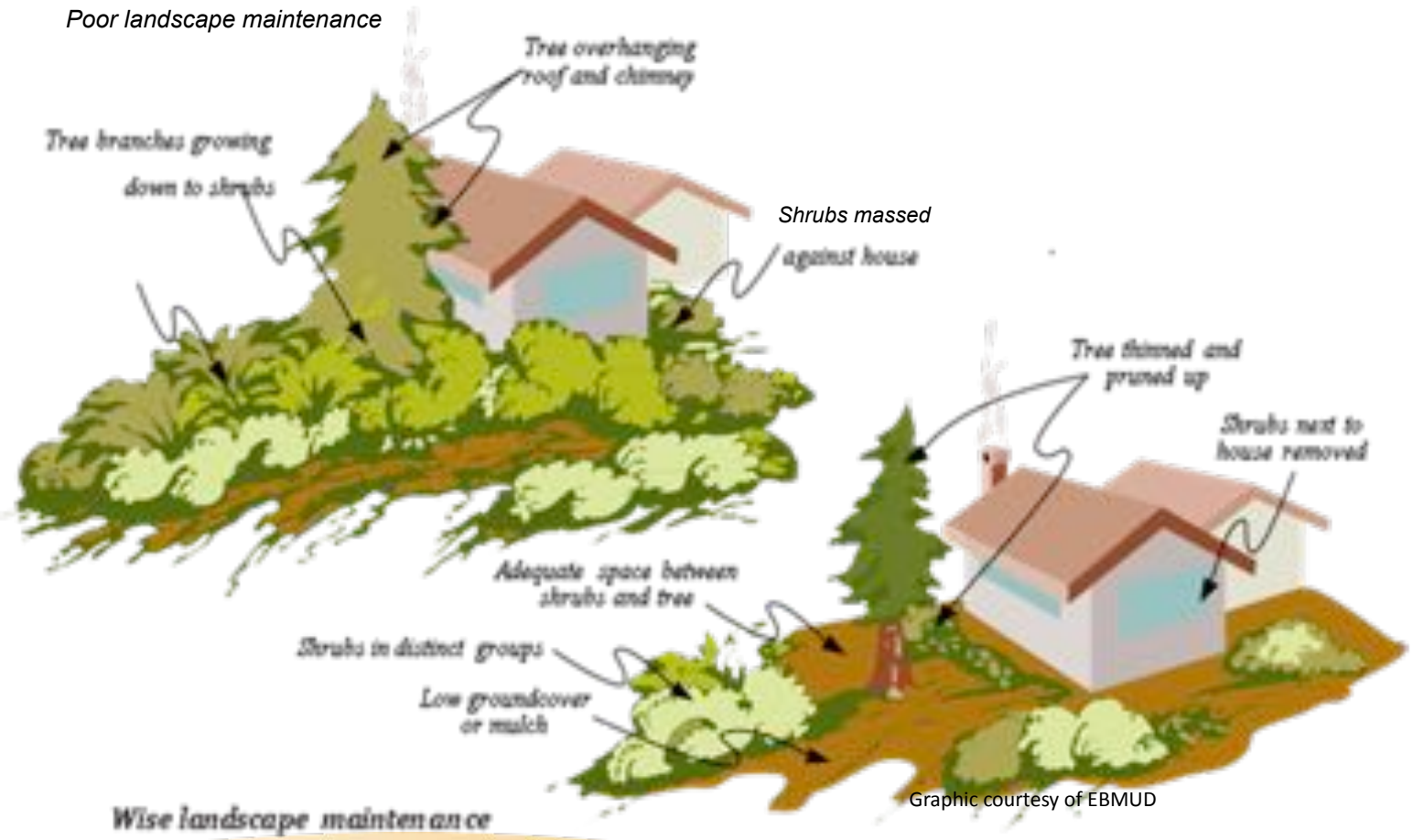
Mulch

- Organic mulch conserves moisture, but also burns
- Compost and large sized composted arbor mulch are the best options
- NO “gorilla hair” or shredded bark mulch -- extremely susceptible to ignition from embers
- NO organic mulch within 0-5’ of house
- Separate mulched areas with non-combustible materials where possible

And much of your success depends on…..

