Parks Saving the Monarch

Parks are critical partners in the nationwide effort to restore habitat and increase the population of this beloved insect

By Richard J. Dolesh

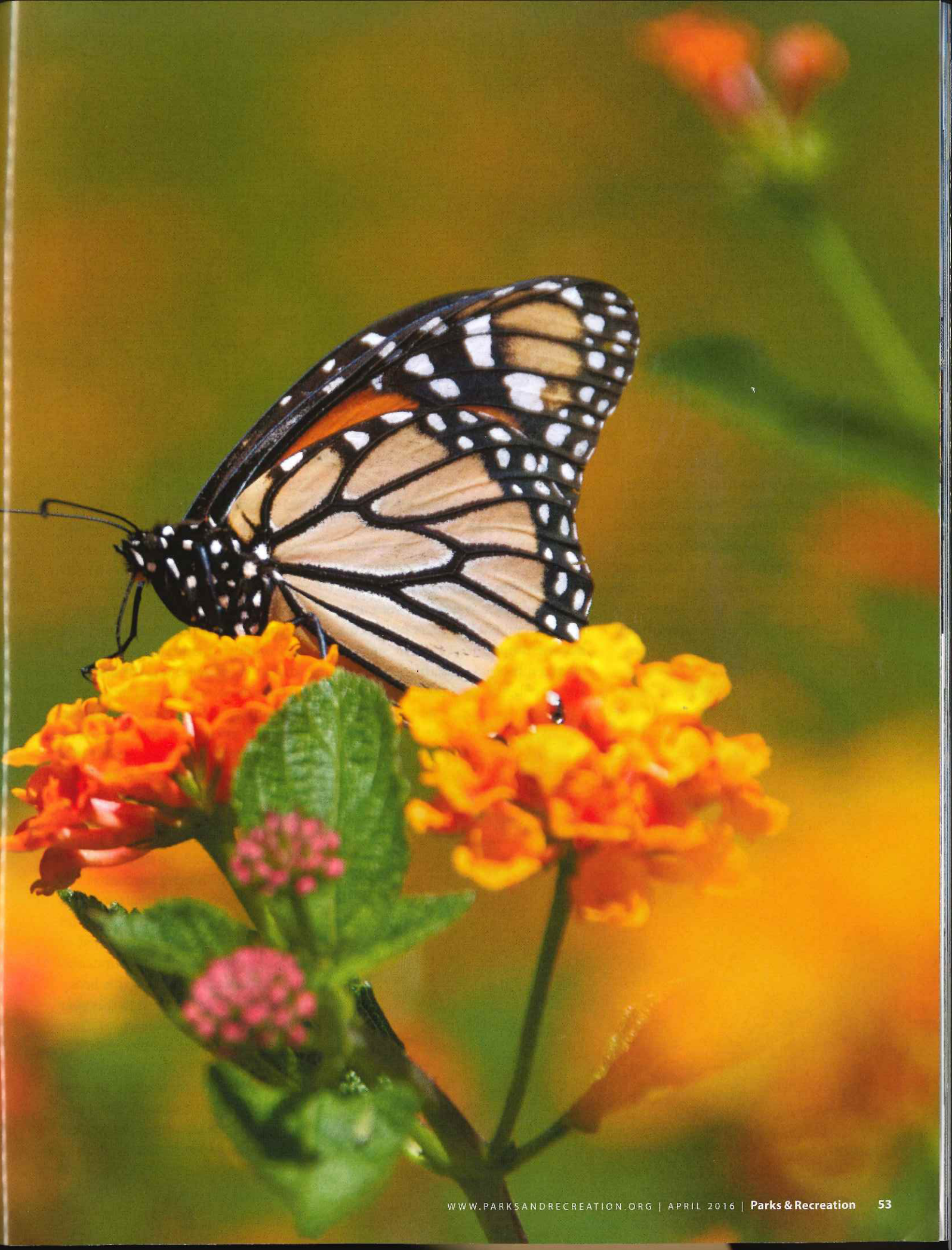
A little over a year ago, NRPA announced the Parks for Monarchs campaign, an initiative to encourage park and recreation agencies across the nation to collectively show the power of parks as we work to save the monarch butterfly, a remarkable wildlife species whose numbers have declined more than 90 percent in the past two decades.

