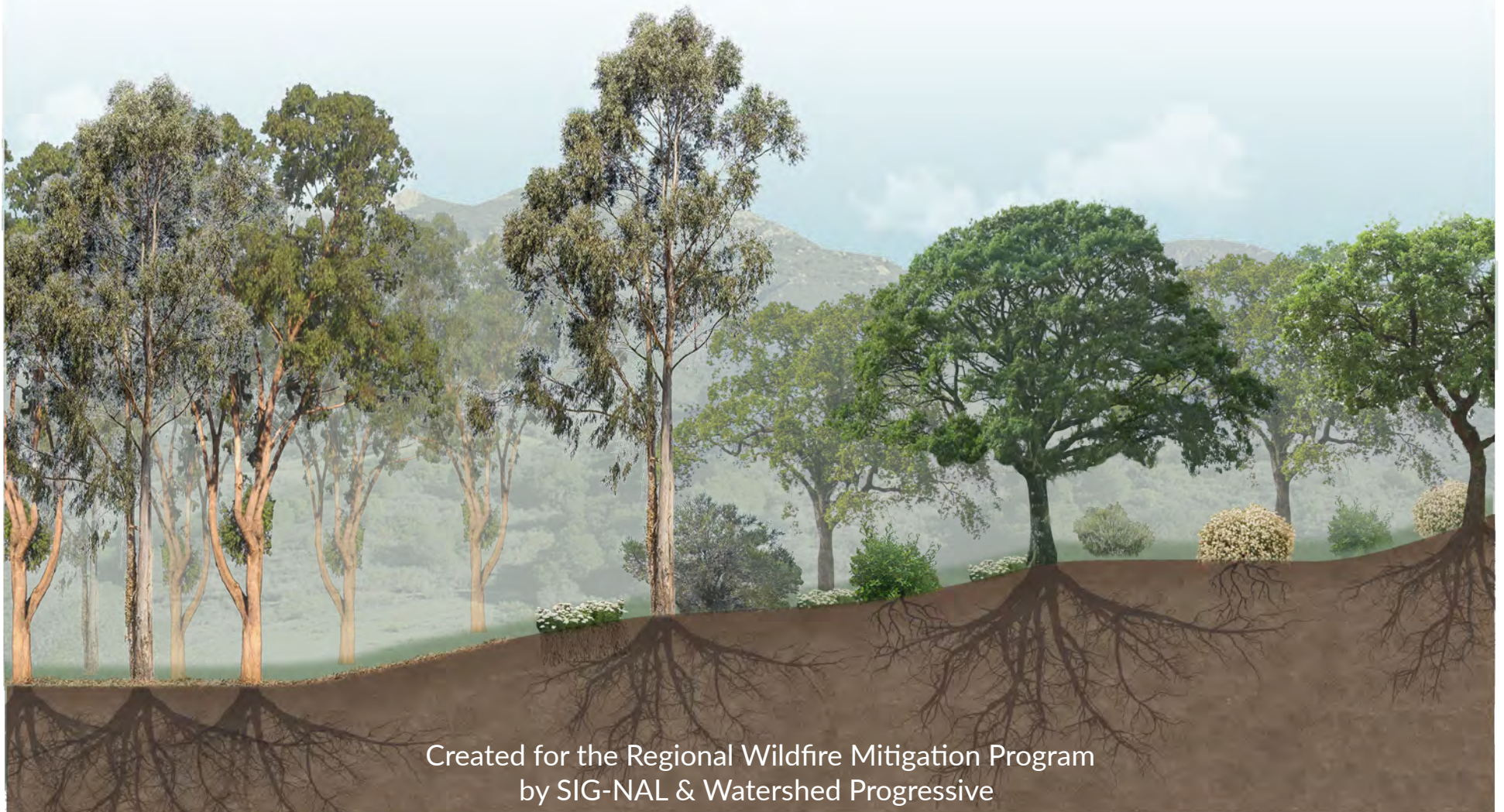




Design Templates for Wildfire Mitigation & Landscape Resilience

Vegetation Management Strategies for the Wildland Urban Interface in Coastal Central & Southern California

Post Eucalyptus Native Woodland Restoration



Created for the Regional Wildfire Mitigation Program
by SIG-NAL & Watershed Progressive



Post Eucalyptus Restoration

Post Eucalyptus Native Woodland Restoration



Eucalyptus Fire Hazards

In California, Blue Gum Eucalyptus (*Eucalyptus globulus*) and other species, are a high wildfire hazard. Eucalyptus trees are non-native to California, and invasive in coastal locations because of their ability to grow, spread rapidly, and ignite more easily than trees native to chaparral habitat.

Eucalyptus stands are more susceptible to fire during the dry season. They accumulate more fuel than native trees through dropped limbs, bark and leaves. Eucalyptus leaf litter is especially flammable (1). Blue Gum trees tend to propagate fire through open crowns, and can increase the rate of fire spread to adjacent areas.

