

The Butterfly Effect

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



An Introduction to 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. 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* four times each 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.

While Neighborhood Greening’s pilot community is Mendota Heights, how we roll up our communal sleeves here can be used as a model for other neighborhoods across the region. The idea is to create Neighborhood Greening communities across the metro area—maybe even across the country. It’s a big undertaking, but one we believe is very much worth pursuing. While some of the stories in the journal focus on the people, places, and history of Mendota Heights, they really are without boundary. So no matter what neighborhood you call home, *The Butterfly Effect* is meant to inspire.

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

Photo credit, left: Nel Pilgrim-Rukavina, **cover:** Dave Crawford, the great spangled fritillary butterfly on wild bergamot (*Monarda fistulosa*).

The Meeting of the Waters: Stories From Our Community

The Kraus Family Creates a Backyard Habitat

A few summers ago, the Kraus family noticed a steady increase in monarch butterflies visiting their backyard native wildflower garden. One day after an overnight rainfall, Paula Kraus was stunned to see the black walnut tree in her family’s backyard overflowing with monarch butterflies sunning their wings. “We counted 40 butterflies in that single tree,” she remembers. While that day was the crescendo to a summer full of monarch visits, their backyard garden continued to be a sanctuary for the butterflies for several more weeks. “Throughout the summer, there would often be groups of ten to 20 monarchs hanging out, sipping nectar—especially on our meadow blazing star flowers. Some days we would have 50 or so monarchs visiting our garden. I had never seen anything like that before,” marvels Paula.

Since the Kraus family installed their native plant garden five years ago, they have welcomed all kinds of visitors to their backyard—a wide range of butterflies, birds, and bees—as well as the human visitors who are interested in taking in their backyard habitat. The garden, designed by Tennant Landscaping, is planted exclusively with Minnesota native flowers and grasses. Most of the plants in the garden were purchased from [Outback Nursery](#). A wooded area beyond the garden—which had been overrun with Siberian elm and other invasive woody plants—has been replanted with native oak, maple, hackberry, and pagoda dogwood trees, to name a few.

Paula’s husband, Tom, who grew up on his grandparent’s 110-acre dairy farm, originally pushed for the idea of creating a native plant garden. “As a kid, I had all these natural spaces and wetlands I could explore,” explains Tom, who has warm memories of catching frogs, snakes, and salamanders while exploring the property. Paula and Tom wanted their four young children to experience some of the adventure of wildlife discovery in their own yard. Tom knew that a garden planted with Minnesota natives would attract the most wildlife. And it has. “The kids love looking for bugs, caterpillars, spiders. And when a visitor asks about a flower or something in the garden, our kids love being the one to give the answer,” says Paula.

The Kraus family garden, while planted only with native vegetation, follows formal garden design principles and fits well into the suburban landscape. “As with any garden, we weed on occasion, but we rarely need to water and it never needs fertilizing,” explains Paula. “When we do have to weed, we turn up the music in the backyard to lure the kids into helping,” says Paula with a smile.

To see a short video of monarchs sipping nectar on meadow blazing star in the Kraus family backyard garden, visit www.neighborhoodgreening.org/resources/

Middle, right: The Kraus family. **Clockwise from top left:** Some of the Kraus family’s favorite Minnesota native flowers in their garden: Joe Pye weed (*Eupatorium maculatum*), Purple coneflower (*Echinacea purpurea*), Butterfly milkweed (*Asclepias tuberosa*), Coreopsis (*Coreopsis palmata*), and Meadow blazing star (*Liatris ligulistylis*).



Round About Our Community

Where's this? When was the photo taken? (see answer on last page)



photo credit: Minnesota Historical Society



WANTED: ECOSYSTEM OUTLAW

Featured Outlaw: Buckthorn

Don't be fooled by this outlaw! With buckthorn's ability to quickly grow into dense, thorny, thicket-forming hedges, you may love how it keeps your neighbors from seeing your hair sticking straight up while taking the dog out to the backyard first thing in the morning, but, this is one clever con artist. Banned from garden centers in the 1930s, buckthorn long ago escaped from our suburban and urban landscapes and is now taking over and degrading our woods, parks, yards, and roadsides.

