

A close-up photograph of a butterfly with orange and brown wings perched on a vibrant purple flower. The flower has a green, fuzzy bud at its base. In the background, other purple flowers and green leaves are visible, creating a lush, natural setting.

The Butterfly Effect

Spring/Summer, 2019
Vol. 3, No. 1

Harnessing the spirit of residents, schools, organizations, places of worship, and businesses to create a greener community.

“Let us be the ancestors our
descendants will thank.”

– Winona LaDuke

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Cover: European Skipper on Ohio Spiderwort (*Tradescantia ohiensis*). The orange tint of the wing-edge distinguishes this small, skittish butterfly from many look-alikes. As its name implies, the European skipper is not native to North America but instead to Europe and Asia. Skippers are distinguished from other butterflies by their “skipping” flight, smaller size, and bodies that are large in proportion to their wings. Skippers in the monocot subfamily (“[grass skippers](#)”) use grasses and sedges as larval hosts.



Community Greening in Action in
Minneapolis' Greater Longfellow
Neighborhood



Over a decade ago Daniel Schultz listened to a talk given by Doug Tallamy, the author of the book [Bringing Nature Home](#). It turned the way he saw the natural world upside-down. “It was such a shock to learn how little wildlife habitat is left in the United States,” states Daniel. He recalls Tallamy explaining how half of the United States is now used for farming and grazing with the other half consumed mostly by urban and suburban sprawl. “Only five percent of our land remains for wildlife habitat,” says Daniel in amazement. “I had always taken nature for granted, living so close to the Mississippi River and Minnehaha Falls. I honestly assumed nature was alive and well.”

That lecture opened Daniel’s eyes to the possibility of turning his own yard into a refuge for birds, bees, butterflies, beneficial insects, and other wildlife by planting the vegetation they rely on most for survival: native plants.

“I knew I had to do something in my own yard because if we want wildlife to survive we need to let it thrive in our urban and suburban landscapes. There’s simply nowhere else for wildlife to go,” he explains.

Daniel, a business owner and busy father of four young children ages three to nine, somehow found the time to install and maintain a large native plant garden in his yard. And then he had a “lightbulb moment” after learning about the [National Wildlife Federation’s Community Wildlife Habitat Certification](#) program—a program that certifies an *entire community* as an official wildlife habitat if a specific target number of participants becomes certified. The brainstorm: certification of his own community, the Greater Longfellow neighborhood, located in South Minneapolis, Minnesota. With a population of 23,000, certification would require a minimum of 150 certified backyard wildlife habitats, four schoolyard habitats, and four common areas certified as wildlife habitat.

Previous page: A sunny spot for hoary vervain, rattlesnake master—and royal catchfly native flowers in the Schultz garden. **Left:** Seen in the neighborhood: the mighty cup plant, which can tower to 10 feet in full bloom. With its leaves naturally forming a cup for water to collect, and its flowers that attract both birds and pollinators, Daniel calls it “habitat on a stick.”

To become certified, the back yard, schoolyard, or common area must offer the basic elements that all wildlife need: food, water, cover, and places to raise young. The program also requires that the community program mandate “sustainable gardening practices such as using rain barrels, reducing water usage, removing invasive plants, using native plants, and eliminating pesticides.” In addition, the certification must be sustained by ongoing educational programming. After receiving approval from the Greater Longfellow Council, Daniel promptly set out to meet the challenge.

Through tabling at local events, showing up at plant sales and garden center events, and partnering with other community groups, Daniel discovered his neighbors had a strong interest in becoming a certified wildlife habitat community. Ongoing placement of notices in the social network Nextdoor have triggered a robust response from throughout the area. In less than two years, 42 back yards, three schoolyards, and one church wildlife habitat have been certified.

The response has been so strong that Daniel is now working to connect mentors—individuals with a solid understanding of gardening with native plants as well as sustainability issues—with mentees who want to become involved in the program but are not sure how to get started. Ideally, mentors have native plants to share from their own gardens to help cut costs and to help jumpstart the gardens.

While the community has a way to go to become officially certified, it is the journey and not the destination that is important to Daniel. “It’s all about reconnecting people with nature. It’s also been great meeting neighbors, sharing ideas, building community, and networking with other groups,” says Daniel.

And then, checking his email he remarks with astonishment, “I just got five more responses from people interested in the program!” Surely, the Greater Longfellow neighborhood will soon be joining the 200 communities across the country that are certified by or registered with the National Wildlife Federation.

Click [here](#) for more information on the Greater Longfellow neighborhood Community Wildlife Habitat program.



