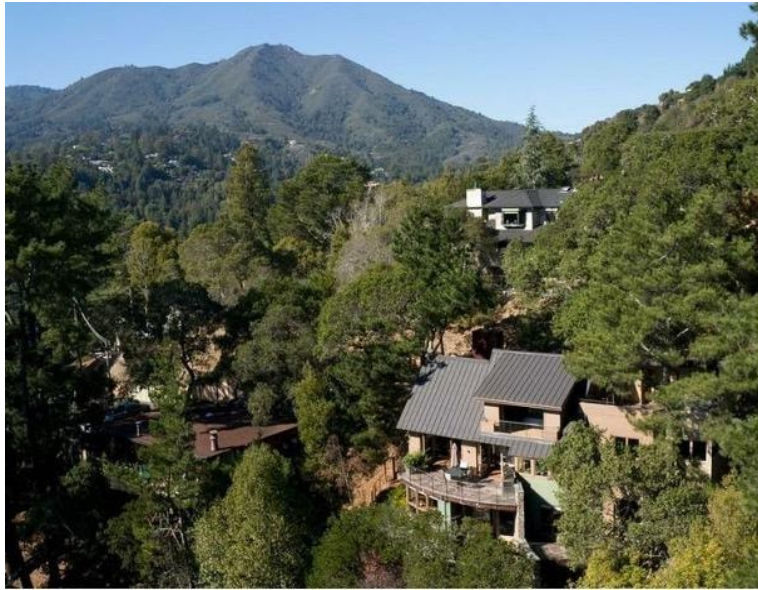


ECOLOGICALLY SOUND PRACTICES FOR VEGETATION MANAGEMENT



Ecologically Sound Practices Partnership

May 30, 2021 Final Draft

Excerpt

Section III: Defensible Space

Ecologically Sound Practices for Defensible Space

May 30, 2021 Final Draft

Defensible Space is needed to reduce the intensity of wildfires as they approach homes or other structures, and reduce the likelihood that vegetation near buildings will ignite from embers. Defensible space creates a safer place for firefighters to operate and for residents to evacuate. Defensible space may also reduce the likelihood that a structural fire will spread to neighboring homes or wildlands.

Defensible space landscapes also can play an important role in combating climate change and maintaining a biodiverse and sustainable environment. Increased public outreach, expanded home and property inspections, and more frequent enforcement of wildfire ordinances offer the opportunity to transform under-managed properties into fire smart, water wise, biodiverse, and climate friendly landscapes throughout Marin. These Ecologically Sound Practices for Defensible Space provide guidance for making landscapes more sustainable and biodiverse by emphasizing maintenance practices and design modifications that reduce fire intensity, remove fire prone plants, and use native and other plants needed for bees, butterflies, birds, and other wildlife to thrive.

The intended audience for these practices is ultimately the individual residents or property owners who are responsible for designing and maintaining defensible space. In addition, these practices are intended to inform and assist the development of educational and training materials by organizations who deliver information to residents and landscape professionals, such as FIREsafe Marin, UCCE Master Gardeners, California Native Plant Society, and fire service home inspectors as well as potential certification programs for fire agency inspectors.

I. Plant choice

Focus on geographically appropriate California native plants and low-water-use plants that thrive in a Mediterranean climate and are easy to maintain.

1. Grow ‘the right plant in the right place’ for microclimate and garden conditions.
2. Choose plants that store water in leaves and stems, do not produce excessive dead, dry, or fine debris, maintain high moisture content with limited watering, require little maintenance, and contribute to the ecological health of the surrounding area.
3. See the [‘how to choose plants’](#) page of the UC Marin Master Gardeners website.
4. See the [‘fire smart landscaping’](#) page of the Marin chapter of the California Native Plant Society for a list of native plants to replace plants considered fire-hazardous by Marin fire authorities. These native plants can serve similar functions in the garden as those

fire-hazardous species.

