



Research and
Community Science

*Annual
Review*

2016

URBAN
ECOLOGY CENTER
So much life

A MESSAGE FROM THE TEAM

The Urban Ecology Center's [Research and Community Science program](#) serves as a meaningful bridge between academic research and the community-at-large. The program encourages collaborative spaces for research between professional and community scientists and creates a more engaged, knowledgeable and ecologically literate community. The Center maintains a network of urban field stations in which all research is accessible to and advised by both community and professional researchers.

Introducing the Research and Community Science Department!

We're happy to announce that the Urban Ecology Center's Research and Citizen Science Department is now the Research and Community Science Department. We want to emphasize that everyone in the community is encouraged to collaborate with us—whether it's learning how to survey for wildlife in the field, analyzing data, or carrying out original research. [Read more about this new name on our blog!](#)



The Research and Community Science team: Manager of Research and Community Science Tim Vargo, Research and Community Science Coordinator Jennifer Callaghan, and GIS and Field Data Coordinator Jessica Orlando.



2016 Research and Community Science intern Dionne Price holding a Butler's Gartersnake. The Urban Ecology Center offers year-round opportunities for the community to learn from observations of wildlife in our urban greenspaces while contributing to collaborative research efforts. Photo by 2016 Research and Community Science intern Melissa Gilmore.

It's hard to believe that **so much life** can be found throughout Milwaukee. Land stewardship efforts have restored wetland, prairie, oak savanna, woodland, riparian, and aquatic habitats at Riverside Park, Washington Park, and the Menomonee Valley.

These diverse habitats are now occupied by mammals that were extirpated for decades, 195 resident and migratory bird species, snake species such as the previously State Threatened Butler's gartersnake, insects including 41 species of dragonflies and damselflies, and more! Thank you to all of the community scientists who volunteered their time to research the transformation of the Urban Ecology Center's greenspaces.

—Jennifer, Jessica, and Tim



Cover photo: A beaver within the Milwaukee Rotary Centennial Arboretum along the Milwaukee River. An increase in beaver activity in Riverside Park was a highlight of 2016 and we are excited to report that the American Beaver (*Castor canadensis*) has returned to an area from which they were extirpated for decades. Photo by community scientist Bruce Halmo in January 2017. Bruce frequently observes (and photographs) wildlife sightings during his frequent walks along the Milwaukee River Greenway.

LAND STEWARDSHIP

The Urban Ecology Center's Land Stewardship team improves habitat quality through community engaged, hands-on restoration work. The community works together in all aspects of the restoration process, including planning and collecting native seeds (with state permits) and removing invasive species to provide space for native plant plugs and tree seedlings. *The Research and Community Science team is focused on understanding how wildlife respond to this progression of restoration—which will in turn inform and adapt land management decisions.*

Acre by acre, staff and volunteers have created and enhanced ecosystems within urban green-spaces that provide wildlife habitat, clean air and water, and places for learning and recreation

Riverside Park

- 4,710 hands-on volunteer hours to improve habitat
- 5,000 square feet of smothering fabric were pulled up and river flats previously dominated by reed canary grass were planted with native grasses, sedges and forbs
- Over 750 native Wisconsin trees were planted along the riparian corridor of the Milwaukee River and adjacent areas below Wisconsin Paperboard Corporation
- A prescribed burn was conducted in May on the "new" Arboretum land as well as the two small prairies



Successful burns have been conducted in Riverside Park in 2002, 2010, 2012, and now 2016. Controlled burns are an invaluable management tool to help knock back invasive plants, return nutrients to the soil, decrease 'duff' layer, and invigorate and aid in fire adapted native species germination. [Learn more about how the land stewards use prescribed fire in this video!](#)

Washington Park

- 891 volunteers donated 3,239 hours of their time to support the Washington Park Land Stewardship activities 2015 – 2016 fiscal year
- Over 1,000 herbaceous plugs were planted to add to the habitat diversity of the prairie, woodland and orchard
- 22.5 cubic yards of common cattail removed from the emergent and fringe areas of the lagoon shoreline along with clusters of reed canary grass
- The second invertebrate survey was conducted throughout the orchard to monitor restoration effects on insect populations



Urban Ecology Center staff, summer interns, community volunteers, and groups such as DentaQuest work together to manage a variety of plant communities in the Menomonee Valley. Photo by Manager of Land Stewardship Kim Forbeck.

Menomonee Valley

- 640 volunteers contributed 1,784 service hours during the 2015 – 2016 fiscal year—a 40% increase compared to the previous fiscal year
- 10,000 herbaceous woodland and prairie plants were planted where non-native, invasive plants were removed
- Wood chips were used to create trails that traverse the park's mounds to prevent erosion
- A riverbank stabilization project provided a trail that parallels Three Bridges Park on the north side of the Menomonee River. We've already adjusted our Weekly Bird Walk and bat survey routes to begin monitoring ecosystems adjacent to this new trail
- A water line to the community gardens was run from the Urban Ecology Center building

