

Native Pollinators, Native Plants

by Amy Yarger

When I first began my career at Butterfly Pavilion, visitors often would ask me, "How do I attract butterflies without attracting bees?" I rarely hear that question now. With threats from habitat destruction to chemical pollution to invasive species, pollinator populations may be at an all-time low, but concern for their survival has blossomed. Rightly so - the health of ecosystems rides on the back of these (mostly) small creatures. Pollinator declines may hit our pantry as well. According to *The Forgotten Pollinators* by Steven Buchmann and Gary Paul Nabhan, every third bite of food we eat is a result of pollinator-plant interactions. With Colony Collapse Disorder and other challenges facing introduced European honeybees, farmers and land managers are turning to our native pollinators for help.



Showy Milkweed (*Asclepias speciosa*) Photo by Amy Yarger

Colorado's native pollinators are truly a motley crew, ranging from the majestic Two-Tailed Swallowtail Butterfly (*Papilio multicaudatus*) to the jewel-like Metallic Green Bee (*Agapostemon coloradinus*) to the often clumsy Pennsylvania Leatherwing beetle (*Chauliognathus pennsylvanicus*). At last count, Colorado was home to 946 species of bees and 233 species of butterflies. Colorado's habitat diversity and open spaces have a lot to do with that high insect diversity, which is higher than almost every other state. Pollinators, and the native plants they visit, are a significant part of Colorado's natural heritage.

Native plants are especially important to support these beneficial insects for a number of reasons. Pollinators have adapted over countless generations to identify the flowers that will provide them pollen and nectar and to access those rewards. Every adaptation from sensory perception to mouthparts to chemical tolerance plays a role in determining whether a plant attracts a pollinator. Researcher Gordon Frankie conducted the Urban Bee Project and found that native bees are four times more likely to visit native flowers than non-native flowers.



Hummingbird and Rocky Mountain Beeplant (*Cleome serrulata*)
Photo by Charlie Turner

Native plants also play essential roles in the life cycles of many pollinators, especially those that are herbivores in the larval stage. Butterfly and moth species each have a narrow range of host plants that are suitable for egg-laying; over generations, larva have adapted to specific secondary chemical compounds contained in the plant tissues. The most famous example that comes to mind is milkweed's relationship with Monarch butterflies (*Danaus plexippus*). For many insects, milkweed is a distasteful or poisonous plant, but Monarch caterpillars can actually incorporate the toxins and use them for defense against predators. Monarch caterpillars cannot thrive on plants in other families, because they haven't adapted to those different secondary compounds. Research by Douglas Tallamy has found that native plant genera support three times as many butterfly and moth species, so that areas with more native plants have higher biodiversity overall.

The main virtue in growing native plants for pollinators is that the native plants fit well into the environment and make for a more balanced habitat. Native plants, well adapted to the temperatures, soil, and water availability of a region, can thrive without heavy pesticide use, fertilizers or other chemicals that might interfere with a pollinator's ability to forage and reproduce. Pesticides especially can have a negative impact on pollinators. Some of the first organisms to be affected by pollution in the environment are the invertebrates like butterflies. Ecologists often use butterfly populations as an indicator of environmental health for that reason.

The best thing a gardener can do for pollinators is to make space for them in the garden. Flowers of different seasons, sizes, colors, and shapes support more kinds of pollinators; plant diversity leads to pollinator diversity. In gardens with more than eight species of flowering plants, diversity and abundance of native bees was found to be significantly higher. By planting the same flowering plants in clumps or swaths, the gardener

can create a bigger “advertisement” to attract pollinators, while maintaining a diverse and interesting garden. Some of the most visited native plants at Butterfly Pavilion are Rocky Mountain beeplant (*Cleome serrulata*), Rabbitbrush (*Ericameria nauseosus* aka *Chrysothamnus nauseosus*), blanketflower (*Gaillardia aristata*), and golden currant (*Ribes aureum*). Butterfly Pavilion gardeners seek to create as long a bloom season as possible, with a planting plan that can feed everything from the tiniest sweat bee to the biggest butterfly.

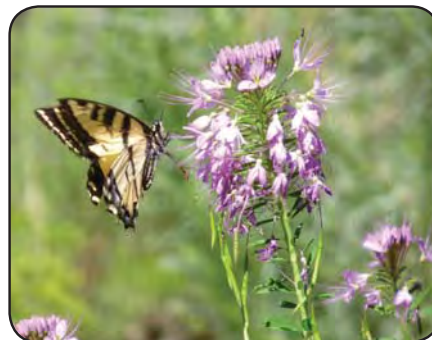
Your garden design makes a difference to pollinators as well. Pollinators get little benefit from perfect lawns and trimmed hedges. Instead, gardens that more closely resemble natural habitat can support more pollinators. Open ground with bunch grasses and shrubs can allow native bees, such as bumblebees and digger bees, to dig burrows. Shrubs with soft wood or hollow stems, such as golden currant (*Ribes aureum*), can also provide nesting sites for solitary bees. By planting in layers, tall shrubs and grasses next to shorter plants and groundcovers, the gardener can create more shelter for a variety of pollinators and other beneficial insects. These sorts of habitats tend to be better balanced and healthy as well, attracting precisely those insects that will eat potential pests – a boon to the gardener wanting to avoid pesticides.

Growing native plants for pollinators is rewarding, surprising and not all that difficult. Many gardeners are providing pollinator habitat without consciously thinking about it, if they are following sustainable gardening practices using native plants. Gardeners can be ideal citizen scientists, too. Projects such as The Great Sunflower Project can be great for helping the gardener learn more about native pollinators, as well as for contributing data to the larger pollinator conservation effort. What a revelation to watch the gardens over the year and note the dozens of different insects, all with their own amazing traits, foraging. The garden would be poorer without them, and so would we.

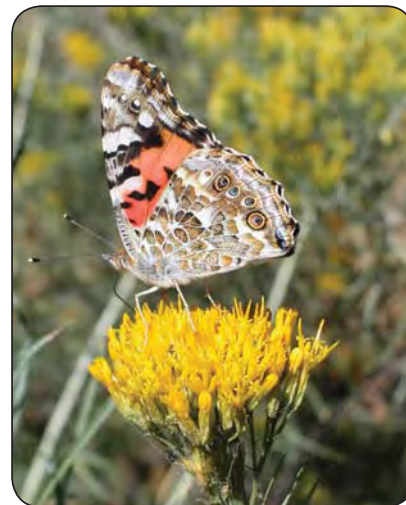
Reading List

The Forgotten Pollinators by Stephen Buchmann and Gary Paul Nabhan
Bringing Nature Home: How You Can Sustain Wildlife With Native Plants by Douglas Tallamy
Attracting Native Pollinators: Protecting North America’s Bees and Butterflies (Xerces Society Guide)
The Urban Bee Project - <http://urbanbeeproject.tumblr.com/>
Great Sunflower Project - <http://www.greatsunflower.org/>

Amy Yarger has worked in the public horticulture field since 1996. She received a bachelor’s degree in ecology and evolutionary biology at the University of California, Irvine, and then went on to study the effects of noxious weeds on pollinator-plant relationships at the University of Michigan. Her work as Horticulture Director at Butterfly Pavilion touches on many of her passions: plants, insects, habitat conservation, and science education.



Rocky Mountain Beeplant



Rabbitbrush

Photos on this page by Charles and Jan Turner



Blanketflower



Golden Currant