# Gardening with Native Plants

UC Master Gardeners of Monterey & Santa Cruz Fall Fest October 2019





## **Gardening with Beautiful Native Plants**

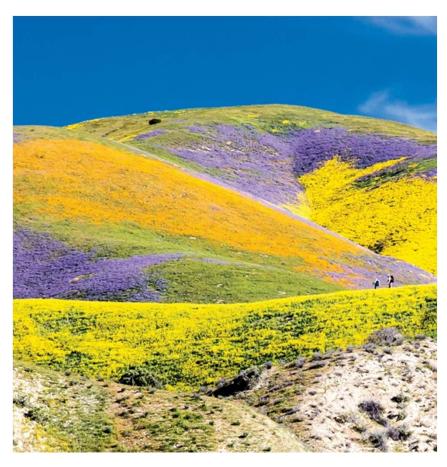




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## California is a Biodiversity Hotspot

- California is considered one of 34
   Global Biodiversity Hotspots. We
   have a large number of plants and
   animals that do not occur elsewhere
   in the world.
- Our state has more plant species (7,000+) than any other state.
- We have 1,600 species of bees.
   (4,000 bee species in entire U.S.)
- Estimated 100,000 insects
- 650 bird, 220 mammal, 100 reptile, 75 amphibian, 70 freshwater fish and 100 marine fish and mammal species

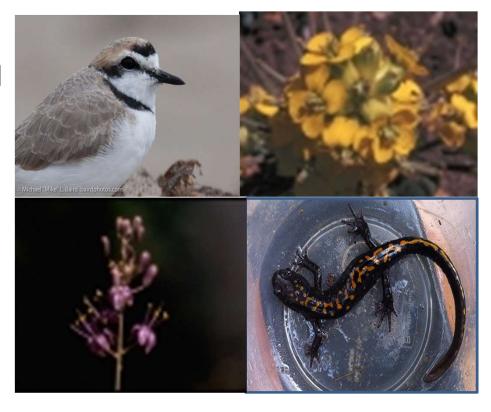




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# Habitat Loss and Biodiversity Initiative

- Over 75% of native habitat has been lost in California
- 300 species are Federally listed as threatened and endangered.
- The State Biodiversity
   Initiative was launched in 2018
   to provide a roadmap and funding to protect our biodiversity.
- http://opr.ca.gov/docs/20180907-CaliforniaBiodiversityActionPlan.pdf
- Photos of local endangered species: Western Snowy Plover, Menzies' wallflower, Santa Lucia Purple Amole, long-toed salamander

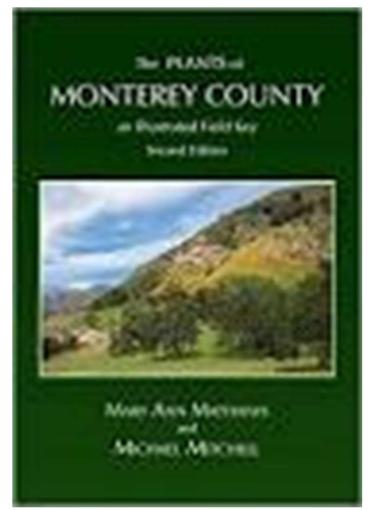




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## **Monterey County Plants**

- Large and diverse flora
- Over 1,500 native species
- Highest number 68
   of rare and
   endangered plants
   of all counties in
   California.







## Santa Cruz County Plants

- Santa Cruz County has over 1,000 native species. That's a lot for the second smallest county in the state. (S.F. is the smallest.)
- There are many choices for gardeners.
- Pictured: Ribes sanguineum var. glutinosum Pink-flowering currant





## Non-native and Invasive Species

- Our urban landscapes are dominated by nonnative plantings.
- It's easy and simple to upgrade and replace plants.
- It helps stem the flow of invasive species into our natural areas.



Pennisetum setaceum Purple Fountain Grass



## Many Benefits



## Fewer Problems

- Adapted to our soils
- Adapted to dry summers
- Adapted to fire
- Attracts beneficial insects, pollinators and supports wildlife
- Controls erosion

- Few amendments or fertilizers needed
- Once established, little watering
- Fire rejuvenates many natives
- Native wildlife and plants are closely connected
- Extensive root systems hold soil



