

California Native Plant Society

Native Plant Landscaping to Reduce Wildfire Risk

RECOMMENDATIONS FOR LANDSCAPING NEAR SAN DIEGO'S CANYONS AND WILDLANDS

Is it possible to prevent damage to homes near native plant wildlands, that may burn in a brush fire, while sustaining the nearby native plant communities? The San Diego Chapter of the California Native Plant Society ("CNPS") has developed this handout to help property owners effectively address both of these concerns. These wild landscapes, most of which are renewed by fire, provide us benefits that we need: they cleanse our air and keep the soil from blowing or washing away, they support pollinators and birds that play a role in our farms and gardens, and they slow and capture rainfall and thus recharge the water table and reservoirs. The wild landscapes of San Diego County include over a thousand species of native plants and their interdependent hundreds of species of birds, reptiles, mammals, and insects.

By correctly developing a sustainable, low-fuel landscape in the 100 feet around your home, you can provide a defensible space in low-wind wildfires. However, management of the fuel in vegetation is only one part of reducing fire risk on your home site. Of equal or greater importance is the designing or retrofitting the structure of the home to reduce its combustibility and vulnerability to wind-blown embers. This may entail changing or adding materials, installing emergency sprinklers inside or out, and using non-combustible materials in furnishings and garden structures (for more information, see the International Wildland-Urban Interface Code, International Code Council, 2003.) This creates a pre-defended home site, and increases the probability of survival in a high-wind wildfire.

Most of California's native plants are no worse fire risks than other plants from other parts of the world. All plants, even succulents, can generate dead, flammable material ("fuel"); in fact, large patches of old succulents have a thick layer of highly flammable dead matter underneath, which can burn rapidly. Some plants, when desiccated, are reported to ignite more quickly than others. Some examples that have been named are Eucalyptus (Australia), pines (world-wide), rosemary (Italy) and the larger species of California sagebrush. Plants with tiny leaves are considered more easily ignitable, because the leaves more easily dry out. Examples of such species include the native chamise, Australian tea trees, or Peruvian (misnamed "California") pepper trees. Areas with thick, dry leaf litter (as in groves of Avocados or Acacias) are also easily ignitable. In a high-intensity fire, every plant will burn, even lawn and succulents, after being dried out by the heat of the fire.

This handout is intended to complement other documents. For instance, "Living With Wildfire" from the San Diego County Department of Planning and Land Use, is an excellent guide for the homeowner to help reduce fire risk. To augment this and other useful guides, CNPS encourages people to select native plants that fulfill needs for reducing fire risk. Non-native, succulent "iceplant" species are fire-resistant, but their shallow roots do not provide good erosion control, commonly resulting in slope-failure. They, along with about a dozen other non-native plants, easily invade wildland areas, becoming pests that crowd out native plants and eliminating food and habitat for local wildlife. (See CNPS information on Invasive Pest Plants or the California Invasive Plant Council for more information.)

FUEL MANAGEMENT ZONES

You can make the difference between a fast-moving, hot fire versus a slow-moving, cooler fire near your house by creating fuel management zones. A slow moving fire can give firefighters a place and time to stall a fire or stop it completely before it reaches structures.

Think of your property as a series of zones of fire risk, working out from the home. Ideally, each succeeding zone requires less and less effort to sustain. The more actual area you create that needs lots of irrigation and pruning, the higher your cost and time commitment, both initially and over the perpetual life of the landscape. Try to install landscape so the most it requires is annual pruning, weed whipping and weeding. Consider how to balance your capability to develop and support the property when you make plans for how much area to allocate to the Zones. Your goal is to establish a sustainable (that is, affordable yet effective) fuel-management is as follows:

The first zone is the first 30-50¹ feet of site away from the house. This area serves as a defensible space around your home where fire-fighters can mount resistance to a fire in the area. Patios, or other paved or mulched areas, small plants, and ground-covering plants less than six inches high are particularly appropriate in Zone 1. Sun-shades of non-combustible material, non-flammable fencing and furnishings, and well-placed, irrigated, healthy trees without deadwood, are appropriate.