BATS

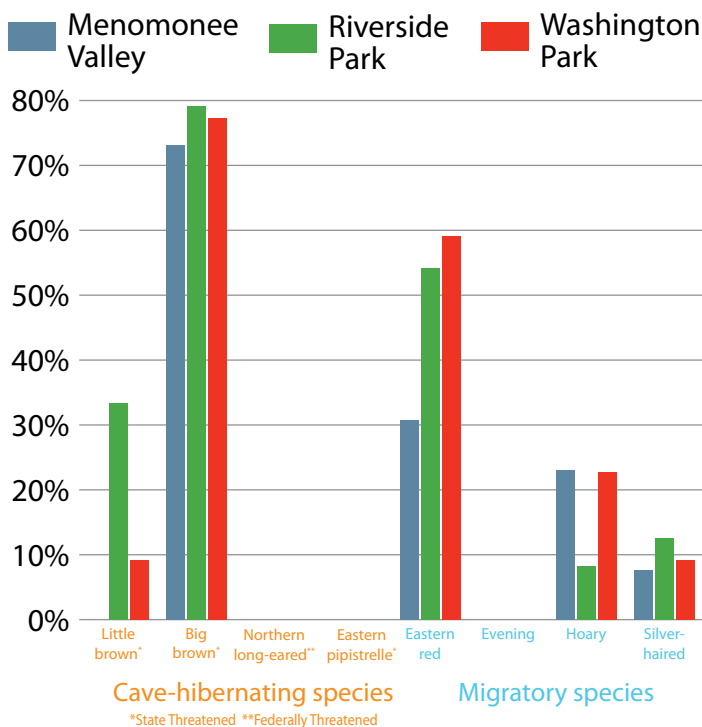
We conducted six walking [acoustic bat surveys in 2016](#), bringing the total to 72 surveys since 2011. Surveys occur after sunset when bats are most active during migration (spring and fall) and breeding and residency (summer). The monitoring equipment translates high-frequency echolocation calls bats use to search for prey and avoid obstacles into visual sonograms. Each species' unique sound waves help document their presence in our parks and contribute to state-wide monitoring efforts.

We are among the first sites to simultaneously survey with different versions of bat detectors, thanks to access to the latest technology borrowed from our partner, Escuela Verde. This allows the Wisconsin Department of Natural Resources to better advise field monitoring efforts across the state, which is especially urgent since cave-hibernating bats are threatened by [White Nose Syndrome](#), a deadly fungal disease that causes them to expel energy reserves needed to survive winter.

Wisconsin bats are superheroes of the night—controlling insects and protecting human health

The Urban Ecology Center has recorded five of Wisconsin's eight bat species

% of 2011 – 2016 surveys with species present



Wisconsin Bat Festival 2016 field trips and Superheroes of the Night Bat Science Demonstration. Photos by Marketing Communications Coordinator Anna Aragon and community scientist Janet Carr.

In fall of 2016, we collaborated with the U.S. Forest Service, Wisconsin Department of Natural Resources, and the Organization for Bat Conservation to bring bat science to the Menomonee Valley as part of the Wisconsin Bat Festival. More than 200 students gathered for an up-close encounter with bats from all over the world and in the evening the Center was transformed into a field research station complete with live bats, mist nets, thermal and infrared cameras, radio transmitters, and hands-on activities to explore why bats are *superheroes of the night*! The event culminated with a festival at the Milwaukee Public Museum where our Young Scientists Club presented a poster of their research and learned from educators and biologists across the region.



Wisconsin Department of Natural Resources Biologist Jennifer Redell with a Big Brown Bat! Photo by volunteer Joe Meyer.

WHAT'S A NIGHT SURVEY LIKE?

City Slickers

—by community scientist *Becky Tidberg*

My daughter's favorite animal is the bat and has been since she was 4 years old. She's now 14 and instead of being content watching *Fern Gully*, we have to indulge her in other ways such as catch and releases and bat listening walks hosted by the Urban Ecology Center.

We've participated in bat walks at a couple of different locations but the one we attended last summer held some special magic. Finding the wild in the middle of the city is always an interesting juxtaposition, seeing how wildlife has adapted to city sidewalks and construction venues.

When we left the Center with our ultrasonic detectors, flashlights, and sweatshirts, it was clear we'd entered the wild, but I couldn't leave my city-fied self behind.

The first encounter we noticed was the other Wisconsin state bird—the mosquito. They buzzed around begging for donations like the co-worker in charge of collecting for Bob's birthday. Sorry, ladies, I gave at the office.

We paused to record the bats on our radar screens and then had to choose to take the straight path which headed toward the casino or turn left for the nature trail. A few rabbits scurried out of the community garden—raiding the office fridge no doubt—and headed down the straight path. Off to multiply their winnings along with their families, I guess.

As we made the turn in the path, we were struck by the lights of a factory slightly filtered by trees. Against those trees, the flashbulbs of fireflies blinked from either side of our very own red carpet. "Yes, I'm wearing a Beatles t-shirt and jeans. Please get my good side. We will be attending the Kopp's Frozen Custard after party."

Our whole group was ready for a drink by this time but only the geese were so lucky. To our left the river meandered slowly and the birds were bellied up to a sandbar, one to a stool, where old posts cleared the water. I'm not sure who was bartending but the bullfrogs and crickets provided background music that would've made Sinatra proud.

We lingered for a while in the artisan district. Perched on the bridge we could see some of our winged mammals catching a snack near the water. But we could also inspect the weaving skills of a variety of local spiders spinning webs large enough to be spread across any table, but too delicate to be touched by anything but the eyes. Those massive webs splayed against graffiti were a good reminder that we weren't wandering the northern back woods, but were still in the middle of our largest city.

Learning to live together is one of the primary goals of the Urban Ecology Center. Seeing nature quite literally in our own backyard.



The Hansen-Tidberg Family. Becky is a Learning Coach working with non-traditional college students earning their Associate Degree. She's also a freelance writer with work appearing in five volumes of *Chicken Soup for the Soul*, *Thriving Family Magazine*, and is one-half of The Poetry Professors (along with her hubby) on Facebook and Twitter.

TERRESTRIAL MAMMALS

Mammals play an important role in ecosystem health through their connections with vegetation, soil, invertebrates, and higher levels of the food web. Live-trapping, wildlife cameras, and incidental visual observations aid in monitoring populations of mammals, large and small.