Buckthorn is one of our most noxious and invasive desperados. Birds ingest and expel its seeds, which rapidly grow into seedlings. Left unchecked, buckthorn thickets can contain up to a half-million seedlings per acre. With no room or sunlight for native tree saplings and other naturally occurring vegetation to grow, areas infested with buckthorn degrade over time. What's more, a buckthorn monoculture, which offers little nutrition for beneficial insects, birds, deer, and other animals, threatens important wildlife food sources. This public enemy looks green, but it's an imposter. [Learn](#) how to kick this scam artist out of town! By replacing buckthorn with thicket-forming native shrubs that provide healthy fruits, seeds, pollen, or nectar, you can still venture into your backyard not looking exactly ready for the day **and** provide wildlife with backyard habitat. Some good replacements for buckthorn include:

- High-bush cranberry (*Viburnum trilobum*)
- Nannyberry viburnum (*Viburnum lentago*)
- Chokecherry (*Prunus virginiana*)
- American hazelnut (*Corylus americana*)
- Black chokeberry (*Aronia melanocarpa*)
- Blackhaw viburnum (*Viburnum prunifolium*)
- Inland serviceberry (*Amelanchier interior*)
- Grey dogwood (*Cornus racemosa*)

Left: Local woods infested with a buckthorn thicket. While this looks “green,” these thickets lack adequate nutrients for most wildlife and have pushed out the diverse understory of tree saplings, shrubs, grasses, and wildflowers that once existed in these woods.



Bucking the Buckthorn

One chemical-free method of eradicating midsize buckthorn is to cover a cut stump with a product called a [Buckthorn Baggie](http://www.buckthornbaggie.com). A thick plastic bag is placed over the cut stump of the buckthorn and secured with a zip tie. While not included with the product, metal landscape pins can be used to secure the bottom of the baggie to the ground. A coffee can placed over a buckthorn stump and topped off with a heavy rock does the trick, too! The idea is to completely deprive the tree of sunlight. Keep the stump covered for at least two years. If you notice green shoots sprouting from the cut stump, it means sunlight is getting through. Investigate and resecure the baggie or coffee can.



Above, left: Focus first on removing the female buckthorn, which bears fruit. This will help prevent the growth of seedlings from buckthorn seeds. **Below, left:** A Buckthorn Baggie at work. **Photo credit, above:** Peter Dzuik, Minnesota Wildflowers



What We Plant Matters: Reimagining Our Yards as a Butterfly Haven

Throughout the millennia, the astounding beauty of the butterfly has inspired the imagination, the arts, literature, and poetry. Attracting these magnificent creatures into our own yards requires just three basic ingredients: larval host plants, nectar plants, and sheltering habitat.

No Larval Host Plants = No Butterflies

The first ingredient, larval host plants, are the plants caterpillars must eat to survive. (Check out page 16 to learn more about larval host plants.) You may be surprised to learn that both shrubs and trees play an important role as hosts in the butterfly garden. According to The Xerces Society, in its excellent book, *Gardening for Butterflies*, ten times more butterfly and moth species in their caterpillar stage feed upon native shrubs and trees than feed upon wildflowers or grasses.

Caterpillars Eat. Butterflies Sip.

While caterpillars are voracious eaters, butterflies (with a few exceptions) cannot eat, and only sip. This means a butterfly garden must offer both host plants for caterpillars to eat and plants for butterflies to sip nectar. While some host plants (such as milkweed) serve both purposes, your garden should have a wide range of floral resources that bloom successively from early spring until the end of the season.

The second ingredient, nectar plants, should encompass a wide range of flowers (preferably native) with various bloom times and colors. Avoid cultivated flowers that have been manipulated from the open form of the native species into a very dense or “double ruffle” form. Most butterflies and other insects won’t be able to access the floral resources of these complicated (or even sterile) plants.