The next zone extends another 50'-75'. Less maintenance is desired here. Frequent or heavy irrigation creates problems: water supports annual weeds (which also means work) and excess growth (more fuel). Too much water can actually kill good, drought-tolerant species, leaving deadwood. Instead, prune shrubs as described below. Some scattered trees are OK, and the rest of the area should be low-growing plants, and/or pebbles or other mulch.

LANDSCAPE PLANNING

Here are five steps for designing your landscape to be able to manage fuel to a low level:

1. **Remove all invasive exotic** species of plants by cutting any perennials to the ground, and controlling all annual invasive plants. For information about how to effectively control these, please see CNPS-San Diego information on invasive plant pests, or the California Invasive Plant Council.
2. **Prune existing shrubs and then thin them:**² Create “umbrellas” from all plants over 18” high as follows: remove from the lower half of each shrub stems that are less than 1/2” in diameter so that small, multi-stemmed umbrellas result. This is also known as “pruning up”. If the shrubs are spaced so as to cover about 50% of the ground, or less, then you are done with this step. If there are more, decide which shrubs should be left to prevent erosion and to shade 50% of the soil. Then

¹ This specific information on zones applies to the City of San Diego, Land Development Code section 142.0412. Other jurisdictions may have different specific requirements, including up to three zones.

² Environmentally Sensitive Land in the City of San Diego: if your parcel contains any protected plant or animal species, is subject to an open-space easement, or has 25% or greater slope, a permit is required before pruning or removing plants. Failure to obtain the required permits will render you in violation of local, state, or federal environmental laws. To find out if your property falls under this constraint, call the Planning and Development Review Department (619-446-5000), or, if the land is City-owned Open Space, call Parks and Recreation, Open Space Division (619 685-1358).

selectively remove enough of all the shrubs (by pruning at ground level – do not disturb the soil!) so that those that are left will continue to shade around 50% of the soil. It actually makes sense to prune them all first and then thin them, because it is very hard to visualize the spacing until all have been converted into umbrellas. Grind the trimmings and spread up to one inch of mulch underneath.

3. **Low plants between shrubs:** Use low-growing, spreading plants or mulch between larger shrub blocks, to prevent erosion and yet reduce fuel. Erosion from completely denuded land can cause huge property damage downstream, for which you can be held liable if the rock, debris, and floodwaters originate on land that you have cleared and left without any vegetation cover.
4. **Bigger leaves are better:** For upright shrubs, select with evergreen, succulent leaves for a large portion of the landscape. Avoid plants with tiny leaves or needles, for the most part.
5. **No small-dimension wooden structures:** If you must have fencing, metal is recommended. Wood fences are the culprits many times for carrying fire from natural areas to homes. If a wood fence is already in place, seal it with fire retardant paint on both sides. Build garden structures such as stairs or sitting areas using masonry, metal, and other Class-A rated, fire-resistant composite rather than wood; or if you must use wood, seal it with fire retardant paint on all sides, or wrap it with stucco or use Class-A-rated siding material such as HardiPlank.
6. **Avoid leaving fire ladders to house:** Do not plant a continuous layer of trees or hedges between the outermost zones and the home. Keep trees away from chimneys and wood trellises or decks. Some trees have been found slower to burn than others: Natives like Oak, Toyon, and Lemonadeberry, or non-invasive non-natives like Citrus or Ficus species are some examples.

MANAGEMENT & MAINTENANCE

By following the above five steps in planning, you can reduce your maintenance to a minimum, but there is no garden without a gardener. For illustrations including pruning techniques, see “Fire Safety and Brush Management Guide” at <http://www.ci.san-diego.ca.us/fireandems/inspections/brush.shtml> or 619-533-4444. Three good maintenance practices that sustain a low-fuel vegetation zone that retards fire movement are:

