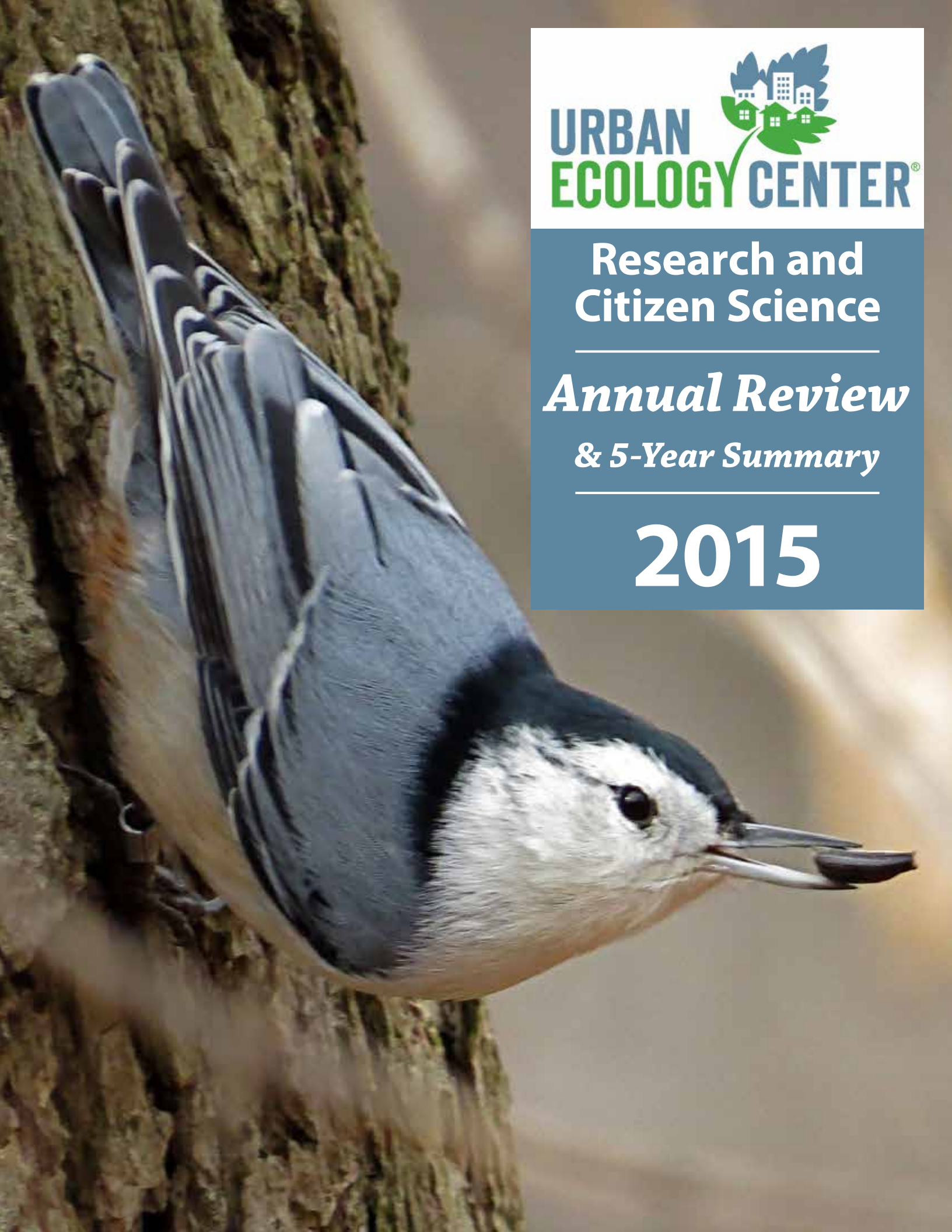




Research and
Citizen Science

Annual Review
& *5-Year Summary*

2015



A MESSAGE FROM THE TEAM

Urban green spaces and restored ecosystems play a unique and valuable role in both wildlife conservation and human well-being. Our parks are important stopover habitats for migratory birds during their long journeys and people from the community walk through these same areas with friends and families to observe these beautiful creatures. With over 80% of the U.S. population residing in cities (and similarly world-wide) it is more important than ever to include urban habitats in the assessment and management of wildlife. Urban habitats support the conservation of native plants and animals, while also being accessible natural areas for the community to use for learning, recreation, and enjoyment. The Urban Ecology Center's Research and Citizen Science department strives to foster increased opportunities for an engaged and ecologically literate community to better understand our natural world—and work together to conserve it.



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



American Kestrel, photographed in Riverside Park on December 17, 2014 by community scientist Bruce Halmo. Throughout this publication, we have featured photos taken at Urban Ecology Center branches by our dedicated volunteers, community scientists, interns, and staff. We are honored to share their talents, which enrich community science in our restored urban green spaces.

In this 5th edition of the Research and Citizen Science Annual Review, we offer not only an overview of 2015, but a 5-year summary of our progress restoring and understanding the Urban Ecology Center's green spaces. While some of our projects are younger than 5 years, and citizen science only began at our newest branch in the Menomonee Valley in 2012, we are able to begin analyzing longer trends and changes in our restored ecosystems.

