



Gardening for Pollinators: An Overview

First in a Four-Part Series

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UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

UC Master Gardener Program

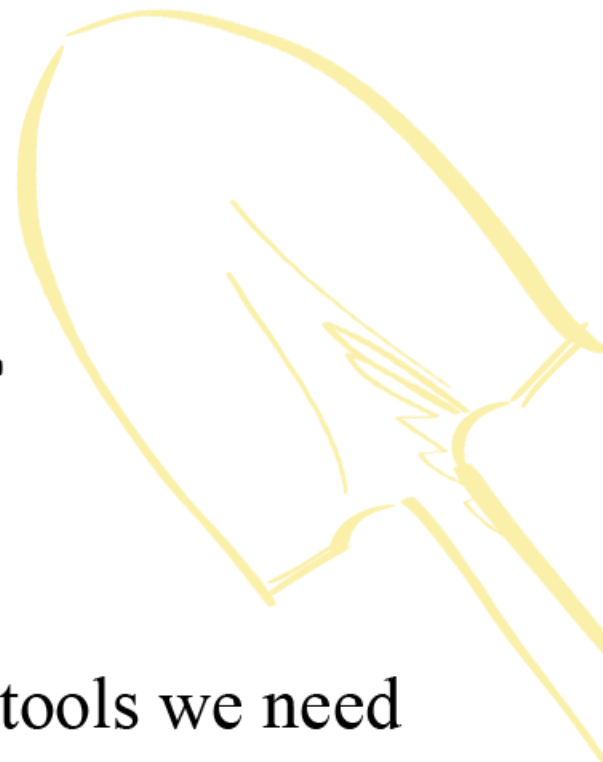


UC Master Gardeners of Napa County
<http://napamg.ucanr.edu/>

Our mission: "To extend research-based knowledge and information on home horticulture, pest management, and sustainable landscape practices to the residents of California and be guided by our core values and strategic initiatives."



Help Us Better Serve You!



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

Why Garden for Pollinators?



Pollinators are essential to the health of our natural, ornamental, and agricultural landscapes

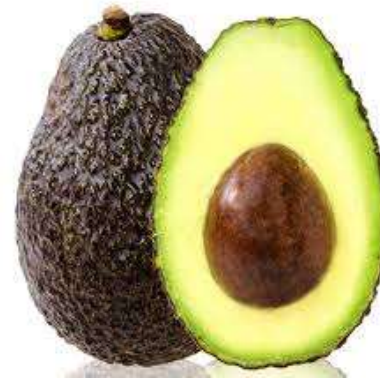
Scientists estimate that:

Animal pollinators are needed for the reproduction of 90% of flowering plants



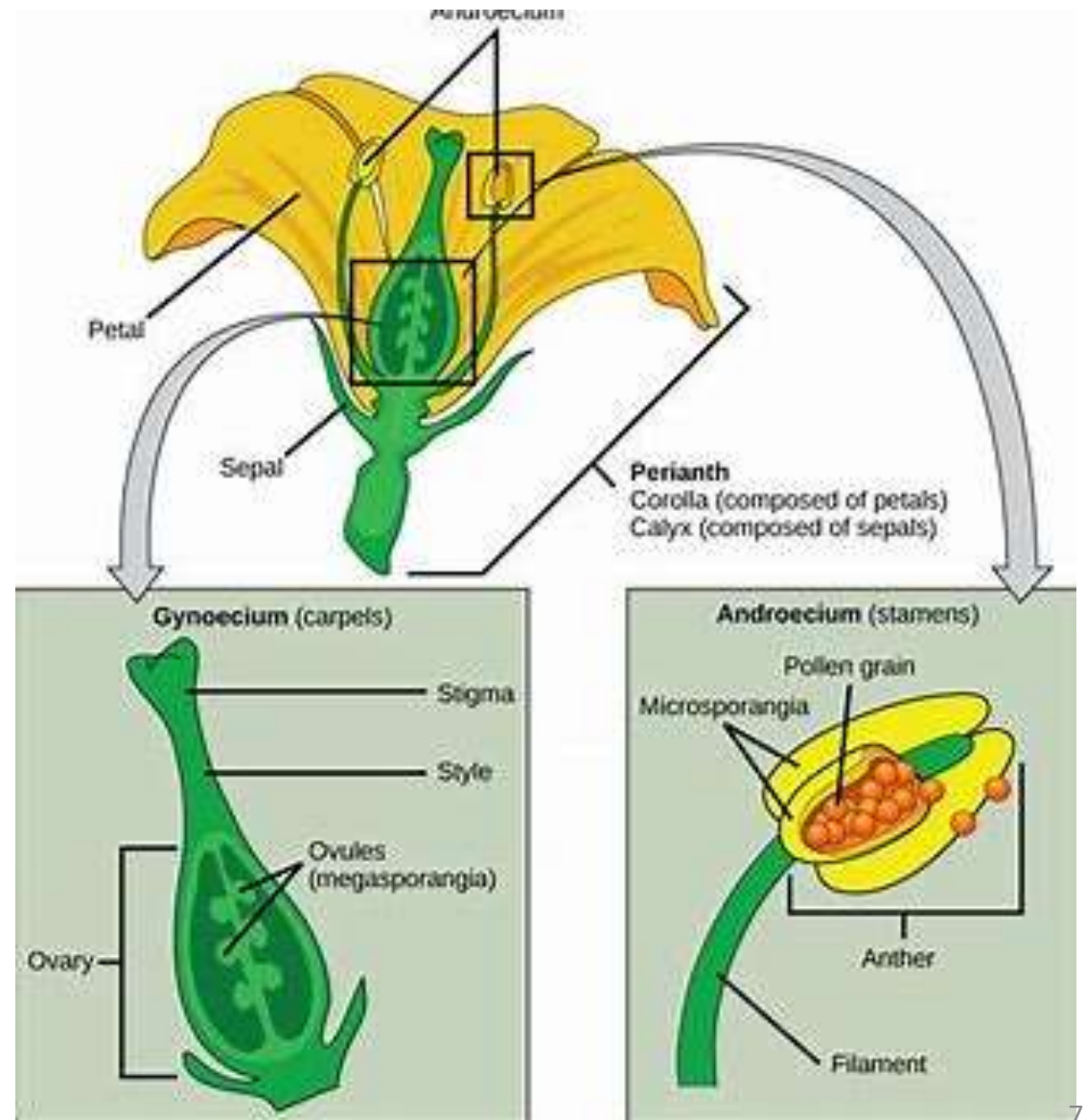
And that.....

One out of every three bites of food we eat exists because of animal pollinators like bees, butterflies and moths, birds and bats, and beetles and other insects.



What is a pollinator?

A pollinator is an animal that moves pollen from the male anther of a flower to the female stigma of another flower



Who are pollinators?

There are a wide variety of biotic pollinators.



California native bees



Populations of both native pollinators and domestic bees are declining because of habitat loss, disease, and pesticides

You can help by making your garden attractive and supportive for pollinators



Factors Contributing to Pollinator Decline

- Habitat destruction and fragmentation
- Increased use of pesticides (spraying without taking precautions to minimize impacts on nontarget wildlife). Pesticides kill insects of both beneficial and pest species.
- Decline in wildland areas (loss of food sources and nesting habitats)
- Introduced or imported bee species and their associated diseases
- Introduced non-native plants that are unattractive to domestic pollinators or that replace native pollinator plants
- Climate change



CREATE A HABITAT

A Pollinator Garden
provides:

- **Food**
- **Water**
- **Shelter/Cover**
- **A Place to raise young**
- **...And does it Sustainably**



FOOD



- Plan for the whole life cycle of the pollinator
- Variety of species and bloom times
- Long duration and sequence of bloom
- Different shapes of bloom for different pollinators
- Plant in 3-4' blocks for visibility and access
- High quality pollen and nectar
- Plant in color (but note, pollinators see differently!)



Nectar

Provides sugars
(carbohydrates) and
amino acids



Pollen

Provides protein, fats/lipids, starch, vitamins, and minerals

“Bee Loaf”: Nectar and pollen combined to feed larval bees



Palynivores

Leafcutter bee, Pollen beetle, European honeybee





WATER

Accessible, nutrient-rich, shallow, with pebbles, leaves, or a stick or corks to stand on, and away from heavily scented plants. Dew works too. And a little salt or wood ash. Or damp gravel or mud. Plan shelter nearby.