Butterflies Are Insects So Avoid Using Insecticides

Any plants you include in your butterfly garden should be free of insecticides. Plants purchased from garden centers may have been treated with systemic insecticides. According to The Xerces Society, “Unlike older classes of insecticides that were formulated to kill pests on contact, systemic insecticides are absorbed by plants upon application and then distributed throughout plant tissues, sometimes including pollen and nectar.” These chemicals, known as neonicotinoids, can make plants toxic to bees, butterflies, and other beneficial insects that eat pollen, sip nectar, or feed on plant tissues.

*“Well, I must
endure the presence
of a few caterpillars
if I wish to become
acquainted with the
butterflies.”*

—The Little Prince

Left: A common buckeye butterfly sips nectar from an anise hyssop flower.
Photo credit: Vicki Bonk



In the Garden It's OK to Be Messy!

Lastly, butterflies require sheltering spaces. It's hard for many gardeners to resist "cleaning up" their gardens in the fall. But many moths and butterflies overwinter as caterpillars, pupae, and even adults in the soil surface, leaf litter, dead plants, twigs, and other hiding places in the garden. Even log piles provide the perfect spot for some moths and butterflies to hibernate. Removing a garden's protective layers means you may be unknowingly removing the very butterflies you are trying to attract (some pupae look exactly like leaf litter so you won't even know you are removing them). Keep your garden's fallen leaves, plant stems, natural debris, and hiding places intact until at least the first week of May. You will not only provide important habitat for butterflies, but other insects (the lifeblood of our ecosystem) as well. A winter garden left intact will also provide winter seeds for birds, attract wildlife, and provide visual interest for you.

Below: It's often easy to overlook garden visitors. Hiding in plain sight on this flower's seedhead is the celery looper. The off-spring of this moth overwinter in the soil. Disturbing the garden in the fall could prevent the next generation from emerging in the spring. **Photo credit:** Dave Crawford

Because butterflies are insects, and products containing neonicotinoids target insects, it makes no sense to bring treated plants (or insecticides) into your butterfly haven. Always ask garden center staff if plants have been treated with insecticides (even if they are labeled "pollinator friendly"). If they don't know the answer, don't purchase. Additionally, "organic" insecticides may not be safe for butterflies. Toxicity varies among these products. [The Xerces Society](#) offers comprehensive research information regarding both the use of insecticides containing neonicotinoids as well as organic insecticides. It should also be noted that seemingly harmless compounds sprayed on foliage (such as garlic, capsaicin, or fish oil) can alter the taste or smell of foliage to the point that a plant is avoided by butterflies altogether.

"Invasive" insects aren't the only ones chewing and chomping on your plants. All insect herbivores need to eat vegetation to survive. As says the little prince in Antoine de Saint-Exupéry's book, "Well, I must endure the presence of a few caterpillars if I wish to become acquainted with the butterflies." Let chewed leaves bring a smile to your face. It means you are providing a healthy habitat that will bring butterflies to your yard. Your butterfly garden will also support wildlife up the food chain—like terrestrial birds (which need thousands of insects to feed their young), reptiles, small animals, and more. To create habitat that truly welcomes butterflies, accept some imperfections in your garden plants and keep them au naturel.

Above: A monarch butterfly getting ready to emerge (eclose). Witnessing this metamorphosis is always a thrill. **Photo credit:** Vicki Bonk





A Partial List of Host Plants for Regional Butterflies and Moths

When a caterpillar emerges from an egg, it is miniscule and can’t travel far to find food. To aid her offspring’s survival, the female butterfly deposits her eggs on the food source her newborn caterpillars require so they can eat as soon as they emerge. The specific plant (or plants) a particular caterpillar must eat is its “host plant.” By planting a wide variety of host plants (which include trees, shrubs, and grasses as well as flowers), you will establish the foundation of your own butterfly haven. When selecting host plants, choose native plants. Cultivars of native plants do not always offer the same ecosystem value as the native species (also referred to as “straight species”). For more information on butterflies, moths, and their host plants, visit butterfliesandmoths.org.

