

The Buzz About Bees:

Attracting and Observing Bees in Your Garden

Pollinator Gardening Workshop,
15 March 2014
Robbin Thorp, UC Davis



The Problem of Scale



The problem of scale:

Honey bee as a “bread box”



A “Not a Bee”



Also “Not A Bee”



A Bee:

Honey bee on almond blossom



What are Bees?

Why are They Important?

- Derived wasps that use pollen for protein to feed their young (rather than animal protein)
- They use nectar as flight fuel (energy)
- They have branched hairs and other adaptations to gather pollen from flowers and transport it back to their nests
- They provide an important ecological service to flowering plants (crop and wild): Pollination



Diversity of Bees



- There are over 19,500 species named.
More likely ca 20,000 (to maybe 30K)
 - More diversity than all: Mammals + Birds + Reptiles + Amphibians summed together.
- Diversity of bee species in:
 - North America = 4,000 species.
 - California = 1,600 species.
 - Yolo County (Kremen studies) = over 300 spp.
 - Häagen-Dazs Honey Bee Haven = 80+ spp.



Diversity of Bees

Mining Bees: **Andrenidae**



Diversity of Bees

Sweat Bees: Halictidae



Diversity of Bees

Polyester & Masked Bees: **Colletidae**



Diversity of Bees

Leafcutting, Carder, Mason: **Megachilidae**



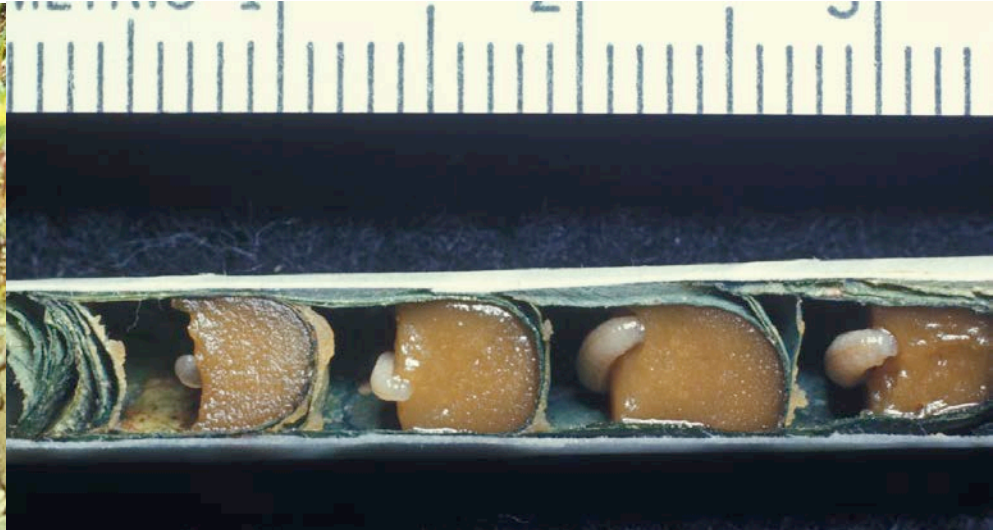
Diversity of Bees

Digger, Carpenter, Cuckoo, Honey: **Apidae**



Bee Life Styles: Solitary (70%)

Soil & Tubular Cavity nesting, Carpenters



Bee Life Styles: Cuckoo (15%)



Bee Life Styles: Social (10%)



Causes of CCD? ;)

by Leila Dowling



What can we do to enhance pollinator populations?

- Hedgerows & Ag landscape restorations
- Conservation set asides
- Green roofs
- Power line easements
- Roadside plantings
- Landfills, golf courses, green belts
- Urban gardens
 - <http://www.helpabee.org/>

Urban Gardens for Bee Health

- Bees need food from flowers
 - Rewards: Pollen & nectar are most important
 - Flower diversity
 - Provide patches (3x3 feet minimum)
 - Flowers for all seasons (bees & flowers have seasons)
- Bees also need nesting habitat (a place to live)
 - Leave some bare soil (Avoid “mulch madness”)
 - Provide bee condos
- Plant it and they will come
- Provide habitat and they will stay & reproduce

Urban Gardens

Oxford Tract, University of California, Berkeley



2003



2004

Häagen-Dazs Honey Bee Haven

UC Davis

2009

2012



Häagen-Dazs Honey Bee Haven

UC Davis, October 2012



Winter-Early Spring

- Plant Examples:
 - Manzanita
 - Almond
 - Ceanothus
 - Gooseberry
 - Germander
 - Seaside Daisy



Spring

- Plant Examples:
 - Phacelia
 - Salvia
 - Catnip
 - CA Poppy
 - Lupine
 - Redbud



Summer

- Plant Examples:
 - Sunflower
 - Goldenrod
 - Coneflower
 - Russian Sage
 - Squash
 - Milkweed



Late Summer-Early Fall

- Plant Examples:
 - Grindelia
 - Cosmos
 - Bidens
 - Aster
 - Coyote Bush
 - CA Buckwheat