Not so long ago, monarchs were taken for granted by just about everyone. In most parts of the country, you could easily find this graceful, floating, dancing splash of orange and black in the landscape in backyards, farm fields or along roadsides. Wherever you found milkweed plants you could generally find a monarch — either as an adult butterfly feeding on the nectar of the milkweed flowers, as an egg on the underside of its leaves, or as a caterpillar relentlessly munching away. And, if you were lucky, perhaps you could find a chrysalis hanging from a twig or under a leaf, looking like a Chinese lantern, almost pulsing with a mysterious energy because you knew that in less than two weeks, a fully formed adult monarch would emerge and continue north in an incredible multi-generation migratory flight. But, those days are almost gone unless we do something to reverse the decline of the monarchs.

One of the most amazing things about monarch migration is that it continues within a season through several generations of butterflies. The entire population that leaves Mexico dies before reaching the furthest distance of that season's migration. However, before they die, they lay eggs for the next generation, which continues the flight northward. This pattern continues through several generations, the current generation never seeing or knowing where the next generation will travel. And at the furthest northward and eastward points of their migration, the final generation of the season decides by signals known only to them that it is time to head south. This generation of monarchs, in a single stupendous flight, migrates all the way to Southern Mexico to live out the winter in a group of mountain forests that they have never seen or ever visited in their lives. The migration of the monarchs is the longest known migration of insects and it is an incredible marvel of nature.

Monarch Population Crash Prompts International Concern

Beginning in the mid-1990s, the population numbers of this once-abundant and common butterfly began to crash, particularly the Eastern population. [*Ed. Note: The migratory patterns of monarchs west of the Rocky Mountains are not as well-known as that*