5. Choose plants that attract pollinators, support songbirds, foster biological pest control, and reduce the need for pesticides.
6. When designing a garden for new plantings, generally space shrubs so they will be 3-5ft apart at maturity. Avoid or reduce situations where shrubs are under tree canopies. Space shrubs and trees for easy maintenance, with increased spacing on slopes. See [CA Public Resources Code 4291](#).
7. Do not introduce invasive plants and remove existing ones.
8. Prune and thin for plant health and vegetative fuel reduction.

II. Maintenance

A. Clean up – Start with the house and work out

Prior to fire season assess your yard and home landscape for flammable materials. See Marin Master Gardeners '[firesmart landscaping maintenance](#).'

1. Remove dead or dry leaves and pine needles from your roof and rain gutters, and within 5ft of structures. Repeat regularly during fire season.
2. Prune branches that overhang any roofs or deck.
3. Remove combustible material on or under decks, overhangs and fences.
4. Do not allow construction materials, recreational equipment, or other debris to accumulate next to structures.
5. Move wood piles at least 30 feet from any structure.
6. Keep propane tanks clear of debris and set 30 feet away from structures.

B. Mulch and Compost

Soil that retains moisture keeps plants greener and less flammable. The higher the soil's carbon content, the more water it can absorb. Add compost and composted mulch where needed to help retain soil moisture, fertility, and carbon and to encourage mycelia and other constituents of the soil biome that support healthy vegetation.

1. Use permeable, noncombustible (inorganic) mulch materials 0-5' around the perimeter of any structure and to create fuel breaks throughout the property. If

planting within the 0-5ft zone, succulent or high water content plants are suitable.

2. Use compost or composted mulch beyond 5 feet, to hold moisture and eliminate weeds, while leaving some bare soil for ground nesting bees.
3. Limit the depth of wood chips or other organic mulch to 3 inches.
4. Separate large composted wood chip areas with paths or non-flammable materials such as gravel, rocks, decomposed granite or stones to break up continuity of flammable materials on the landscape.
5. Where hardscape is required, use permeable materials to allow rainwater to percolate below ground, reducing run-off and erosion.
6. Secure mulch, compost, and biochar (which also helps retain soil moisture) from local suppliers like West Marin Compost and Redwood Landfill.

C. Water Management

Be water-wise. Design landscapes and irrigation systems to work together. Use drip or low-flow overhead spray irrigation where appropriate and adjust the schedule to irrigate deeply and less frequently to keep your plants appropriately hydrated throughout the year.

1. Group and irrigate plants according to their watering needs. Watering more than necessary can encourage quick and excessive plant growth, increasing the fuel load, or cause root rot that results in increased flammability.
2. Maintain irrigation systems to avoid leaks, ensure proper plant hydration, and avoid runoff into streets, walkways, and storm drains.
3. Irrigate as normal on Red Flag Days. Overwatering depletes the water our fire departments need and does not help plants resist embers or heat from fire.
4. Practice rainwater catchment and retain storm water on site.

D. Erosion and Steep Slopes

Slow runoff by maintaining plant cover and using strategically located berms, swales and rain gardens, as well as water-permeable surfaces.

1. Leave in place or restore enough vegetation and roots to maintain a stable slope and prevent erosion. Preferably, use deep-rooted native plants.

2. When vegetation is removed from steep slopes, erosion control measures should be added to reduce runoff, improve infiltration, and recharge groundwater.
3. Include jute geotextile material and erosion catchment wattles that will biodegrade over time. See Marin Master Gardeners '[preventing erosion](#).'

E. Pruning, Thinning, and Mowing

F. Tree and Plant Care

Prune at the right time of the year; fall and winter are best to remove excess growth and dead wood. Avoid pruning in the spring or summer to discourage the spread of disease and prevent excess growth of certain species.

