Things You Can Do to Prevent the Loss of or Create Habitat for Pollinators:

Leave an area of bare soil for soil-dwelling native bees. Bees that live underground prefer south-facing, dry, sandy banks, free of vegetation.

Create or purchase artificial nests for wood dwelling bees, hornfaced bees, leafcutters and carpenter bees.

Inexpensive artificial nests can be created out of paper or plastic straws (roughly 1/4" – 3/8" in diameter) packed into a milk carton, coffee can or PVC pipe and then glued in. These domiciles should be firmly attached to tree trunks, fence posts, or the side of a shed, between 3 and 6' off the ground. The nests should be placed so that the holes are horizontal and the bees are not exposed to the hot afternoon sun.

For orchard mason bees, a constant supply of mud is needed to build nests and separate brood. A "dripping faucet" water source will allow much to accumulate at the bottom of a slanted board. Other insects will also drink the fresh water.

Shelter from rain, snow and wind and from pests like woodpeckers and mice should also be provided.

(Photo By: Jack Kelly Clark, UC Davis)

Credits and References:
Pollinators in the Garden, Betsy Matos and Diane Nelson, Iowa State University

Making Room for Native Pollinators, Matthew Sheperd, Xerces Society and the USGA Wildlife Links Program

Alternative Pollinators: Native Bees (Publ. #IP126), Lane Greer, National Sustainable Agriculture Information Service (*www.attra.org*)

The American Pollinator Protection Campaign's website (*www.nappc.org*)

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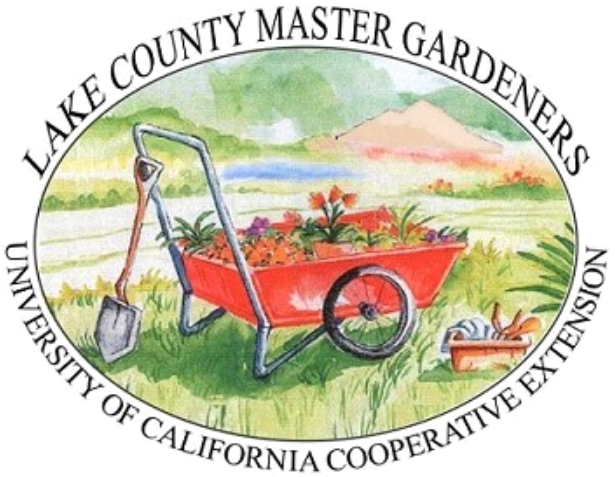
ATTRACTING POLLINATORS TO YOUR GARDEN



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What is Pollination?

Pollination is the transfer of pollen from the anther (male organ of the flower) to the stigma (female organ of the flower). The pollen grain that lands on the stigma must grow downward through a structure called the style. It arrives in the ovary where the eggs are located in order to fertilize the egg, which may then grow into a seed.

Plants vary in the way they accomplish pollination. Some plants – such as corn, walnuts, grapes, soybean, tomato, eggplant and pepper – have female and male organs close together in the same or adjacent flowers. Wind releases the pollen so that it falls onto the stigma without difficulty; no assistance is needed. Other plants including squash and many fruit trees have different anatomy and another means of transporting pollen is necessary. These plants depend on pollinators, usually insects, to carry pollen from one flower to another – more specifically, from the male flower parts to the female flower parts.

The colors, shapes and even fragrances of flowers have evolved for the purpose of attracting pollinators. Flowers with bright colors (especially blue, yellow, violet and red) attract pollinators during the daytime. At night, fragrance overrules color in importance.

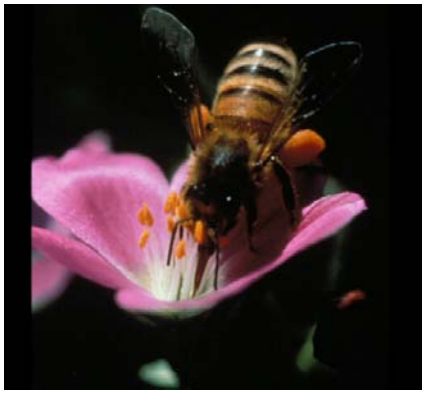
Co-evolution of flowers and pollinators has resulted in spectacular differences among flowers. Some flowers have variations in colors or lines that point the pollinator toward the nectar. Other flowers use traps, twists, or other devices to force pollinators into contact with the pollen.

Everything about the flower (shape, size, structural arrangement and fragrance) is important for attracting pollinators and maximizing pollination efficiency. Consequently, different flowers attract different pollinators.

Different Pollinators and Their Preferred Plants

***Native Bees*:** (Digger bees, Bumble bees, Sweat bees, Alkali bees, Squash bees, Leafcutter bees, Carpenter bees, Mason bees, Shaggy Fuzzyfoot bees)

Blackberry, Raspberry, Dogwood, Fruit trees (apple, cherry,plum), Alfalfa, Asters, Penstemon, Bee balm, Bird's-foot trefoil, Borage, Buttercup, Calendula, Coneflower, Chrysanthemum, Goldenrod, Goldfields, Hollyhock (singles), Impatience, Milkvetch, Mints, Marjoram, Nasturtiums, Oilseed rape, Pincushion, Crown-beard, Daisies, Dandelion, Evening primrose, Forget-me-not, Fuchsia, Gilia, Globe mallow, Red clover, Phacelia, Sunflowers, Coreopsis, Wild mustard, Vervain, Wild buck-wheat, Yarrow, Alyssum, Dill Thyme, Oregano, Rosemary, Anise hyssop, Lavender



(Photo: Vincent Lazaneo, UCCE San Diego)

Butterflies:

Asters, Buddleia, Verbena, Bachelor Buttons, Cosmos, Dahlia, Mexican sunflower, Zinnia, Marigold, Milkweed, Globethistle, Violets, Lupines, Black-eyed Susan, Clover, Sedum

Hummingbirds:

Because of their longer tongues, they tend to favor trumpet or bell shaped flowers. They are especially attracted to red flowers:

California Fuchsia, Monkey flower, Penstemon, Sage, Red Hot Pokers, Phlox, Delphinium, Canna, Liatris, Honeysuckle, Day lilies, Wild geranium, Cardinal flower, Blazing star

Hover flies and small bees:

Because of their short tongues, they prefer packed clusters of tiny flowers and aromatic herbs:

Marigold, Daisy, Coneflower, Butterfly weed

Pollinating beetles:

Wide-open flowers which allow easy access to their pollen are preferred:

Goldenrod, Asters, Sunflowers, Butterfly weed