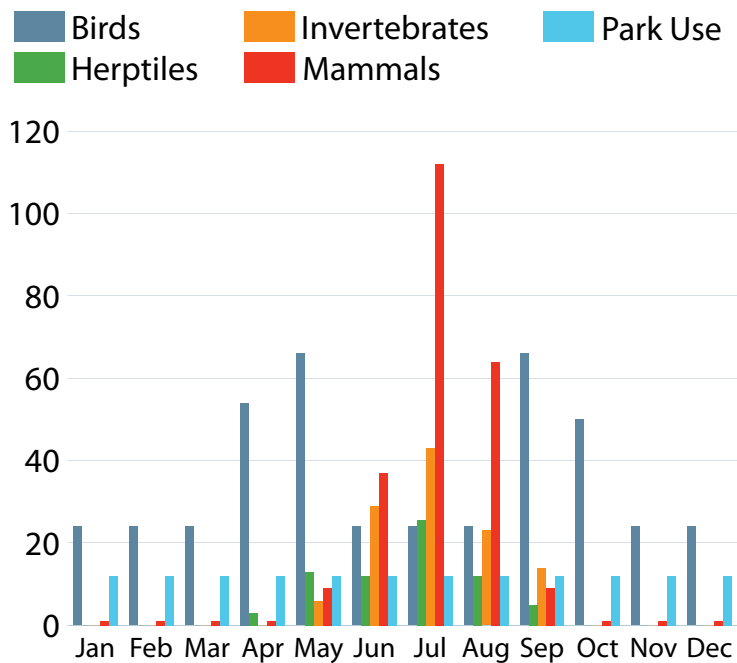
Cover Photo: White-breasted Nuthatch, photographed in Riverside Park on December 17, 2014 by community scientist Bruce Halmo.

ABOUT US

The Urban Ecology Center's Citizen Science Program serves as a meaningful bridge between academic research and the community-at-large that creates a more engaged, knowledgeable, and ecologically literate citizenry. Our programs provide collaborative spaces in research and monitoring for students, children, retirees, professional scientists, and nature-loving community members.

Almost 1,000 hours of community science year-round at the Urban Ecology Center

Total number of 2015 survey hours per month



Above: Photos of a few of our 400+ Research and Citizen Science opportunities that happen year-round at the Urban Ecology Center. Below: Excerpts from the Research and Citizen Science brochure designed in 2016 by Milwaukee Institute of Art and Design student volunteer Keenen Edwards.

There are research opportunities at all three Urban Ecology Center locations which means we need a lot of help and are always on the lookout for new community scientists!

I would LOVE to be an Urban Ecology Center Community Scientist! How do I start?

No prior training is necessary and ALL AGES are welcome! All you need to participate is a curious mind and an adventurous spirit.



Check out our web page:

<http://urbanecologycenter.org/what-we-do/citizen-science.html>

Use the link on the web to sign up to receive the Weekly R&R (Research and Restoration) email newsletter about upcoming community science and land stewardship opportunities.

Contact Research and Citizen Science Coordinator,
Jennifer Callaghan at jcallaghan@urbanecologycenter.org



Urban Ecology Center community scientists participating in bird banding research—one of the most up-close encounters with urban wildlife in Milwaukee.

OUR BRANCHES

The Urban Ecology Center began as a community of concerned neighbors organizing to make Riverside Park clean and safe, growing from a double-wide classroom trailer used for teaching the community about nature and science to **three branches** serving 77,000+ people each year and protecting and restoring urban green spaces across the city of Milwaukee.

Restoration efforts began in the 1990s at Riverside Park, although most areas were previously unmanaged for decades resulting in pockets of native plants and even an undisturbed stock of the originally planted trees. Washington Park was once home to the county zoo and retains many features of a managed city park, including

a man-made lagoon and vast rolling hills of turf grass. Restoration and monitoring began when the branch was opened in 2007. Menomonee Valley was built "from the ground up" in 2012, transforming what was previously the state's largest industrial brownfield into what is now on its way to becoming riparian forest, savanna, and prairie drumlins.

Community science started at each branch during the earliest stages of transformation, which allows us to explore changes in the plant and animal communities and the progression of habitat specialists. Moreover, we are monitoring the corresponding level of community engagement through volunteering and park use.

Our three branches offer opportunities to study the progress of urban green space restoration and how wildlife respond to changes in the land

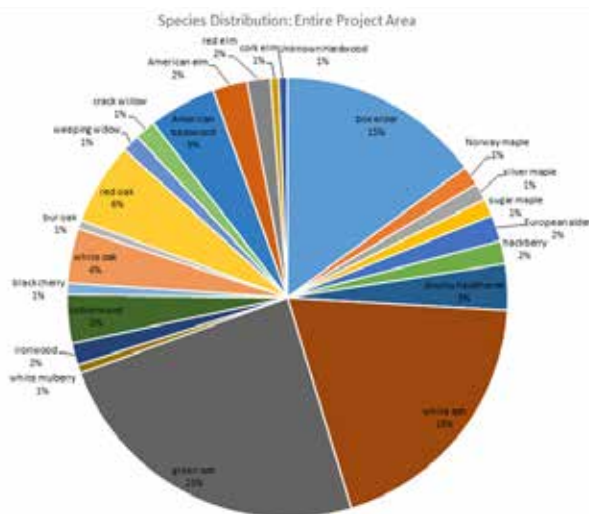


LAND STEWARDSHIP

The Urban Ecology Center's Research and Citizen Science is focused on understanding how wildlife respond to the restoration of land in our parks. In 2015, the Land Stewardship team improved habitat quality on over 50 acres of urban land through community engaged, hands-on restoration work. This included student service learners applying classroom knowledge to their communities, corporate volunteer days, ROOT volunteers who meet weekly to *restore our outdoor treasures*, and more! The community works together in all aspects of the restoration process, from planning and collecting native seeds (with state permits) to pulling up invasive species to provide space for native plant plugs and tree seedlings. Acre by acre, dedicated staff and volunteers have created ecosystems within urban Milwaukee that provide habitat for wildlife, clean air and water, and a place for learning and recreation.

8,333 hours of hands-on restoration by staff and volunteers in 2015!

Riverside Park: Over 5,000 native, wet-mesic plant plugs were planted along the Milwaukee River after removing smothering fabric—a non-chemical method to remove invasive reed canary grass that was previously dominating the river flat habitats. Now deeply rooted native species provide diverse habitat for more wildlife species while improving water quality by naturally filtering stormwater runoff and stabilizing the river bank to prevent erosion.