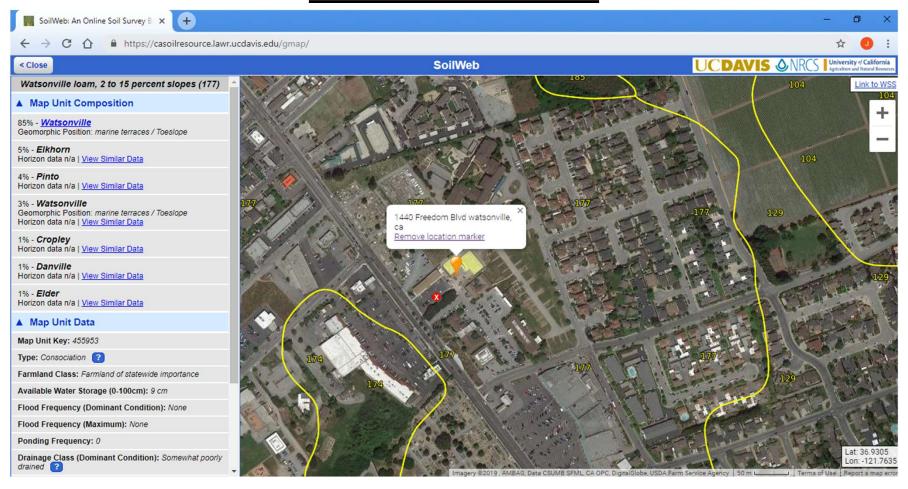
## Local **Native Plants** are Best **Suited to Your Soil**

- Soils vary in pH, depth, texture and chemical composition. Some of our soils are unique.
- More than 1,500 soil series are recognized in California.
- Twenty-seven types of soil have been identified on UCSC campus alone.
- Geologic events such as faulting and glaciation have influenced the mineral content of our soils.
- Combinations of parent rock, organic matter, moisture levels, salinity and topography add to the mix.
- If you are curious, you can access your soil data by entering your address at:
- https://casoilresource.lawr.ucdavis.edu/gmap/





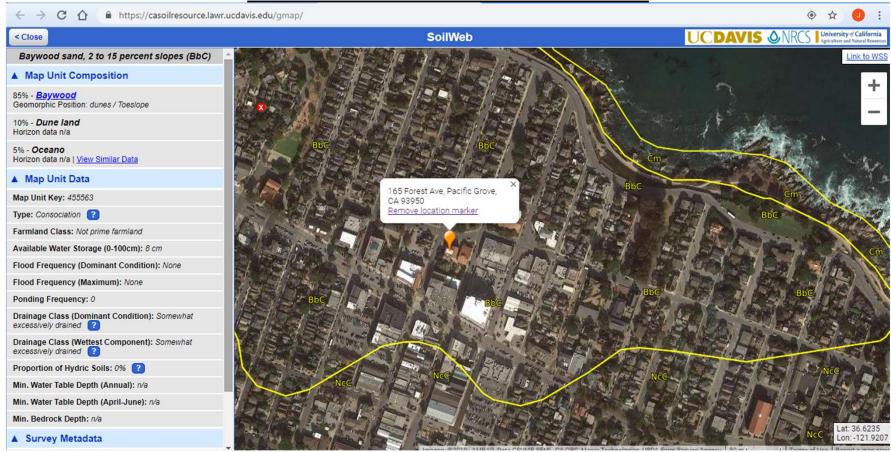
## <u>Example: Soil at UCMG Demo Garden – Watsonville Loam</u>





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## Example: Soil at the Pacific Grove Museum

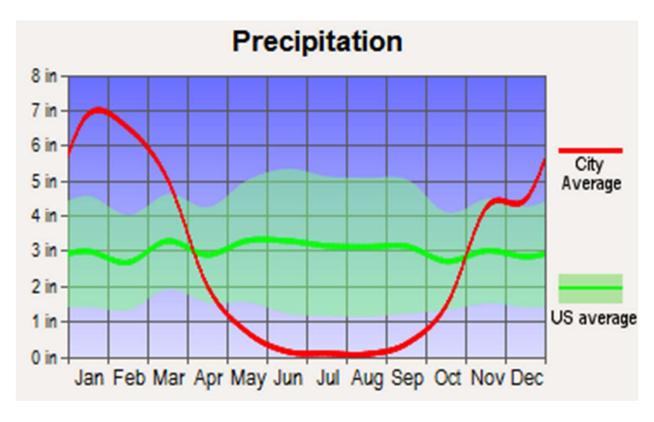




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# Winters are Wet, Summers are Dry

City of Santa Cruz
Precipitation
Growing Season OctMay







## Monterey, CA Average Rainfall

https://www.weather-us.com/en/california-usa/monterey-climate



The average rainfall in January: 4.4"

The average rainfall in February: 3.9"

The average rainfall in March: 3.4"

The average rainfall in April: 1.5"

The average rainfall in May: 0.6"

The average rainfall in June: 0.2"

The average rainfall in July: 0.1"

The average rainfall in August: 0.1"

The average rainfall in September: 0.2"

The average rainfall in October: 1.1"

The average rainfall in November: 2.3"

The average rainfall in December: 3.4"

