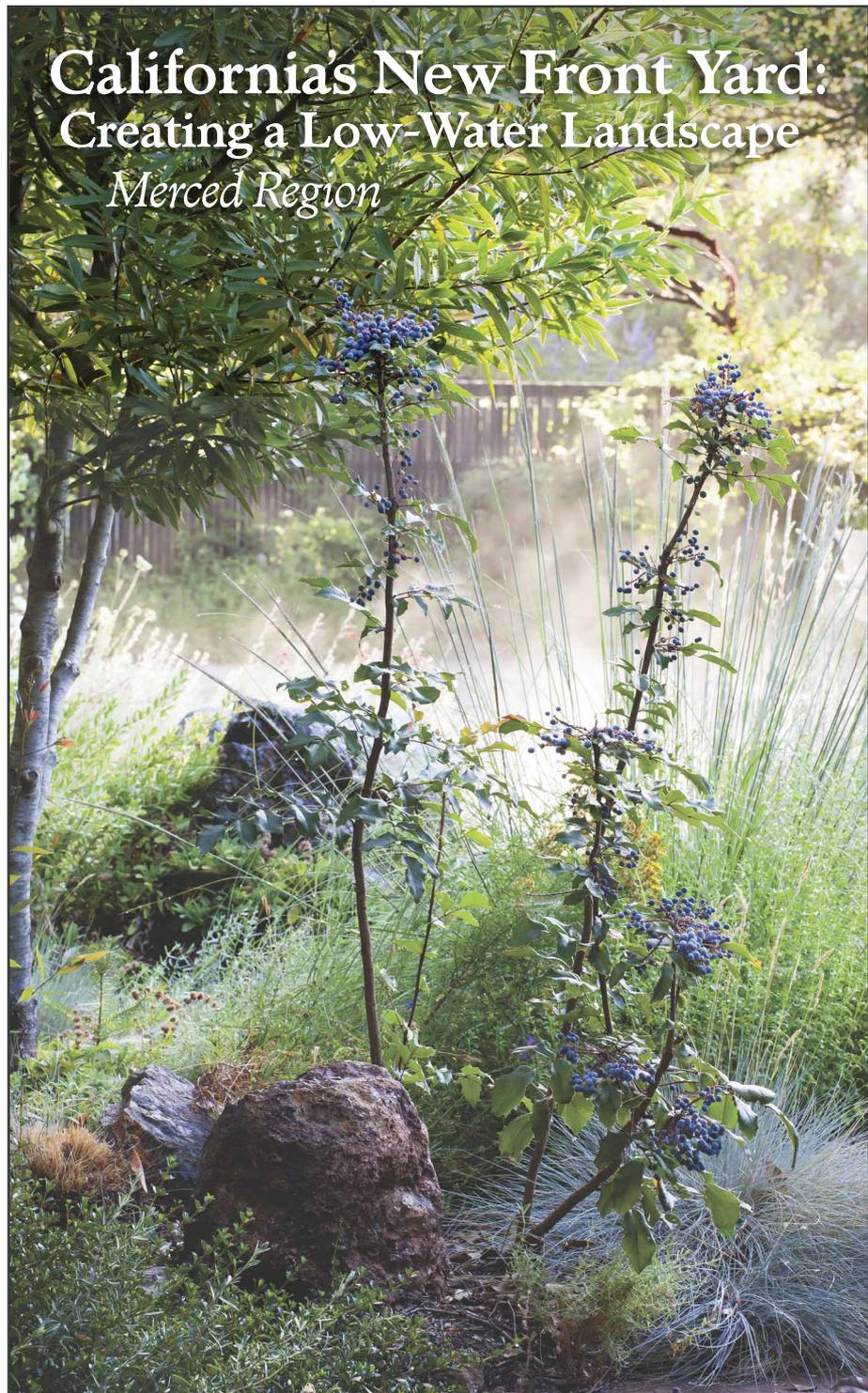


California's New Front Yard: Creating a Low-Water Landscape

Merced Region





Merced is located at the southern end of California's Central Valley and is a spectacular place to live and work. The Mediterranean climate includes winters that are cool, green, and rainy. Summers are warm and dry and full of sunshine.

With lower precipitation in recent years, we now realize the limits to our fresh water. Reducing water use in our landscapes is a principal way to combat water shortages. Does this mean that our yards and outdoor public spaces will be dead and brown? Certainly not! This booklet can help you find and achieve a number of satisfying landscape alternatives.