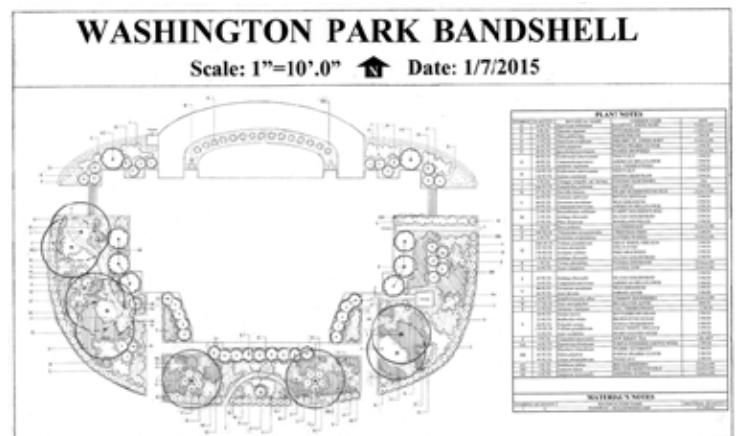
With over 40% of Riverside Park's tree canopy made up of ash trees, land stewards have begun interplanting a more diverse array of tree species and removing sapling ash trees. This will keep our forest ecosystem intact in the future as **Emerald Ash Borer** arrives and infects ash trees. The diverse ensemble of tree species will maintain a healthy ecosystem and reduce impacts from climate change, pests, and disease.



Weekly ROOT volunteers meet year round at all three branches. Our team of staff and volunteers work together to restore our urban green spaces through collecting native seeds, removing non-native invasive species, and planting native vegetation. Photo by Marketing Intern Maddie Bird.

Menomonee Valley: The Urban Ecology Center is now managing more area within Three Bridges Park. In 2015 we planted over 3,500 plant plugs which improved habitat quality for a variety of wildlife species. We've also seen erosion subside with deeply rooted native plant species stabilizing soil and new trails allowing park users to access new habitats without eroding the soil.

Washington Park: The first phase of plantings around the historic Washington Park Bandshell began in 2015, designed to not only beautify the space used for so many community gatherings such as summer concerts and weddings, but provide important pollinator habitat to the park. The fruit orchard (which began producing fruit in 2015) was also interplanted with diverse native plants to attract native insects that reduce orchard pests. Similarly, invasive plant species have been replaced with diverse native species in the Lloyd Street Prairie and adjacent woodland, all thanks to our volunteers!



BATS

We conducted 66 bat surveys during 2011 – 2015 spring and fall migrations (April – May & September – October) and summer breeding and residency (June – August) across our three branches. The acoustic monitoring equipment we carry translates high-frequency bat echolocations into visual sonograms of each species' unique sound waves, documenting their presence in our parks and contributing to state-wide efforts.

Across the country, cave hibernating bats such as Little Brown Bats*, Big Brown Bats*, Eastern Pipistrelle Bats*, and Northern Long-eared Bats** are threatened by [White Nose Syndrome](#), a fungal infection that causes them to expel energy reserves needed to survive winter. And while these species battle disease, bats are also threatened by habitat loss and wind-turbines along their migration routes. Although these cumulative threats have devastated bat populations throughout the eastern and southern U.S., Wisconsin bat populations appear to still be stable. We did not find any significant difference in average number of bat detections per year for either migratory or cave hibernating species at any of our three branches 2011 – 2015. *State Threatened Species **Federally Threatened Species

All eight Wisconsin bat species are important insectivores, keeping pests in balance and protecting native plants, gardens, and human health



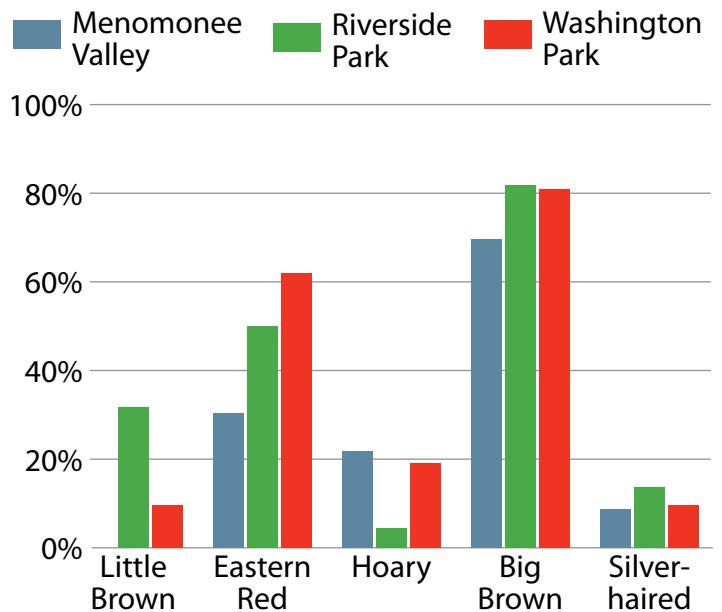
Urban Ecology Center's Community Programs staff Lainet Garcia-Rivera and Michael Espinoza leading a bat survey in Three Bridges Park. Photo by Michael McLoone, Milwaukee Journal Sentinel.



Executive Director and Co-founder of the Organization for Bat Conservation Rob Mies giving an up-close educational program with live bats! Photo by Beth Godbee at Riverside Park during the 2014 Wisconsin Bat Festival.

Community scientists documented five of Wisconsin's eight bat species in our parks

% of 2011 – 2015 bat surveys with species present



Big Brown Bats were the most frequently encountered bat species during 2011 – 2015 surveys. These bats are known to reside in urban areas, roosting in abandoned buildings and attics, but they are currently State-threatened due to the threat of White Nose Syndrome.

Causing mortality in cave hibernating bats since it was first documented in New York in 2006, the deadly fungal disease White Nose Syndrome reached Wisconsin in spring 2014 and is spreading. Acoustic monitoring surveys and educational programming are essential for communities to better understand changes in local bat communities and alert wildlife management agencies to species declines.