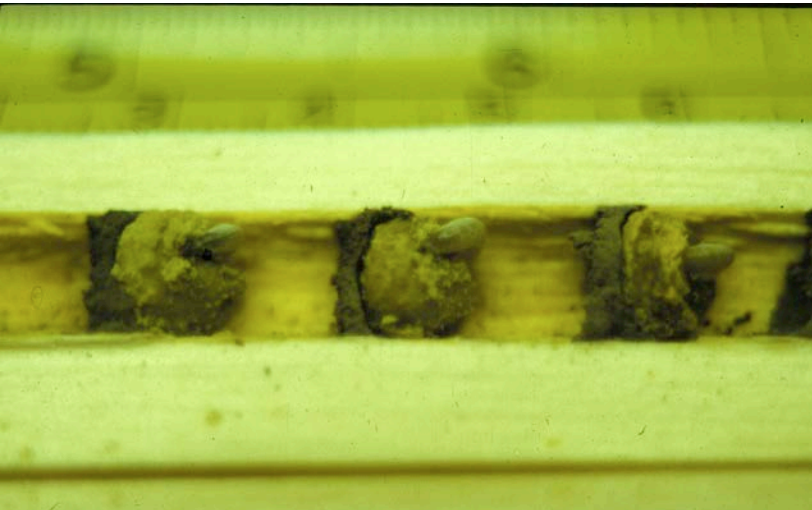
Providing a Place to Live

Soil Nesting Bees



Providing a Place to Live

Condos for Tube Cavity Nesters



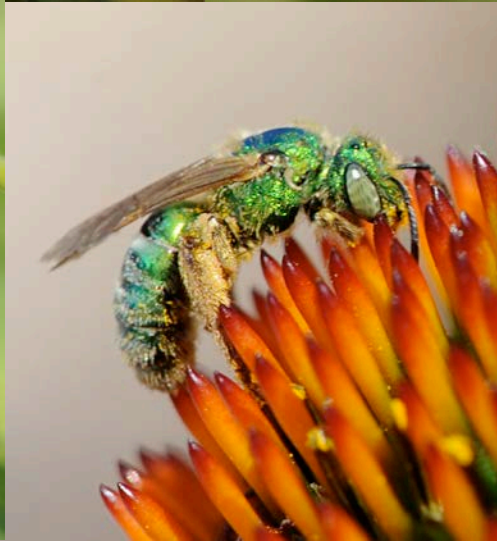
Providing a Place to Live

Some Need Nesting Materials & Water



Observing Bees in Your Garden

Close Up and Personal



Observing Bees in Your Garden

What about bee stings? No Worries



Observing Bees in Your Garden

What about bee stings? Boy Bees Can't Sting



Observing Bees in Your Garden

Behaviors: Mating, Territoriality, Thievery



Observing Bees in Your Garden

Photography, Observing, Netting, Vacuuming



Observing Bees in Your Garden

Catch, Chill, Observe, & Release



Summary

- Bees are diverse (more than just honey bees)
- Some bees are declining, others may be
- Gardens for bees can help provide:
 - Food: pollen & nectar
 - Habitat: a place to live (bare soil, cavities, stems)
 - Nesting materials: leaves, mud, plant hairs
 - Water in thin layers
- Bees can be observed up close with safety
- Bees have many interesting behaviors



Web Resources

General & Urban Bee Gardens

- Xerces Society for Invertebrate Conservation
 - <http://www.xerces.org/bringbackthepollinators/>
 - <http://www.xerces.org/pollinator-resource-center/>
 - <http://www.xerces.org/pollinators-california-region/>
- UC Berkeley: Urban Bee Gardens
 - <http://nature.berkeley.edu/urbanbeegardens/>
 - <http://helpabee.com/>
- UC Davis Häagen-Dazs Honey Bee Haven
 - <http://beebiology.ucdavis.edu/HAVEN/index.html>

Web Resources

Plants, Planting Guides

- UC Davis Arboretum All Stars
 - http://arboretum.ucdavis.edu/arboretum_all_stars.aspx
- Pollinator Partnership (NAPPC) Planting Guides
 - <http://www.pollinator.org/guides.htm>
- Natural Resources Conservation Service (NRCS) (OR guide)
 - <http://www.plant-materials.nrcs.usda.gov/technical/publications/wildlife-pubs.html>

Xerces Society books

THE XERCES SOCIETY GUIDE

Attracting NATIVE POLLINATORS

Protecting North America's Bees and Butterflies



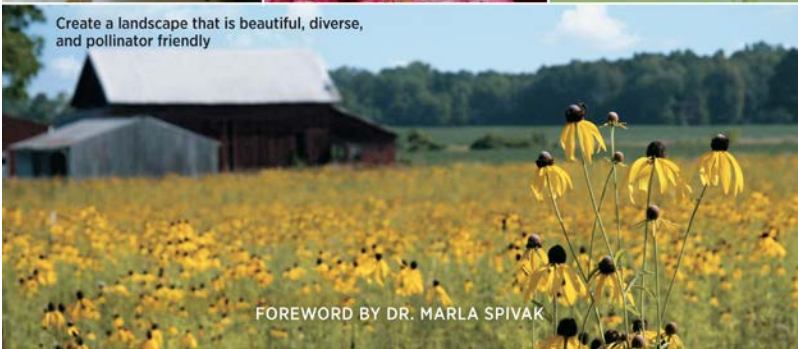
Ensure pollination in your garden, orchard, or farm