Replacing lawns and other high-water use landscapes with native and drought-tolerant plants is a design approach that can produce both strikingly beautiful and ecologically beneficial results. Naturally adapted to long, dry summers and cool, wet winters, these plants include a range of colorful grasses, flowering plants, shrubs, and trees that are native to California and the world's Mediterranean regions. Many of these plants need only manual or drip ("micro") irrigation because of their low-water requirements, resulting in a substantial water savings compared to what is required by the traditional lawn.

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Landscape Alternatives

Homeowners and landscape managers have a range of landscape choices when considering a reduced lawn or no lawn at all. Several of these styles have been recently described and illustrated in *Reimagining the California Lawn: Water-conserving Plants, Practices, and Designs* (Bornstein et al. 2011):

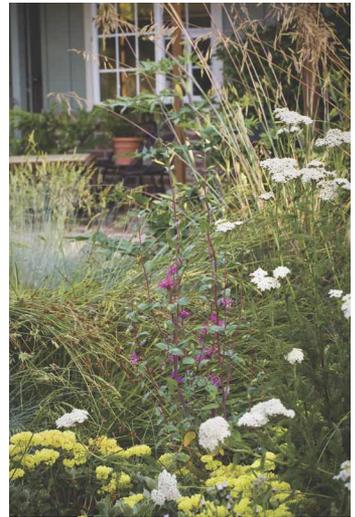
- A *greensward* is a sweep of grasses or sedges that serves as a garden path or opening that can be walked upon.
- A *meadow* is an area of informally mixed grasses, sedges, rushes, and forbs.
- A *Mediterranean chaparral* garden offers colorful, low-water perennials, shrubs, and trees that are native to regions around the world with a Mediterranean climate.
- A *rock garden* celebrates California's geology by arranging rocks with plants tucked in amongst them.
- A *succulent garden* draws upon the striking colors and diverse forms of succulent plants.
- A *carpet and tapestry garden* uses single sweeps and mixed combinations of low-profile plants.
- A *kitchen garden* of herbs, vegetables, and fruits, can be designed to have year-round visual appeal.

Native California Grasses and Forbs for the Low-Water Landscape

Most California native grasses are ideal in the low-water landscape as they evolved to survive long periods with no moisture by tapping the deep moisture in the soil. Native grasses are low-maintenance and can fit in many garden designs, thanks to these attributes:

- They can be left unmowed for long periods, or can be kept short for a lawn look.
- Their inflorescences (or seed stalks) can be left to catch the light of the setting sun and wave in the wind, or can be trimmed for a more tailored look.
- They naturally turn a straw or gold color as they go dormant, but can maintain some green foliage depending on the species.
- There are many different species and varieties, which can be used separately or together to create different effects.

Natural California native grasslands also include forbs, which are herbaceous flowering plants. California native forbs are ideal for the low-water landscape as they exhibit great variation in size, shape, color, bloom period, life cycle, and maintenance requirements. They have the added benefit of attracting and supporting native pollinators and beneficial insects.



Design, Installation, and Maintenance of a Low-Water Landscape

1. Site Inventory, Design, and Planning

Converting to a low-water landscape requires careful planning and design to achieve the functional, aesthetic, and maintenance goals you desire in both the short- and long-term.

- Evaluate your site, and note such factors as drainage patterns, soil types, slopes, areas of sun and shade, building locations, and adjacent land uses. Use this information to inform the layout of your space and the selection of plants and hardscape elements.
- Sketch a landscape concept plan with the types of spaces you want, noting their functions, and the areas of access and circulation.
- Before identifying planting locations, determine locations of hardscape features, such as paths, patios, and decks. Hardscape areas require no water to maintain, and selecting permeable materials such as porous pavers and gravel will allow rainwater to infiltrate the ground.
- Consider which of these you want in your landscape: greensward, meadow, habitat garden, kitchen garden, rock garden, succulent garden, play space, seating area, or rain garden.
- Consider the aesthetic and style you desire. For example, do you want a formal vs. informal appearance or a modern vs. naturalistic style.
- Consider maintenance requirements for your landscape, including how much watering, pruning, trimming, raking, and weeding will be required long-term.



