



UNIVERSITY of CALIFORNIA

Agriculture & Natural Resources



COOPERATIVE EXTENSION • YOLO COUNTY

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Bees in the Landscape

Approximately one-third of the human diet comes from insect-pollinated plants. In California, honey bees are responsible for pollinating almost half of our agricultural production, as well as pollinating food for wild animals and birds. Bees are the primary pollinator for most wildflowers and crops in the United States. Pollination is the fertilization of a flowering plant by pollen being transferred from the anthers of a flower to the ovules of that or another flower. The colors bees see are blue-green, blue, purple, violet, white and yellow. Research shows bees tend to visit blue and/or yellow flowers.

A honey bee will visit flowers of one plant species repeatedly even when flowers of other rewarding plant species are available, exhibiting flower constancy. Continuing to work the same species of plant makes the honey bee the most effective and efficient pollinator for agricultural crops. Many solitary native pollinators do not exhibit flower constancy.

Of the one thousand species of native California bees, twenty-six are bumblebees and the majority of the rest are solitary bees. The largest number of species is soil-nesting bees. They are very active for a period of a few weeks, and the rest of their year long life cycle is spent underground developing from egg to adult. Threats to all bees are parasitic mites, diseases, habitat loss, pesticides, agricultural practices, global warming and colony collapse disorder.

A garden that will attract a wide variety of bee species will aid in producing an abundant crop of fruit and vegetables. Some steps to help bees include:

Providing nourishment

- Plant a wide variety of nectar and pollen producing plants.
 - Select native plants where possible. Native bees will use introduced plants but have been shown to prefer natives.
 - If space allows, planting flowers in clumps of one species scattered throughout at a minimum of four feet can aid in providing visual cues to bees.
- Provide seasonal blooms of differing flower sizes.
 - Bees are all different sizes with different tongue lengths and need different shaped flowers.
 - Provide a variety of blooms for every season.
- Bees depend heavily on having a variety of pollen producing flowers to feed their young. It is important to provide bloom through the entire year for bees that are active in different seasons. This is especially important in spring and fall when flowering resources are scarce.

Nesting:

- Solitary native bees usually nest in the ground, in holes they excavate themselves, or in old rodent holes. A single female will prepare her nest, build a few cells, lay her eggs, and collect pollen for them. Although they nest alone, many females may lay in the same area. If an area is good for native bees, then bumblebees, digger bees and miner bees may occupy the same area. Do not mulch every area of your garden as this will not allow bees to nest. Provide a quiet undisturbed area for bees to establish nests. A hedge-row environment provides species rich flowering plants. Hedgerows serve as important

wildlife corridors serving as a habitat for birds, bees and other animals. The land around hedges typically also includes high plant biodiversity.

- Create a Bee house: Use a piece of untreated 4 x 6 inch or 6 x 6 inch lumber, dead tree limb or piece of firewood. Cut the wood into 8-inch-long blocks. Using a 5/16-inch bit, drill several rows of holes about 6 inches deep ¾ inch apart and across the grain to create a smooth surface. Do not drill all the way through the wood. Add an overhanging roof to shed storm water and provide protection from the afternoon sun. Hang your bee house in a sheltered place, at least three feet off the ground.

Pesticides:

- Insecticides can harm pollinators, so spray at night and avoid spraying when flowers are blooming.
- Herbicides can be an important tool when creating habitat for bees, but always follow the label and avoid spraying desired plants that provide abundant bloom.

A sampling of plants good for bees:

Native plants should be your first choice:

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|------------------|--------------|------------------|------------------|----------|
| ○ Aster | Buckwheat | California Lilac | California Poppy | Clarkia |
| ○ Cleveland Sage | Coffeeberry | Flannel Bush | Goldenrod | Lupine |
| ○ Manzanita | Oregon Grape | Redbud | Rose | Phacelia |
| ○ Sunflower | Toyon | Gum plant | Blue curls | |

Garden Plants

- | | | | |
|-----------|--------------|--------------|-----------|
| ○ Catnip | Cosmos | Giant hyssop | Lavender |
| ○ Oregano | Russian Sage | Rosemary | Sunflower |
| ○ Thyme | | | |

Bees, our life producing pollinators, are ecologically important for other animals, from songbirds to grizzly bears. Our role in the circle of life is protecting, enhancing or providing habitat as the best way to conserve pollinators.

References:

http://www.extension.org/bee_health

<http://entomology.ucdavis.edu/faculty/Mussen/beebriefs/>

<http://beebiology.ucdavis.edu>

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