



## Let us save all the pollinator insects in Minnesota!

The happy result of pollination is the development of fertile seeds and good crop production. Incomplete pollination can result in reduced production of our fruits and vegetables, misshapen product, or uneven ripening. About one third of the food and drink that we put into our mouths depends on insect pollination. Without them, our meals would be very limited indeed.

**“Anywhere you have good, pesticide-free habitat, even as small as a suburban backyard, you are likely to find a good diversity and abundance of native bees.”**

**-Biologist Sam Droege, head of the U.S. Geological Survey’s (USGS)**

The honey bee is a European bee first imported to the United States about 400 years ago. In 2006 whole hives of honey bees suddenly started dying off due to a mysterious condition, the Colony Collapse Disorder (CCD). During the last few years, some beekeepers have experienced dramatic losses of 50 to 90% of their managed colonies of honeybees. Scientists are still studying the causes of colony collapse disorder. It may be due to viruses, mites, pesticides, toxins, and/or habitat loss. All species of bees are decreasing, but the amount of crops requiring insect pollination is increasing. With the dramatic decline of honeybee numbers, saving our native pollinators becomes ever more important. The honey bee is only one of the 20,000 bee species in the world. There are about 3,500 bee species in the United States, and almost 400 of them live right here in Minnesota. Only 2% of these bees are colony forming bees like the honey bees or the bumble bees.

The bumble bee is a colony forming bee. They are native to North America. Come spring, the overwintering queen will form a colony of 50 to 100 bees in the ground. These bees are hard workers. Because tomatoes are self-pollinating, they do not need bees. However, the University of California has shown that regular visits from buzzing bumble bees will increase the tomato crop by 50% and will double the size of the tomatoes. Fruit set in hybrid Sungold cherry tomatoes increases 45% when bumble bees are present. The bumble bee attaches to the tomato blossom and vibrates its flight muscles at exactly the right frequency (middle C on the piano) to release pollen. In Michigan, bumble bees were encouraged by the planting of wildflower buffers around fields of blueberries; yields increased by 500 pounds per acre. Yet sadly, fully one third of North American bumble bee species are in danger of extinction and remaining numbers of other bumble bees are decreasing.

The majority of other bees are solitary female bees that build their nests in holes in the ground, dry twigs, or rotted logs. They are queen bees that build their own nest, collect their own nectar and pollen, and lay eggs without help from other bees except for mating. Native bees have proven to be more efficient pollinators than the imported honey bee. The orchard bee starts working in early spring, even in cool and damp weather. They start working earlier in the day and continue later in the evening than honey bees. The solitary blue orchard bee is a flying dust mop carrying pollen. The USDA has shown that 250 of these gentle critters can do the same work of pollinating an orchard as a hive of 50,000 honey bees. In fact, some owners of orchards, blueberry fields, and cranberry bogs are discovering that over 100 species of native bees can pollinate their crops without the help of honey bees.

All bee species and other pollinators, including the butterflies, moths, flies, wasps, and beetles, have suffered serious declines in recent years. The University of Minnesota is seriously studying the decline of all pollinators and is encouraging our citizens to take action.

What was once abundant habitat for pollinators is now a massive parking lot at a mall, a housing complex, miles and miles of single variety heavily sprayed agricultural crops, a super-highway, or vast acreages of sterile lawn or non-native exotic plants. What is missing are diverse sources of pollen, nectar, or vegetation for food for both larval and adult insects. Even the beautiful butterfly bush with its pink, violet, white, or yellow blossoms will attract hundreds of bees, wasps, butterflies, and flies, but not a single North American insect larva will eat the leaves of this exotic plant from China. In contrast, our oak trees have been shown to support over 500 species of insects (plus the colorful

birds that feed on them). Many of our beautiful plants from other countries, or even from other parts of our own country, have become invasive and have ruined additional thousands of acres of once vibrant wildlife habitat.

You can make a difference in the life of a pollinator. Since the last glacial age about 11,000 years ago, native Minnesota plants and insects have adapted to each other. Growing native wildflowers on even a small plot of land will help our native pollinators. Encourage friends and neighbors to grow wildflowers (neighbors may appreciate a gift of native plants and the bees and butterflies will love you.) Excess native plants are always welcome donations to local plant sales and sell out fast. All types of pollinators will flock to your yard looking for nectar which provides sugar and minerals, and pollen which is a protein source. Many pollinators also prey on aphids and other harmful insects in your garden.

By patient observation, I have easily seen over 20 varieties of pollinators on our *Liatris*, anise hyssop, and *Helenium*. What a sight to see eight Monarch butterflies feeding at once on one blazing star! Yes, Monarch babies feed only on milkweed plants, but in late summer and autumn, the adult butterflies need bountiful nectar sources of all types to provide energy for their long annual flight to their winter home in Mexico. Goldenrod is another pollinator buffet. Goldenrods are incorrectly blamed for causing hay fever; ragweed blooms at the same time and its wind-borne pollen is what causes our fall-time allergies. Goldenrod has heavy pollen, is not allergenic, and will attract dozens of insects. Plant wildflowers in large groups or drifts to make it easy for the insects to move from one blossom to another. Many Minnesota wildflowers are beautiful and can be easily incorporated into the most formal or casual garden. Try growing a variety of flowers to ensure bloom from early spring to late autumn and to provide season-long nutrition. Choose perennials over annuals for year after year food sources. Avoid many of our hybrid flowers which are doubled or unusually colored, or lack pollen, fragrance, and nectar. Allow a few clovers and yes, even the non-native dandelions, in your lawn to provide bee food in early spring.

Provide water and damp spots to meet moisture and mineral requirements of insects, and sunny areas for insects to rest. Leave some bare, un-mulched ground for ground dwelling bees to create homes. Leave some twigs and litter for winter homes for bees. Build or purchase a bee house for orchard bees.

Limit your use of pesticides. Be sure to identify your problem correctly and use the least toxic control method available. Read the label carefully and thoroughly. Spray, if you must, at night when bees are not active or on non-blooming crops. Remember, even "safe" organic insecticides like rotenone, pyrethrin, and Spinosad are very deadly to bees. Horticultural oils, insecticidal soap, and neem are generally safe if not applied directly to bees. Learn to tolerate some insect damage on your plants; the larvae of beautiful butterflies may be eating those plants.

Don't be afraid of those bees and other insects covering your flowers. Yes, some people with allergies need to be especially careful not to get stung. However, the majority of our pollinators do not have stingers and others will not sting unless directly threatened.

We depend on all these pollinators for our food; now they are depending on us for their food, shelter, and habitat.

Sources of more information include:

- [Xerces.org](http://Xerces.org)
- [Monarchjointventure.org](http://Monarchjointventure.org)
- [Bumblebeewatch.org](http://Bumblebeewatch.org)
- [Pollinator.org](http://Pollinator.org) – enter zip code for a list of plants suitable for our region
- [Beelab.umn.edu](http://Beelab.umn.edu)
- [Dnr.state.mn.us](http://Dnr.state.mn.us)

Happy Wildflower Gardening, Joe Baltrukonis