

**City of Woodland Waterwise Garden Tour
Woodland, CA June 16, 2012**

**Gardening to Conserve
Bees, Beneficials, and Birds**

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Why garden for these animals?

- **Natural habitat is under pressure**
- **Free pest control**
- **If you like to eat, thank a pollinator**
 - **As many as 70% of all food crops depend on an animal pollinator**
 - **Honeybees are in trouble**
 - **Average age of US beekeepers is 60**

A ladybug landing on you is supposed to be good luck. Unless you're a mealybug.

Or an aphid, common whitefly or spider mite. In which case, it means you're about to have the worst (and last) day of your miserable, puny, bug life.

Death is a lady. And her name is *Hippodamia convergens*. All of those garden pests you find so infuriating, she finds downright succulent. In fact, this lady is one of nature's most lethal assassins.

She is flying pesticide. She is Winged Victory, swooping on the parasites that would dare dine on the fruits, flowers and vegetables of your labor. A single adult can polish off nearly 400 aphids in under a week.

Before you know it, word buzzes all around the free-loaders' underworld: There's no more free lunch. The smorgasbord is now closed.

She is swift. Silent. And deadly as all get-out. And yet, completely innocuous to the environment and pets. Unless, of course, you keep a pet mealybug, or aphid. If so, you can consider this fair warning.

She and her colleague, the praying mantis, form a sort of League of Justice against backyard evildoers. Simply release them into the affected areas and let nature take its course. Literally. By the way, if you plant some grasses, sunflowers or wildflowers along your garden's edges, you'll make an inviting home for these flying aces. To the casual observer, they just look cute. Waddling and buzzing cheerily.

Yet, deep down in the soil, a grim but necessary work is protecting you and yours. Chomp, chomp.

Nails and lumber built your house. But your

garden was built with season after season of care and worry. Time and love. And a whole bunch of good, old-fashioned stoop labor. The truth is, more than any other part of your home, your garden reflects you.

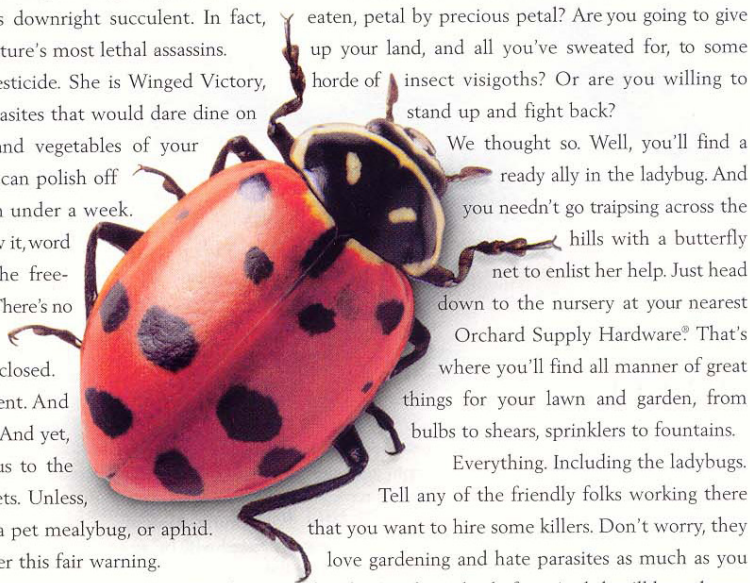
So how can you just stand idly by while it is all eaten, petal by precious petal? Are you going to give up your land, and all you've sweated for, to some horde of insect visigoths? Or are you willing to stand up and fight back?

We thought so. Well, you'll find a ready ally in the ladybug. And you needn't go traipsing across the hills with a butterfly net to enlist her help. Just head down to the nursery at your nearest Orchard Supply Hardware®. That's where you'll find all manner of great things for your lawn and garden, from bulbs to shears, sprinklers to fountains.

Everything. Including the ladybugs. Tell any of the friendly folks working there that you want to hire some killers. Don't worry, they love gardening and hate parasites as much as you do. They've done this before. And they'll be only too happy to help you set up the hit.