1. Remove tree branches within 6-10 feet of the ground or up to $\frac{1}{3}$ the height of the tree, whichever is less, to mimic the conditions in a healthy forest (see DS.III.A.4 below)
2. Leave the branch collar when making flush cuts to reduce injury to the tree.
3. The space between an understory shrub and the lowest branch of a tree should be 3 times the height of the understory shrub.
4. Remove the portion of a tree that extends within 10 feet of the outlet of a chimney or stovepipe. See [CA Public Resources Code 4291 \(a\)\(2\)](#).
5. Avoid planting trees under power lines to prevent having to remove them later. Pre-existing trees and shrubs under power lines should be pruned to prevent contact with the lines. When planting near power lines, choose fire-resistant species, favoring natives where possible. See [PG&E's 'Right Tree, Right Place' guidelines](#).
6. Trees should only be removed if dead or advised to do so by inspectors because they pose a fire hazard.

G. Climate Change

Climate change is a major factor contributing to increased wildfires in Marin. See the Carbon Management Section of these Ecologically Sound Practices for more ways to reduce it.

1. As temperatures increase, keep plants hydrated during heat events, and frequently monitor. Thriving plants are more resistant to embers and radiant heat from wildfire.
2. Choose electric or battery powered gardening tools over gas powered.
3. A primary goal of all fuel treatments, including the maintenance of defensible space, is to reduce fire intensity and encourage healthy plants. Such treatments generally release

less carbon, restore vital soil nutrients, and encourage healthy forests and new growth that maximizes long-term carbon sequestration.

4. Consider household energy efficiency improvements and other steps to reduce the greenhouse gas emissions that are driving climate change and intensifying wildfires. For comprehensive climate mitigation and adaptation actions, see [Resilient Neighborhoods](#).

H. Home Hardening

Hardening the home to resist ignition is important since buildings are often more vulnerable than surrounding vegetation. Strategies include installing ignition resistant roofing, retrofitting ember resistant screens over vents, enclosing eaves, closing in the open space under decks, separating wooden fences and gates from the house, and installing ignition resistant siding. See Firesafe Marin '[harden your home](#)'.

III. Wildlife habitat

Coordinate with neighboring Firewise USA sites to create fire-resilient wildlife habitat corridors; provide drinking water and plants suitable for wildlife diets; limit the use of pesticides, herbicides, and chemical fertilizers; and reduce the likelihood of habitat destruction from high intensity wildfires. Our landscapes are shared with a host of other living creatures. Each decision we make also affects them.

A. Structural habitat

A well maintained defensible space can create or enhance structural habitat for wildlife use, often including an open understory canopy ideal for foraging bats, raptors, and owls.

1. Leave Dusky-footed wood rat nests intact. Dusky-footed wood rats are an important food source for raptors. Multiple generations use these 'pile of sticks' homes.
2. Install bat, owl, and bird nest boxes 10-15ft above ground and away from buildings. Boxes require annual cleaning.
3. Space plants for wildlife shelter; clear dead leaf litter under shrubs less than 5ft high.
4. Dead branches, limbs close to the ground, and logs serve as wildlife habitat. Small areas of such material may be left in place beyond the 30ft zone around structures.

B. Food/ Forage

Encourage plants that serve as perennial food sources for pollinators, insects and small mammals. The most suitable food sources are native plants with which wildlife has co-evolved. See [Marin Master Gardeners plant lists](#).

1. Plant native nectar plants for pollinators and native trees and shrubs that produce berries for songbirds and mammals. Remove invasive vines that reduce nesting habitat for songbirds.
2. If one cannot plant natives, best practice is to plant non-invasive Mediterranean drought-tolerant plants that are not designated fire-hazardous.

C. Sources of Water

Provide summer water sources for butterflies, birds and mammals.

1. Encourage the use of non-chlorinated ponds and birdbaths.
2. Keep swimming pools and water troughs covered when not in use or build wildlife escape ramps.

D. Bare Ground

Bare ground is beneficial for ground nesting insects and sun basking for reptiles such as lizards and snakes.

1. Maintain ample areas of bare ground within the zone 0-5ft from the house and integrate strategically throughout the landscape.