….Maintenance

Landscape Maintenance



Graphic courtesy of EBMUD

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
- Thin overgrown vegetation
- Move woodpiles to 30+ feet from buildings, or cover with fire resistant tarps. Clear surrounding vegetation
- Consider timing of plant removals/cutbacks based on wildlife cycles
- Reuse on-site materials when possible, i.e., keep any chipped wood on site to compost as mulch

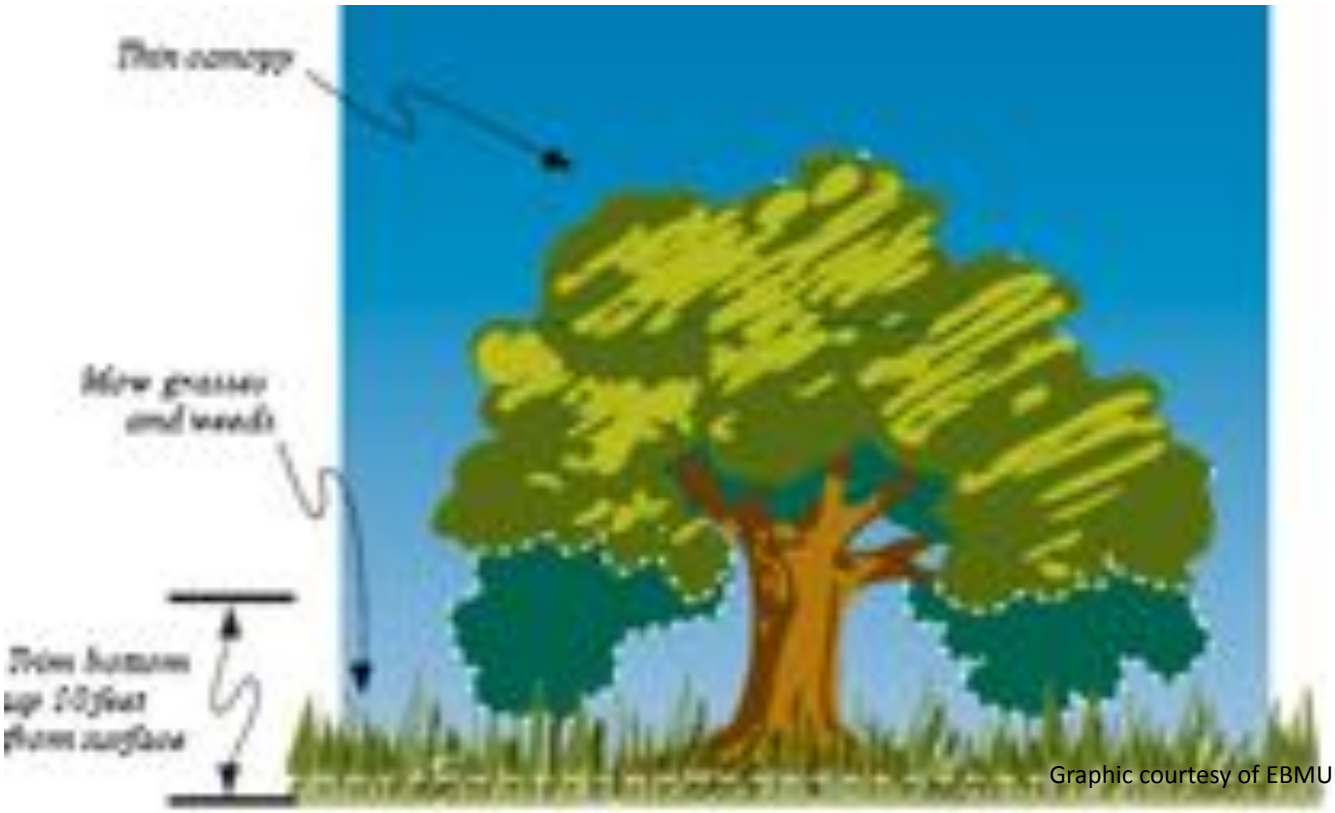
Every few years as needed:

- 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

Graphic courtesy of EBMUD

Maintenance Example

Tree Considerations



Graphic courtesy of EBMUD

Proper maintenance is key to fire resistance.

http://sonomamg.ucanr.edu/Firewise_Landscaping/

UCCE Master Gardener Program

http://sonomamg.ucanr.edu/

Biodiverse, Drought Resistant,
Fire-wise and Beautiful

California Resilient Landscapes - Oak Woodland Unit

AprilOwensDesign.com

habitat corridor project

HabitatCorridorProject.org

Resilient Landscapes

Pollinators and Biodiversity Loss

80% California Native + 20% Favorite Low Water Plants = Biodiversity! (Remainder: annuals and high water use plants in pots or in the Ember Free zone.)

