

Why Pollinators Matter

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A favorite anecdote of my undergraduate botany professor was that bumblebees, just like us college students, have ‘majors’ and ‘minors’ – except instead of majoring in Biology and minoring in Computer Science, a bumblebee might major in Violets with a minor in Witch-hazels.

For generalist species – which are known for their ability to thrive in a wide variety of habitats by using a wide variety of resources – like the bumblebees (*Bombus* spp.), such specialization is surprising. Why search for and collect nectar from only one or two types of flowers when so many more are readily available?



Bumblebee (*Bombus* sp.) pollinating Sweet Pepperbush (*Clethra alnifolia*)

For bumbles, the answer comes down to learning ability.

Gathering nectar from a flower might seem trivial, but imagine it from the bee’s perspective: to complete this task, they must learn where nectar can be found in complex configurations of petals often larger than their own bodies, whether there is enough nectar in that flower to be worth collecting, and how to retrieve it if so – all while hovering mid-air or perching precariously nearby.



Dutchman’s Breeches (*Dicentra cucullaria*)

This task is complex enough that specializing on only a few species is worth giving up on the rest. For example, take Dutchman’s Breeches (*Dicentra cucullaria*), a native spring ephemeral flower related to cultivated Bleeding Hearts (*Lamprocapnos spectabilis*). These unique flowers are shaped like tiny, upside-down pairs of pants. The nectar sought by the bees is stored on the interior of—for lack of a better term—the ‘crotch,’ and the only openings are by the specks of yellow in the ‘waist.’ Pollinating them thus requires bees to hang upside-down from neighboring flowers with their hind legs, pry open the stiff outer petals with their midlegs, and reach into the interior with their faces and forelegs to get at the valuable nectar – quite the feat of acrobatics!

The specialization of bees on specific, worthwhile flowers saves them from having to learn too many of these complex retrieval mechanisms. It is also a critical adaptation to our seasonal climate. Like many of our spring ephemerals, Dutchman’s breeches’ early blooms arrive just in time to meet the queen bumblebees as they emerge from their winter hibernation. These queen bees (the extraordinarily large bumblebees you’ve likely seen buzzing around in March and April) focus on nectar-rich, early blooming flowers for a few weeks as they search for a place to set up their nests and begin the critical task of replenishing the populations of worker bees (the more ordinary-sized bumbles you’ll see pollinating flowers for the rest of the

summer). The long-lived queens will switch ‘majors’ several times through the season, with their preferences tracking the bloom times of different species. The shorter-lived workers will only have time to learn one or two flowers; their lifespans are too short for any more.

This fascinating lifestyle is perfect for wild places, but difficult to maintain in the modern lawn. Imagine a worker bee who majored in violets the day after the grass—and every one of its white and purple violets—is mowed. Imagine a bumblebee nest reliant on the seasonal cycle of native flowers, surrounded by gardens of only a few non-native species: species which they often cannot open, species which tend to not be as nutritious for them as natives, and species that will not provide food for any meaningful part of the year.



Monarch Butterfly (*Danaus plexippus*)

This is the plight of the bumblebees.

Similar stories can be told about many of our struggling native insects, from the charismatic Monarchs to the simple hoverflies, all of which have been facing steep declines due to habitat loss. Our lawns and gardens are often not a safe haven for our pollinators: they are too empty of native plants for food and wild spaces for habitat, too full of the pesticides and herbicides that make their survival impossible.

Most people are willing to get behind the importance of some bugs – butterflies and fireflies are quite beautiful, and we all love the fruits and vegetables pollination produces – but insecticides are, after all, used for a reason. Plenty of people just don’t like bugs. As I have recently received my first few mosquito bites of the season, I’ll admit, I’m sympathetic. But in the end, it’s not actually about the bugs.

By mass, bugs take up about 7.7% of the animal biomass on our planet. In comparison, humans only make up 2.3%, and all our wild birds and mammals together, another 0.4%.¹ That makes bugs a very outsized proportion of the animals in our local ecosystem and, consequently, a critical part of its food chain. Not only are bugs responsible for pollinating $\frac{3}{4}$ of the world’s flowering plants, they also directly feed a huge proportion of our fish, birds, and mammals. As much as we might not love them, nothing in our natural world works without enough bugs.



Black-throated Green Warbler
(*Setophaga virens*)

Photo credit: Cody Limber

Songbirds are a prime example. Resident birds that nest in New England over the summer rely on a stable supply of bugs to raise their young; even those that are usually strict seedeaters, such as chickadees and goldfinches, must locate an ample number of caterpillars for their chicks, who often cannot digest the hard seeds that their parents eat. Migrant birds suffer from diminishing insect populations, too: they need bugs to fuel their thousand-mile journeys north.

Those that cannot find enough food struggle to even make it to their breeding grounds, adding to their increasingly fraught travel woes.

The reason to care about bugs, then, is not just for their own sake, but for the sake of the animals that eat them and the flowers that are pollinated by them. Reversing the global decline of birds or recovering populations of native plants is impossible without their food, their pollinators, their essential link to the rest of their ecosystems. But how can we care for the bugs that make our ecosystems thrive?



The answer is simple: welcome them to our yards.

As human landscapes take up larger and larger proportions of the planet, the easiest way to keep that planet healthy is to let those landscapes become a part of the ecosystems they are built in.

A growing trend for integrating into our wild spaces and welcoming bugs into lawns and gardens is No Mow May, a pledge to let your grass grow wild and flower-full for the whole month. Like budgeting, dieting, or difficult New Year's Resolutions, I find that No Mow May is best approached not as an all-or-nothing solution, but as an incremental change of habits and attitudes. It's not specifically about taking a month off of lawnmowing (though this can certainly be a worthwhile part of the challenge!), but instead about taking a month to consider what you have to power to do in your own yard to support a more vibrant and healthy ecosystem.



For some, this can mean mowing every other week instead of weekly; this plan still allows some fast-paced flowers to bloom, without allowing grass to grow to heights that are prohibitively tall for smaller lawn mowers.

For others, this could mean swearing off other practices that have less to do with the height of the lawn than with its contents: moving away from lawn management reliant on herbicides and insecticides will save the lives of far more insects and their predators than a month of extra flowers, even if your grass does stay its normal height.

For those most committed to improving the habitat quality of their property, this could instead mean reducing the size of their lawn or giving up on grass as a main groundcover altogether; letting native plants back into our greenspaces can be a beautiful and welcome change, saving costs and time even as it promotes the survival of pollinators and their ecosystems alike.

For a problem as serious as the global decline of insect populations, everyone doing whatever they can, one day at a time, is going to matter a great deal to the bumblebees, butterflies, and bluebirds in our neighborhoods. As you start to plan your yardwork this year, think about how you could participate in the spring effort to let bugs support our ecosystems the way they are meant to. The bumblebees will thank you!