SMALL TERRESTRIAL MAMMALS

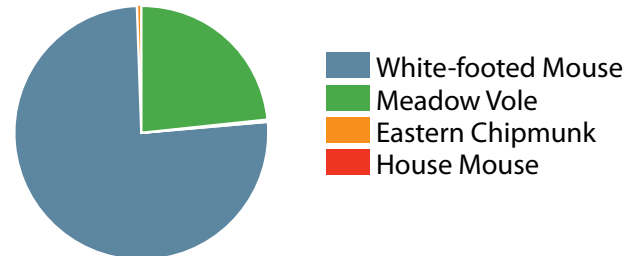
Mammals play an important role in ecosystem health, impacting vegetation, soil, and food web interactions. Live-trapping, wildlife cameras, and incidental visual observations allow us to monitor populations of mammals, large and small. Mark-recapture procedures enable us to estimate population size and monitor population trends over time. At Riverside Park our team of community scientists has documented increased capture rates between 2011 and 2015. This suggests the populations of Meadow Voles, White-footed Mice, and Eastern Chipmunks are increasing with ongoing habitat restoration.



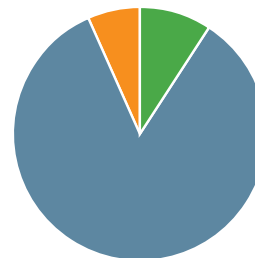
Urban Ecology Center intern Lauren Snell researching long-term small mammal populations through a mark-recapture study. Mark-recapture involves setting baited Sherman live traps for three consecutive nights. Each morning traps are checked and animals are identified, marked with nail polish, and released.

Small mammal species composition by branch

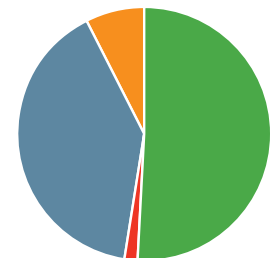
Based on 2011 – 2015 live trap surveys



Menomonee Valley
2014 – 2015



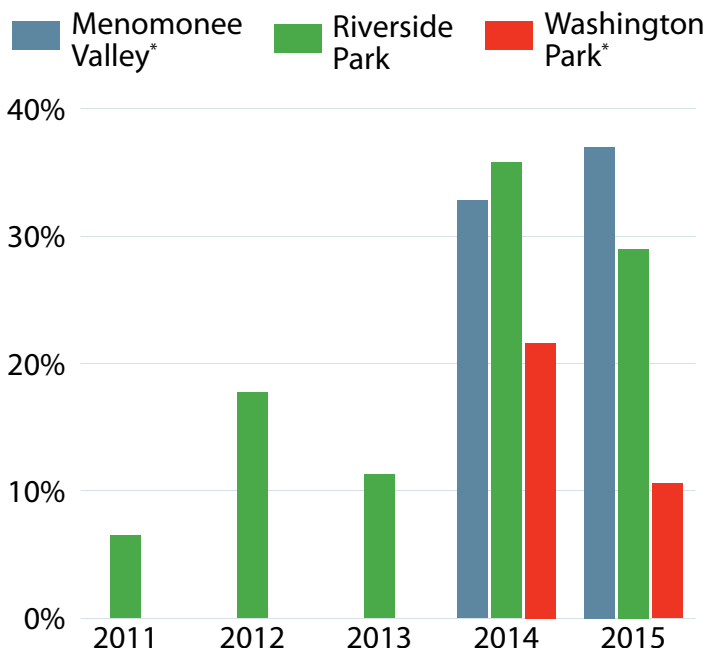
Riverside Park
2011 – 2015



Washington Park
2014 – 2015

Small mammal capture rate 2011 – 2015

% of live traps with small mammals present



*Surveys did not begin until 2014 at Menomonee Valley and Washington Park

This section was written and analyzed by Research and Citizen Science volunteer Rachele Ketelhohn, a senior at UW-Milwaukee majoring in Conservation and Environmental Science and pursuing a career in wildlife conservation.

During fall of 2015, birders on the Riverside Park Weekly Bird Walk found a deceased Northern Short-tailed Shrew along the canoe launch path. We do not know if this was a resident or if it was brought into the park by a predator (e.g., a raptor during a flyover), but its presence would indicate the return of an entirely new order of mammals. Even a small population could indicate that restoration efforts are improving habitat quality for wildlife.



Intermittent wildlife camera surveys provide additional species presence data for larger mammals and more elusive species. In 2015, we continued to document beaver activity at Riverside Park. American Beavers had been extirpated from the Milwaukee River for decades and their return is a testament to habitat restoration efforts of our land stewards, volunteers, and community partners.

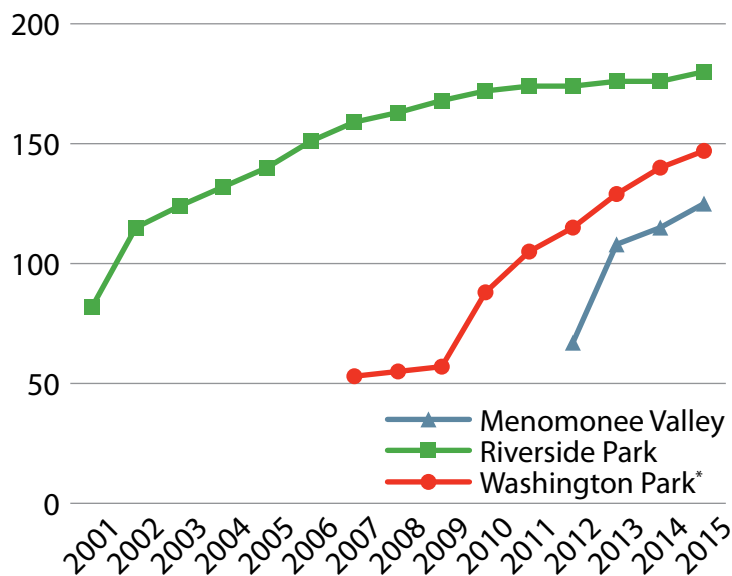
WEEKLY BIRD WALKS

Weekly Bird Walks constitute the longest running wildlife survey at the Urban Ecology Center. Community scientists have run weekly surveys at Riverside Park since 2001 (Thursdays), Washington Park since 2010 (Wednesdays), and Menomonee Valley as of the branch opening in September 2012 (Tuesdays).