2016 Research and Community Science Interns Melissa Gilmore, Kara Kehl, and Peter Rebholz with a White-footed Mouse that was live-trapped in June 2016 in Three Bridges Park. Mammals are trapped three consecutive nights each week of the field season then marked, measured, and released to determine population trends of these important primary consumers (and prey) within our restored ecosystems.



Documenting the presence of some mammal species doesn't always require hundreds of trap nights or wildlife cameras. In 2016 American beavers made their presence at both Menomonee Valley and Riverside Park well known due to increased chew markings, felled trees, sightings, and even tail slapping!

The Urban Ecology Center is excited to report that the American beaver has returned to stretches of the Milwaukee and Menomonee Rivers, areas from which they were extirpated for decades.

In response to the increased beaver activity observed in 2016, the Urban Ecology Center's Land Stewardship team and Research and Community Science team began working towards an organizational strategy to co-exist with these new residents in the park. The return of the beaver is a testament to the hard work and countless hours spent by Urban Ecology Center volunteers and staff along with our community partners to restore habitat for wildlife like the beaver. The return of the beaver also brings some interesting issues based on their desire to do their own habitat restoration work, particularly cutting down trees. We have decided to allow beavers to continue to modify their habitat while taking some steps to protect selected trees of various sizes to continue with some of our own restoration goals. We welcome input from the community as this process unfolds and we strongly welcome help to study the behavior of the urban beavers. [Read more about beaver ecology on our blog!](#)

In winter of 2017 the Research and Community Science and Land Stewardship departments invited the Wisconsin Department of Natural Resources to lead a forum for the community to discuss both the ecological importance of beavers and concerns about their effects on land restoration along the Milwaukee River.

"The increased beaver activity along the Milwaukee River at Riverside Park left many people curious about beavers and their effects on the ecosystem. Wisconsin Department of Natural Resources Milwaukee County Biologist and Regional Educator Dianne Robinson came to Riverside Park to educate a packed room about beaver ecology. We learned that despite living on the river, beavers are herbivores and do not eat fish but rather a variety of soft woods. Beavers live in colonies consisting of one monogamous adult pair and several juveniles within their 1 – 3 square mile home range. Beavers impact the ecosystem in many ways, particularly by altering stream flow, recharging groundwater, and increasing sedimentation. This can increase the diversity of reptiles and amphibians, the abundance of invertebrates, and waterfowl habitat, but can cause flood damage as well. Hopefully we will continue to learn more about beavers on a stretch of urban river as we observe their activity at Riverside Park."*

**Note that our beavers do not have a lodge or dam and likely will never create either. Instead they have excavated a den in the river bank enhanced with downed saplings and large branches. Other beavers in the Great Lakes region are known to utilize banks rather than lodges in large, fast-flowing rivers similar to the Milwaukee River. We were surprised and excited to learn that we have less-than-typical beavers living in our park!*

—by community scientist Rachelle Ketelhohn, a senior at UW-Milwaukee majoring in Conservation and Environmental Science and pursuing a career in wildlife conservation.



A pair of beavers within the Milwaukee Rotary Centennial Arboretum along the Milwaukee River. Photo by community scientist Bruce Halmo in January 2017.

REPTILES AND AMPHIBIANS

Frogs & Toads

Frogs and toads hold an important ecological position: the middle of the food chain. They convert insects and other invertebrates (and even some smaller vertebrates) into food for larger predators. Additionally, they are sensitive to environmental change and are in decline worldwide due to disease, climate change, habitat loss, and environmental contaminants. Monitoring populations over time can help indicate restoration progress of urban water resources and adjacent uplands.

"On a cold, crisp evening last week, Tim Vargo, Manager of Research and Community Science at the Urban Ecology Center, gave a short description of the program to



Community scientists listen for frogs and toads. Photo by Milwaukee Journal Sentinel's Mark Hoffman.

volunteers bundled up for the weather, some wearing head lamps. The group would spend five minutes silently listening at each location. Volunteers piled into an Urban Ecology Center bus and traveled to the first stop at Schlitz Audubon Center, where, because of its rich diversity of wetlands, two surveys were done. Also on the route were Brown Deer Park, McGovern Park, Estabrook Park, Riverside Park and the Juneau Park lagoon. Aside from

the two places at Schlitz Audubon Center where volunteers heard spring peepers, it was silent everywhere else."

—by Milwaukee Journal Sentinel Reporter Meg Jones who joined us on a very chilly April frog and toad survey. Read more in her article [Volunteers head to the woods for annual DNR frog count](#).

2016 marked the last year of Urban Ecology Center's participation in the Wisconsin Department of Natural Resources [Wisconsin Frog and Toad Survey](#)—the longest running acoustic frog monitoring project in North America. Why are we retiring this project? We are narrowing our focus to more closely monitor the parks we manage, including a newly created amphibian habitat pond in Riverside Park. However, the county-wide driving route will be continued by Schlitz Audubon.

Northern leopard frog tadpoles ready to absorb their tails and metamorphose. We are excited to document breeding amphibians in the restored aquatic habitats of Menomonee Valley. Photo by 2016 Research and Community Science intern Peter Rebholz.



Snakes

Since 2013, we've conducted snake surveys in the Menomonee Valley using a network of plywood coverboards. The ground beneath the boards retains heat, especially at night, making them attractive shelter for ectothermic animals that use the environment to regulate their body temperature. Individual snakes are identified year after year using mark-recapture techniques to study population dynamics over time and track individual growth and body condition.



[Butler's gartersnakes](#) (previously a State Threatened Species) have accounted for 98% of snake species documented in the Menomonee Valley since surveys began in 2013. In the summer of 2016, the species was observed on all 11 surveys with 24 new individuals and 19 recaptures. Additionally in 2016, we captured (then recaptured) one DeKay's Brown Snake.