- American Lady and Painted Lady:** Ironweed (*Vernonia fasciculata*), pussytoe species (*Antennaria*), pearly everlasting (*Anaphalis margaritacea*)
- Baltimore Checkerspot:** White turtlehead (*Chelone glabra*)
- Black Swallowtail:** Golden Alexanders species (such as *Zizia aurea* or *Zizia aptera*) as well as the leaves of plants in the parsley, carrot, celery, or dill families.
- Common Buckeye:** Monkey flower (*Mimulus ringens*), blue vervain (*Verbena hastata*), hoary vervain (*Verbena stricta*)
- Coral Hairstreak:** Chokecherry shrub (*Prunus virginiana*)
- Delaware Skipper:** Big bluestem grass (*Andropogon gerardii*), switchgrass (*Panicum virgatum*)
- Eastern Tiger Swallowtail:** numerous native trees including wild cherry (*Prunus*), basswood (*Tilia*), birch (*Betula*), cottonwood (*Populus*), and willow (*Salix*)
- Fritillaries:** Native violet species (*Viola*)
- Hummingbird Clearwing Moth:** Northern bush honeysuckle (*Diervilla lonicera*), chokecherry shrub (*Prunus virginiana*), white snowberry shrub (*Symphoricarpos albus*), nannyberry, and highbush cranberry shrubs (*Viburnum species*)
- Monarch:** Milkweed species (*Asclepias*)
- Mourning Cloak:** Numerous native trees including pussy willow (*Salix discolor*) and weeping willow (*Salix babylonica*), cottonwood (*Populus deltoides*), aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), and hackberry (*Celtis occidentalis*).
- Pearl Crescent:** Several species of true smooth aster (such as *Aster laevis* and *Aster novae-angliae*)
- Silvery Checkerspot:** Black-eyed Susan (*Rudbeckia hirta*), pale purple coneflower (*Echinacea pallida*)
- Spring Azure and Summer Azure:** New Jersey tea (*Caenothus americanus*), redb twig dogwood (*Cornus sericea*), nannyberry and highbush cranberry shrubs (*Viburnum species*)
- Top Three Host Trees for Butterflies and Moths:** *Quercus* species (oaks), *Salix* species (willows) and *Prunus* species (e.g., cherry shrubs and trees such as chokecherry, black cherry).

Left: Newly emerged black swallowtail caterpillars munching on a dill plant. Black swallowtail caterpillars eat plants in the *Apiaceae* plant family which include Golden Alexanders (such as *Zizia aurea* or *Zizia aptera*) as well as parsley, carrot, celery, fennel, and dill. Caterpillars rarely resemble the butterfly or moth they will transform into. Like the Ugly Duckling, even the “ugliest” caterpillar can turn into a lovely winged creature. Part of the enjoyment of the butterfly garden is observing the metamorphosis from egg, to several caterpillar stages, to chrysalis/cocoon, to butterfly or moth.

My, What Big Eyes You Have!

If you were a would-be predator of this beetle—the Eastern-eyed click beetle—those two fake supersized-eyes might make you think twice! This beetle will “play dead” on its back when threatened. When the coast is clear, it makes a clicking noise as it flips itself upright. Over an inch long, this species of click beetle is not a threat to our Minnesota gardens. The beetle pictured above was first spotted resting on the tire of a car parked in a Mendota Heights driveway. Look for this interesting creature in wooded areas, especially from May to July.





Guess Which Flower is Better for Bees, Birds, and Butterflies?

The more a plant is manipulated, the less attractive it becomes to wildlife. Changing a plant's natural traits such as color, size, shape, bloom time, leaf variegation, leaf color, structure, even scent, can diminish its wildlife value. Pictured left, native *Echinacea purpurea* (above) has been cultivated into a floral oddity (below). The native flower's open structure above left offers pollinators easy access to nutrients. The dense structure of the ironically named 'Butterfly Kisses' probably keeps most pollinators away. This cultivar's seedhead has virtually vanished so that it offers few winter seeds for birds.