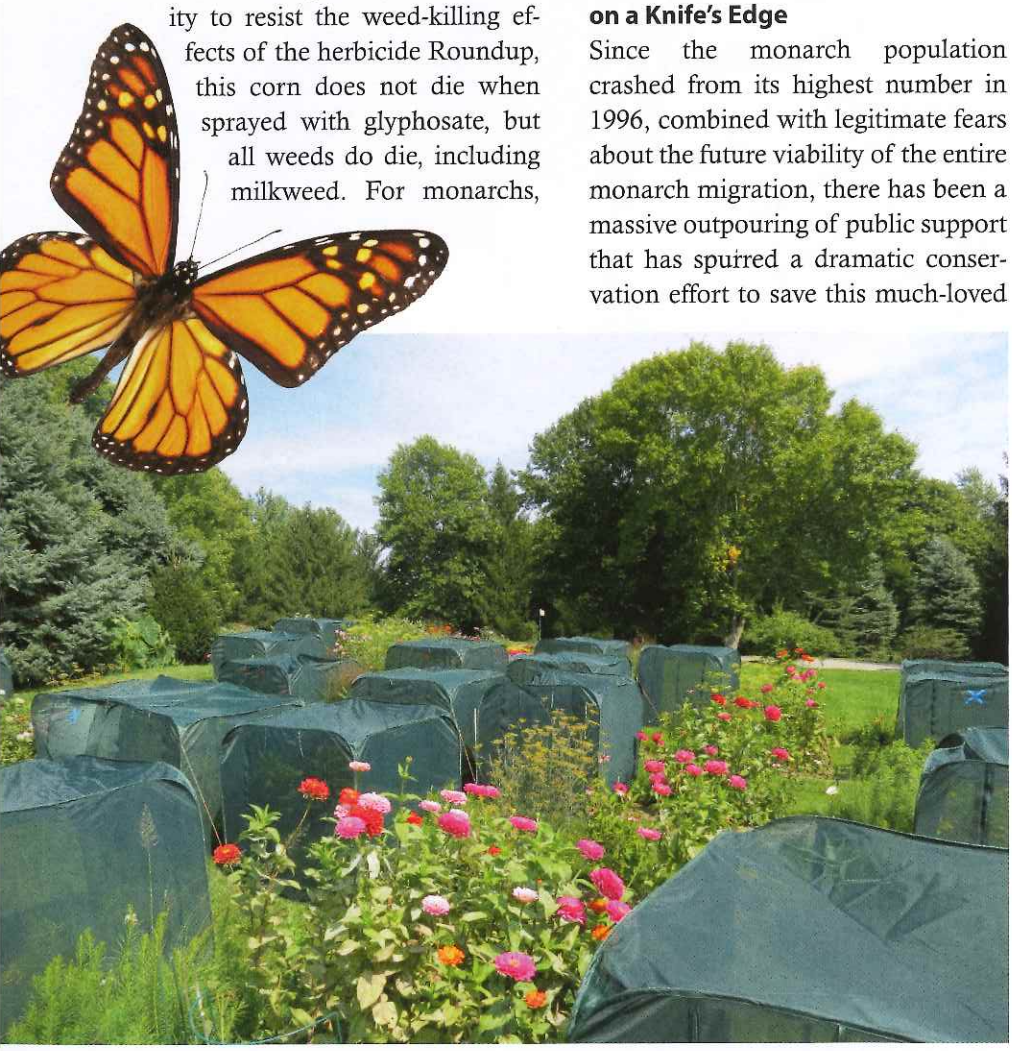


of their eastern counterparts — they do migrate, but do not make as long a migration. Their migratory patterns are generally different than the eastern population.] The root cause was a massive loss of habitat, primarily from the disappearance of milkweed plants in the vast corn fields of the heartland. The so-called "corn belt" forms the most important habitat on the monarch migration highway that literally hundreds of millions of monarchs previously traveled on their migration north. Genetically modified corn that is resistant to the primary herbicide used for weed control, glyphosate, rapidly replaced all other types of unmodified corn. Often called "Round-up ready" for its ability to resist the weed-killing effects of the herbicide Roundup, this corn does not die when sprayed with glyphosate, but all weeds do die, including milkweed. For monarchs, this proved to be devastating.

Because of the rapid embrace of this GMO corn, which now totals almost 90 percent of all U.S. corn and more than 95 percent of soybean crops, a huge swath of what was once high-quality monarch habitat has disappeared. More than 150 million acres of monarch habitat has been lost and in that timeframe, what was once a population of 1 billion monarchs fell to barely 50 million. Many other factors also played a role — extreme weather, logging of the Oyamel firs in the Mexican wintering forests, loss of other non-agricultural habitat and other factors.

Fate of Monarchs Balanced on a Knife's Edge

Since the monarch population crashed from its highest number in 1996, combined with legitimate fears about the future viability of the entire monarch migration, there has been a massive outpouring of public support that has spurred a dramatic conservation effort to save this much-loved species. Recent developments point to just how delicate is the balance of the monarch's recovery.



Parks across the country are developing innovative projects to provide monarch habitat.

First, the good news: After 20 years of long-term decline in the eastern population of monarchs, the estimates of the 2016 wintering monarchs showed the total population was up significantly — 225 percent from the previous year. However, even though the numbers were up by a significant percentage, 2016 marks one of the lowest counts ever recorded and there may be more bad news ahead.

A just-published study in the journal *Scientific Reports* by the Scripps Institution of Oceanography at the University of California, San Diego, and the U.S. Geological Survey, estimates that there is a "substantial probability" of an extinction-type event for the entire population of monarchs if they were subjected to events such as severe winter storms or extended periods of extreme heat or drought, or other environmental causes. The researchers estimate the probability of the complete loss of this subset of the monarch population from such an event as between 11 percent and 57 percent. If the monarch population were decimated in such a manner, recovery of the species would be impossible.

Chip Taylor, head of Monarch Watch and one of the authors of the study says, "There is annual variation in the monarch population and that is natural. The problem is that we can always have unanticipated or unexpected bad weather." For example, Taylor noted, there was a heavy late winter storm in Mexico this year that caused the blow-down of trees and other damage in the monarch wintering areas. "There were clusters of monarchs in the trees covered with snow, but we were fortunate. A lot of our monarchs had already left the wintering forests. This is just one

The city of Hagerstown, Maryland Department of Parks and Engineering, in partnership with the local Kiwanis Club, dedicated its new trailside park near Antietam Creek as a monarch waystation.

example of the great uncertainty from year to year."