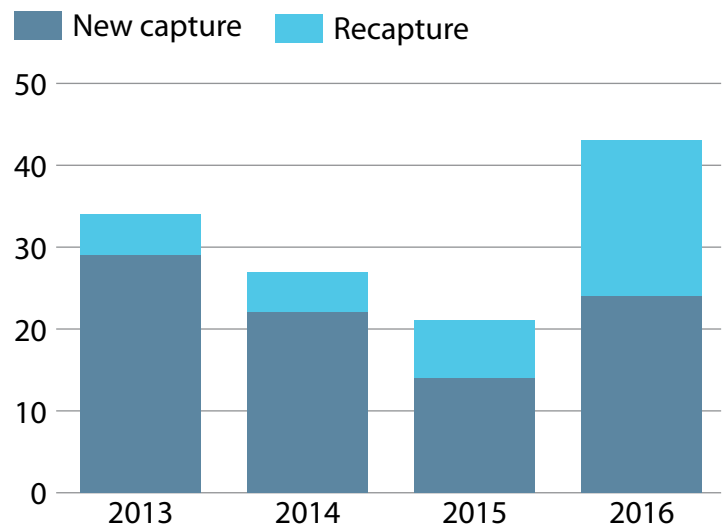


(Top) Community scientist (and now UW-Green Bay student) Russell Mason measuring a Butler's gartersnake. (Bottom) Outdoor Leader Jake Olsen

learning how to handle snakes in the field—and in our Native Wisconsin Animal Rooms! Photos by 2016 Research and Community Science intern Peter Rebholz.

Number of individual Butler's gartersnakes

Captured and recaptured at Menomonee Valley



WEEKLY BIRD WALKS

Community scientists meet at 8:00 a.m. for [Weekly Bird Walks](#) to record the birds at each of the three Urban Ecology Center branches. These year-round surveys have been happening at Riverside Park since 2001 (Thursdays), Washington Park since 2010 (Wednesdays), and Menomonee Valley as of the branch opening in September 2012 (Tuesdays). Each 1.5-mile walking route takes about 2 hours and all experience levels are welcome—we even have binoculars to borrow.

Four species were recorded for the first time, increasing the cumulative Urban Ecology Center bird list to 194 species



Washington Park Wednesdays



Menomonee Valley Tuesdays

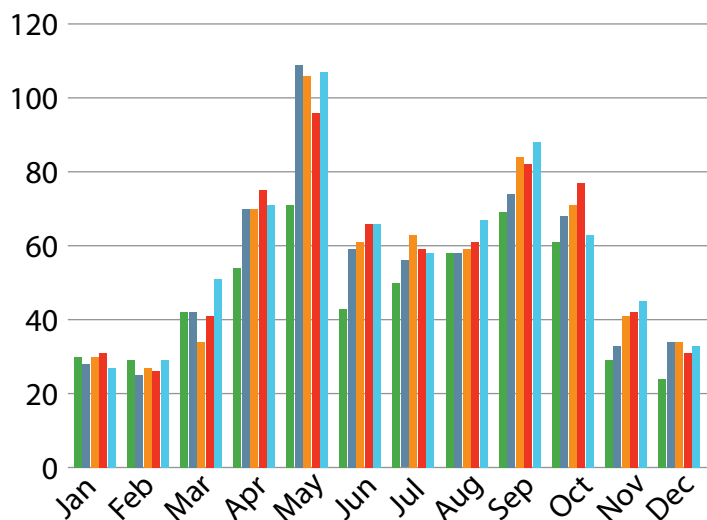
Community scientists recorded 144 bird species among our three branches during Weekly Bird Walks in 2016. Four of these species were first-time records for any of our three branches, increasing our cumulative Urban Ecology Center “life list” to 194 bird species! These newcomers include greater yellowlegs at Washington Park, pectoral sandpiper at Menomonee Valley, and pileated woodpecker and bank swallow at Riverside Park.

Two branches also had days with record high bird species counts in 2016—Riverside Park with 67 species recorded on May 12, 2016 and Washington Park with 65 species recorded on May 11, 2016—both the same week of our Green Birding Challenge, our biggest bird watching day of the year!

Number of bird species recorded monthly

Recorded at all three branches 2012 – 2016

2012 2013 2014 2015 2016



Riverside Park Thursdays

Photos: Community scientists recording birds during Weekly Bird Walks at each of the three branches. Menomonee Valley photo by Mark Peterson/Redux Pictures for [Politico Magazine](#), Washington Park photo by 2016 Research and Community Science intern Dionne Price, and Riverside Park photo by 2016 Volunteer and Visitor Services intern Nina Schield.

BIRD BANDING

Bird banding surveys occur every spring and fall and are unique up-close encounters with urban wildlife. Our team of community scientists works hard in the restored ecosystems of the Menomonee Valley, Riverside Park, and Washington Park to safely band birds while providing educational opportunities for school groups and the community—who often get to hold and release a bird!

61 species were banded in 2016—more than any year on record across branches



Our first-ever American woodcock was banded on October 19, 2016 at Washington Park! The American woodcock is listed as a State Special Concern Species in Wisconsin due to the loss of forest and shrubland habitat, and it is rarely seen in our three parks. We can only hope that this bird makes its way to another banding station in the future so more can be learned about this elusive species. Photo by Research and Community Science Coordinator Jennifer Callaghan.

In 2016, we partnered with the U.S. Forest Service and high school Escuela Verde to create a field research mentorship program for high school students. Students attended workshops and training sessions in ornithology and learned the benefits of bird banding as a tool for conducting research. We introduced the entirety of a field study, from asking a research question to early mornings assisting volunteers and biologists identifying and banding birds in the field. The goal is to build off of this pilot year for a deeper experience in 2017 where students can lead community research.