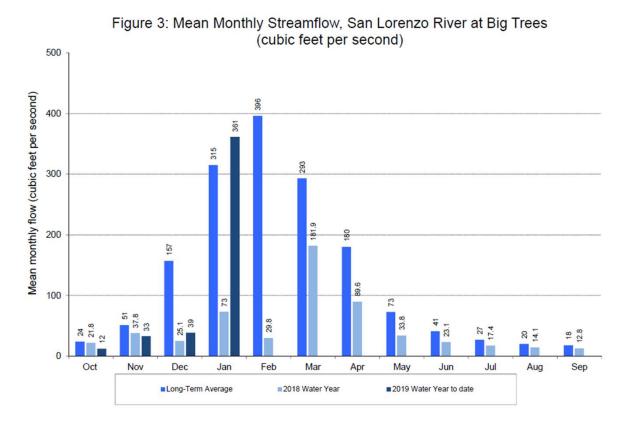
The wettest month (with the highest rainfall) is **January** (4.4"). Driest months (with the lowest rainfall) are **July** and **August** (0.1").



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## City of Santa Cruz Water Supply 2018/19 Native Plant Water Needs Match Supply

Figure 3.







## Native Plants and Fire Recovery



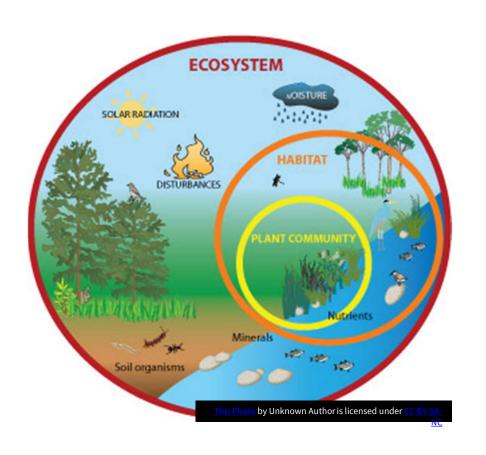
- Many native plants rapidly regenerate after a fire and their roots prevent erosion.
- Native California Oaks are adapted to survive periodic burning and will recover if the cambium is intact.
- The invasion of non-native grasses has increased the ignition, spread and severity of wildfires.
- Eucalyptus trees have flammable resins, peeling bark and dead wood that cause fires to spread especially fast.
- Our Riparian ecosystems act as moist buffers and don't burn severely except when they are infested with weeds.
- New Fire Recovery
   Guide: <a href="https://www.cnps.org/wp-content/uploads/2018/04/CNPS-fire-recovery-guide-LR-040618.pdf">https://www.cnps.org/wp-content/uploads/2018/04/CNPS-fire-recovery-guide-LR-040618.pdf</a>



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## Gardening for Wildlife is Important

- There is a 40% loss of insects worldwide
- Biodiversity increases the resilience of ecosystems
- The health of planetary life depends on food webs, which depend on the health of interdependent species from fungi and microorganisms to plants, invertebrates, herbivores and carnivores







## Native Plants Support Wildlife

## Native plants coevolved with native species and provide:

- Nesting materials, cover and places to live
- Food
  - Pollen
  - Nectar
  - Seeds and Nuts
  - Berries & Other Fruit
  - Foliage
  - Insects...





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## Native Plants Support Native Insects

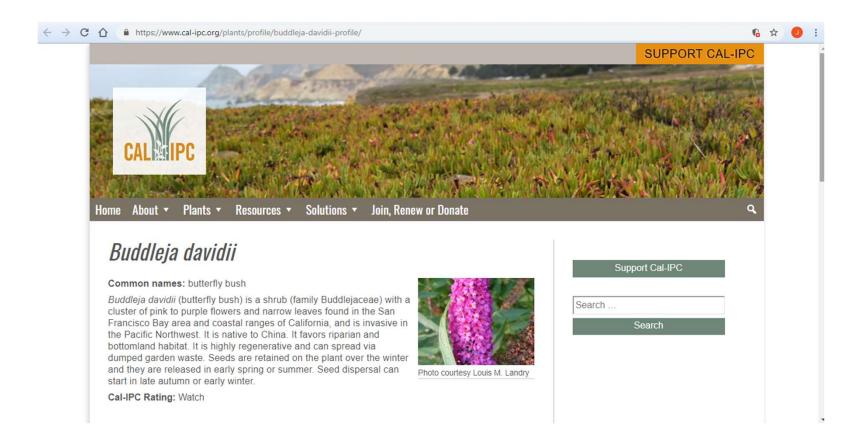


- Insects play a large role in transferring energy from plants to other animals.
- An estimated 90% of insect herbivores are specialists needing particular host plants.
- While Buddleia butterfly bush, native to Asia – produces nectar, not a single species of butterfly in North America can reproduce on it. (Tallamy 2007)



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## Cal-IPC California Invasive Plant Council Helps Stop the Spread of Invasives





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## **Birds Rely on Insects**

- 96% of terrestrial birds of North America raise their young on insects
- Caterpillars and other insects are fatty, high protein foods needed in large quantities
- A mother bird may need 400 insects a day to feed her nestlings