Above: Making the best of a rained-out native plant sale. From left to right: botanist and president of the Native Plant Society, Michael Lynch; conservation information manager at The Nature Conservancy, Marya Johnston-McIntosh; and Greater Longfellow neighborhood community wildlife team leader and master naturalist, Daniel Schultz. **Below:** The Environment and River Gorge Committee, part of the [Longfellow Community Council](#). Many of the people on the committee helped grow and lay the foundation for the Greater Longfellow Community Wildlife Habitat Project and have long advocated for green spaces in the neighborhood.

Observing Berry Interesting Behavior



“On a hike this past fall I noticed a handful of black-capped chickadees jumping around among the fruit heads of staghorn sumac. After watching more closely, they would pick a dried berry and then fly off to a nearby branch and break it open with their bill, just like they do with sunflowers seeds from a feeder. They were searching for the tiny seeds inside. Very interesting behavior I had never witnessed before from a very common bird!”

—[Travis Bonovsky](#), nature photographer
Monticello, Minnesota

A Pollinator Health Food Banquet



“Native flowers are absolutely the best food source for native pollinators, and the pollinators know it. *Pollinators* native to your region strongly prefer *flowers* native to your region. The food quality of native flowers is superior compared to non-native flowers. The nine pollinators in the image to the right (can you find them all!) are willing to crowd together to partake in the high-nutrient content of this stiff goldenrod (*Solidago rigida*). If foraging on a non-native flower is the pollinator equivalent of a steady diet of fast food hamburgers, native flowers are more like selecting the best foods from the produce section of your grocery store.”

—Dave Crawford, naturalist
St. Paul, Minnesota



Saving Our Bees

by Heather Holm



Native plant gardeners with keen observation skills have surely noticed the increase in flower-visiting insects in their gardens. Fascinating visitation patterns emerge from one growing season to the next such as the same type of bee consistently foraging on a particular native plant. About 15 years ago, while installing and tending native landscapes, I started to notice these patterns and the astounding diversity of insects that native flowering plants attracted compared to traditional gardens filled with non-native plants. Since I always had an interest in entomology, it didn't take much for me to become enthralled with bees, to create a desire to learn more about these amazing insects, and to begin a fascinating journey educating others about their importance and connection to native plants.

In the last five years, extensive coverage in the media has centered on the plight of pollinators, specifically the European honey bee, *Apis mellifera*. Journalists have written much about this bee and its problems—pathogens, disease, pesticide exposure and other stressors that, combined, have severely impacted their immune system, health, and hive survival. Introduced into North America in the early 1600s, honey bees have been domesticated by humans for thousands of years. With the attention solely focused on the honey bee, it has become the template for people's understanding of how bees behave (forage), live (colonies or hives), contribute resources for human consumption (wax, honey), and provide some of the ecosystem services (pollination) that humans depend upon. However, this one-bee media coverage is based largely upon economic, not conservation concerns.

Hive losses cost beekeepers money and time to replenish their stock. Our current way of growing food in large, conventional monocultures means that the impact on the health and seasonal population fluctuations of honey bees will continue. Unless we change the way we grow food and provide habitat for honey bees—and native bees—this trend of hive losses for beekeepers will continue.

But what about native bees? Despite the importance of native bees, they do not dominate the discussion of bees in the media; in fact, little is heard about the diversity or lifestyles of native bees. Native bees pollinate many of the food crops humans consume and in many instances, are more efficient at pollination than honey bees. Native bees have coevolved with native plants, forming critical interdependent relationships, helping to pollinate and maintain diverse, thriving native plant communities.

Previous page: A pure green metallic sweat bee (*Augochlora pura*) nesting in a cavity in a decaying log **Left:** A mining bee (*Andrena sp.*) on chokecherry (*Prunus virginiana*).

There is still much work ahead to educate the public about native bees. With the spotlight on honey bees, attention is diverted from native bees and one well-meaning, but misdirected, result is the formation of citizen advocacy groups whose mission is to “save the bees.” These groups focus on saving honey bees, and this dominant focus has prompted one-sided responses:

- Individuals introducing a hive of honey bees in their back yard.
- Citizen groups advocating for municipalities to adopt bee friendly practices while changing ordinances so residents can keep honey bees in their back yards.
- Nature centers installing hives on their property to teach the public about bees. School children on a class trip to these nature centers learn about honey bees rather than native bees.
- Local, state, and federal conservation organizations joining the “plight of pollinators” bandwagon highlight honey bees in their literature or on their websites.
- A presidential memorandum is issued with honey bees, monarch butterflies, and pollinator habitat as its three main goals.
- Corporations or non-profit organizations allowing hives on their campuses or rooftops as a public relations campaign to show their support for bees.
- Bee- or pollinator-friendly articles or books featuring photos of honey bees.

