

## **WHY POLLINATORS MATTER**

Most native wildflowers depend on pollinators to promote plant reproduction and sustain plant populations.

About one-third of our worldwide agricultural production depends to some extent on bee pollination, however less than 10 percent of the 100 most productive crop species depend entirely on bee pollination.

Some of the most healthy and widely available foods such as berries, apples, nuts and squash would never be available without the help of pollinators. If we want to continue eating foods like almonds, apples, avocados, blueberries, cranberries, etc. we need to understand that bees and other pollinators can't keep up with the current growth in production of these foods.

## **DECLINE OF NATIVE BEE POPULATIONS**

Colony collapse disorder is blamed for large, inexplicable die-offs. The disorder, which causes adult bees to abandon their hives and fly off to die, is likely a combination of many causes, including parasites, viruses, bacteria, poor nutrition and pesticides.

Diversity abundance of wild-insect pollinators has declined in many agricultural landscapes. Whether such declines reduce crop yields, or are mitigated by managed pollinators such as honey bees, is unclear (*Garibaldi, Steffan-Dewenter et. al., Science Journal, 2013*).

Modern agricultural practices, landscape fragmentation and habitat degradation have negatively affected wild bee populations by eliminating resources needed for successful reproduction such as nesting sites and pollen and nectar sources.

The loss of wild bees' nesting sites due to the expansion of farmland eliminates native wildflowers that the wild bees depend on when food crops aren't in blossom. The distance between crop fields and natural or semi-natural habitats containing suitable nesting sites reduce species richness and abundance of crop pollinators in America and Europe. The changing climate may also play a role in the loss of nesting sites and reduction of wild bee populations.

In most parts of the world, domestic bees provide pollination only locally and not necessarily where it is needed most. Domesticated bees mainly produce honey; any contribution they make to crop pollination is usually a secondary benefit. Even when beekeepers install plenty of hives in the field, crop yields usually increased when wild, native bees such as bumblebees, carpenter bees were in the area. "The surprising message is that honeybees cannot carry the load. Honeybees need help from their relatives and other wild bees, says Marla Spivak, a professor of entomology at University of Minnesota.

Overall, wild insects pollinated crops more effectively, because increase in their visitation enhanced fruit set by twice as much as equivalent increase in honey bee visitation. Further, visitation by wild insects and honey bees promoted fruit set independently, so high abundance of managed honey bees supplemented, rather than

substituted for, pollination by wild insects. Our results suggest that new practices for integrated management of both honey bees and diverse wild-insect assemblages will enhance global crop yields (*Garibaldi, Steffan-Dewenter et. al.; Science Journal, 2013*).

## **FLOWERS AND POLLINATORS**

The importance of bees, butterflies, hummingbirds, moths and other pollinators has become more prominent as honey bee hives are affected by 'colony collapse disorder' and other ailments.

Native bees including bumble bees, sweat bees, alkali bees, carpenter bees and digger bees are not the same as docile honey bees, native to Europe, that live in hives and help produce large amounts of honey.

Some native bees live only a year or less, either alone or in small groups, on the ground in hollow cavities in piles of sticks and twigs. Unlike the honey bee, many native bees do not fly great distances and need native forage nearby.

The decline of some native bee species may be contributed to their dependence upon just a few kinds of wildflowers for their food source. Native bees that emerge and fly in early spring don't have the cornucopia of flowering plants that mid-summer bees can access. For native bee species to survive, their preferred flowers have to be blooming when the bees start flying and need food.

Gardeners can enhance habitat for native pollinators and help these early-season bees by growing native early-season flowering plants whose color and shape attract bees, butterflies and birds such as Oregon grape, barberries, willows, or other native plants that are attractive to bees.

## **THINGS YOU CAN DO TO HELP**

- Plant patches of flowers to create a foraging habitat for pollinators.
- Native plants are the best source of food for native bees; however there are also some garden plants that are great for pollinators.
- Provide a range of plants that offer a succession of flowers, pollen and nectar through the whole growing season.
- Pollinators often choose the most rewarding flowers, and you can help direct them to your cucumbers and squash by growing their favorite flowers nearby.

## **ADDING COLOR & VARIETY TO YOUR GARDEN & LANDSCAPE**

Native bumblebees are excellent pollinators of vegetables, flowers, and fruit trees and are essential to pollination and fruit set of commercial and home crops including many types of berries.

Each species of bumblebee has a different range of flowers that it pollinates, but the different species together are usually capable of pollinating many of the plants in a flower or vegetable garden.

Bumblebees are the only native bees that are social. That is, they live in colonies, usually of less than 100 individual bees, and different bees perform different tasks for the colony. Their social behavior is not as complex as honeybees; most gardeners will find bumblebees in their gardens naturally.

Bumblebees are particularly attracted to native plants such as lupine, mint, larkspur, aster, clover, salmonberry, Oregon grape, salal, blueberry, madrone and rhododendron.



Oregon Grape



Salal



Salmonberry

Bees prefer flowers that are blue, purple, white or yellow such as goldenrod, asters, plants in the mint family, etc.



Aster species



Goldenrod



Agastache (Anise hyssop)

Adult butterflies are attracted to red, yellow, orange, pink and purple blossoms that are flat-topped or clustered and have short flower tubes.



Blazing star



Common Milkweed



Butterfly weed



Moths, many of which fly at night, are attracted to pale flowers that reflect the moon. Flowers that have a single petal provide easy access to their pollen and nectar.

- Good plants for supplying nectar in spring include Aubretia, Bluebell, Clover, Cuckooflower, Daisy, Dandelion, Forget-me-not, Honesty, Pansy, Primrose, Sweet Rocket and Wallflower.
- For late summer and autumn nectar, plant Buddleia, French Marigold, Ice Plant, Knapweed, Lavender, Marjoram, Michaelmas Daisy, Mint, Red Valerian, Scabious and Thyme.
- Ivy is especially good for autumn flying moths, as it flowers in October and November.



Hummingbirds tend to like red flowers with long, tubular shapes such as the scarlet gilia (or skyrocket) and penstemon species; most commercial hummingbird feeders are aptly shaped and colored.



Bee Balm



Phlox species



Lupine species



Red-hot Poker



Hollyhock