Since 2001, community scientists recorded 190 bird species across Urban Ecology Center branches

Cumulative bird species richness

Total number of species documented based on 1,204 checklists (weekly walks and casual observations)



*Washington park checklists were occasional before 2010

Of 168 species documented from 630 checklists during 2011 – 2015, 63% were common to all three branches. During these five years, unique species included: nine in Riverside Park (Bobolink, Brewer’s Blackbird, Eastern Meadowlark, Eastern Screech-owl, Grasshopper Sparrow, Northern Shrike, Wild Turkey, Wilson’s Snipe, and Yellow-bellied Flycatcher), five in Menomonee Valley (American Wigeon, American Woodcock, Budgerigar, Cliff Swallow, and Common Redpoll), and eleven in Washington Park (American Bittern, American Black Duck, Blue-winged Warbler, Cackling Goose, Gadwall, Green-winged Teal, Northern Mockingbird, Northern Shoveler, Ring-necked Duck, Ruddy Duck, and Yellow-rumped Warbler-Myrtle). However some of these also occur outside typical bird walk hours or in previous years (e.g., American Woodcock is a frequent evening visitor at Riverside Park and has been documented prior to 2011 at Washington Park).

Savanna specialists are more frequent with ongoing habitat restoration at Riverside Park

2011 – 2015 Weekly Bird Walks with species present



*State Special Concern Species

Our research aids in determining how stewardship in the parks impacts local wildlife. Restoration of the Milwaukee Rotary Centennial Arboretum, including prairie and oak savanna habitats, is correlated with an increase in species that specialize in open ecosystems.



Northern Shrike, photographed November 11, 2014 by citizen scientist Bruce Halmo. Throughout that winter, we observed a Northern Shrike at Riverside Park. Migrating south from the Arctic, they are one of the only raptorial songbirds—their specialized feeding may also indicate a healthy population of meadow voles.

BIRD BANDING

Bird banding is an important research method that helps determine the importance of green spaces as stopover sites for birds to refuel during the long, demanding migration process. Each bird is given a unique identification leg band and metrics such as age, weight, molting status, wing length, and the amount of fat are recorded. If a bird is encountered again in the future it will help us understand migration patterns and habitat use, which aids in conservation.

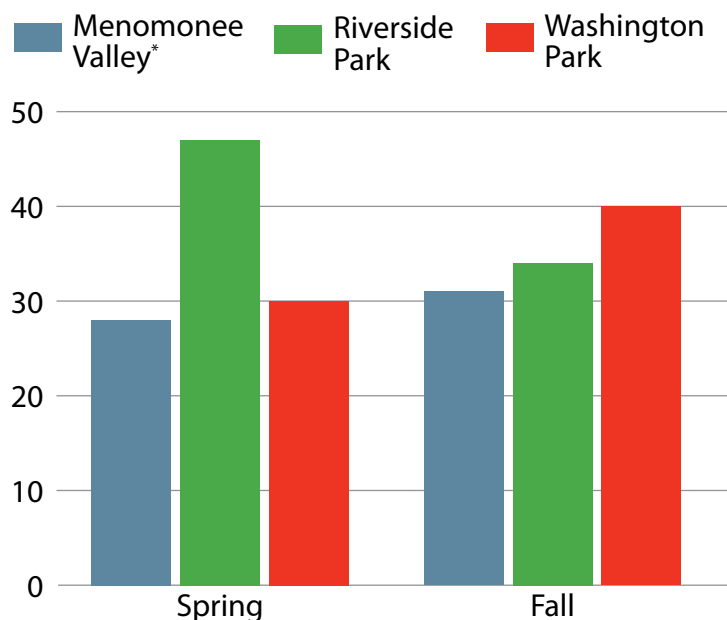
Community scientists contribute throughout the banding process: from setting up nets to apprentice-style mentorship learning how to record data and handle birds. All levels of experience are welcome and many volunteers enjoy the up-close encounters, learning opportunities, and chance to release a banded bird—experiences that often propel people to get more involved in community science.

75 bird species were banded at our three branches 2011 – 2015

Banding also helps document the presence of more elusive species. We documented several bird species through bird banding that were undetected on Weekly Bird Walks, including Gray-cheeked Thrush, Mourning Warbler, and Western Palm Warbler at all three branches.

Cumulative bird species richness

Total number of species documented during 2011 – 2015 bird banding sessions



*Bird banding did not begin until Fall 2012 at Menomonee Valley



I Spy...Birds! summer campers at Washington Park get an up-close look as Research and Citizen Science Coordinator Jennifer Callaghan bands a bird. Led by Environmental Educator Tory Bahe, this camp has been sponsored by Wisconsin Society for Ornithology since 2012. Photo by Marketing Intern Maddie Bird.