2. Plant Selection

Select your plant palette by considering these ideas:

- Optimal low-water plants are typically those that are native to your region and that naturally grow in the conditions of your space.
- Low-water plants also include those that are not native but are adapted to a Mediterranean climate.
- Avoid plants that are considered invasive weeds. These species can be found on the California Invasive Plant Council website (www.cal-ipc.org) and the Plant Right website (www.plantright.org).
- Keep in mind that plants differ in the following ways: their appearance in different seasons, their maintenance requirements, and whether they attract wildlife and pollinators, such as hummingbirds, butterflies, and bees.

Locate your plants in the landscape after considering these steps:

- Identify the placement of trees and shrubs first, since they will be the largest plant material and will provide the overarching structure.
- Anticipate how large the trees and shrubs will grow, and make sure to allow enough room for the plants to grow into maturity.
- Select grass and forb species for a greensward, meadow, or other low-water garden by considering these factors:



Sun or shade? Select plants suited for the levels of sun and shade in your landscape.

Annual or perennial? Consider the life cycles of your plants. Annual plants are more suitable for seasonal colorful accents, and perennials are more suitable for the long-term foundation of your garden and landscape.

Warm-season or cool-season? Warm-season grasses actively grow in warmer months and can go dormant in cooler months, and cool-season grasses actively grow in cooler months and can go dormant in warmer months. Many California native bunchgrasses are cool-season grasses.

Spreading (rhizomatous) grass or bunchgrass? Spreading grasses, sedges and forbs creep laterally as their rhizomes, or underground stems, send out new roots and shoots. These grasses are good candidates for greenswards and swales. Bunchgrasses grow in clumps, rather than spreading or forming a mat, and are commonly used in meadow gardens and as ornamentals.

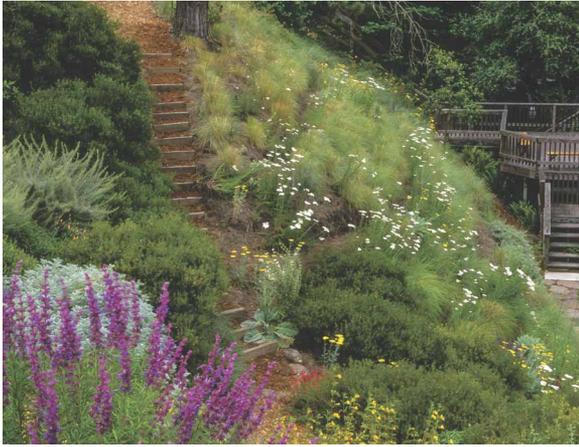
3. Lawn Removal Methods

The types of grasses and weeds in your lawn can help determine the best lawn removal method (Bornstein et al. 2011), as well as the amount of time you allow for this task. Before choosing a method, you should research the species you wish to remove. Some hardier species, like bermuda grass, require more aggressive methods and will return if not removed properly. Some of the most popular lawn removal methods include the following:

- **Sheet Mulching:** Sheet mulching involves smothering your lawn with organic material, such as cardboard, compost, mulch, or a combination of these. The organic layers suppress weed growth and enrich the soil as they break down.
- **Mechanical Removal:** Remove lawn areas mechanically with a sod cutter, rototiller, or tractor with a tiller attachment. This option works quickly but may not be effective for areas with heavy weed infestations, since the weed seeds remain in the soil.
- **Solarization:** Solarization involves trapping the heat of the sun under a layer of clear plastic sheeting. This method kills nearly everything in the upper few inches of the soil. Solarization is effective in hot areas of California but not as effective in cooler, coastal climates.
- **Herbicides are sometimes needed for problem weeds:** You may choose to apply herbicide to plants like bermuda grass and kikuyu grass, which have persistent underground stems (rhizomes). The lowest toxicity herbicide should be used according to the label instructions.

Not interested in eliminating your lawn? Then consider keeping lawn in areas that have specific functions, such as recreation, seating, and picnicking. The best areas for lawn removal are those that occur in small strips and patches, on steep slopes, and under trees.





4. Watering and Long-term Care

Maintenance and watering requirements of a low-water landscape vary depending on the type of landscape and the plants selected. Even native and drought-tolerant plants may require some water during the first few years after installation to establish and thrive.