53 community scientists and professional partners contributed

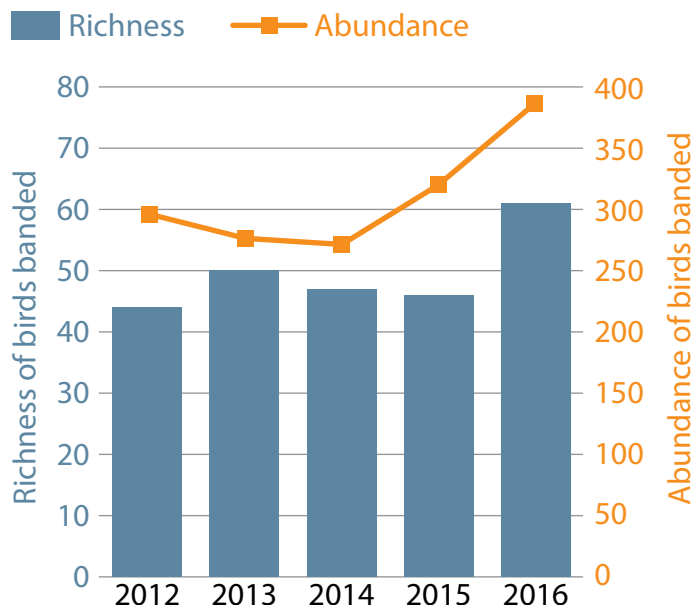
1,475 hours of field work, mentoring, and data management during

17 bird banding sessions in 2016!



Birds banded at all three branches

Species richness and abundance 2012 – 2016



Bird banding as an educational tool for [I Spy...Birds! summer camp](#) at Washington Park led by Environmental Educator Tory Bahe and Escuela Verde students participating in a field research mentorship program at Menomonee Valley in partnership with the U.S. Forest Service. Photos by Marketing Communications Coordinator Anna Aragon and Escuela Verde Advisor Joey Zocher.

ODONATES



Community scientists have monitored the odonates (dragonflies and damselflies) in Riverside Park since 2013 and in Washington Park and Menomonee Valley since 2014. Over time, this program can provide valuable data to document the impact of restoration and stewardship of urban greenspaces, as well as indicate the health of aquatic ecosystems such as the Milwaukee River, Washington Park lagoon, Menomonee River, and newly created ephemeral ponds.

In 2016 we recorded five species for the first time at any of our three branches:

- Common baskettail on June 15 at Washington Park
 - Blue-tipped dancer on June 29 at Menomonee Valley
 - Fragile forktail, green-striped darner and shadow darner on August 31 at Menomonee Valley
-



A comparison of a green-striped darner (left) and shadow darner (right). Both were recorded for the first time at any of our branches during an August 31, 2016 survey at Menomonee Valley! These two were among eight species first observed in Menomonee Valley in 2016.



This common baskettail was recorded for the first time at any of our branches during a June 15, 2016 survey at Washington Park and among three 2016 species first observed in Washington Park.

Why monitor odonates?

•**Odonates are indicator species particularly in aquatic habitats such as rivers, lakes, and ponds.** Their sensitivity to habitat quality and amphibious life cycle (they spend the majority of their life cycles underwater as eggs and larval nymphs) make them well suited for evaluating environmental changes over time

•**Odonate surveys are a great way to connect the community with urban greenspaces.** Dragonflies and damselflies are fascinating creatures that generate interest among prospective volunteers. Artists often join to photograph, sketch, or be inspired by their diversity

•**The 41 species we have observed at our three branches (so far) is a manageable number** of local species to learn to identify (as opposed to much larger groups of insects)

•**The Wisconsin Dragonfly Society requested our participation because Milwaukee County was largely under-surveyed** and our efforts have led to numerous observations of species that haven't been recorded in Milwaukee County in over 100 years

—Written, analyzed, and photographed by community scientist Ann Graf. Ann regularly attends and leads odonate surveys and contributes to much of the photo-documentation of this project. In 2016, she attended the Wisconsin Dragonfly Society annual meeting in Black River Falls, WI. Ann presented her research, *Dragons and Damsels: Odonata as Evidence of a Healthy Ecosystem*, at the Annual Urban Ecology Center Research Symposium in December 2016.



MONARCHS

Each fall, monarchs migrate from their summer breeding territories (like the Urban Ecology Center) to the mountains of central Mexico. In spring these same butterflies fly north, but not all the way back to Wisconsin. It's their grandchildren that will make it back... [and their grandchildren's grandchildren then start the same long migration to Mexico in fall.](#) In September, our community scientists tagged 62 adult monarchs of this "super generation" on their way to overwinter in central Mexico. Tags recovered during migration, overwintering, or return flight increase understanding of population dynamics and habitat preferences to help conserve this species.

Monarchs are the focus of our butterfly research largely because of declines in recent decades and the urgency to better understand their unique 2,000+ mile multigenerational migration



"Throughout the summer of 2016, community scientists surveyed butterfly populations within the Menomonee Valley and collected valuable data towards understanding their migration. Once a week we walked through the park to record different species of butterflies—equipped with only nets, a clipboard, and keen observation skills. We also surveyed specifically for Monarch larvae every week. The process was simple but interesting: find milkweed plants where monarchs lay their eggs and count how many are present. Though it didn't occur to me at first, this research helps us understand how many monarchs migrated back to Milwaukee to lay eggs—and by monitoring reproductive success we can estimate how many adults we expect to migrate and overwinter."