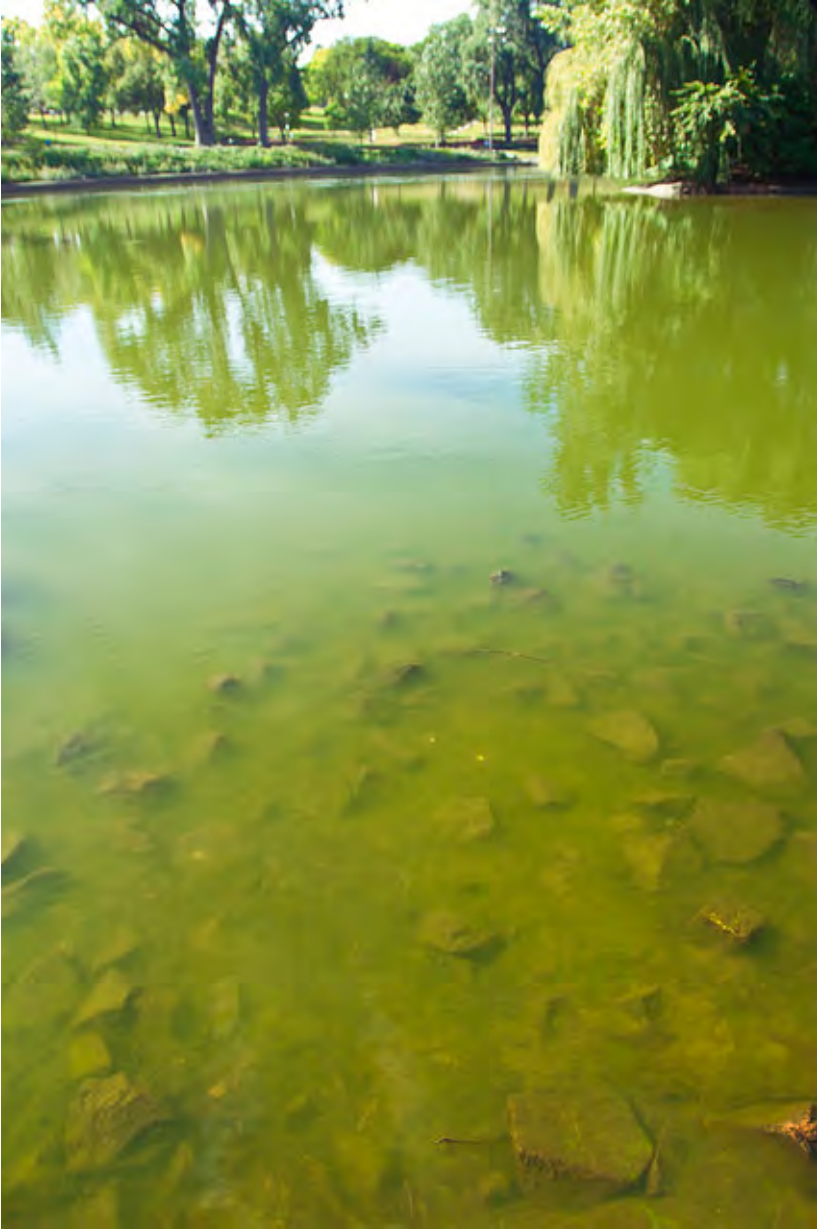


Read plant labels so you know what you are buying. Plant names that include an "x" (such as *Coreopsis* x 'Moonbeam') indicate the plant is not a straight species native, but a hybrid—a plant that is created by crossing two species. A label with a description in single quotation marks (such as *Echinacea* 'Pink Double Delight') indicates the plant is a cultivar—a new plant created through selective breeding. Native plants are indicated by their Latin botanical name. *Vernonia fasciculata* is the two-part Latin name (its scientific nomenclature), for the straight species of ironweed.

Do You Know About Stormwater Pollutants?