Several strategies can reduce and minimize the use of potable water for landscape irrigation:

- If you have sufficient roof area for catchment and space for tank storage, consider harvesting rainwater from your roof during the winter and saving the water in tanks where it can be used for irrigation during the summer.
- Store and use “gray water,” which is untreated water from clothes washers, showers, bathtubs, bathroom sinks, and laundry tubs. Your water district will likely have current guidance on using gray water to irrigate the yard.
- If you want to install an irrigation system, consider a high-efficiency system that includes a “smart” controller with rain sensors that automatically adapt to local weather conditions.
- Minimize sprinkler and spray irrigation systems when possible to limit overspray and evapotranspiration of irrigation water. Instead, use a drip or bubbler irrigation system, especially for trees and shrubs.

Other maintenance considerations include pruning, trimming, raking, grass clipping, weeding, and pest control.

Some common best practices for maintenance include the following:

- Locate plants far enough away from pathways, roads, buildings, and other plants so that pruning and trimming are minimized.
- Produce mulch and compost from plant debris and grass clippings.
- Regularly apply organic mulch and top-dress landscape areas with compost or non-synthetic fertilizers to add nutrients to soil and suppress weeds.
- Use organic and integrated pest management (IPM) techniques to avoid the use of pesticides and noxious chemicals.

Plant List for the Merced Region*

The following plants represent various species and types of plants suitable for a low-water landscape. All except one are California native plants that are either indigenous or adaptable to the Merced region climate.

Unless otherwise noted, the following plants generally take full sun. All have limited water needs but require sufficient irrigation to establish during the first year. Supplemental irrigation may be required, or desirable, depending on the site and location.

Lawn Alternatives

Bouteloua gracilis (blue grama): California native plant. A warm season, perennial, native grass; drought-tolerant; full sun; good for grazing; mow to 3 inches or attractive unmowed; water (summer) every 1–4 weeks; do not over-irrigate or over-fertilize. Source: plants.usda.gov

Buchloe dactyloides ‘UC Verde’ (UC Verde buffalo grass): UC Verde was developed by the University of California and has a high heat tolerance; uses ¼ inch of water per week; grows 4–8 inches; resistant to most turf insects; spreads quickly and repairs itself. Source: www.todddvalleyfarms.com

Carex praeegracilis (slender sedge): California native plant. Lawn substitute in sun or light shade; tolerates foot traffic; keep natural or trim occasionally; drought-resistant; water every 1–4 weeks depending on exposure. Source: www.calfloranursery.com

Carex pansa (Pacific dune sedge): California native plant. Lawn substitute or unmowed meadow; moderate sun to partial shade; flowers in early spring; partial shade to full sun or full shade; water every 1–4 weeks depending on exposure. Source: www.calfloranursery.com

Festuca rubra ‘Molate’ (Molate fescue): California native plant. Meadow plant with gray-green foliage 12–18 inches with flowers up to 3 feet; more drought tolerant than many other red fescues; water every 1–4 weeks depending on exposure. Source: www.calfloranursery.com

Native Meadow and Flowering Perennials

Achillea millefolium ‘Island pink’ (island pink yarrow): California native plant cultivar. Good cut flowers; attracts butterflies and beneficial insects. Pink blooms in spring, summer, fall; remove old flower stalks; divide when clumps get crowded; water deeply every 1–2 weeks or less.

Asclepias speciosa (showy milkweed): California native plant. Large, velvety foliage; 2–6 feet; dormant in winter; full sun; larval host plant for monarch butterfly. Showy pink/white blooms in summer; once established, water deeply once or twice a month or not at all. Source: plants.usda.gov

Epilobium canum (California fuchsia): California native plant. Bright red blossoms attractive to hummingbirds; up to 3 feet high; blooms from August to late fall. Many are aggressive spreaders. Source: Keator et al. 2007

Festuca idahoensis (Idaho fescue): California native plant. Tolerates summer drought and various soil types, long lived; fine-bladed, deep green foliage; attractive inflorescence.

Muhlenbergia rigens (deergrass): California native plant. Makes a low informal screen or border; needs almost no maintenance; remove old leaves at any time; adds texture and movement to the garden.

Penstemon heterophyllus ‘Margarita BOP’ (Santa Margarita foothill penstemon): California native plant cultivar. Flowers are golden yellow as buds, bright blue as blooms, then change to purple-pink; unlike many California native penstemons, it thrives in garden conditions.

Salvia spathacea (hummingbird sage): California native plant. Fragrant leaves; drought-tolerant;

*All information provided by the UC Davis Arboretum (www.arboretum.ucdavis.edu), unless otherwise specified.

sun or partial shade; attracts hummingbirds. Pink-purple blooms in winter and spring; remove old stalks at end of season; water deeply every 1–2 weeks.

