



Bloodroot



Ruby-throated hummingbird on cardinal flower



Japanese beetle on bee balm



Crested yellow orchid



Blue winged wasp on goldenrod



Trumpet creeper



Hummingbird moth on wild bergamot



Purple pitcherplant



Paw-paw



Water Lily

# PARTNERS IN POLLINATION

*Flowers and plants, and the animals who love them*

By Kerry Wixted

*Did you know? More than 3,000 plant species—including an amazing number of wildflowers, from mysterious orchids to carnivorous plants and everything in between—call Maryland home. Much of that diversity results from animal pollinators, which account for nearly 80 percent of pollination around the world.*

## The birds and the bees, and beetles

While it is no secret that showy flowers use their colors and scents to attract pollinators, a remarkable coevolution exists between the two. By examining particular flower characteristics like shape, size, color and scent, you can deduce potential pollinators.

For example, hummingbirds favor red or orange flowers tubular in shape. Conversely, beetles tend to prefer white or green bowl-

shaped flowers. Small, nondescript flowers that lack fragrant scents are pollinated by the wind or other means.

The key animal pollinators may surprise you. Beetles are the most numerous pollinators, although bees are the most efficient. Others include ants, bats (in tropical regions), birds, butterflies, flies, moths, wasps, and even some mammals and reptiles. In Maryland, the only vertebrate pollinator is the ruby-throated hummingbird.

## How to get pollinated

Animals do not visit plants for the sake of pollination; they visit in order to eat. To that effect, plants have evolved elaborate attraction methods. Plants most visited by bees, for example, have nectar guides, which are visible in ultraviolet light. These guides work as neon road signs, directing bees to the sweet spot. Other flowers, like the paw-paw (*Asimina triloba*), smell like rotting flesh in order to attract hungry flies and beetles in search of a meal. Flowers that rely on animals tend to place their *nectaries* (where nectar is stored) deep down within, causing animals to probe with their heads and/or tongues to get the sugary reward. The plant ultimately aims to deposit its pollen on its visitor and to receive the pollen from another flower. A successful exchange results in setting fruit.

This process is not always easy. Some plants, like the Virginia snakeroot (*Aristolochia serpentaria*), tempt and trap their pollinators, releasing their quarry after some time has passed. Other plants, like the fragrant water lily (*Nymphaea odorata*), are more grisly. During the first day of bloom, it secretes fluid to trap and kill unsuspecting pollinators. If a pollinator is carrying any pollen, it sinks to the bottom of the fluid pool and fertilizes the plant. After a day, the water lily releases its own pollen instead of the deadly liquid.

In contrast, the lowly skunk cabbage (*Symplocarpus foetidus*) treats its pollinators well. One of Maryland's earliest blooming wildflowers, it emerges in swamps as early as December. This plant actually warms itself up using enzymes, which causes any surrounding snow to melt while treating flies and beetles to a meal and a warm place to stay.

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Trillium



Virginia bluebells



Great spangled fritillary on milkweed



Sunflowers at McKee-Beshers



Rue Anemone



Tickseed



Dutchman's breeches



Spring beauty



Sweet Joe pyweed

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### Floral diversity and specialization

To reduce competition for pollinators, flowers bloom at different times of the year.

Following winter, some plants known as spring ephemerals will flower, fruit and die in a short period of time. These woodland wildflowers take advantage of the extra sun hitting the forest floor before the canopy leaves out.

You can find spring beauty (*Claytonia virginica*), trout lily (*Erythronium americanum*), trillium (*Trillium spp.*), Virginia bluebell (*Mertensia virginica*), toothwort (*Cardamine spp.*), rue anemone

(*Anemonella thalictroides*), Dutchman's breeches (*Dicentra cucullaria*) and more along the forest floor.

Many of these wildflowers have specialized pollinators. For example, a tiny, ground-nesting bee called *Andrena erigeniae* almost exclusively visits these spring beauties.

Maryland also contains more than 15 species of carnivorous plants like the rare purple pitcherplant (*Sarracenia purpurea*). To prevent accidentally eating their pollinators, most carnivorous plants place their flowers well above their traps.

### Plants and pollinators in peril

Unfortunately, many wildflowers and their wild pollinators are in decline. The largest threat to both groups is habitat loss. Other factors include invasive species, over-browsing by white-tailed deer, illegal collection, climate and weather changes, and disease.

Fortunately, you can easily help, even in small-scale places like your own backyard.

Planting native species of wildflowers enhances your backyard's beauty while providing a buffet for local pollinators. In addition, decreasing or eliminating pesticide use helps pollinators as well as animals farther up the food chain, like songbirds. ■

[dnr.maryland.gov/wildlife](http://dnr.maryland.gov/wildlife)

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## See for yourself

Enjoy impressive spring wildflower displays from mid-March through late April in places like Flag Ponds Nature Park, Lostland Run Natural Area, Potomac Gorge Natural Area, Chapman State Park, the Hereford section of Gunpowder Falls State Park and along the river in Susquehanna State Park.

As summer sets in, most wildflower blooms are at their peak. Easy to spot, you will notice an abundance of bee and butterfly species flitting between flowers. Bumblebee workers, in particular, are usually out en-masse. They use an interesting tactic known as *buzz pollination* where they vibrate to loosen pollen particles. This technique is particularly effective with species like blueberries (*Vaccinium spp.*)

Visit marshy habitats like Otter Point Creek Natural Area in late summer to see blooming swamp mallows (*Hibiscus spp.*), milkweed (*Asclepias spp.*), pyweed (*Eupatorium spp.*), cardinal flower (*Lobelia cardinalis*) and more. McKee-Besher Wildlife Management Area is also well known for its impressive sunflower fields in July.

While fall may seem like a period of senescence, you can still find many flowers in bloom. These late-blooming species are critical to many wildlife species like migrating monarchs. Two of the best fall wildflower locations are Cranesville Swamp Natural Area and Soldiers Delight Natural Environment Area. The serpentine grasslands consist of a mix of color, from fall blooming blazing stars (*Liatris spp.*) to goldenrods (*Solidago spp.*) In other places, like the marshes of Jug Bay Wetlands Sanctuary, tickseed sunflowers (*Bidens spp.*) cover the area in brilliant yellow hues.