Common spring species 2011 – 2015

(occurrence ≥ 50% of bird banding sessions)

Menomonee Valley	Riverside Park	Washington Park
American Robin (100%)	Red-winged Blackbird (63%)	Red-winged Blackbird (75%)
American Goldfinch (100%)		Common Grackle (67%)
Common Grackle (86%)		American Robin (58%)
Red-winged Blackbird (86%)		Northern Cardinal (50%)
Song Sparrow (71%)		
Tree Swallow (71%)		
Trail's Flycatcher (57%)		

Common fall species 2011 – 2015

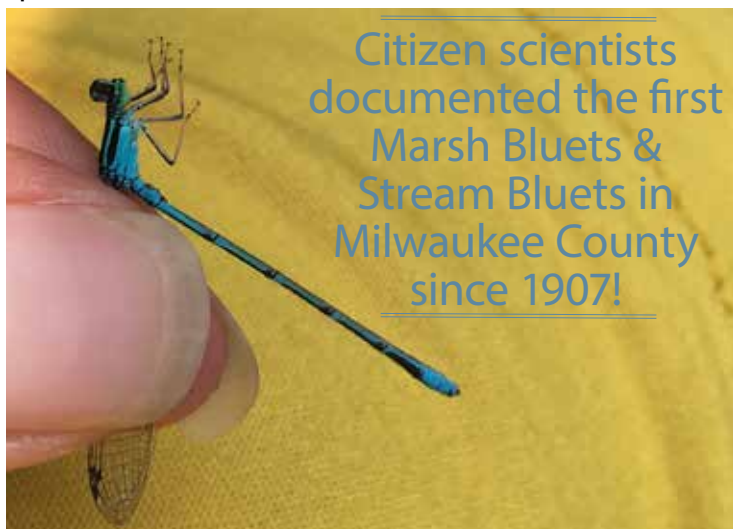
(occurrence ≥ 50% of bird banding sessions)

Menomonee Valley	Riverside Park	Washington Park
American Goldfinch (100%)	Swainson's Thrush (58%)	White-throated Sparrow (80%)
House Finch (50%)	Northern Waterthrush (53%)	Hermit Thrush (70%)
Black-capped Chickadee (50%)		Gray-cheeked Thrush (50%)
		Gray Catbird (50%)
		Slate-colored Junco (50%)

During 2011 – 2015, 39% of banded species were common to all three branches, while 39% were unique to only one branch (ten species unique to Menomonee Valley, ten species unique to Riverside Park, and nine species unique to Washington Park). Common species varied among branches and seasons, reflecting each branch's diverse community of birds supported by unique habitats. However, there were some similarities, including Red-winged Blackbirds which were among the most common spring birds across all three branches and American Goldfinch which occurred during 100% of Menomonee Valley sessions during both seasons.

ODONATES

The Urban Ecology Center contributes observations to the [Wisconsin Odonata Survey](#), a record of dragonflies and damselflies throughout the state. Community scientists have submitted numerous observations of species that haven't been recorded in Milwaukee County in over 100 years, including Marsh Bluets and Stream Bluets damselflies. Additionally, a 2015 Cobra Clubtail observation was only the second observation in Milwaukee County. These community-led efforts provide valuable data that improve our understanding of flight season patterns, population estimates, and species inventories.

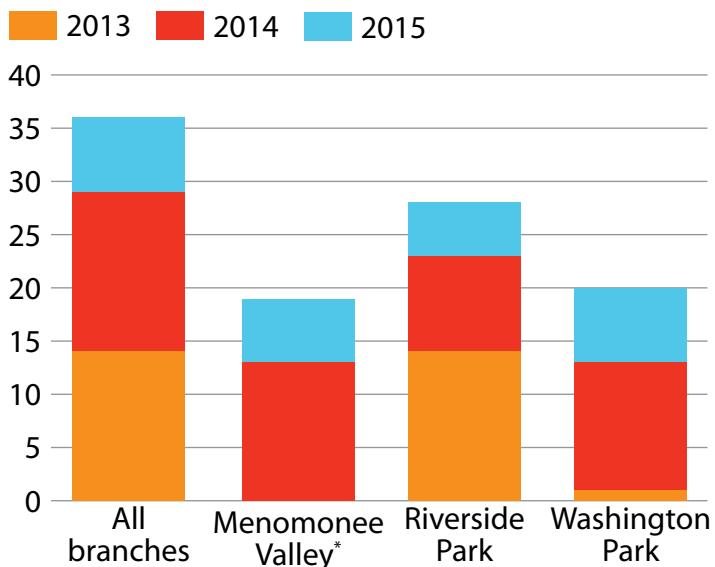


Citizen scientists documented the first Marsh Bluets & Stream Bluets in Milwaukee County since 1907!

Stream Bluet damselfly photographed by Research and Citizen Science Coordinator Jennifer Callaghan.

Cumulative odonate species richness

Number of species first documented each year at Urban Ecology Center branches



*Odonate surveys did not begin until 2014 at Menomonee Valley



Using a hand lens in the field to identify a dragonfly. Photo by citizen science volunteer Ann Graf.

Across branches, Eastern Forktails were among the most common species—88% of Menomonee Valley (MV) surveys, 45% of Riverside Park (RP) surveys, and 90% of Washington Park (WP) surveys. Other common species include Common Green Darner (all branches), Powdered Dancer (MV & RP), Twelve-spotted Skimmer (MV & WP), Blue-fronted Dancer (RP), and Common Whitetail (RP & WP).

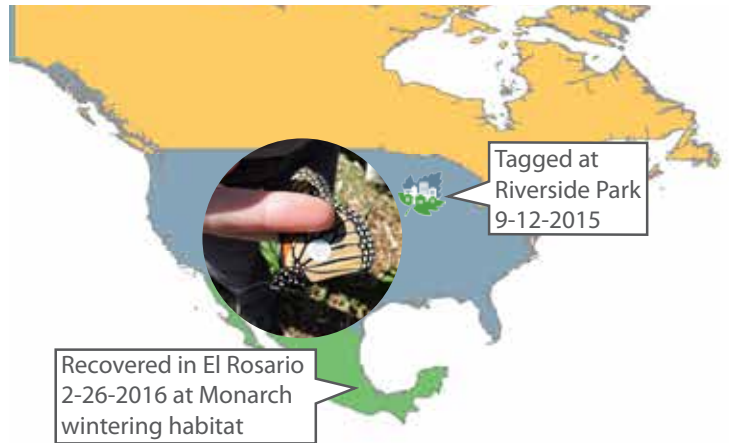
Dragonflies and damselflies actually spend the majority of their life cycles as eggs and larval nymphs (up to 1 – 4 years) within aquatic habitats such as rivers, lakes, and ponds. It isn't until the very end of their lives that they metamorphosize into adults and emerge from their aquatic nurseries. Adults live only a short time during their flight season (about 1 month), which is long enough to reproduce and continue the next generation. Because the aquatic larvae of many dragonfly and damselfly species are sensitive to pollution, their presence can indicate good or improving water quality in urban waterways and adjacent riparian buffers.