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

Start where you live. Sonoma County has a unique sense of place.

Plant Communities

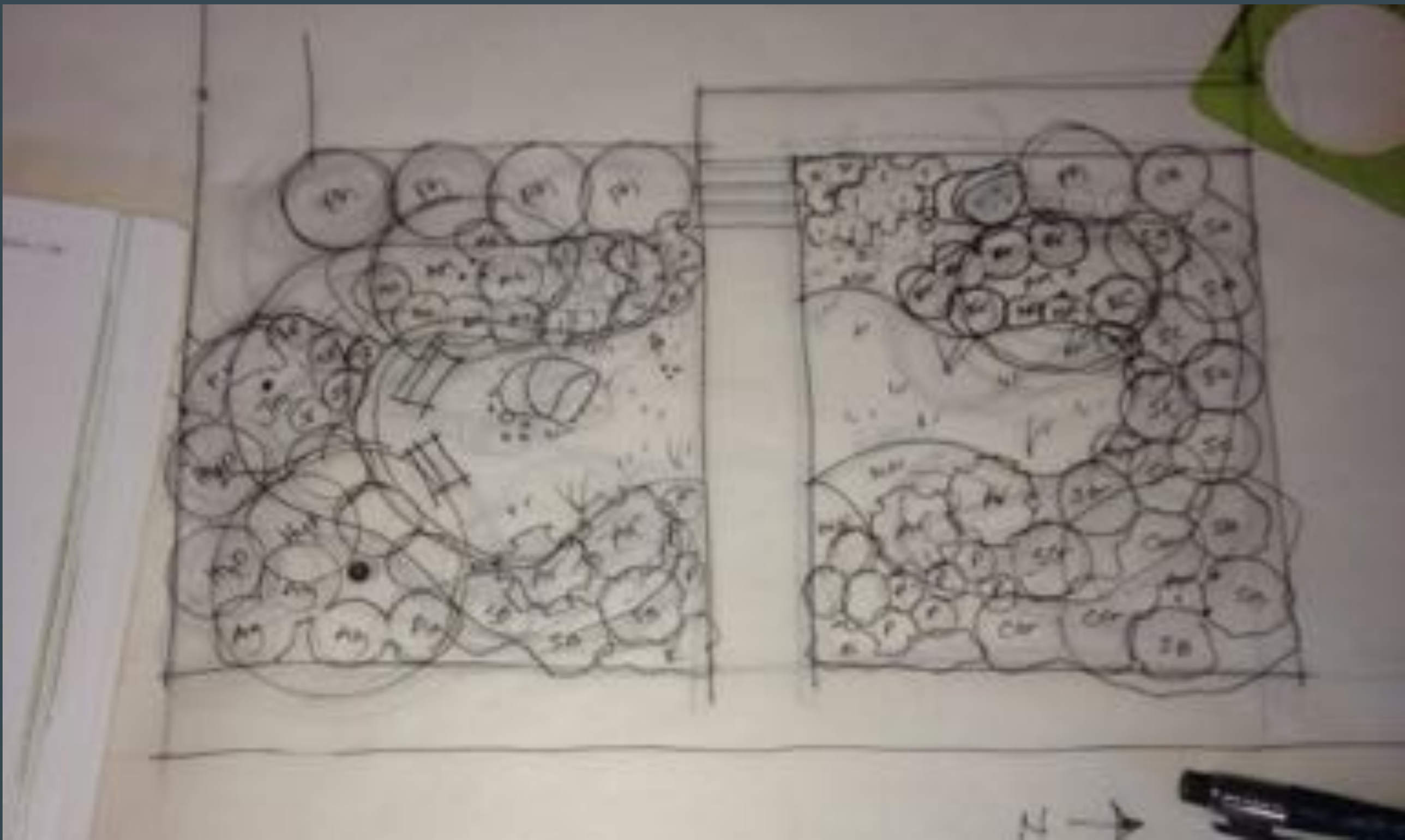
Oak Woodland

Mixed Evergreen Forest

Chaparral

Grasslands

Sustainability



Design 0’-5’

Decorative Rock and Boulders

Permeable Hardscape

Fountains for Bee’s, Birds and Butterflies - Shallow Boulder

Containers

Design 0’-5’

“No-Mow” Fescue and Trinity Pebbles with Steel Edging

Design 0’-5’

Existing Large Old Growth Trees

Energy Savings

Coast Live Oak - Naturally Suppress Crown Fires

Deciduous Trees - Maintenance In Fire Season

Design 5’-30’

Swales and Water Gardens

Create Mounds

Mass Plants Islands With Space Between

Explore Overhead Sprinklers - deep soak more in Fire Season!