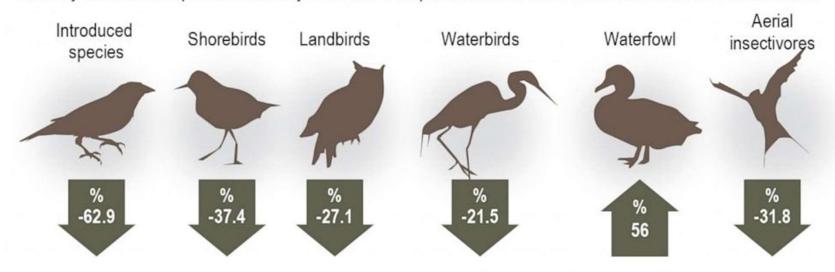


## **Decline in Bird Population**

https://www.sciencemag.org/news/2019/09/three-billion-northamerican-birds-have-vanished-1970-surveys-show

#### Bird numbers on the decline across North America

A newly released comprehensive study estimates a 29 percent loss in overall wild bird counts since the 1970s.



SOURCE: journal Science

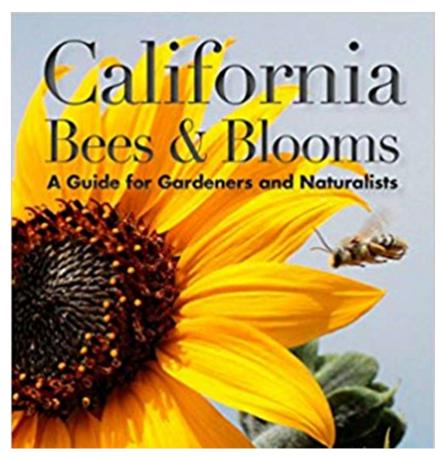




### Native Plants Support Our Native Bees

## Findings from the Berkeley survey of plants in front yards (2003)

- 1,000 different plants recorded
- 950 non-native, 50 native
- Non-native plants attracted 8% of bees
- Native plants attracted 80% of bees
- One small urban garden can attract 40-50 species of bees if planted with native "bee plants"







## Oaks are "Super Plants"

## Coast Live Oak Quercus agrifolia

- One of the most important wildlife plants
  - Easy to grow
- Can reach 40' in 20 years





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## Coast Live Oak Acorns

- From little acorns, mighty oaks grow.
- Tens of thousands of acres of oaks have been lost to agricultural conversion, fires and urbanization.
- There are 9 species of oaks in Santa Cruz County.
- Oaks sequester more carbon than other urban trees.
- Re-Oaking programs are now a statewide effort.



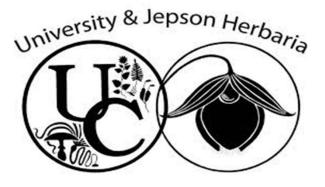


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# <u>Calscape.org</u> <u>Restore</u> <u>Nature One</u> Garden at a



**Time** 



- Launched in 2016, Calscape is an online tool that lets you identify the plants that are native to where you live.
- Developed through a strategic partnership with the California Native Plant Society (CNPS) and the Jepson Herbarium at U.C. Berkeley
- Maps are based on over 2 million GPS field observations



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## Calscape – It's easy to find your most local plants

ABOUT CALSCAPE

CONTACT CALSCAPE

PLANTING GUIDE NURSERIES MY PLANT LISTS

BUTTERFLIES

HIJTK



Search for California native plants by name

Enter a California address or click the map to see plants native to that location

165 Forest Ave. Pacific Grove. Ca 93950

782 plants native to 36.6218,-121.9173 (165 forest ave, pacific grove, ca 93950)































Bioregion: Central Coast Annual Precipitation: 17.01" Summer Precipitation: 0.24" Coldest Month Avg. Temp: 49.43° F Hottest Month Avg. Temp: 62.39° F Humidity: 0.98 - 4.66 vpd

Native Plants: 782



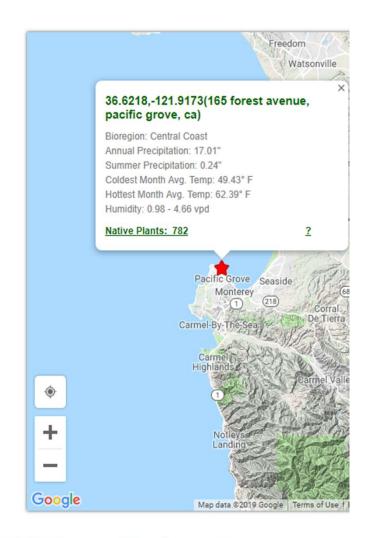


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## Plants are sorted into useful categories

**782** plants native to 36.6218,-121.9173 (165 forest avenue, pacific grove, ca)







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## Very Easy Plants - Tough & Reliable

97 very easy plants native to 165 Forest Ave, Pacific Grove, Ca 93950

Options



Blue Eyed Grass Sisyrinchium bellum



California Fuchsia Epilobium canum



Douglas Iris Iris douglasiana



Carmel Ceanothus Ceanothus thyrsiflorus var.