SHELTER

Leave plant material
for overwintering.

Tolerate a little
chaos.

Add structures.



A PLACE TO RAISE YOUNG



Undisturbed hiding places, nesting materials, bare earth for mud, dead wood for holes and habitat. Or something man-made, with care to prevent disease.



SUSTAINABILITY

USE:
IPM
No-Till Gardening
Wise Water Use
Tolerance
Compost
Engagement!



Support the Entire Life Cycle

Pipevine Swallowtail





Diversity: Plant 20 plant types if possible

Autumn dry garden with California natives



Summer waterwise garden with plants from Mediterranean climates



Vary flower color and shape





Mass plants in blocks of 3-4' or more

Coreopsis and Anigozanthus



Salvia and Clarkia



Plant Native Plants for Native Fauna

Our climate zone: North coastal to moderate Inland Valley

**Solidago
californica**



Ceanothus 'Concha'



**Eriogonum grande
var. rubescens**

Supplement with high quality plants from other Mediterranean climates



Leonotis leonurus
(Lion's Tail)



Calamintha nepeta

Echium candicans 'Pride of Madeira'



Plan and Plant for Year-round Benefit

***Eriogonum fasciculatum* (California buckwheat)**

Spring and summer



Fall and winter





Plan a sequence of bloom times, February-October+

Ceanothus (C. thyrsifolia repens)



**Baccharis pilularis
(male, Coyote bush)**

**Eriogonum fasciculatum
(Buckwheat)**



Winter-Early Spring

Phacelia tanacetifolia



Arctostaphylos

Ceanothus 'Concha'



Spring

Layia platyglossa (Tidy Tips)



Lupinus albifrons (Silver bush lupine), Eschscholzia (California poppy)

Summer

Salvias

Asclepias

Achillea





Fall

**Symphotrichum
(Aster)**



Solidago (Goldenrod)

**Epilobium (California
fuchsia)**



Wildflowers: Support through the seasons





So, in planning your garden, think:

- California Natives (North Coastal to moderate Inland Valley)
- Non-Natives compatible with a Mediterranean climate and with a high quality nectar and/or pollen
- Food, water, shelter, a place to raise young, and sustainability
- Diversity and variety in species, color, bloom shape, height, and bloom time, planted in 3-4'+ blocks of one species
- Year-round seasonal planning and overlapping bloom cycles
- Sustainable gardening practices for your health and the health of all the guests in your garden



Resources Online:

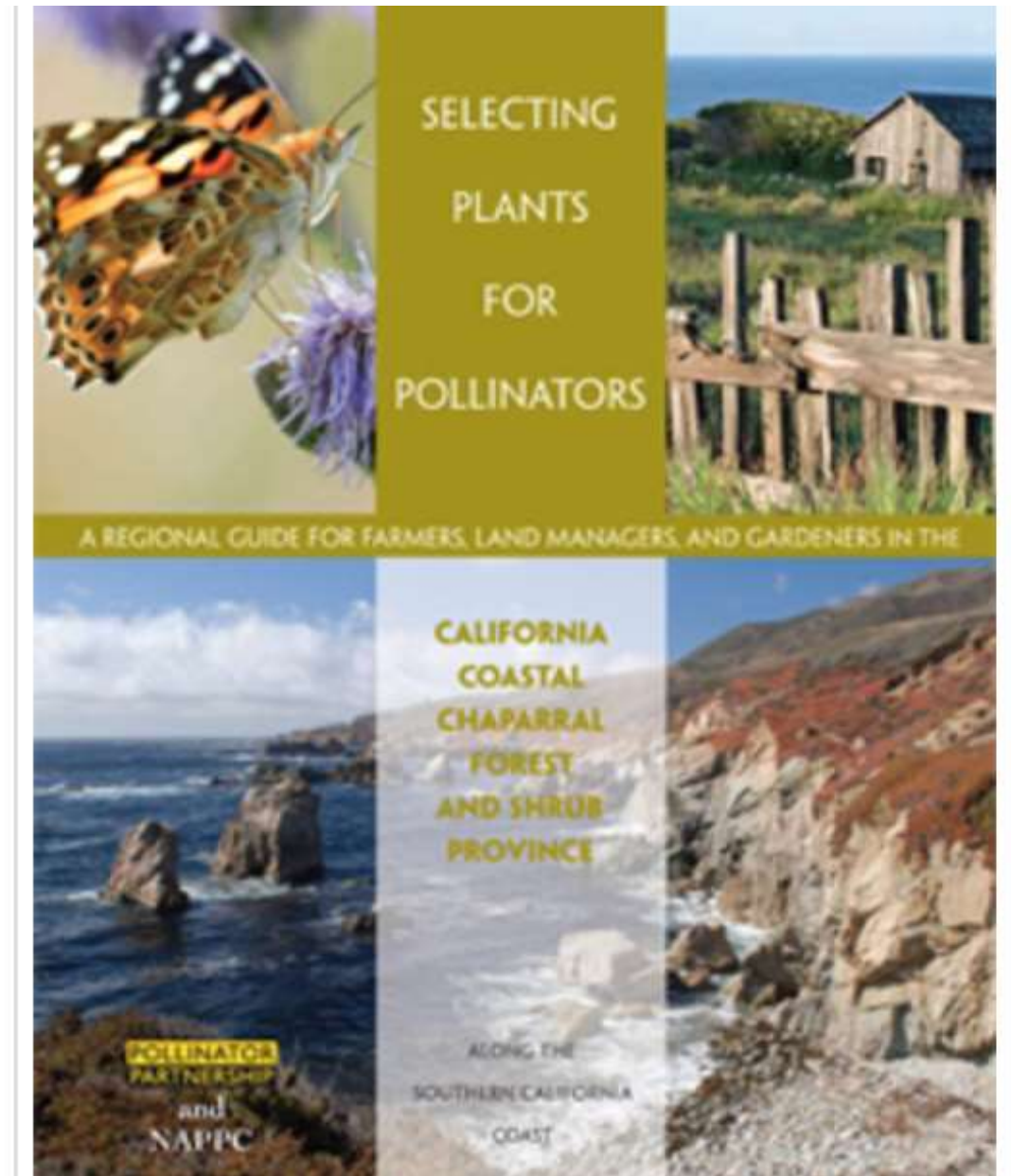
- <https://pollinator.org/> (Pollinator Partnership) Regional Guides and general information
- <https://xerces.org> (The Xerces Society)
- https://xerces.org/sites/default/files/2018-05/17-045_02_XercesSoc_Pollinator-Plants_California_web-4page.pdf Detailed info and plant lists
- <https://www.nwf.org> (The National Wildlife Federation)
- <https://beegarden.ucdavis.edu/> UC Davis Haagen-Dazs Honey Bee Haven
- <http://nature.berkeley.edu/urbanbeegardens/>
- <http://ucanr.edu/sites/PollenNation/> (UC kid-friendly site)
- www.laspilitas.com/ (a California native plant nursery, but an excellent resource)
- <https://anrcatalog.ucanr.edu/pdf/8498.pdf> (Excellent, thorough, with great references)
- <https://anrcatalog.ucanr.edu/pdf/8518.pdf> (Includes plant layouts)
- <http://www.helpabee.org/index.html> UC Berkeley Urban Bee Lab.
- <https://www.cnps.org> California Native Plant Society
- <http://www.helpabee.org/best-bee-plants-for-california.html> Plant lists