Permeable and Re-Used Hardscape

Sawcut Concrete and Reclaimed Fence Boards

Paths as Separation of Islands

Flagstone Pavers and California Fescue

Mass Low Growing Plants

California fuchsia and Gum Plant

Rain Garden
With Native Plants

Dry Creeks / Swale

Design 30’-100’ - Biodiversity Zone

Design 30’-100’ - Shaded Fuel Break

Before and after photos of roadside shaded fuel break along Briceland-Thorn Road. Sept-Oct 2014. Photo: Laura Cochrane, Mattole Restoration Council.

Fuel Breaks have Biodiversity too.

Why use California Native Plants?

Biodiversity and the Food Web

Sustainable

Resilient

Adapted

Beautiful

Flash Discussion - Why use natives in your garden?

1) *Keeps local* ***insect and animal populations thriving***
2) Reduces need for water
3) Bringing in other species potentially spreads exotic diseases
4) Beauty: blooming season matches our climate
Plus using natives gives another ***fun aspect/challenge*** *to gardening as a hobby. It also helps* ***start conversations*** *with neighbors and visitors about why native plants are important/awesome (especially if you have or "native plants live here" sign!) -- so it's an* ***education opportunity***.
-Kerry

Habitat. *The more native gardens the more habitat.*

With the articles lately about bird populations crashing, planting natives is a positive way people can take action

Low maintenance. *It's adapted to our local climate. Also capable of year round*

I love natives for their quiet beauty, the way they fit in and give one a sense of place. Ours is a world class flora has so much richness to offer.

Insects being the ***currency in our ecological bank account,*** *being the basis of the food chain. How native insects depend on native plants. How native birds depend on insects, especially caterpillars to raise their chicks. How plants defend themselves from chewing insects and how long it takes for the insects to evolve to be able to eat foliage. He suggested 70% native plants in the landscape to support native wildlife. Another reason to grow native plants!*

For years it was always about drought tolerance, but there is so much more. The habitat angle gives the gardener a very important reason to at least include some native plants in your garden.

-California Flora Nursery

Tips for Successful Habitat Planting

Many Types of Flowers

Large Groupings - Pollinator Targets

Flowering at Different Times

Plants that Provide Both Nectar and Pollen Sources

Use YOUR area's plant community.

Oak Woodland

Trees: Coast Live Oak, Madrone, Buckeye, Blue Oak, Oregon Oak

Shrubs: Coffeeberry, Toyon, Manzanita

Perennials: California Fescue, Monkeyflower

Buck Brush

Clarkia

Hounds Tongue

Monkey Flower

Leafy Daisy

Sages (Salvia sp)