Contrary to reports in the media, honey bees are not at risk of extinction, and as such they don’t need saving. The most recent estimate is that their population has increased 45 percent worldwide in the last 50 years. Humans have distributed this industrialized bee globally to every continent except Antarctica. As Sheila Colla and J. Scott MacIvor wrote in their 2016 article, “Questioning Public Perception, Conservation Policy, and Recovery Actions for Honey Bees in North America,” “Honey bee losses are not a conservation problem, but instead a domesticated animal management issue.” Many of the issues they face stem from their intense domestication and the stressors put upon them while being transported great distances to pollinate monocultures of crops, being exposed to pesticides, or from the nutritionally poor, inadequate habitat provided for the bees.

Honey bee threats manifest as measurable monetary loss (economic), whereas native bee threats are environmental in nature (habitat loss, climate change, and pesticides) and the loss is more difficult to quantify. Because honey bees do not need to be saved from extinction, these responses pose problems from a conservation, biodiversity, and ecological standpoint. Honey bees have very different lifestyles compared to native bees. It’s like comparing a domesticated animal with a wild animal of the same family or genus, such as a dog vs. a wolf or a chicken vs. a chickadee. Just like these examples, there are striking differences between the European honey

Right: The ground-nesting *Colletes* bee.





bee and native bees. The majority of native bees do not live in colonies; most construct solitary nests below ground in burrows or above ground in cavities. They depend on natural landscapes that provide adequate forage and nesting opportunities. Any major disturbance in a landscape managed by humans can impact existing or potential nesting sites of native bees. Another misguided response is the recommendations put forth for what plants (bee forage) to plant for bees.

Many bee advocacy groups focused on “saving” the European honey bee promote the use of non-native and even invasive plants because they are cited as being “good for bees.” One example of this thinking that comes up often is that dandelions, a plant introduced from Europe, are good for bees because it is the only plant that flowers in early spring. Native bees have survived on this continent for thousands of years without dandelions and have found an adequate amount of forage from native plants such as willows, red maple, currants, and gooseberries, as well as early flowering woodland wildflowers. Dandelions are an attractive nectar source for bees, but the pollen has a low 15 percent protein content, a nutritionally inadequate food source for alien and native bees to provide for their larvae. In contrast, pollen from the native pussy willow, *Salix discolor*, has a 40 percent protein content. Other “plant these for the bees” posters or memes include creeping charlie, birdsfoot trefoil, barberry and Siberian pea shrub, many of which are considered noxious weeds or invasive.

Growing evidence presented in peer-reviewed journals indicates that honey bees compete for resources with native bees. One hive of honey bees can contain between 10,000-50,000 bees, and honey bees can forage two to four miles in any direction from a hive, collecting resources over an area of land that contains many native bee nests. In contrast, native bees have limited foraging ranges, 200 yards to one mile.

Measuring the competition for resources has been very difficult for researchers since finding nests and quantifying competition at flowers is challenging. But one recently published paper by James Cane and Vincent Tepedino, “Gauging the Effect of Honey Bee Pollen Collection on Native Bee Communities,” approached the problem from a different direction. Instead, they looked at the quantity of floral resources collected by one honey bee colony and compared that to the quantity of resources collected by a solitary bee. Their results showed that one hive of honey bees in three months collects the equivalent quantity of forage that 100,000 solitary bees would collect. The implications of these results may mean that for every hive introduced by well-intentioned people who want to “save the bees,” the negative impact on native bee populations is potentially quite significant.

In urban/suburban areas there has been a significant increase in the number of hives introduced, as more municipalities adopt bee-friendly ordinances allowing hives in residential back yards. These built environments that include flower-rich gardens have been found to be very good at supporting common, but diverse, native bee populations. So the negative impact from competition in habitats such as these that support diverse native bee



Above: A small carpenter bee (*Certina sp.*) excavating her nest in the end of a flower stalk stem.

Previous page: A small carpenter bee (*Ceratina sp.*) on *Rosa blanda*.



Above: A leafcutter bee (*Megachilidae* sp.) on American bellflower (*Campanula americana*).

populations is potentially significant. Honey bees may not be pollinator-friendly at all if these metrics only represent a rough estimate of their potential to deplete limited resources that native bees depend upon.