California Coastal
Chapparal Forest and
Shrub Province:
Regional Guide

https://www.pollinator.org/guides_code



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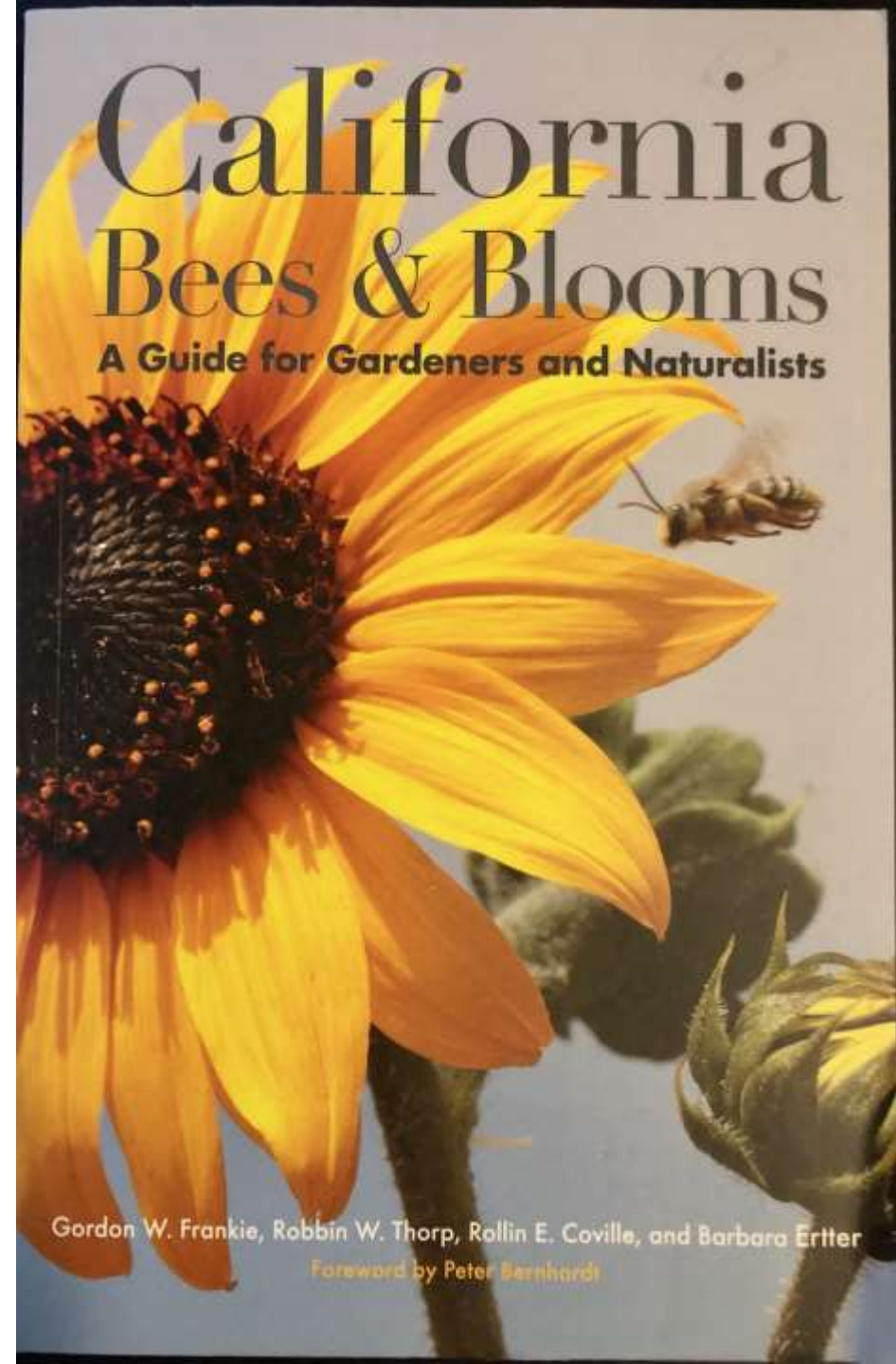


UC Master Gardener Program

California Bees
and Blooms: A
Guide for Gardeners and
Naturalists

Published in collaboration with the
California Native Plant Society

<https://www.cnps.org>



FIND this slideshow & further resources
on our website:

UC Master Gardeners of Napa County
<http://napamg.ucanr.edu>



Go to UC Master Gardeners
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Go to **Events Find Us!**

Then click on
references and
slides **here**

Explore our whole
website to find
many more garden
resources





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Thank you so much for coming!



Photo of the Haagen Dazs Honey Bee Haven garden, UC Davis, Christine Casey, director



Questions?

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