Taylor says to double or even quadruple the present number of monarchs would still not be a success. "We need a much bigger overwintering population. The bottom line is that we have to increase the number of monarchs [by creating more habitat] so that the population is resilient enough to withstand extreme events."

What Park and Rec Agencies Say They Need

In late December 2015, NRPA surveyed a group of almost 900 park and recreation agencies to ask what they were doing for monarch conservation and what their greatest needs were.

The survey generated 120 responses. Some of the topline findings were:

- 53 percent of agencies are already engaged in monarch conservation and 45 percent are also working on other pollinator conservation activities.
- 84 percent are planting milkweed plants or seeds and 76 percent are creating monarch waystations.
- Among agencies that have installed a monarch waystation, 73 percent have between one and five, and 27 percent have installed more than five.
- A significant amount of agencies — 36 percent — said they had more than 10 acres dedicated to monarch habitat restoration.

With regard to engaging and educating the public, 64 percent of agencies said they had educational displays or signs and two-thirds said they held educational programs for children and adults in their parks and centers. Regrettably, 16 percent of agencies said they were providing no education to the public about monarch conservation.

Many agencies are already engaged in advanced monarch conservation activities such as tagging and releasing, monitoring monarch larva with citizen volunteers, holding butterfly counts or surveys and hosting monarch festivals or plant sales. Regrettably, 33 percent of agencies are not utilizing volunteers at all for monarch conservation.

Key takeaways from the survey questions and comments included a strong desire for low-cost or free milkweed plants (80 percent); training for staff and volunteers through webinars, conference sessions or online information (77 percent); and funding for monarch conservation projects and programs (76 percent).

The survey results give a good picture of where NRPA member agencies are engaged on the spectrum of monarch conservation actions. Forty-six percent said they were "just getting started;" 30 percent rated themselves as "adequate — could use some additional resources and training;" and 20 percent of agencies rated themselves as "advanced" in working on monarch conservation and education activities.

Overall, most agencies said they needed more funding and resources. One commenter said, "Our agency has ample land for monarch habitat creation, however, we lack the staff time and resources to take our efforts to the next level."

Many respondents took time to reply to this request: "Please comment on your agency's monarch conservation efforts, particularly what you think has been most successful and what you see as the greatest challenges." To read more about the survey, including com-

ments on the above, visit www.nrpa.org/parks4monarchs.

"Seize the Milkweed Day" and Other Cool Monarch Conservation Ideas

In response to online queries and a continuing dialogue on NRPA Connect (www.nrpaconnect.org), it is evident that several park and rec agencies are displaying considerable creativity in developing monarch conservation activities. They are planting milkweeds in new or restored habitat with new volunteer partnerships, engaging the public in citizen science or conservation projects in new ways, and involving children and youth through hands-on education programs.

Alexandra McFadden, education coordinator for New Bedford Parks, Recreation and Beaches in New Bedford, Massachusetts, says, "We have an after-school program at Hayden-McFadden Elementary School that has been participating in a weekly pollinator education program. Every Friday after school, about 50 students work with a local college student to learn about pollinators like monarch butterflies and why they are so important. They do all kinds of research and arts and crafts projects relating to pollinators and plant milkweed seeds in soil to take home to replant in their own gardens for monarch conservation. The program will culminate with a trip to a local university to present their research and see Jane Goodall give a presentation on environmental conservation."

Cedar Rapids, Iowa, has gone hog wild for monarchs. Residents Clark McLeod and Cam Watts have organized an effort to plant 25,000 milkweed plugs in and around Cedar Rapids and grow them in tented enclosures to produce the highest possible number of monarchs from eggs. Twenty-five organizations have mobilized to plant the milkweeds and raise monarchs during a two-year cycle in protected environments called Monarch Zones. Jenny Corbett, lead naturalist at Wickiup Hill Learning Center of Linn County Parks says her agency will conduct public education programs and tours of a large bio-tent to show the various stages of monarch life cycle. The Learning Center is working with a local beekeepers group to teach a yearlong beekeepers class to promote planting nectar plants, also essential to monarchs during their life cycle, and promote habitat creation for all pollinators. "By helping one," says Corbett, "you are helping others." Corbett loves a special Wickiup Hill event called "Seize the Milkweed Day," during which 1,000 locally grown milkweed plugs are distributed.