Identify the flower-visiting insects of your region



Provide host plants and nesting sites for bees and butterflies



Create a landscape that is beautiful, diverse, and pollinator friendly

FOREWORD BY DR. MARLA SPIVAK



Managing Alternative Pollinators

*A Handbook for Beekeepers,
Growers, and Conservationists*



ERIC MADER • MARLA SPIVAK • ELAINE EVANS

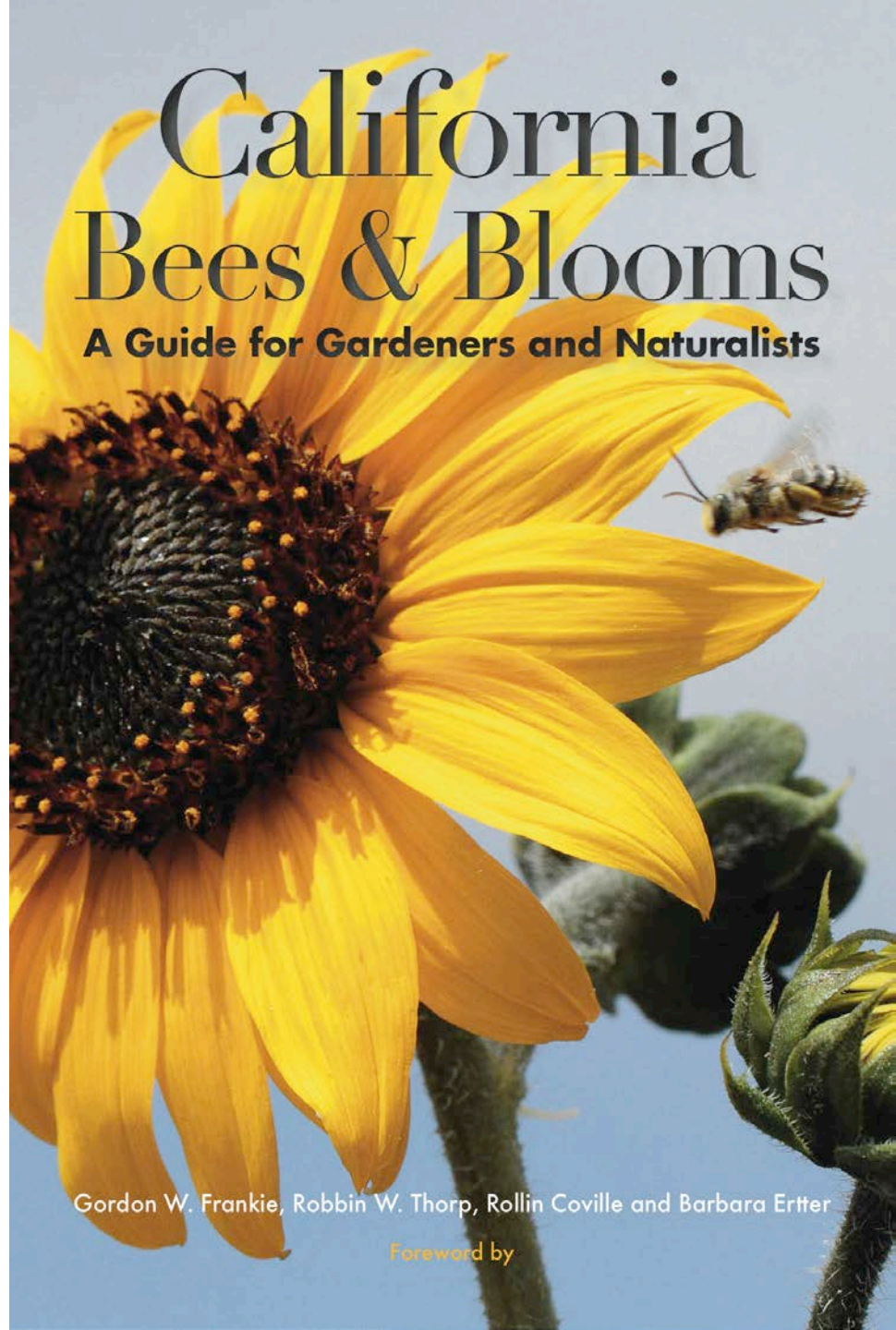


California Bees & Blooms

A Guide for Gardeners and Naturalists

Gordon W. Frankie, Robbin W. Thorp, Rollin Coville and Barbara Ertter

Foreword by



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