Little Sur Manzanita Arctostaphyk edmundsii



Western Columbine Aquilegia formosa



California Wax Myrtle Morella californica



Gumweed Grindelia stricta var. platyphylla



Pajaro Manzanita Arctostaphylos pajaroensis



Hollyleaf Redberry Rhamnus ilicifolia



Solidago velutina ssp californica

California



Scrub Oak Quercus berberidifolia



Malva Malva assurgentiflora



Giant Chain Fern Woodwardia fimbriata



One Leaf Onion Allium unifolii



Yellow Eyed Grass Sisyrinchium californicum



California Fescue Festuca californica



Purple Needlegrass Stipa pulchra



Yerba Buena Clinopodium douglasii



Calocedrus decurrens





## **Butterfly and Moth Host Plant Info**

86 butterfly & moths species hosted by Red Flowering Currant ( Ribes sanguineum ) in California

Options

#### 1 species confirmed



Ceanothus Silkmoth Hyalophora euryalus

85 species likely



Hoary Comma Polygonia gracilis



Milbert's Tortoiseshell Aglais milberti



Satyr Comma Polygonia satyrus



Green Comma Polygonia faunus



Tailed Copper Lycaena arota



Oreas Comma Polygonia oreas



White-lined Sphinx Hyles lineata



Polyphemus moth Antheraea polyphemus



Alfalfa Looper Moth Autographa californica



Elegant Sheepmoth Hemileuca eglanterina



Wandering Tiger Moth Spilosoma vestalis



Speckled Green Fruitworm Moth Orthosia hibisci



Isabella Tiger Moth Pyrrharctia

isabella



Brown Woodling Egira perlubens



Silver-spotted Tiger Moth Lophocampa argentata



Manto Tussock Moth Orgyia antiqua



Marbled Carpet Dysstroma truncata



Spotted Tussock Moth Lophocampa maculata



Virginian Tiger Moth Spilosoma virginica



Fruit-Tree Leafroller Moth Archips argyrospila



Filament Bearer Nematocampa resistaria



Wavy-Lined Emerald Synchlora aerata



Salt-and-Pepper Geometer Biston betularia



Sulphur Moth Hesperumia sulphuraria



Yellow-Headed Cutworm Moth Apamea amputatrix



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### <u>Calscape – Info on Individual Plants</u>





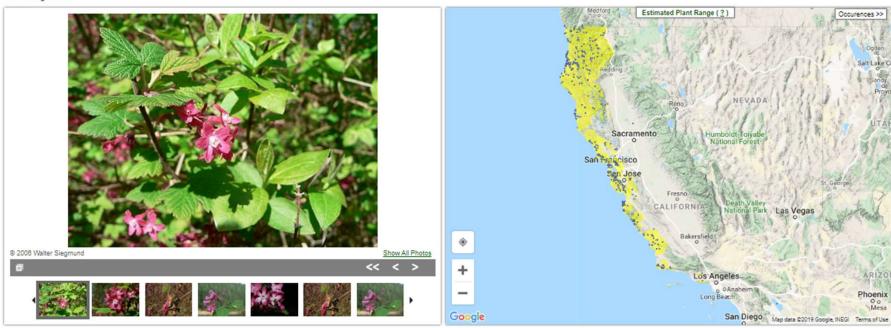
Search for California native plants by name

ADVANCE

Q

HOME > RIBES

#### Red Flowering Currant Ribes sanguineum



About Red Flowering Currant (Ribes sanguineum)

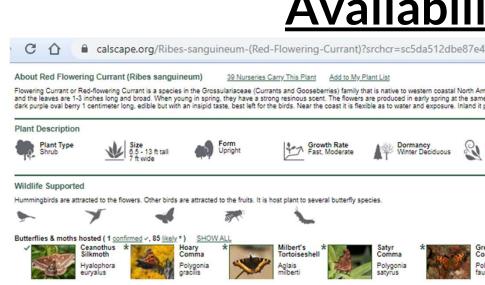
39 Nurseries Carry This Plant Add to My Plant Li

Flowering Currant or Red-flowering Currant is a species in the Grossulariaceae (Currants and Gooseberries) family that is native to western coastal North America from central British Columbia south to central California. It is a deciduous shrub growing up to 13 feet tall. The bark is dark brownish-grey and the leaves are 1-3 inches long and broad. When young in spring, they have a strong resinous scent. The flowers are produced in early spring at the same time as as the leaves emerge, on racemes of 5-30 flowers, each flower is 5-10 millimeters in diameter, with five red or pink petals. The fruit is a dark purple oval berry 1 centimeter long, edible but with an inspirid tasks, best left for the birds. Nestible as to water and shadow



