

The Buzz About Bees

Restoring Native Pollinator Populations

Gardeners As Observers

As gardeners, we're ever hopeful, aren't we? No matter past garden failures, we dig in and continue to plant. We nurture our vegetable and flower gardens, our trees and shrubs, our growing world. When we find ways to improve, we adopt those changes that help us become better. When we are informed of problem areas, we spread the word and lobby for solutions. We become a part of the solution.

When we became aware of the plunge in the Monarch population, we started planting milkweed in our gardens...milkweed! Who does that? Previous generations tried to eradicate milkweed. But we discovered that Monarchs only lay their eggs on milkweed species; that's the only plant the caterpillars will eat. So now we actually plant in our gardens what was once considered a nuisance species.

Now word is spreading that bees, our champion pollinators, are declining at very concerning rates. Some are even perilously threatened. Gardeners are observant so how did we not see this? Our eyes are often drawn by large aspects of plants that conform to our garden designs: bright blooms, selected color palettes, vertical statements. Small creatures like bees sometimes just don't enter our awareness.



Bumble Bee on Asclepias Tuberosa

Perhaps we just weren't paying attention. After all, most of our produce is available year-round from our local grocer: stacks of lettuce, regimented rows of cucumbers, piles of potatoes. There couldn't really be a lack of pollinators if so much is available so often, could there?

Declining Bee Populations

Studies continue showing that bee populations are in trouble. Bee keepers with managed colonies of the European honey bee were the first to raise the alarm. Since 2006 beekeepers in the United States have reported colony loss rates averaging 30% each winter where historically the losses have only been 10 to 15 percent.



Rusty Patched Bumble Bee

Now we know that native bee species are in trouble as well. Not all of the 4,000 native bee species have been studied. But some 1,500 have been studied closely. Of those, the population of 52% declined by more than 30% from 2005-2015. And 24% of native bees are in serious peril. The rusty patched bumble bee, native to Ohio, has suffered such a serious decline that it was placed on the endangered species list in 2017.

Habitat Loss and Pesticides

So, what's causing this alarming decline? Their habitat is shrinking and so are their food and nesting sources. Urbanization is consuming habitat, but so is the expansion of land for cultured crops. From 2006 to 2011 more than one million acres of grasslands from the Midwest through the Northern and Southern Plains were converted to monoculture crops.

Agricultural intensification, though, is the primary driver of declining bee populations, monoculture plantings of corn, soybeans and others that require heavy use of toxic pesticides.

Among the more powerful of these pesticides are the neonicotinoids, neonics for short. These are compounds that attack the nervous system of insects and other animals. They are systemics, meaning they are absorbed into the plant through soil drenches, injection, aerial spray or even coating of seeds before they are planted. Because they are absorbed into the plants, the chemicals are even in the nectar and the pollen making them toxic to pollinators that gather only these floral foods and cause no harm to the plants.

The chemicals can also remain in the plant for months and in the soil for even years. Successive crops can still absorb the toxins and present danger to pollinators. Even some growers of landscape plants use these powerful toxins. Because of studies on these chemicals, some neonics have already been banned, others severely curtailed in their use.

Commercial Growers Nurturing Native Bees

Now that growers and gardeners alike know the crisis faced by bees, what's being done to help the recovery of these important pollinators? And how can we as gardeners help? With the continuing collapse of honey bee colonies, growers have begun exploring ways to provide habitat for native bees, which are often more efficient at pollination than honey bees. Professors at Montana State University, working with vegetable growers, planted strips of perennial wildflowers next to crop fields. The growers had increased crop yields from greater pollination and also



Wildflower Plot in Crop Rows

harvested and sold the wildflower seeds for additional profit, more than offsetting the initial costs of planting and cultivating the wildflowers.

Blueberry farmers in Michigan, working with Michigan State University professors, found that native bees attracted to plantings of Michigan wildflowers within and around their fields have increased yields so much that they recovered their costs within three years. And the USDA's Natural Resource Conservation Service will now cover 50 to 90 percent of the initial cost.



Alkali Bee

From the alfalfa fields of the arid, alkali soils west of the Rockies to the apple orchards of New York and Pennsylvania, native pollinators like the alkali bee (*Nomia melanderi*) and orchard bees in the species *Osmia* are being nurtured by commercial growers formerly dependent on honey bees.

Gardeners as Problem Solvers

What can we as gardeners do? Plant a habitat for our native pollinators, of course. Pollinators need diverse and abundant food sources and places to build their nests and raise their young. Different native species are active at different times of the year; some for short periods of time. Habitat for pollinators should have a diversity of flowers that bloom at different times. This will sustain a wide variety of pollinators during the variety of times they are active.

Keep in mind that not all flowering plants are equal. Some provide mostly nectar; some provide mostly pollen. Even pollen nutrients of different plants can vary. So, a diversity of flowering plants blooming throughout the growing season will support a diversity of pollinators.

Most native bees are ground dwelling or nest in hollow branches of berry canes, even in holes made in dead wood by beetles. So don't be too tidy in your garden. Keep some patches of bare soil. Keep a dead snag in a tree if it's not a danger to anyone. Hang a mason bee habitat.



Mason Bee Habitat

As gardeners, we know that celebrating our plants also celebrates our entire ecosystem, including the pollinators that allow both beauty and bountiful harvests.

Explore more about our native bees is some of the following links:

[Penn State University-How We Can Encourage Native Bees](#)

[Ohio State University-Bee Population Decline](#)

[National Academies-Strategies for Maintaining Pollinators](#)

[Pollinators in Peril-Center for Biological Diversity](#)

[Xerces Society-How Neonicotinoids are Killing Bees](#)

[Entomological Society-Wildflower Strips for Crop Enhancement](#)

[Scientific American-Return of the Native Bees](#)