Looks like your luck is turning, gardenwise.

For 70 years, Orchard has been there. Helping Californians make the most of their homes and gardens. Doing it with this idea: Customer service means having the things people need and offering the help they want. There are over 6,000 items in every Orchard nursery, and people who know how to use them. Come visit us or log on to www.osh.com.

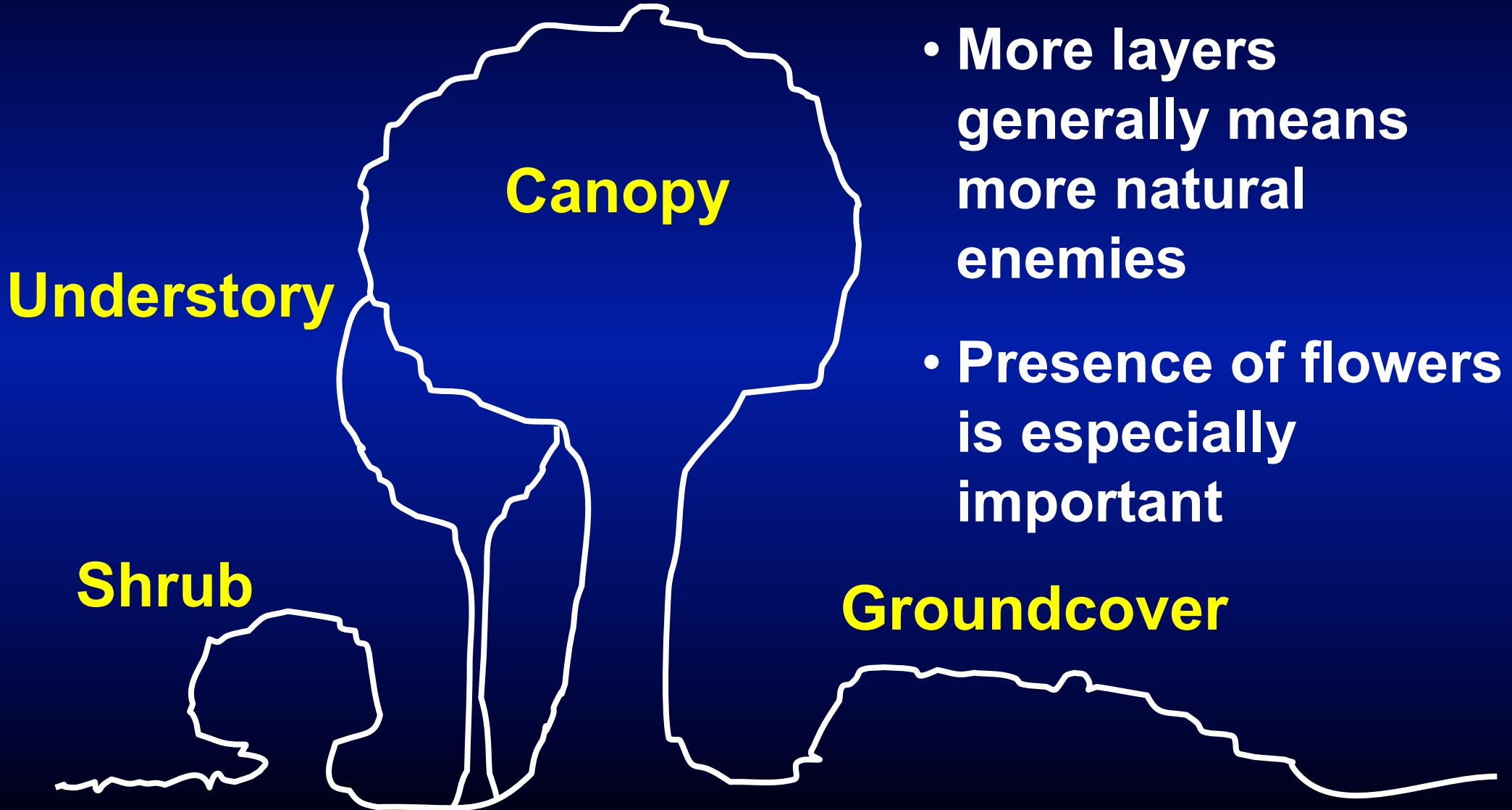


“Build It and They Will Come”