Maintenance of Eucalyptus trees in dense stands requires keeping lower branches of the trees trimmed (see diagram). Ultimately, full removal of dense Eucalyptus stands from chaparral habitat allows native vegetation to be reestablished.



DIAGRAM: Maintaining Eucalyptus Trees to Reduce Fire Hazard

Restoring Native Woodland

Eucalyptus trees negatively impact the hydrology of a region by extracting water from the soil with far-reaching root systems, often overtaking water resources from other plants in the ecosystem and impacting groundwater levels that feed local streams and creeks. Blue Gum Eucalyptus trees produce allelochemicals, natural substances that suppress the growth of surrounding plants. Changes to soil characteristics inhibit understory growth, which increases erosion and impacts soil health.

Restoring native woodland habitat repairs and re-hydrates soils, keeping the ground cool and moist. Allelochemicals may persist in the soil post Eucalyptus-removal (2). Compost and wood chip mulch from non-Eucalyptus sources offer soil protection and aid in restoring soil biology during native woodland restoration.

Plants in the Plant Palette on the following page were selected for their abilities to fix nitrogen post-Eucalyptus removal, and restore soil health. (Azomite is a naturally derived soil amendment that re-mineralizes soils.*)

ADDITIONAL CONSIDERATIONS

Eucalyptus stand removal requires preparation, tree assessments, and is site-specific. Experts in this field should be consulted for further information.

Protecting Monarch Habitat

Dense Eucalyptus groves threaten natural ecosystems and biodiversity because they displace native plants upon which biota rely (3).

However, Eucalyptus trees do provide critical habitat for migratory Monarch butterflies and various bird species. Every fall, monarchs migrate to overwintering sites in California. Monarchs seek out microclimates with stable temperatures, and need adequate dappled sunlight, shade, and protection from wind (4).

At sites where Eucalyptus do provide ecosystem services, such as monarch overwintering habitat, it is essential to phase their removal according to growth timelines for newly planted natives intended to replace the woodland overstory.

Plan to plant new replacement oaks and other native tree 10-15 years before complete removal of Eucalyptus trees so that new trees can reach adequate height for monarch habitat (5).



PHOTO (nps.gov) Monarch Butterfly. Studies have shown that monarchs do not prefer Eucalyptus trees over Oak trees, and will happily migrate to native oaks under the right conditions of temperature, sunlight, and wind protection.

Post Eucalyptus Restoration

Post Eucalyptus Native Woodland Restoration



ILLUSTRATION: Phased Post-Eucalyptus Native Oak Woodland Restoration
Removing Eucalyptus trees eliminates highly combustible material from the environment. Post Eucalyptus Native Woodland Restoration repairs vulnerable Coastal Oak Woodland habitat.



Post Eucalyptus Restoration

Plant Palette

TREES







Quercus agrifolia
Coast Live Oak

SHRUBS







Frangula californica
California Coffeeberry

SHRUBS







Heteromeles arbutifolia
Toyon

SHRUBS











Sambucus mexicana
Blue Elderberry




GRASSES




Elymus condensatus "Canyon Prince"
Giant Wild Rye




Prunus ilicifolia
Hollyleaf Cherry










Eriogonum fasciculatum
California Buckwheat




Rhus integrifolia
Lemonade Berry














Rosa californica
California Wild Rose











Muhlenbergia rigens
Deergrass











Aesculus californica
California Buckeye



Keckiella cordifolia
Climbing Penstemon



Ribes indecorum
White Flowering Currant












Cercocarpus betuloides
Mountain Mahogany

SOIL DRAINAGE

-  slow
-  adaptable
-  fast




SUN/SHADE

-  full sun
-  partial sun / shade
-  full shade

WATER USAGE

-  low
-  moderate
-  high

OTHER CONSIDERATIONS

-  erosion control
-  pollinator
-  fire resistant with maintenance



Post Eucalyptus Restoration

Construction Details and Additional Resources



Works Cited - Post Eucalyptus Native Woodland Restoration

1. National Park Service U.S. Department of the Interior. (n.d.). Golden Gate National Recreation Area Point Reyes National Seashore ... https://www.nps.gov/pore/learn/management/upload/firemanagement_fireeducation_newsletter_eucalyptus.pdf
2. Watson, K. (n.d.). The effect of eucalyptus and oak leaf extracts on California native ... <https://nature.berkeley.edu/classes/es196/projects/2000final/watson.pdf>
3. Ipcw plant report – California Invasive Plant Council. (n.d.). Retrieved June 21, 2023, from <https://www.cal-ipc.org/resources/library/publications/ipcw/report48/>
4. Xerces Society for Invertebrate Conservation. (2017). Protecting California's Butterfly Groves - Xerces Society. Xerces Society for Invertebrate Conservation. https://xerces.org/sites/default/files/2018-05/17_040_01_ProtectingCaliforniaButterflyGroves.pdf
5. Griffiths, J., & Villablanca, F. (2013). Management of Monarch butterfly (*Danaus plexippus*) overwintering habitat: recommendations based on patterns of tree use. <https://www.xerces.org/sites/default/files/publications/13-063.pdf>