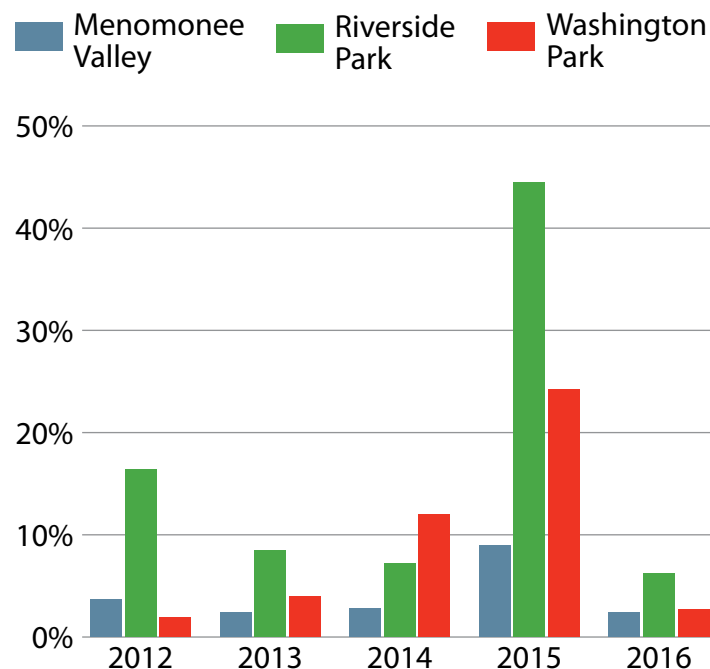
—By Jake Olsen, Outdoor Leader and Rufus King High School class of 2018. Photo: Jake releasing a butterfly he tagged at Riverside Park. [Watch Jake and other community scientists tagging monarchs!](#)



This monarch instar was found while searching one of Riverside Park's milkweed plants for eggs, larval instars (caterpillars), and pupae as part of the University of Minnesota's Monarch Larva Monitoring Project. Photo by 2016 Research and Community Science intern Dionne Price.

Monarch egg & larval detections 2012 – 2016

% of milkweeds with monarch eggs & larvae



What happened in 2016?

We found fewer eggs and larvae in 2016 than we did in 2015 and also observed fewer adults. Despite local restoration efforts, monarchs are threatened by habitat loss, pesticides, and climate change across their entire migration route. As overwintering butterflies began the journey north in 2016, a March sleet storm struck central Mexico and decimated the population, resulting in fewer and later arrivals to Wisconsin. We are hopeful that restoring greenspaces, like our three parks, will aid monarch recovery.

So much more than milkweed

Monarchs require a nectar food source staggered along their entire 2,000+ mile migration route and throughout the summer breeding season. A 20-year population decline has led to [petitioning for federal listing as an Endangered Species.](#)

Adult monarchs depend on a variety of native flowering plants like this Meadow Blazing Star in the Menomonee Valley. Photo by 2016 Research and Community Science intern Peter Rebholz.



OTHER INVERTEBRATES

Singing Insects

Invertebrates are the most diverse and abundant animal life on the planet. Although much of this biodiversity goes unnoticed due to the small size and cryptic coloration, some advertise their presence differently. Like birds and frogs, some insects produce songs to attract mates, startle predators, or claim territories. These singing insects belong to several groups, including grasshoppers, katydids, crickets (Order Orthoptera) and cicadas (Order Hemiptera). Recently scientists have begun using songs to monitor singing insects in surveys similar to those used for birds, frogs, and even bats.



Can you spot this cryptic singing insect? Photo by GIS and Field Data Coordinator Jessica Orlando.

The Urban Ecology Center began monitoring singing insects at each of its three branches in 2015. In 2016, three surveys were performed in early September, the peak season for many singing insects. Each survey began with a brief training workshop to help community scientists begin to learn the different insect calls. Following training, sections of the trails and paths were walked at each of the branches while listening for and identifying insects calling. The presence of particular species was recorded for each survey. In the future, call intensity information could be added to the surveys to indicate the relative abundance of each singing insect species.



Community scientists listening for singing insects in the field after a song identification workshop led by Dr. Jessica Orlofske.

Six species of singing insects were detected during the 2016 surveys

The singers most frequently encountered during our surveys included field crickets, short-winged meadow katydids, and snowy tree crickets. Additional orthopterans observed during the surveys included larger katydids, specifically the coneheads (e.g., *Neoconocephalus ensiger*) and angle-wings (*Microcentrum rhombifolium*). Finally, community scientists noted the ubiquitous song of the dog-day cicada, the loudest insect observed during the surveys!

—By UW-Parkside Assistant Professor of Biological Sciences Jessica Orlofske, Ph.D. [Follow her blog to learn more!](#)

Benthic Macroinvertebrates

We depend on freshwater resources for food, air, water, climate control, waste assimilation and more. While physical and chemical assessments can indicate the potential for water to support life, it can often be more effective to rely on the organisms living in the water to “tell us” the water quality by their presence (or absence).



Students conduct water quality research through the River Connections program during the school year and summer camp. Read more in [a recent blog post](#) by educator Laurel Cutright.

benthic: in or on the bottom of a body of water

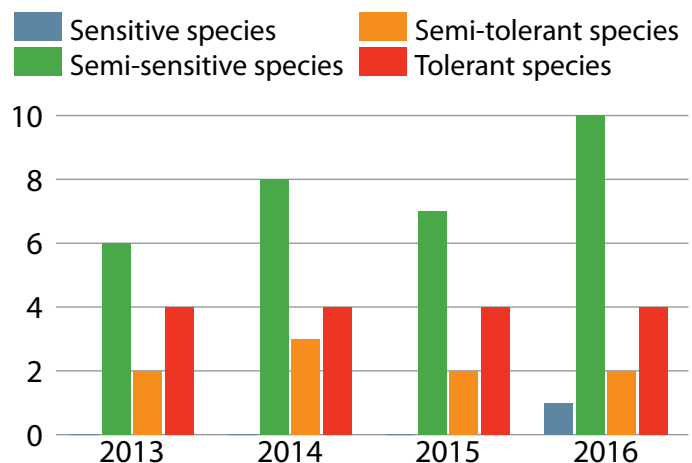
macro: big enough to be seen with the naked eye

invertebrates: animals without backbones

Pollution-sensitive organisms such as mayflies, stoneflies and caddisflies are more susceptible to the effects of physical and chemical changes compared to pollution-tolerant organisms such as midges and worms. Polluted water will have fewer individuals and less variety of pollution-sensitive organisms and greater numbers and more variety of pollution-tolerant organisms.