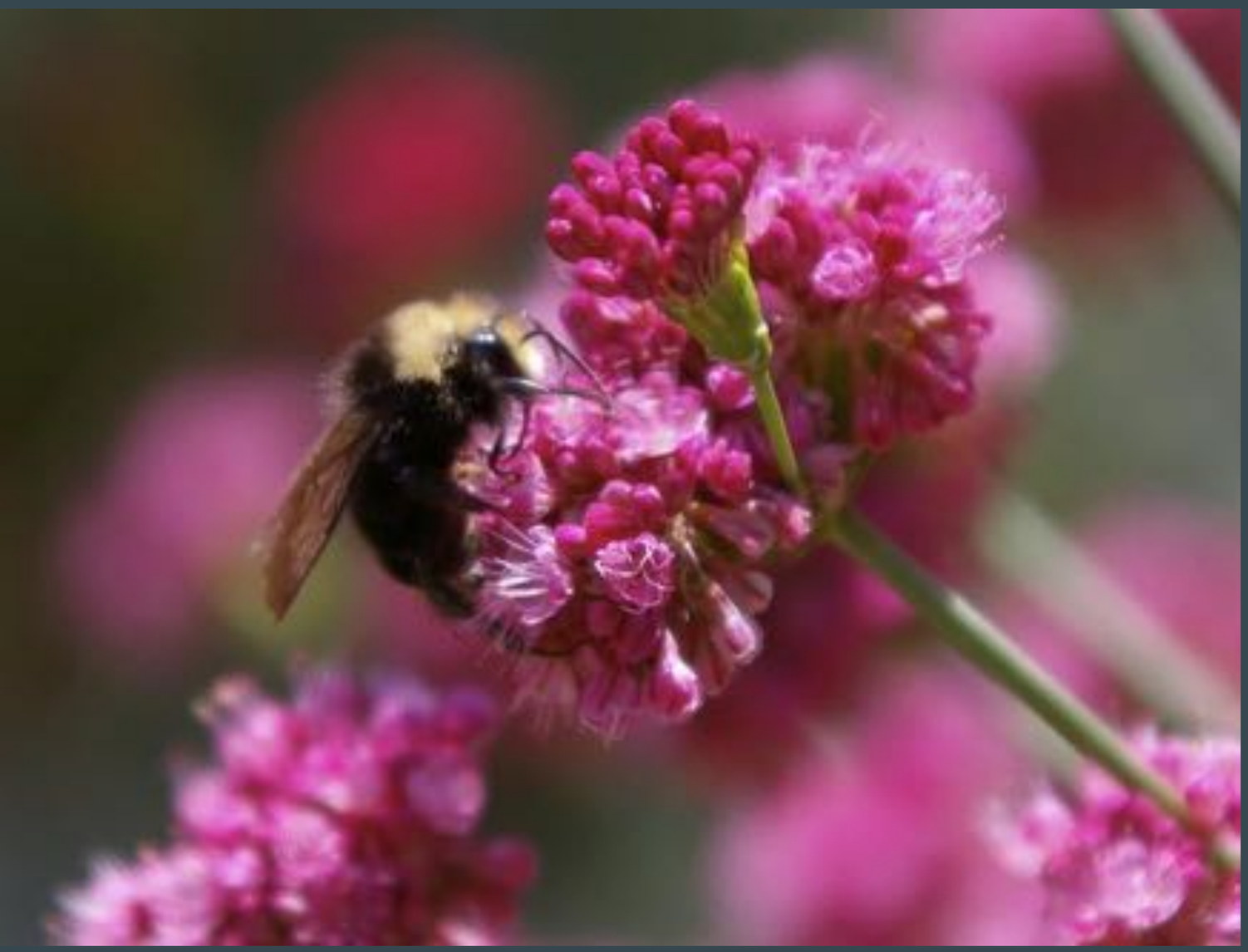
Larger Species May be Shorter Lived with Extra Water

Like to be Cut to Ground Periodically

Great Group of Shrubs and Groundcovers - Full of Habitat

Leave Seed Heads on as Long as Possible

Sonoma Sage (Salvia sonomensis)



Buckwheats (Eriogonum sp)

Big Habitat Value!

Groundcover to Large Shrub

Leave Seed Heads for Fall Color

California Native Shrubs -Coyote Bush (Baccharis Pilularis) with Salvia Sonomensis

California Native Shrubs- Toyon (Heteromeles arbutifolia)

California Native Shrubs - Manzanita (Arctostaphylos sp)

California Native Shrubs -Coffeeberry (Frangula californica)

Biodiversity Islands! Mix Shrubs with low growing - well maintained plants

- Frangula ‘Mound San Bruno’ Coffeeberry
- Salvia clevelandii (any selection)
- Epilobium ‘Wayne’s Silver’ or ‘Calistoga’ ‘Everett’s Choice’
- Arctostaphylos ‘Howard McMinn’
- Baccharis ‘Twin Peaks’ or ‘Pigeon Point’ (careful not to over water these)
- Mimulus aurantiacus or cultivars
- Add a grass (Muhlenbergia, Leymus, Festuca etc…)

Drought, Fire, Native Plants and Irrigation

Well-Hydrated

Irrigation
- Hunter MP Rotators
- Drip

Maintenance

- Please NO Moonscapes - Gardens need some tending
- Oak Leaves
- Mulch
- Habitat Timing
- Erosion Control 4-S for runoff: Slow, Spread, Sink and Store.
- Annual Fire Assessment in August

Maintenance - Invasive PaInts

BEFORE

AFTER

And Back to Why.