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## Landscaping tips and Nursery **Availability**



39 Nurseries Carry This Plant Add to My Plant List

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Flowering Season Spring, Winter

Humminobirds are attracted to the flowers. Other birds are attracted to the fruits. It is host plant to several butterfly species

























Copper Lycaena



#### Landscaping Information



Sun Part Shade

































Trees: Maples (Acer sp.), Alders (Alnus sp.), Giant Chinquapin (Chrysolepis chrysophylla), Ash (Fraxinus sq.), Coast Silktassel (Garry elliptica), Pines (Pinus sp.), Cottonwood (Populus sq.), Oaks (Quercus sq.), and Bay Laurel (Umbellularia californica) Shrubs: Serviceberry (Amelanchier so.), Manzanita (Arctostaphylos sp.), Ceanothus sp., Dogwood (Cornus so.), Coffeeberry (Frangula so.), Toyon (Heteromeles arbutifolia), Ocean Spray (Holodiscus discolor), and Snowberry (Symphoricarpos so.)



Propagation' For propagating by seed: 3.5-5 mos. stratification (USDA Forest Service 1974).

#### **Natural Setting**



Site Type
Found along the coast and in the Coast Ranges, often on north facing slopes. It occurs in several habitats including chaparral, forest and woodland.





Annual Precipitation: 2.7" - 154.7", Summer Precipitation: 0.17" - 5.95", Coldest Month: 11.3" - 58.3", Hottest Month: 34.6" - 89.1", Humidity: 0.01" - 39.60", Elevation: -232" - 14040"







# Sourcing Plants What's Available? Saving Money



- Native plant nurseries, local growers
- Local nurseries most have a Native plant section or can order plants for you
- Plant Sales CNPS, Watsonville Wetlands, Cabrillo College (Annually on Mother's Day weekend), UC Master Gardeners Fall Fest & Plant Sale
- Seeds
- Bulbs
- Propagating your own plants
- Mail-order sources



# Short Lists of Easy, Reliable and Beautiful Native Plants for Central Coast Gardens

- Perennials
- Annual WIldflowers
- Groundcovers
- Shrubs
- Container Plants
- Other Favorites









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### A Blood Currant in a Pot

Plants in containers will need more watering.

Some native plants have even been used for bonsai.

Nice to enjoy scented species up close.

Great for bulbs that are summer dormant.





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## Things to Consider When Selecting Specific Plants for Your Garden

#### Microclimates on your property:

- Topography slopes, trenches
- Existing trees and shrubs to be retained
- Existing irrigation and hardscape
- Nearby natural features beach, creek, forest, cliffs, bluffs etc.

Size considerations. Many choices for tiny areas to large landscapes.

Year-round color, texture, scent, uses (erosion control, herbal, edible, wildlife, screening, espalier, children, etc.)

Ease of maintenance and availability.....



# Defensible Space and Landscaping





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### A Garden Near West Cliff Drive

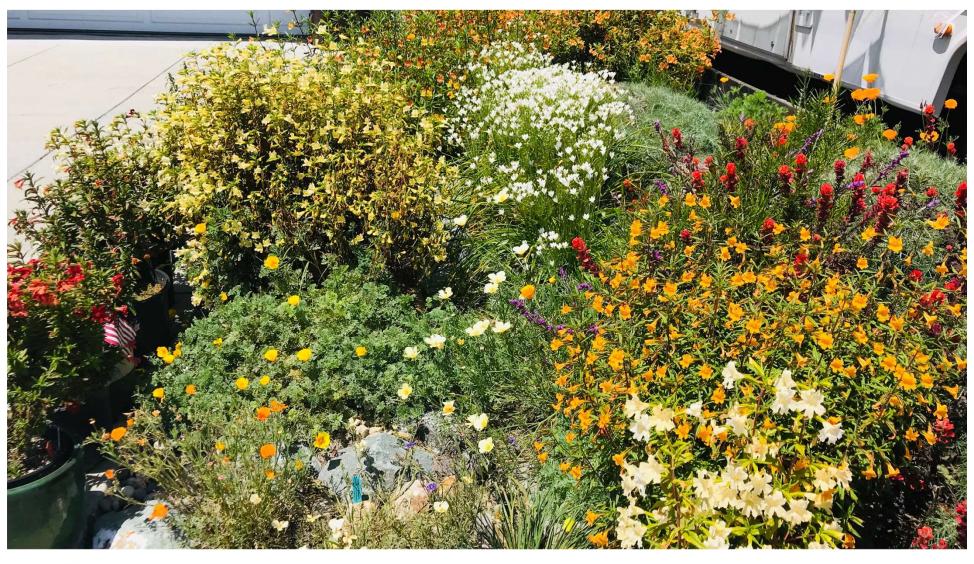
- Includes a profusion of perennial and annual flowers
- Coyote bush pruned to take on a beautiful form
- Highly aromatic Cleveland sage and Woolly blue curls
- Plants in containers to meet their specific needs