With habitat loss being one of the main contributors to the decline of native bee species, it is more important than ever to protect or restore the native landscapes that these bees depend upon, including habitat in agricultural fields; local, state, or federal land; and other conservation land. While we can support a diversity of common bee species in our flower-rich residential landscapes, including the endangered rusty patched bumble bee, *Bombus affinis*, it's the large, natural parcels of land that support both rare plants and bee species. Public land managers can be pressured by beekeepers to allow them to place their hives without restrictions on these large tracts of land to forage for the summer months. This is one reason Cane and Tepedino published their paper: "Such a metric is needed by public land managers confronting migratory beekeeper demands for insecticide-free, convenient, resource-rich habitats for summering." Colla and MacIvor also raised this concern and expressed the need for environmental impact assessments and monitoring of native bee populations before the introduction of hives in large, natural areas.

Beekeepers aren't required to provide forage for their bees, and it takes an abundance of flowering plants to provide enough food for one hive of honey bees. One estimate is at least one acre of flowering plants per hive—an amount that one urban or suburban backyard cannot support. In contrast, farm animals would be provided food but these domesticated animals are confined to farms by fences, so they likely pose a minimal threat to wild populations of animals or birds. Honey bees are different and unique; they forage outside the boundaries of the farm (or back yard) to find their food. Forgoing the responsibility of providing an adequate amount of forage for the number of bees that are kept may put further pressure on wild populations, especially if numerous hives are stationed in one place for summering. This prompts a much-needed consideration for municipalities and advocacy groups that both alien and native bee species have enough forage available.

The journey continues with a call to action. Education about native bees and the habitat they require is critical in order to balance the current lopsided information and media coverage. Let's decrease the pressure on all bees by advocating for, creating, restoring, and enhancing habitat for bees, first and foremost. This can be accomplished with the strategic placement of hives in landscapes adequately planted to support the hives, protecting diverse native bee populations from competition for resources in both built and natural landscapes, and advocating for and supporting more research of native bee populations and environmental impact assessments of landscapes before hives are introduced.

HEATHER HOLM is a horticulturist and biologist who takes part in native bee research projects and informs and educates audiences in the Midwest and Northeast about the fascinating world of native bees and the native plants that support them. Holm is also author of *Bees: An Identification and Native Plant Forage Guide*, and *Pollinators of Native Plants*. Learn more at www.pollinatorsnativeplants.com. All photos in this article are courtesy of Heather Holm.



Notice Nature Everywhere

These lime and turquoise-colored lichen (*Flavopunctelia soledica/Parmelia sulcata*) were spotted growing on a tree in a damp wooded area on the shore of Lake Superior in northern Minnesota. The stunning lichen species can be found in a rainbow of colors worldwide. Check out the Facebook page “[Lichens Connecting People!](#)” to learn about all things lichen. Look for lichen on your next walk.

About This Journal

In mathematical chaos theory, the butterfly effect is the concept that a *very small difference in the initial state of a physical system can make a significant difference to that state at some later time*. What can this theory offer to the communities in which we live? We think it offers a lot. The cumulative effort of individual actions can positively impact the local ecosystems that comprise our lakes, streams, wetlands, yards, gardens, recreational areas, open spaces, roadsides, schools, and places of worship, and much more. Margaret Mead’s powerful idea, “Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has,” informs the articles you will read in this journal.

Neighborhood Greening, a non-profit organization dedicated to environmental education and stewardship, publishes *The Butterfly Effect* twice per year. In the journal, we celebrate community successes, examine small but impactful changes we can make to become better stewards of our local ecosystems, and tell the stories of those who are striving to green their neighborhoods. By harnessing the spirit of community, we believe focused efforts will make our neighborhoods better places to live for both humans and wildlife. There is much we can do to positively impact our shared environment—together. House by house. Block by block. Neighborhood by neighborhood.

We hope you enjoyed *The Butterfly Effect* and that you look forward to receiving this free publication in your inbox twice per year. You can sign up by visiting www.neighborhoodgreening.org.

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Do you have a story or idea to share about how you or someone you know is making your neighborhood greener, more environmentally sustainable, or wildlife friendly? Please send your ideas to Green@neighborhoodgreening.org.

Want ideas to green your neighborhood year round? Be sure to check out “[42 Ways to Green Your Neighborhood](#)” on Neighborhood Greening’s website.

The Butterfly Effect is published two times per year by Neighborhood Greening, a 501(c)(3) non-profit organization dedicated to community environmental education and stewardship. Block by block. Neighborhood by neighborhood.

Thank you to this issue’s contributors:
Carole Arwidson, Travis Bonovsky, Dave Crawford,
Heather Holm, Nel Pilgrim-Rukavina, and Daniel Schultz

Events, Classes &
Volunteer Opportunities

Be sure to visit Neighborhood
Greening’s Resources page at [http://
neighborhoodgreening.org/resources/](http://neighborhoodgreening.org/resources/)