- If the conditions are right, natural enemies will find your garden
- Purchased lady beetles tend to disperse upon release



“Build it and They Will Come”



“Build it and They Will Come”

- Provide water, shelter, and food
- Minimize pesticide use

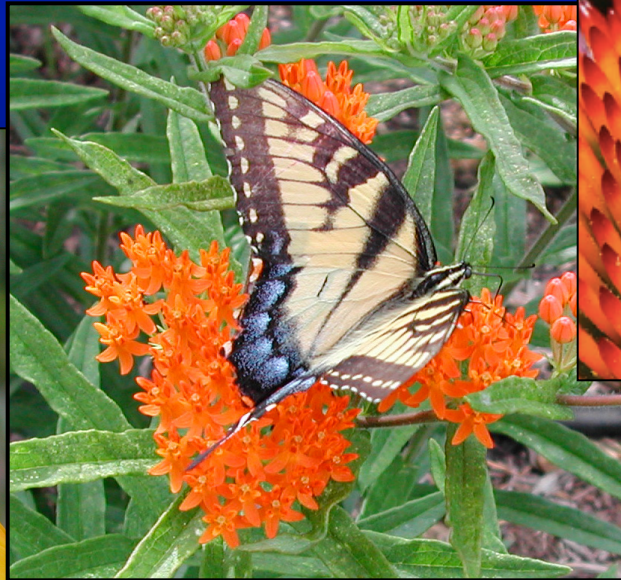
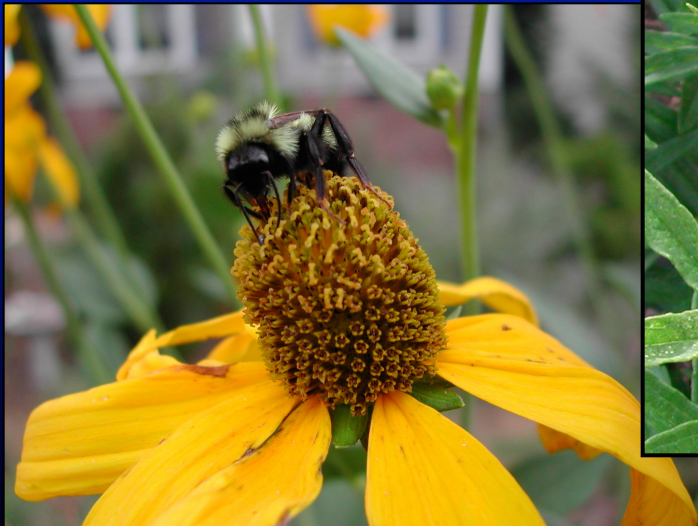