1. **Annual pruning:** Schedule annual pruning in June (as late as possible to avoid harming nesting birds) to thin out twiggy plants, keep shrubs lifted above ground, remove dead wood, shear off seed heads, and weed-whip annual flowers to six inches. Leave seed for next year’s bloom. Shred cuttings and process as compost to use as mulch next season. If you provide some water to the landscape the cuttings can be used as mulch in-place.
2. **Irrigate as needed for health:** Provide supplemental irrigation during winter & spring if rainfall is below normal, to prevent death of shrubs. Dead wood from drought dieback is a risk in extreme drought. Twice/month, ½” soaks through the normal rainy season November through April is enough for excellent health of most lower elevation San Diego area native plants, so if rainfall fails, give water. Twice or three times monthly irrigation is useful to establish plants but more than that supports weeds and unwanted plants. Portable sprinklers moved around a large area with cat-food cans to measure the amount of water applied is a simple solution. All kinds of irrigation systems, from soaker hoses, drip lines, and permanent spray heads, to a 5-

gallon bucket with a small hole in the bottom can work. Be careful to not over-water.³

3. **Weed:** Learn to recognize and kill invasive, fire-promoting plants with Roundup whenever you see them and especially while they are small (such as Pampas Grass, Giant Reed, Mustard, and Fennel). These species become huge in one season and set so much seed that your work can become overwhelming if they become established.

CALIFORNIA NATIVE PLANTS FOR FIRE-RESISTANT LANDSCAPING CONCERNS ABOUT PRESERVING NATIVE PLANT GENETIC INTEGRITY

California nurseries are growing many native plants, but there are issues with simply buying plants from a nursery. When your home is NOT adjacent to a dedicated natural preserve or a healthy wild native plant community, your choice of plants will be much broader. However, if your home is next to a preserve, CNPS urges you to protect the genetic integrity of those local plants. For example, to preserve the value of our local plant diversity, only locally native species may be planted inside the MSCP⁴ Preserve.

To protect the remaining natural stands from genetic degradation, first encourage natural revegetation by actively managing against weeds and exotics. Some of the original native plant species will undoubtedly self-seed. Select those that fit your landscape needs and prune and thin them as recommended above. To completely revegetate your area, you may need to actively assist revegetation by growing plants from seeds, cuttings, or divisions collected locally. (See our handout on revegetation of iceplant-covered hillsides for more information. Of special importance is to search for low-growing species for the larger areas of the landscape and grow them in large quantities.

At CNPS, we understand that different situations call for different planting needs and programs. Use the following choices to decide which approach fits your needs:

1. If your property is next to wild vegetation that is a natural preserve or is a healthy stand of natives, then we encourage you to actively or passively infill your area with appropriate species from the local plants. You may start your own nursery, collect seeds, cuttings, and root divisions and do it yourself. If you require help, this process is called “contract growing”, and various nurseries are established to provide this service. For information on how to propagate from seeds or cuttings, or for services, contact CNPS for books and contacts to help you learn how to do it or to locate professional help. “Protect Local Species in Your Fuel Management Zone” is the list for you.
2. If the adjacent land is degraded and you simply want to enjoy planting species of plants native to the broad province of California while reducing the fire hazard, you have more readily available options. **Look at “Plants from Nurseries for a Less-Pristine Fire-Resistant Landscape” to add to the local species list options.**
3. If your property is next to a preserve, but you purchased it with bare earth at risk of erosion, it must be protected with plants as soon as possible. You may not have time to plant the permanent array of locally collected plants until the next year, so you need a nurse crop. As this nurse crop

³ Please be aware that the City of San Diego prohibits permanent irrigation in Zone 2 and irrigation runoff into adjacent native vegetation.

⁴ MSCP = Multiple Species Conservation Program

establishes, you can proceed to grow the plants for the permanent landscape. See “Native Nurse-Crop Species That Are Low Fuel.”

LIST 1: PROTECT LOCAL SPECIES IN THE FUEL MANAGEMENT ZONES

A year of time may be needed to grow container plants, and seed collection may not be reliable every year, so this means of landscaping with natives requires commitment of time and resources, as well as planning. Collect starts and seed from your local area.

- These or similar species are found in many San Diego area plant communities. If they are in your local area, they can be contract grown to use for your fire-resistant landscape.
- They are usable because their growth habit is low, or their foliage resists ignition, or they can be pruned easily to reduce fire risk.