Community scientists netting dragonflies and damselflies in Washington Park Lagoon during an odonate survey. Photo by citizen science volunteer Janet Carr.

MONARCHS

Community scientists collect long-term monitoring data for both larval and adult monarchs at the Urban Ecology Center. In coordination with the University of Minnesota's Monarch Larva Monitoring Project, milkweed plants are surveyed for monarch eggs, larval instars (caterpillars), and pupae to assess distribution and abundance of breeding monarchs and milkweed during the summer breeding season. Then in September, as part of the University of Kansas' Monarch Watch, we tag the "super generation" of adult monarch butterflies during their 2,000+ mile, multi-generational migration to central Mexico. After overwintering, these butterflies fly north to breed but not all the way back to Wisconsin. It's their grandchildren that will make it back here and the grandchildren's grandchildren (five generations!) then start the same long migration to Mexico that their great-great grandparents began a year earlier. Tags recovered during migration, winter hibernation, or return spring flight increase understanding of population dynamics, improve habitat along migration routes, and help conserve this unique species.



In September, community scientists tag monarch butterflies by placing a sticker with a unique code on the discal cell on the underside of the hindwing. One of the 2015 monarchs tagged in Riverside Park was recovered in El Rosario, Mexico! This butterfly journeyed 2,300+ miles to overwinter in central Mexico and breed, letting the next generations of monarchs continue the return trip to Wisconsin.

Land stewardship at the Center increased milkweed density from 0.1 plants/m² at all three branches in 2013 to 5 plants/m² at Menomonee Valley, 11 plants/m² at Riverside Park, and 10 plants/m² at Washington Park in 2015. This corresponded with increased monarch larval detections across all three branches.



Monarch butterflies lay eggs on milkweed plants, whose leaves are eaten by larval instars (caterpillars) after hatching. Absorbing unpalatable milkweed compounds into their body protects them from predators even after metamorphosis into adult butterflies. Photo by Urban Ecology Center educator and phenology enthusiast Matt Flower at Riverside Park on July 17, 2014.

Monarch egg & larval detections 2011 – 2015*

% of milkweeds with monarch eggs or larvae

■ Larvae ■ Eggs

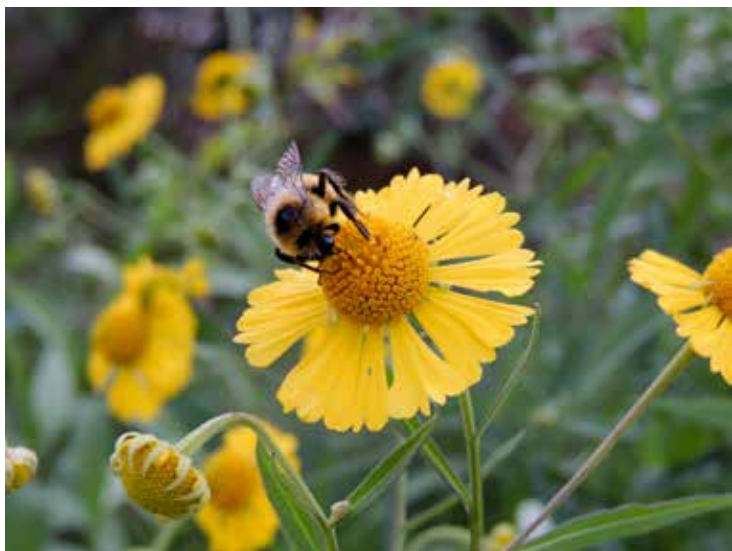


*Surveys did not begin until 2012 at Menomonee Valley and Washington Park

OTHER INVERTEBRATES

Odonates and monarchs constitute only a part of the Urban Ecology Center's invertebrate research. Five years ago, invertebrates were one of our least studied groups of organisms. Today, it is the Center's fastest growing suite of urban wildlife surveys. Community scientists of all ages have contributed hundreds of hours netting, trapping, photographing, listening for, and identifying invertebrates.

This surge has been fueled by the CRIKT team (Citizens Researching Invertebrate Kritters Together). In 2014, this enthusiastic group of community scientists crafted a long-term invertebrate monitoring plan to assess the urban ecosystem restoration at our three branches and they continue to adapt the plan over time.



A bee species pollinating a sneezeweed flower—the Center's land stewardship team says it is an unfortunate misnomer and gets a bad reputation as an allergen because it blooms the same time as ragweed, the real culprit. Photo by Urban Ecology Center educator and phenology enthusiast Matt Flower at Riverside Park on August 30, 2013.

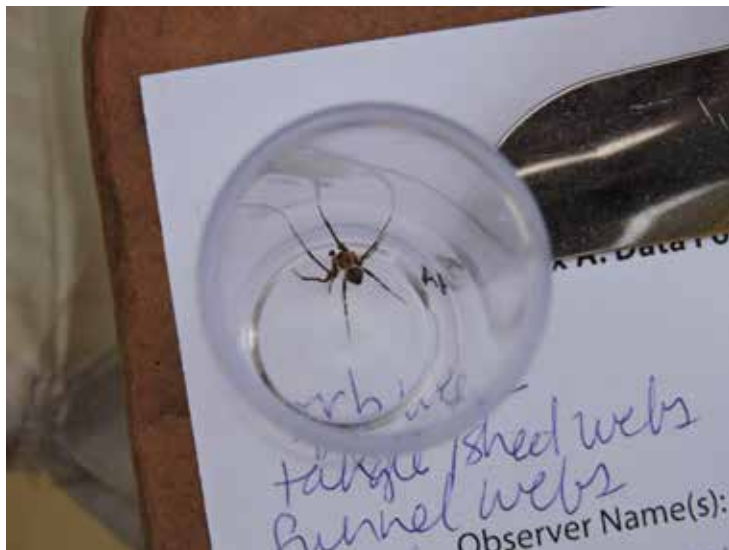
115 hours of invertebrate surveys were conducted during the 2015 field season