E. Decomposers

Slow, spread, and sink rainwater to support nematodes, fungal network, and nutrient cycling.

1. Wet months in Mediterranean climates are the most valuable time for rainfall to slowly move through soil profile. This allows decomposers to cycle nutrients, and for mycorrhizae and nematodes to build up soil.
2. Outside the 0-5ft zone, leave dead leaves on the ground in the winter to encourage decomposers.
3. Use composted mulch where feasible in the 5ft- 30ft zone, to a depth of about 3 inches, to keep roots moist in the summer months, as well as provide habitat for soil organisms and other wildlife.
4. Beyond the 30ft zone, leaf material and dead branches are encouraged to a maximum depth of 3" to reduce evapotranspiration and enhance habitat in the top soil horizon.

F. Bird Nesting Season

Marin County is part of a migratory bird flyway, and many birds nest here. Reduce impacts to bird nesting and foraging.

1. Inspect for the presence of nesting birds prior to performing vegetation work, and when possible, perform work outside of bird nesting season.
2. When cutting grass in the spring and summer months (as required to reduce flammable fine fuels) inspect the area first for ground nesting birds, reptiles, and mammals.
3. Remove dead branches and prune trees adjacent to structures in the winter whenever possible. Winter work is less likely to disturb nests and reduces the maintenance required during fire season.

IV. General Resources:

1. [Ecologically Sound Practices Partnership \(ESP\)](#)
2. [University of California Marin Master Gardeners \(MMG\)](#)
3. [University of California Integrated Pest Management \(UCIPM\)](#)
4. [FIRESafe Marin \(FSM\)](#)
5. [California Native Plant Society & CalScape \(CNPS\)](#)
6. [Marin Municipal Water District \(MMWD\) Watershed Approach to Landscaping](#)
7. [Marin Audubon Society](#)
8. [University of California Climate Wise Gardening](#)
9. [University of California Tree Care and Management](#)
10. [PG&E planting considerations](#)
11. [CalPoly SelecTree](#)
12. [California Invasive Plant Council \(CalIPC\)](#)
13. [Ecological Artisans](#) Effective Erosion Control: Straw Wattle

V. Wildlife Resources:

1. [International Bat Conservation Biologist](#) – Bethany Shultz
2. [Xerces Society List of habitat guide for pollinators](#) –
3. [Bruns Lab- Point Reyes Vision Fire- study](#)- UC Berkeley lab that study mycological community. [Reference to be confirmed.]
4. SF Mycological group - grow mushrooms in your garden - Ken Lenshfield
5. [Marin Native Plant Society - Replacement plant list](#)
6. [Habitat Structure in Montane Forests](#) –US Forest Service

7. Point Reyes National Seashore Wildlife and Bird Biologist – Dave Press
8. Water Wise - Greg Ruben - micro sprinklers (drip saturates the drip zone). Landscaper in S. California
9. [Marin Municipal Water District – Watershed Approach to Landscaping](#)
10. [Marin Beekeepers](#) – Bonnie Morse

Cut out dead, dried, and diseased wood to increase space between plant groupings and tree branches while being sensitive to nesting birds, wood rats or other wildlife habitats.

1. Monitor plant height and prune lower vegetation to reduce the risk of fire spreading into tree canopies.
2. Regularly prune woody, twiggy or overgrown shrubs to remove accumulated dry material and remove dead wood.
3. Cut back vines and groundcovers to remove build-up of dry stems and dead leaves.
4. Prune lower tree limbs away from understory vegetation that would allow fire to move from the ground to the upper portion of the tree. Remove climbing vines from trees.
5. Gently thin tree canopies to remove deadwood and twiggy growth and maintain separation between trees. Avoid topping trees.
6. Mow annual grasses and weeds to about 4-6 inches tall. Mow before 10 am and not on hot or windy days.
7. Prior to mowing, inspect for invertebrates or other wildlife.
8. Use hand pulling or string trimmers (vs. lawnmowers) for clearing weeds, grasses, or other fine vegetation.