In Fort Worth, Texas, Gail Manning, entomologist and education team leader at the Fort Worth Botanic Gardens, part of the Fort Worth Parks and Recreation Department, says "I collect wild milkweed seeds from local native milkweed plants, package them up with an instruction sheet and distribute them to the public." She says the center has an extensive program for monarchs and other pollinators. "I came up with the idea for distributing milkweed seeds simply because I wanted to give people an opportunity to provide habitat for monarchs. We talk a lot about creating habitat for monarchs, and this just seemed one of the best ways to do it." She noted the importance of planting other nectar-bearing plants on which a variety of pollinators can feed, but it is monarchs that the public loves most. "When the weather cools and monarchs come through Fort Worth, our residents might see a dozen monarchs. When they come here to the botanic garden they might see hundreds. People really look forward to the migration of the monarchs."

Rodney Tissue, professional engineer for the Hagerstown, Maryland Department of Parks and Engineering, reported on a partnership project with the local Kiwanis Club, which dedicated its new trailside park near Antietam Creek as a monarch waystation. He said on the day they planted the milkweed, "monarch butterflies were landing on the milkweed plants. It was amazing."

The Kansas City, Missouri, Department of Parks and Recreation is partnering on a monarch demonstration garden at Loose Park in Kansas City, according to Director Mark McHenry. This project is funded in part by a monarch conservation grant from the National Fish and Wildlife Foundation. The garden will be the site of educational programs and will be maintained and monitored by volunteers from a local garden club. The volunteers will report results to monarch monitoring organizations and the Field Museum in Chicago as part of the EPIC program (Ecological Places in Cities).

How to Help Save the Monarch

What you can do to help save the monarch is simple: Create habitat and educate the public. Taylor says, "Parks can create habitat for monarchs and other pollinators. We have lost tens of millions of acres of habitat. Parks can play a big role in restoring that habitat." He continues, "The second, and possibly more important role that parks can play, is to educate the public. The conclusions of two presidential working groups and a host of conservation organizations is that if we are to save the monarch, it will take an all-hands-on-deck effort. We need parks." Taylor says we must come to grips with the fact that we continue to lose a million acres of monarch habitat per year. "We won't save the monarch unless we make it national priority," he says.

So, here are four simple things you and your agency can do to help save the monarch:

Restore monarch habitat by planting milkweed in parks and on other public lands. It is not too late to request free milkweed plants from Monarch Watch for larger plantings in landscape restoration projects more than 2 acres in size, as well as smaller flats. Visit www.monarchwatch.org and click "Free Milkweeds for Restoration," and remember to check "NRPA member."

Educate the public in whatever ways you can of the need to become engaged in monarch conservation — exhibits, signs, festivals, programs, citizen science projects, etc.

Encourage your mayor to take the Mayors for Monarchs Pledge. Visit www.nwf.org/How-to-Help/Garden-for-Wildlife/Community-Habitats/Mayors-Monarch-Pledge.aspx to learn more.

Join NRPA's Parks for Monarchs campaign (www.nrpa.org/parks4monarchs) and tell us what you are doing. We want to hear about how you are meeting challenges, developing new partnerships, and achieving success, and we want to share your inspirational achievements.