K. Laing Garden
Photo by Anandi Paganini





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### Special Considerations if you live in the Wildlife Urban Interface

- Maintain the biological integrity of wild populations of native plants by avoiding species that might crosspollinate with them.
- Eliminate invasive species
- Reduce fuel loads

Photo of Master Gardener Karen Cozza's garden by Kevin Lohman





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#### Weed Eradication Before Planting

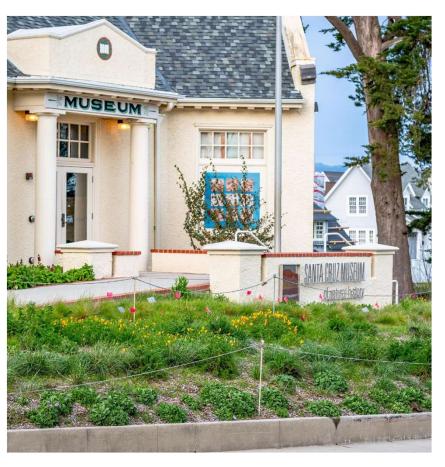


- Invasive weeds can outcompete your plants for resources
- Identify your weeds to determine optimal methods of removal
- Perennial weeds are more difficult to eradicate
- Weeds produce a lot of seed
- Weed seeds persist for many years
- Remove weeds before they set seed
- Sheet mulching can help suppress weeds
- Once established, many native plants will help suppress weeds
- <a href="http://ipm.ucanr.edu/PMG/menu.weeds.html">http://ipm.ucanr.edu/PMG/menu.weeds.html</a>
- https://www.cal-ipc.org/wpcontent/uploads/2017/03/TheTopOffenders \_\_20171114.pdf



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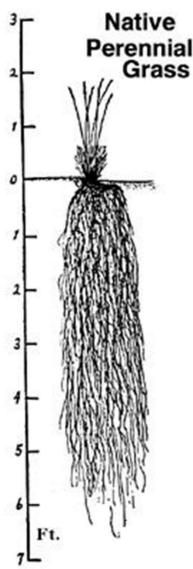
### **Planting**



- Planting in late fall to winter is best.
- Calscape planting guide <u>https://calscape.org/planting-guide.php</u>
- Space plants for future growth.
- Spaces can be filled with wildflowers, bunchgrasses, stones or even art!
- Mulch to maintain moisture and suppress weeds.
- Photo by Kevin Lohman



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### Watering to Establish Plants - Sleep, Creep then Leap!

- More extensive root growth occurs while plants are becoming established (great erosion control)
- Watering is needed to establish roots and during periods of drought
- In general, watering will taper off to once a month
- As a rule of thumb, plants are established if they have doubled or tripled in size or lived through 2 or 3 summers

Drawing: Typical root system of a perennial native grass.

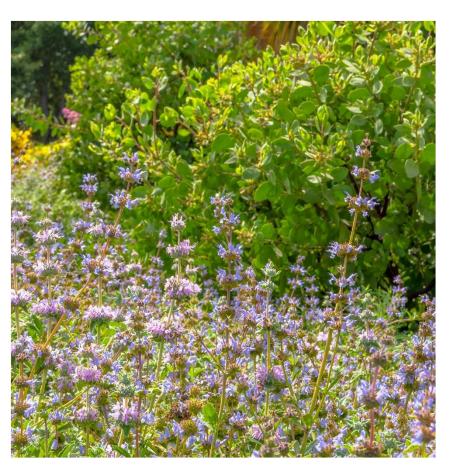
Courtesy: Hastings Natural History Reserve – UC Natural Reserve

System



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#### **Group Plants in Hydrozones**



- Plants native to moist canyons and shady streams are water-needy.
- Plants of scrub or chaparral communities need a lot less water.
- Other plants fall somewhere in the middle.
- You may have 3 hydrozones on your property.

Photo by Kevin Lohman



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### **Careful Watering in Summer**

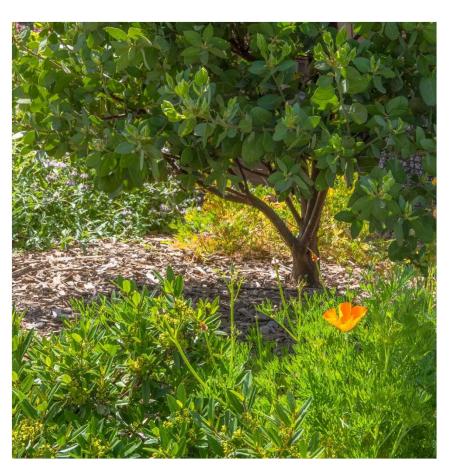


- Native plants adapted to hot and dry soils are sensitive to fungi and bacteria that become active in warm, wet soils.
- New plantings are establishing the root systems needed to survive drought.
- Summer watering can be a balancing act but is fairly easy with our cool coastal climate.
- Water during cool periods.
- "Very Easy" plants can take summer watering



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### No Garden is No Maintenance-That Would be No Fun!