Low groundcovers

<i>Artemisia douglasiana</i>	Douglas’ sage
<i>Epilobium</i> (= <i>zauschneria</i> .)	California fuchsia, hummingbird plant
<i>Eriogonum</i> spp., very low	Buckwheat: lot for individuals with a flat growth habit
<i>Solidago californica</i>	California Goldenrod

Succulents

<i>Agave</i> species	Several in different areas of the county
<i>Abronia</i> species	two species of sand Verbena in the county
<i>Opuntia littoralis</i> , <i>O. prolifera</i>	Coastal Prickly-pear, Cholla, and other Cactus species
<i>Dudleya</i> species	e.g., Ladies’ Fingers, Chalk-Lettuce, Live-Forever
<i>Nolina parryi</i>	Parry’s Nolina
<i>Yucca</i> species	Mohave Yucca and Our Lord’s Candle

Wildflowers (a few of the many): should be weed-whipped in June

<i>Clarkia</i> species	Wine Cup, Summer’s Darling, and others
<i>Eschscholzia</i> species	California and other Poppies
<i>Layia</i> , <i>Madia</i> , etc.	Annual daisy-type species
<i>Lupinus</i> species	many kinds of Lupines
<i>Phacelia</i> species	many kinds of blue-bells

Trees or tree-like shrubs that are slow to ignite if pruned correctly

<i>Heteromeles arbutifolia</i>	Toyon
<i>Quercus dumosa</i>	Scrub Oak
<i>Quercus agrifolia</i>	Coast Live Oak
<i>Quercus engelmannii</i>	Engelmann Oak
<i>Rhus integrifolia</i>	Lemonadeberry

Broad-leaf shrubs, group and prune off low twigs to resemble miniature trees

<i>Ceanothus</i> sp.	California Lilac
<i>Isomeris arborea</i>	Bladderpod
<i>Lonicera subspicata</i>	Chaparral Honeysuckle
<i>Malacothamus fasciculatus</i>	Chaparral Mallow
<i>Malosma laurina</i>	Laurel Sumac
<i>Prunus illicifolia</i> ssp. <i>Illicifolia</i>	Hollyleaf Cherry
<i>Rhamnus californica</i>	Coffeeberry
<i>Rhamnus crocea</i>	Redberry
<i>Ribes speciosum</i>	Fuschia-flowered Gooseberry

LIST 2: NURSERIES PLANTS FOR A LESS PRISTINE FIRE RESISTANT LANDSCAPE

In addition to the above species, if you are not concerned about genetic contamination, there are many plants available from retail nurseries. See the CNPS web site for nurseries that may grow these plants. The following plants:

- ...are native to southern California or are horticultural varieties of native southern California plants that will thrive in various areas of San Diego and will provide erosion control and support native wildlife. Be sure that your climate zone is correct for the plants you select (frost, water, heat,) and that exposure (sun, shade) and soil will be appropriate.
- ...are usable because their growth habit is low, or their foliage resists ignition, or they can be pruned easily to reduce fire risk.

Low-fuel Groundcovers

<i>Artemisia pycnocephala</i>	Beach Sand Wort
<i>Eriogonum umbellatum</i>	Sulfur flower
<i>Camissonia chieranthifolia</i>	Beach Evening Primrose
<i>Salvia sonomensis</i>	Creeping Salvia
<i>Sisyrinchium bellum</i>	Blue-eyed Grass (a perennial bulb that spreads)

Low varieties of otherwise more flammable native species

Adenostema fasciculatum (Chamise); for example "Nicolas"
Arctostaphylos species & varieties (Manzanita); for example "Green Carpet"
Artemisia californica (California Sagebrush) low var.; for example "Canyon Grey"
Baccharis pilularis (Coyote Brush) low var.; for example "Twin Peaks" (male-only cultivar)
Ceanothus species and varieties; for example, "Anchor Bay"
Eriogonum fasciculatum (Flat-top Buckwheat) low var.; for example "Dana Point"
Fremontodendron X"Ken Taylor"
Salvia mellifera "Tera Seca"

Native Nurse-Crop Species That Are Low Fuel

The following species can be grown easily from seed to prevent erosion and will not invade or cause problems in either a pristine or a disturbed environment. Your permanent vegetation can be planted during the next cool wet season.

<i>Achillea millefolium</i>	Yarrow
<i>Camissonia</i> species	"Sun-cups", evening primroses
<i>Eschscholzia californica</i>	California Poppy
<i>Lotus scoparius</i>	Deerweed
<i>Plantago insularis</i>	Plantain