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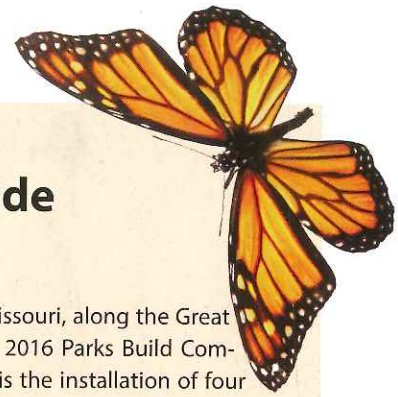


Trojan Park Stormwater Management Areas Provide Habitat for Monarchs

Trojan Park, a new neighborhood park in Wellston, Missouri, along the Great Rivers Greenway (GRG) in St. Louis County, is NRPA's 2016 Parks Build Community project. An integral part of the park's design is the installation of four bio-retention areas that will capture and hold stormwater on the site during rainstorms. What is innovative about the installation of these required best-management practices for stormwater (BMPs) is that all four will be planted as pollinator gardens and butterfly conservation areas. One of the gardens will be specifically planted as a monarch butterfly waystation.

Trojan Park is a compact neighborhood park designed by Forum Studio in conjunction with GRG staff and located right on the St. Vincent Greenway. Michael Sorth, director of conservation and community for GRG, said the decision to include pollinator gardens as part of the stormwater mitigation requirements is "a trend that we are seeing across the St. Louis region." He continued, "Park agencies are starting to see a different way to develop more sustainable landscapes."

Angie Weber, GRG's conservation program manager, says, "Bio-retention areas like these are ideal for increasing wildlife habitat. The right plants will produce the right habitat." She says that often park agencies or landscape design firms will choose showy or exotic plants that provide color and appeal, but don't contribute to producing quality wildlife habitat.

"Because of the great concern for pollinators, a conversation we are having across the St. Louis region, we chose to plant pollinator-friendly plants," Weber says. "We believe that all landscaping should contribute to the goal of creating productive landscapes with good ecological function."

When Trojan Park's pollinator and monarch gardens are planted, the partnership that is managing the park — The City of Wellston, St. Louis County Parks and Recreation and GRG — will invite the support of local volunteers including Master Gardeners, the St. Louis Audubon Society and homeowners and residents of Wellston to maintain them. As Weber says, "People who are uninitiated in saving the monarchs and other pollinators learn what it's about and then become excited to help provide stewardship."