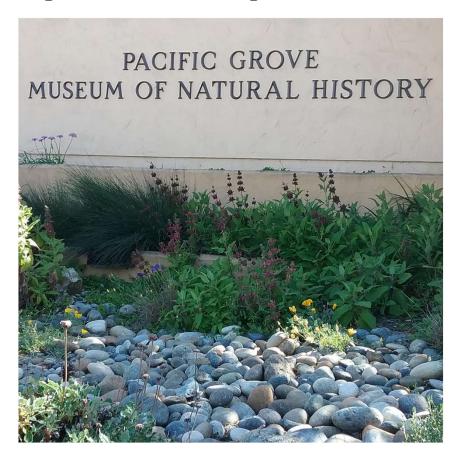
- Mulching
- Weeding
- Pruning
- Seed sowing
- Transplanting
- Coppicing
- Harvesting bulbs
- Native American techniques for plant cultivation included all the above methods to ensure good supplies of the plants they depended upon.



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## Places to View Native Gardens in Monterey County

- Pacific Grove Museum
- Lester Rowntree Native Garden
- Marina Coast Water
   Management District
   Well Site Community
   Gardens
- Carr Lake Garden in Salinas





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## Public Places to View Native Gardens in Santa Cruz County

- Seymour Marine Discovery Center UCSC
- Natural Bridges State Beach Visitor Center
- UCSC Arboretum and UCSC Farm
- Bay Street Reservoir corner of Cardiff and Iowa next to the 7 Eleven
- Henry Cowell State Park Visitor Center
- Land Trust of Santa Cruz County Water St.
- Santa Cruz Museum of Natural History
- Seabright Beach
- Sunset Beach
- UC Cooperative Center and UC Master Gardener Demonstration Garden in Watsonville
- Patrick J. Fitz Wetlands Educational Center (Pajaro Valley H.S.)



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#### **Internet Resources**

- ⊖ Calscape <a href="https://calscape.org/">https://calscape.org/</a>
- Calflora <a href="https://www.calflora.org/">https://www.calflora.org/</a>
- UC Master Gardeners of Monterey Bay- Local Resourceshttp://mbmg.ucanr.edu/Read An Article/Local Resources/
- California Native Plant Society <a href="https://www.cnps.org/">https://www.cnps.org/</a>
- Xerces Society <a href="https://xerces.org/">https://xerces.org/</a>
- Tilden Botanic Garden https://www.ebparks.org/parks/tilden/botanic\_garden.htm
- Weed Gallery and Key to Identifying Weeds <a href="http://ipm.ucanr.edu/PMG/menu.weeds.html">http://ipm.ucanr.edu/PMG/menu.weeds.html</a>
- California Native Grasslands Association: <a href="https://cnga.org/">https://cnga.org/</a>





#### **Helpful Books**

- California Native Plants for the Garden by Bornstein, Fross & O'Brien.
   Cachuma Press 2005.
- Designing California Native Gardens by Keator, Middlebrook. University of California Press 2007.
- California Native Gardening by Helen Popper. University of California Press 2012.
- Growing California Native Plants 2<sup>nd</sup> Edition by Schmidt. University of California Press 2012
- Wild Suburbia: Learning to Garden with Native Plants by Eisenstein. Heyday 2016
- California Bees and Blooms by Frankie, Thorp, Coville, Ertter. Heyday 2014.



#### **Additional References**

- Anderson, M. Kat 2005's Tending the Wild: Native American Knowledge and the Management of California's Natural Resources. Berkeley and Los Angeles: University of California Press.
- Haff, T., Brown, M., Tyler, W. 2008. *The Natural History of the UC Santa Cruz Campus.* Santa Cruz: Environmental Studies Department University of Santa Cruz.
- Matthew, M., Mitchell, M 2015. Plants of Monterey County and Illustrated Field Guide
   2<sup>nd</sup> Edition.: California Native Plant Society Monterey Bay Chapter.
- Ornduff, R., Faber, P., Keeler-Wolf, T. 2003. *Introduction to California Plant Life Revised Edition.* Berkeley and Los Angeles: University of California Press.
- Tallamy, D.W., 2012. Bringing Nature Home How You Can Sustain Wildlife with Native Plants. Portland, Oregon Timber Press.

Sources of plant photos and gardens include Calflora, CalPhotos and independent photographers who have agreed to share their images.



#### **Help Us Grow!**

Our follow-up survey provides us the tools we need to grow and improve the quality of our program.