Sisyrinchium bellum (blue eyed grass): California native plant. One-foot tall perennial with blue flowers blooming between January and June. Likes full sun. *Source: www.laspilitas.com*

Groundcovers

Arctostaphylos uva-ursi (bearberry): California native plant. There are a number of varieties available of this sturdy low-growing evergreen groundcover. Dark green foliage, with pink flowers and showy red berries. Part shade and some summer water in inland areas. *Source: www.calfloranursery.com*

Ceanothus griseus var. *horizontalis* ‘Yankee point’ (creeping blueblossom): California native plant cultivar. This fast-growing, hearty groundcover reaches 2 to 3 feet tall and spreads 8 to 12 or more feet wide. Plants have dark green leaves and bright blue flower clusters in winter through early spring.

Ribes viburnifolium (evergreen currant): California native plant. Shade-tolerant; shiny and fragrant foliage all year; attracts hummingbirds and beneficial insects. Colorful blooms in spring; little to no pruning; water deeply once or twice a month.

Vitis californica (California grape): California native plant. This vine is deciduous and grows clusters of small, edible grapes. Tolerates shade, sand, and clay as well as seasonal flooding. *Source: www.laspilitas.com*

Shrubs

Ceanothus ‘Concha’ (concha ceanothus): California native plant cultivar. Dark green leaves all year; showy lilac; attracts beneficial insects. Deep blue with reddish bracts blooms in spring; little to no pruning, shape after spring flowering; water deeply once or twice a month.

Fremontodendron californicum (California flannel bush): California native plant. An evergreen shrub from 5 to 10 feet tall. Explodes with yellow flowers in the spring; requires good

drainage and likes sun to partial shade. *Source: www.laspilitas.com*

Heteromeles arbutifolia (Toyon): California native plant. An evergreen shrub with dark, waxy leaves; 10 to 15 feet tall. Produces wonderful red berries in the winter that are very attractive to migrating birds.

Prunus ilicifolia (holly leaf cherry): California native plant. A large evergreen shrub. Groups of white flowers in spring are attractive to pollinators, large fruit is attractive to birds. Very drought tolerant.

Ribes aureum (golden currant): California native plant. Flowers have a light, spicy fragrance; good choice for planting under native oaks; attracts butterflies and beneficial insects.

Salvia apiana (California white sage): California native plant. Spring flowers attract pollinating bees; leaves contain fragrant oils.

Trees

Ceanothus ‘Ray Hartman’ (Ray Hartman California lilac): California native plant. Tolerates some summer irrigation; makes a good screen or small garden tree. Purple blooms in fall and winter; little to no pruning; water deeply once or twice a month.

Cercis occidentalis (western redbud): California native plant. Early spring bloom; reddish seed pods in summer; attracts beneficial insects. Colorful blooms in winter and spring; little to no pruning; may be trained as a small tree; water deeply once or twice a month.

Quercus douglasii (California blue oak): California native plant. A deciduous oak with blue-green leaves and light-colored bark; 30 to 50 feet high. Highly adapted to drought conditions, often dropping their leaves before summer’s end. *Source: www.laspilitas.com*

Quercus lobata (valley oak): California native plant. Provides shelter, food for insects and animals; tolerates high heat, drought, and alkaline soil; attracts beneficial insects, birds. Flowers not showy; little to no pruning; water deeply once or twice a month or not at all.

Suggested Resources

Books

The American Meadow Garden, John Greenlee, Timber Press, 2009.

Attracting Native Pollinators: Protecting North America's Bees and Butterflies, The Xerces Society, Storey Publishing, 2011.

Bringing Nature Home: How You Can Sustain Wildlife with Native Plants, Douglas W. Tallamy, Timber Press, 2009.

California Native Plants for the Garden, Carol Bornstein, David Fross, and Bart O'Brien, Cachuma Press, 2005.

California Native Gardening: A Month-By-Month Guide; Helen Popper, University of California press Berkeley and Los Angeles, 2012.

California Native Landscape: The Homeowner's Design Guide to Restoring Its Beauty and Balance. Greg Rubin and Lucy Warren, Timber Press, 2013.

Designing California Native Gardens, Glenn Keator, Arlie Middlebrook, and Phyllis M. Faber. University of California Press, 2007.

The New American Front Yard: Kiss Your Grass Goodbye! Sarah Carolyn Sutton, Tendril Press, 2011.