— Richard J. Dolesh, NRPA's Vice President of Conservation and Parks

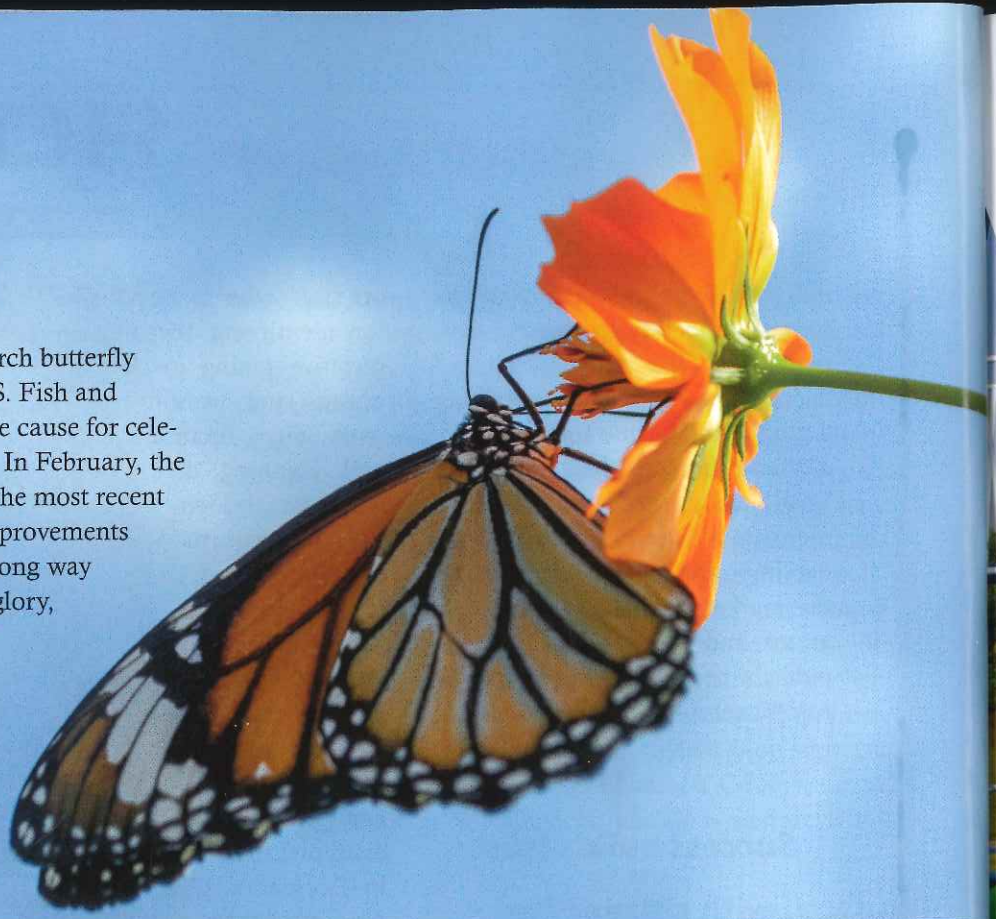
Of Pollinators and Partnerships

Texas Discovery Gardens makes a daily mission of connecting children and families to the natural environment. The 76-year-old Dallas-based nonprofit was the first public garden in Texas to be certified 100 percent organic and its grounds are maintained with water conservation and sustainability in mind. An almost 10-year partnership with the Dallas Park and Recreation Department provides a portion of operational funding and allows for creative stewardship of two historic properties located within the garden grounds, while a robust volunteer core and dedicated staff members provide additional support and education for the tens of thousands of visitors who pour into the facility each year. The more than 7-acre botanic garden includes native and adapted plants, as well as the impressive two-story Rosine Smith Sammons Butterfly House and Insectarium. Once inside, visitors are greeted by knowledgeable entomologists and a tropical rainforest teeming with hundreds of sparkling butterflies. In April, Texas Discovery Gardens hosts its butterfly gardening workshop and butterfly plant sale — both events educate participants about the importance of pollinators like bees and butterflies, and encourage the inclusion of pollinator-friendly plants in backyard gardens. If that's not enough butterfly action, each day at noon, Texas Discovery Gardens staff host a butterfly release demonstration, where the newly emerged insects are set free to take wing inside the Sammons Butterfly House. Yet more butterfly-themed events take place throughout the year — readers in the vicinity are encouraged to visit www.texasdiscoverygardens.org to learn more and for volunteer opportunities.

— Samantha Bartram, Executive Editor of Parks & Recreation *magazine*

Monarchs Rising

Population numbers for the iconic monarch butterfly have been steadily dwindling, but the U.S. Fish and Wildlife Service (USFWS) provides some cause for celebration with its recent monarch updates. In February, the agency released new information about the most recent monarch migration, showing marked improvements in monarch populations. There is still a long way to go to restore the species to its former glory, but with ongoing commitment from our park and recreation agencies, schools and neighborhood backyards to provide monarchs with friendly places to rest and replicate, the positive trends are bound to continue. Below, find some of the highlights of the USFWS report.



255:

Percentage increase in monarch populations overwintering in Mexico-based habitats in 2015-2016.

10:

Acres of habitat occupied by monarchs overwintering in Mexico (the insects only took up 2.8 acres just a year ago).

2 months:

Period of time it takes migrating North American monarch butterflies to reach their overwintering grounds in Mexico.

90:

Percentage by which monarch butterfly populations have decreased since peak populations were recorded in the mid-1990s.

138,000:

Acreage of the Mexico-based Monarch Butterfly Biosphere Reserve, established in 1980 to protect the insect's sensitive overwintering grounds.

12:

Number of mountaintops in existence worldwide that provide the correct type of habitat to safely overwinter monarch populations.

4:

Stages the monarch butterfly goes through during its time overwintering in Mexico: arrival, the establishment of overwintering colonies, colony movement and spring dispersal.

3:

Countries working in partnership to help shore up monarch butterfly populations in North America (Canada, the United States and Mexico).

250,000,000:

The monarch population target goal set by USFWS and its partners — they hope to reach a quarter of a billion butterflies by 2020.

Source: "Monarch Numbers Increase, But Work to Restore Butterflies Is Not Over," USFWS February, 2016 press release (www.fws.gov/midwest/news/MonarchPopulation2016.html)