Milwaukee River sensitive and semi-sensitive species increased since 2013

Median species richness per survey



—By Research and Community Science intern Yue Pheng Lee. Since his internship ended, he has gone on to work with the American Conservation Experience in southern California and has been invited to serve in Peace Corps Nepal!

ANNUAL EVENTS

Green Birding Challenge

2016 marked the 6th annual Green Birding Challenge, our unique fundraiser that inspires friendly competition and encourages everyone to get outside to explore the wonders of resident and migratory birds each May. In addition to being the best month for seeing colorful migrant birds in Milwaukee, May is when people all around the world celebrate International Migratory Bird Day—a celebration of birds and their migrations that transcend political boundaries.



Unique 2016 t-shirts designed by volunteer Claire Colton!

Teams of birders of all skill levels compete to find the most species of birds without using fossil fuels. The challenge raises money for community science programming which provides students and the community year-round opportunities to learn about birds and other wildlife at the Center.

18 teams traveled by foot or bike to identify as many species as possible--without fossil fuels
120 species of birds were identified between 6:00 a.m. and 11:00 a.m.
\$19,600 was raised by participants and sponsors!



The Festive Coquettes worked together to identify 76 species—more than any other team and winning them the mobile Soaring Eagle category. They were also the top fundraising team raising \$3,184! Photo by event volunteer Ann Graf.

2016 was the first year of the Fledgling Fun Challenge. This was a non-competitive, 2-hour mini-challenge where families and novices participated in guided opportunities to learn more about birds. Photo by event volunteer Claire Colton.



Annual Research Symposium



Each year community scientists gather to present findings of their own original research. 2016 presenters included:

•Ann Graf, Research and Citizen Scientist - *Dragons and Damsels:*

Odonata as Evidence of a Healthy Ecosystem

•Kara Delanty, Milwaukee County Zoo and Master of Arts Candidate, Miami University - *Location of Bat Monitoring Equipment for Citizen Science Based Surveys in the State of Wisconsin*

•Menomonee Valley Young Scientists Club - *Methods of Insect Collection in Three Bridges Park*

•Violet Zaragoza, Escuela Verde student - *In What Ways does the Lack of Cultural Competency Training Affect the Health Care Services of Multicultural Patients?*

•Shameka Tyler, Human Resources Specialist and Master of Arts in Adult Education and Organizational Development, Alverno College - *Where are the African Americans in Environmental Education?*

•Jake Olsen, Outdoor Leader and Rufus King High School student - *A Comparison of American/European Birds*

•Yue Pheng Lee, Research and Community Science Intern and UW-Milwaukee student - *Biological Monitoring: Benthic Macroinvertebrates*

Eco-travel

[Our Eco-travel program](#) explores new places while focusing on nature, education, community, and fun. Eco-travel is a great way to support year-round community science programming at the Center while connecting to new places, organizations aligned with our mission, and each other.

In 2016 the Research and Community Science team led trips to explore:

•***The Biodiversity of Costa Rica***—the country with the largest percentage of protected areas and plans to become the first carbon-neutral country by 2021

•***Coastal Maine using wind***—one of our cleanest renewable energy sources—aboard the oldest schooner in the U.S.

•***Wisconsin's Tiffany Bottoms State Natural Area***—by open-air train with the Chippewa Valley Motor Car Association, a local group of train enthusiasts committed to getting people back on the rails and into this beautiful and remote area



Exploring closer to home in Tiffany Bottoms State Natural Area by rail.