Did you know stormwater does not go to a wastewater treatment facility? Pollutants that go down the storm drain on the streets where we live, such as grass clippings, leaves, pet waste, fertilizers, pesticides, road salt, and residue from automobiles, are funneled untreated to the nearest waterbody. Those waterbodies include our local lakes, streams, wetlands, natural and manmade ponds, and rivers—such as the Mississippi. The pond behind your house or the lake down the road most likely receives stormwater runoff. You can help make an impact in reducing local water pollution by keeping your driveway, street curb, and storm drain swept and clear of pollutants (grass clippings and leaves are also water pollutants as they contain phosphorus which fuels oxygen-depleting algae). As they say, “Only rain down the drain.”

Right: Your street is a local tributary that connects to our local waterbodies. Grass clippings, leaves, and pet waste that go down our stormdrains are a large source of pollution in our lakes, streams, rivers, and ponds.
Photo credit, upper left: MPCA





Events, Classes & Volunteer Opportunities

Prairie Moon Nursery Tour and Open House

You'll have a chance to see our diverse prairie plantings, production gardens, seed storage/cleaning facilities, and learn about native insects from a guest speaker. Reservations required.

Saturday, July 15th, 1:00 p.m. – 4:00 p.m.

www.prairiemoon.com/tour-and-open-house.html

A Prairie Walk with Carolyn Harstad

Tour the extensive prairie garden at the Dakota County Fairgrounds with author and native plant expert Carolyn Harstad. Learn how you can incorporate these hardy natives into your own landscape. Registration required. Sponsored by the University of Minnesota Extension Master Gardeners in Dakota County.

Tuesday, July 18, 6:30 p.m. – 8:00 p.m.

www.dakotamastergardeners.org/event/tuesday-evenings-in-the-garden-a-prairie-walk/

Minneapolis Monarch Festival

The Festival celebrates the monarch butterfly's amazing 2,300 mile migration from Minnesota to Mexico with music, food, dance, hands-on art, native plant sales and plenty of opportunities to get up close with monarch butterflies, learn about their habitats, and what you can do to make a difference.

Saturday, September 9, 10 a.m. – 4:00 p.m.

www.monarchfestival.org/

PollinAtION Festival

On an extraordinary fall day in Stillwater, 1000+ bee friends will buzz on over to the Kissing Birch Farm, not just for the beer, but in support of butterflies, bees and pollinator friendly communities.

Sunday, September 10, noon – 6:00 p.m.

www.pollinatorfriendly.org

Hawk Weekend Festival

Come and celebrate the fall bird migration with us! Hawk Weekend is the annual festival held by the Hawk Ridge Bird Observatory in Duluth, MN. It is a wonderful opportunity to showcase one of North America's best places to experience the fall bird migration at Hawk Ridge Nature Reserve. There will be a variety of field trips, hikes, programs, and activities for all ages!

September 15 – September 17

www.hawkridge.org/events/hawk-weekend-festival/

Left: An Eastern swallowtail butterfly sipping nectar from the Joe Pye flower. Joe Pye is a pollinator favorite, especially for monarch and swallowtail butterflies, as well as bumblebees.

Photo credit: Lucy Pilgrim-Rukavina

“When you tug at a single thing in nature,
you will find it attached to the rest of the
world.”

—John Muir



Did You Enjoy This Edition of *The Butterfly Effect*?

Don't miss the next journal! Sign up to receive your free e-version of *The Butterfly Effect* at www.neighborhoodgreening.org/the-butterfly-effect.

Do you have a story or idea to share about making your neighborhood part of a greener, more environmentally sustainable community? Please send your ideas to Green@neighborhoodgreening.org.

The Butterfly Effect is published four 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.

Explore our website and sign up to receive *The Butterfly Effect* at www.neighborhoodgreening.org. Visit our Resources page for a wonderful list of books, videos, newsletters, native plant growers/vendors, and much more: www.neighborhoodgreening.org/resources.

Round About Our Community



“Construction of the Mendota Bridge, 1925.”

When completed in 1926, the Mendota Bridge was the longest continuous, concrete arch bridge in the world. Before this bridge was built, the river could be crossed by ferry; the Smith Avenue High Bridge, built in 1889, offered another way to cross the river.

Thank You to Our Sponsors



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