Photo Rollin Coville

Water



**Bees drink water,
while most insects
derive moisture
indirectly from
damp soil**



Shelter— ground level

- Bare ground
- Mulch
- Rock and stone crevices
- Stumps and logs



Shelter— above ground

- Bee houses
- Bird houses
- Grasses
- Dead trees, if you have the space



Shelter– plant material

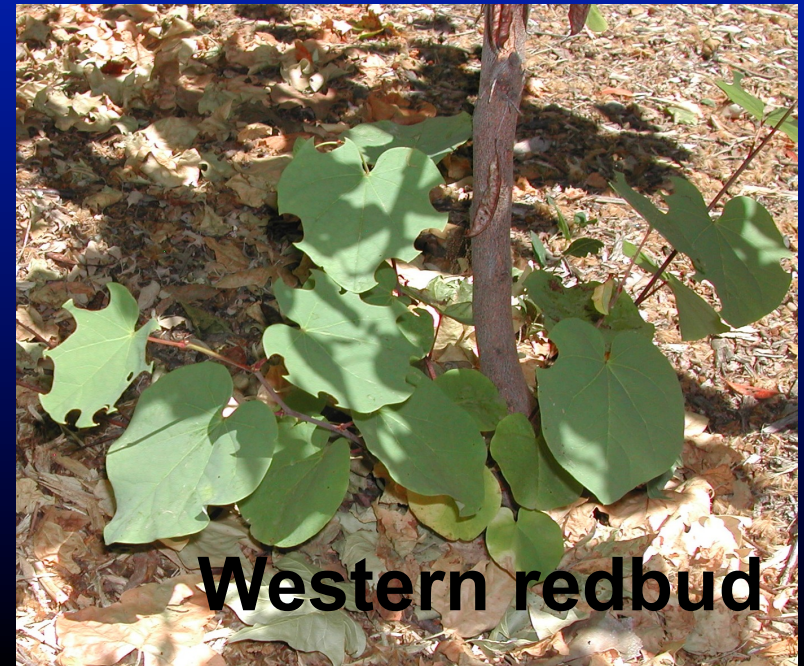
- Propolis: resin used to line nest (native bees) or seal gaps (honeybees)
- Plant material also used to construct nests



Coyote bush



Lamb's ear



Western redbud

Butterfly boxes



- 40 boxes placed in a wooded area of the Penn State campus.
- One year later:
 - Spider webs in 26 boxes
 - Wasp nests in 7 boxes
 - Flies in 3 boxes
 - Gypsy moths in 2 boxes
 - Ant colony in 1 box
 - Stink bugs in 2 boxes
 - Mouse nest in 1 box
 - 8 boxes were empty

Food -- birds



**Hummingbird
sage**



**Hummingbird
mint**

Food -- birds



CA
fuchsia



Penstemon

Food -- birds



**Cone
flower**



Mexican hat



Rudbeckia

Food -- insects

- **Diversity is good**
 - Try to always have something in bloom
 - Variety of flower shapes and sizes
 - Variety of plant families
- **Native bees need native plants: 20 of 22 studies show that bees isolated from their native habitat don't pollinate as well**

Flat flowers



Tubular flowers



Food -- insects

- **Caterpillars generally have more specific food requirements than butterflies**
- **Try to plant in groups**
- **A non-common plant with many bee species is better than a common plant with fewer bee species**



CA buckwheat



St. Catherine's lace



Seacliff buckwheat



Red buckwheat



Eriogonum nudum

[http://
www.laspilitas.com/
groups/buckwheat/
california_buckwheat
.html](http://www.laspilitas.com/groups/buckwheat/california_buckwheat.html)

Plant family	Mean proportion of samples with natural enemies \pm SE	Plant examples
Asclepidaceae	36.58 \pm 2.66	Milkweed, butterfly bush
Scrophulariaceae	22.75 \pm 2.26	Penstemon
Compositae (=Asteraceae)	19.53 \pm 1.20	Aster, coreopsis, sunflower
Rubiaceae	19.36 \pm 1.53	Gardenia , CA button bush
Apiaceae (=Umbelliferae)	18.06 \pm 1.31	Yampah, Lomatium
Labiatae	17.19 \pm 1.09	Sages
Balsaminaceae	15.19 \pm 1.42	Impatiens

***not water-wise**

Table adapted from Casey, CA. 2005. Companion plants for ornamental nursery stock conservation biological control. IOBC Bulletin 28(1): 47-50.



Aphid parasitoids

- Occur naturally and will be found when pesticide use is minimized
- Mummies will be the most obvious sign of their activity
- Over 30% parasitism may give control



Photo by JK Clark, UC Statewide IPM Program



Photo Susan Ellis



Photo Oregon State

Syrphid flies

- Aphid predators with adult food requirements similar to bees
- Larvae eat aphids and thrips
- Adults hover over plants



Photo PA Dept. of Conservation

Ground beetles

- Feed on many soil-dwelling pests and caterpillars
- Use mulch to conserve soil moisture and create a favorable environment



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Dazs® Honey
Bee Haven
on the UC
Davis
campus

Summary



Don't forget
the mulch!

- Provide the right conditions – food, water, shelter – and many insects and birds will find your garden
- Minimize pesticide use

THANK YOU

Any questions?