2016 COMMUNITY SCIENTISTS

Adam Honts	Christine Wilkinson	Janet Carr	Leah Weiss	Ricardo Rosas
Adam Yellen	Chuck Stebelton	Jean Casper	Leakhena Au	Rich Kudronowicz
Adelie Content	Cindy Haq	Jean Classen	Lenore Lee	Robin Squier
Ajay Rajurkar	Claire Colton	Jean Zachariasen	Liam Smith	Rochelle Voelkel
Aleksandra Avrutina	Cordarrell Martin	Jeanne Prochnow	Lincoln Rice	Rohan Waghray
Alex Martinez	Craig Berg	Jeff Taylor	Linda Frank	Ronald Gutschow
Alexa Hollywood	Dale Snider	Jennifer Lautz	Linda Orlando	Ronald Switzer
Alexandra Kilmer	Dana Hanson	Jessica Jaglowski	Linh Nguyen	Rose Mary Muller
Alicia Schultz	Daniel Jibson	Jessica Mailhot	Liza Fleischmann	Russell Mason
Allie Zindl	Daniel Pirtle	Jessica Orlofske	Lora Loke	Sam Rebholz
Alyssa Craft	Danny Lynn	Joanna Rotter	Lori Dehaan	Samantha Vertucci
Amy Baer	David Axtell	Joanne Kline	Maggie Hennig	Samuel Lovern
Ann Bowe	David Dehaan	Joe Meyer	Maggie Madden	Sarah Aumann
Ann Graf	David Sikorski	Joel Springsteen	Maria Terres	Sarah Fischer
Anne Bales	David Vogel	Joey Kilmer	Marilyn Bontly	Sarah Zahner
Annika Roberts	Dean Muller	John Gnorski	Marquette Univ. H.S.	Scott Mason
Anonymous	Dennis Casper	John Schwabe	Martin Pfeiffer	Sean Jackson
Avinash Rajurkar	Dennis Oulahan	John Sterr	Mary Staten	Sid Hamm
Barb Kellerman	Diane Weaver	Jonathan Abresch	Mary Mirasola	Sonia Ost
Barbara Eisenberg	Dominick Reed	Jonathan Rogers	Mary Mueller	Stacey Rebholz
Barbara Todd	Elaine Vokoun	Jonathon Bales	Mary Schley	Stacy Zacher
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Ben Bobinski	Elizabeth Cliffe	Joseph Kilmer	Maurice Fair	Stephen Gaza
Benjamin Pritchard	Elizabeth Dalton	Josie Roberts	Max Rebholz	Stephen Baldwin
Benjamin Grabowski	Elizabeth Kaplan	Juanita Malloy	Megan Henson	Steven Marshall
Beth Lee	Elizabeth Vokac	Judi Kistler	Melissa Giuffre	Susan Blaustein
Billie Harrison	Emilie Hunn	Judy Jones	Michelle Hawkins	Susan Cruz
Bob Stetson	Emily Kronenberger	Julia Robson	Michelle Les	Suzy Holstein
Brian Hansen	Emily Michi	Karen Hamm	Nancy Tran	Tallulah Sams
Brian Holoubek	Emma-Sarah	Karen Haley	Nate Rebholz	Taylor Pichler
Brittany Peters	Stephens	Kate Hightdudis	Neil Houtler	Terese Keehan
Brittany Pladek	Emma Kate Stecker	Kathleen Gallick	Nicholas Hightdudis	Terry Pavletic
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Bruce Halmo	Ethan Bott	Kathleen Mahoney	Nina Schield	Thomas Nelson
Caitlin O'Brien	Evan Fischer	Kathrin Spinnler	Oliver Rebholz	Tom Content
Candace Rogers	Gabriel Ziskin	Kathy Gillman	Olivia Beauchamp	Tom Pier
Carol Johnstone	Gloria Stone	Katie Gennrich	Owen Bellin	Tom Sheperd
Carolyn Washburne	Hansen-Tidbergs	Katie Halmo	Paul Sokolowski	Tyler Morgan
Carolyn Vargo	Helen Barborich	Katlyn Plier	Peggy Cavanaugh	UW-Madison
Casey Thomas	Henry Vargo	Katrina Degenhardt	Peggy Noonan	Valerie Pogue
Catey Doyle	Jacqueline Weber	Keenen Edwards	Peter McMullen	Vicki Piaskowski
Catherine Seelman	James Gennrich	Kelsey Crank	Philip Longenecker	Victor Vargo
Cecilia Vargo	James Orlando	Kelsey Cartwright	Phyllis Keener	Vivi Content
Celina Burback	Jamie Pipke	Kevin Sas-Perez	Quintin Bendixen	Walker Holoubek
Charlotte Catalano	Jana Viel	Kira Church	Rachel Burge	Will Sebern
Chris Young	Jane Cliff	Kirsten Maier	Rachelle Ketelhohn	William Vuyk
Christian Lankford	Jane Gellman	Lajwanti Waghray	Rakesh Waghray	William Rumpf
Christine Korty	Janet Gonzalez	Lane Kistler	Rebecca Burton	Yang Liu

My Mediocre Powers

*What if I
was patient
every day?*

*Patient enough
to observe,
to observe things
long enough.*

*Long enough
to learn – to learn
directly.*

*I should be patient,
and learn directly
from what I see.*

*From observation
and patience,
not from reading.*



This poem was written by Urban Ecology Center community scientist Sue Blaustein who has contributed to numerous wildlife surveys, particularly those involving observations of the invertebrate world. Sue's poem was a reflection on an insect field guide passage: *"Among his most famous studies are his work on hunting wasps, his descriptions of the domestic lives of dung beetles, the revelation of the complicated life cycle of a group of beetles called Meloidae..., and detailed work on the relationship between the sex of the egg and the dimension of the cells of a group of solitary bees, Osmiae,"* by David Black in his introduction to Jean-Henri Fabre's *Insects*. Photo by volunteer Jeanette Fellows in Three Bridges Park during March 2016's monthly Photo Phenology hike.

Find this document online at:

<http://urbanecologycenter.org/what-we-do/research-and-community-science-annual-reviews.html>



Riverside Park

1500 E. Park Place
Milwaukee, WI 53211
P (414) 964-8505
F (414) 964-1084
uec@urbanecologycenter.org

Hours:

Mon – Thurs | 9 a.m. – 7 p.m.
Fri & Sat | 9 a.m. – 5 p.m.
Sun | Noon – 5 p.m.

Washington Park

1859 N. 40th Street
Milwaukee, WI 53208
P (414) 344-5460
F (414) 344-5462
tevens@urbanecologycenter.org

Hours:

Tues – Thurs | Noon – 7 p.m.
Fri | Noon – 6 p.m.
Sat | 9 a.m. – 5 p.m.

Menomonee Valley

3700 W. Pierce Street
Milwaukee, WI 53215
P (414) 431-2040
F (414) 308-1858
gholstein@urbanecologycenter.org

Hours:

Tues – Thurs | Noon – 7 p.m.
Fri | Noon – 6 p.m.
Sat | 9 a.m. – 5 p.m.

The Urban Ecology Center is a proud member of
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