Plants and Landscapes for Summer-Dry Climates of the San Francisco Bay Region, East Bay Municipal Utilities District, 2004.

Reimagining the California Lawn: Water-Conserving Plants, Practices, and Designs, Carol Bornstein, David Fross, and Bart O'Brien, Cachuma Press, 2011.

Professionals

American Society of Landscape Architects, Northern California Chapter: www.asla-ncc.org

Association of Professional Landscape Designers: www.apldca.org

California Landscape Contractors Association: www.clca.org

Websites

"Arboretum All-Stars," UC Davis: www.arboretum.ucdavis.edu/arboretum_all_stars.aspx

Calflora. A database for distribution and habitat information for California native plants. Photos posted for each species as well as links to nursery availability and other resources specific to that species: www.calflora.org

California Center for Urban Horticulture. Promotes water-conserving, pest- and disease-resistant home gardens; creates environment-ally sound public landscapes and parks; and produces better plant materials for sustainable urban landscapes: www.ccuuh.ucdavis.edu

California Native Grasslands Association. Educates and advocates for the preservation and restoration of California's native grasses and grassland ecosystems through workshops, programs, and publications: www.cnga.org

California Native Plant Link Exchange. A database of California native plants that lists nurseries and seed suppliers who carry these species and horticultural information on these species: www.cnplx.info

California Native Plant Society. Conserves California native plants and their natural habitats and increases understanding, appreciation, and horticultural use of native plants: www.cnps.org. CNPS also has a “Gardening Program” website with resources on using native plants in gardens: www.cnps.org/cnps/grownative/

Cooperative Extension, Master Gardeners of Merced County. Trained volunteers who provide University of California-approved horticulture information to home gardeners of Merced County: ucanr.edu/sites/mgmerced/

Plant Right. Dedicated to ensuring that invasive plants are not introduced into California through the nursery industry. Suggested alternatives to invasive plants are posted on website: www.plantright.org

Pollinator Partnership. Works to protect the health of managed and native pollinating animals vital to the North American ecosystems and agriculture: www.pollinator.org

River-Friendly Landscaping. A collaboration between public agencies, non-profit organizations, designers, private landscape architects, and contractors in the Greater Sacramento Region: <http://www.ecolandscapes.org/riverfriendly/>

Save Our Water. Sponsored by Association of California Water Agencies and California Department of Water Resources: www.saveourh2o.org

Turf Demonstration Project, Sacramento County UC Cooperative Extension: <http://cesacramento.ucanr.edu/Pomology/> and from the list of links in the left margin, click on *Turf Demonstration Project* then select *Native Grass Turf*, *Native Grass Meadow*, or *Our Findings* for more information.

Nurseries and Seed Suppliers

Cornflower Farms, Elk Grove, CA. Retail and wholesale; must place order prior to picking up. www.cornflowerfarms.com

Floral Native Nursery, Chico, CA. Retail and wholesale. www.floralnativenursery.com

Hedgerow Farms, Winters, CA. Retail and wholesale; must place order prior to pick-up. www.hedgerowfarms.com

Intermountain Nursery, Prather, CA. Retail and wholesale. www.intermountainnursery.com

Larner Seeds, Bolinas, CA. Retail, online store. www.larnerseeds.com

Merced Gardens and Nursery, Merced, CA. Retail. www.mercedgardens.com

Mountain Sage Nursery, Groveland, CA. Retail. www.mtsage.com

Oaktown Native Plant Nursery, Berkeley, CA. Retail and wholesale. oaktownnativenursery.info

Pacific Coast Seed, Livermore, CA. Wholesale. www.pcseed.com

Queen Anne’s Garden Nursery, Atwater, CA. Retail. www.queenannesgardennursery.com

The Watershed Nursery, Richmond, CA. Wholesale and retail. www.thewatershednursery.com

UC Santa Cruz Arboretum. Retail; nursery. www.arboretum.ucsc.edu/shop

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For more information on CNGA's programs and events or to become a member, visit www.cnga.org



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The mission of the California Native Grasslands Association is to promote, preserve, and restore the diversity of California's native grasses and grassland ecosystems through education, advocacy, research, and stewardship.



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The Department of Water Resources works to manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments.

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- Bornstein, C., D. Fross, and B. O'Brien. 2005. *California Native Plants for the Garden*. Cachuma Press.
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