Though small in size, backboneless animals such as beetles, bees, moths, grasshoppers, and spiders can be important indicators of ecosystem health. They are present throughout the food web as primary consumers and pollinators of many native plants, detritivores important for nutrient cycling, predators of agricultural pests, and prey for an abundance of wildlife. These often overlooked "kritters" help us keep track of our progress in restoring functioning, resilient, and sustainable native ecosystems.



Community scientists identifying moths on a sheet during a July 2014 Moth Night survey at Riverside Park.

Urban natural areas are important habitats for invertebrates and over 300 are listed as Species of Greatest Conservation Need in the [Wisconsin Wildlife Action Plan](#). But records in urban areas like Milwaukee are often scarce and the need for life history, distribution, and habitat use information is greatly needed to conserve species. To amplify conservation efforts across the state, the plan explicitly calls for community scientists to be partners in this important research. The Urban Ecology Center isn't taking this call lightly and continues to increase opportunities for our *community to research invertebrate kritters together!*



Orb-weaver spider observed on a 2015 Menomonee Valley spider survey. In 2015, six diverse orders of spiders were found at the Menomonee Valley.

REPTILES AND AMPHIBIANS

The acoustic frog and toad survey is one of the Urban Ecology Center's longest running wildlife monitoring projects. We have surveyed sites throughout Milwaukee County as part of the state-wide, volunteer-led [Wisconsin Frog and Toad Survey](#). During 2012 – 2015 we surveyed 100 points during driving routes in southern and northern Milwaukee County and heard the breeding calls of seven frog and toad species: Boreal Chorus Frog, Spring Peeper, Northern Leopard Frog, American Toad, Gray Treefrog, Green Frog, and American Bullfrog. Three of these—Green Frog, American Bullfrog, and American Toad—were found in Riverside Park.



(Clockwise from top) Northern Leopard Frog encountered during a visual frog and toad survey, Menomonee Valley Outdoor Detective summer campers learning about Butler's Gartersnakes—a state Special Concern Species found in our restored green spaces, and juvenile Snapping Turtle photographed at Riverside Park by community scientist Bruce Halmo.

Basking turtles are surveyed along the Milwaukee River, Menomonee River, and Washington Park Lagoon using binoculars while walking along the shoreline.

- 5 species (Snapping, Painted, Spiny Softshell, Red-eared Slider*, and Northern Map Turtles**) were recorded from 2011 – 2015 in Riverside Park. Four of these species (Snapping, Painted, Spiny Softshell, and Red-eared Slider*) were also documented in 2011 – 2013 surveys using baited hoop net traps set in the Milwaukee River.
- 2 species (Spiny Softshell and Snapping Turtles) were recorded from 2014 – 2015 at Menomonee Valley.
- 2 species (Painted and Snapping Turtles) were recorded in 2015 at Washington Park.

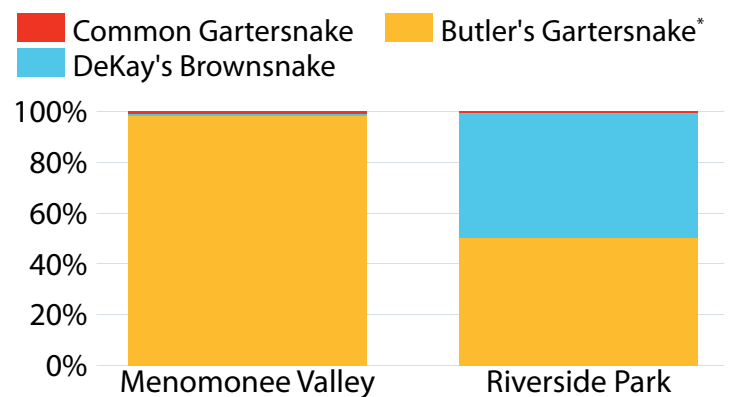
*Red-eared Sliders are non-native and invasive

**Northern Map Turtles were historically found in river systems of western Wisconsin, but have expanded their range into southeastern Wisconsin, likely introduced by humans

Snake surveys began in Riverside Park in 2007 and in Menomonee Valley and Washington Park in 2011 using a network of plywood coverboards. The ground beneath the boards holds heat, especially at night, making them attractive shelter for ectothermic animals that use their environment to regulate body temperature.

Three snake species have been documented at Menomonee Valley and Riverside Park

Species composition (%) during 2011 – 2015 surveys



*State Special Concern Species

Sampling was most intensive at Riverside Park during 2011 – 2013 when [Butler's Gartersnake](#) population (then a State Threatened Species) was being estimated through mark-recapture modeling. During that time over 2,000 individual snakes were documented! At the Menomonee Valley, sampling effort was greatest during 2013 – 2015 and Butler's Gartersnakes were present on 84.4 % of surveys. In Washington Park, only one individual Butler's Gartersnake has been recorded (2011) and surveys were discontinued after 2014. We are hopeful that habitat restoration in the park (and along corridors to the park) will result in more snakes one day.



Monitoring snakes with coverboards in Menomonee Valley

PARK USE

In addition to surveying how wildlife are using the restored urban green spaces in our parks, we are interested in how the human community uses the parks adjacent to the three Urban Ecology Center branches. It is our hope that the ecological restorations of parks, along with daily programming at the Center, creates places that are welcoming to both wildlife and humans.

Community Scientists and Center staff have conducted approximately 80 park use surveys annually at each of the three branches since 2013

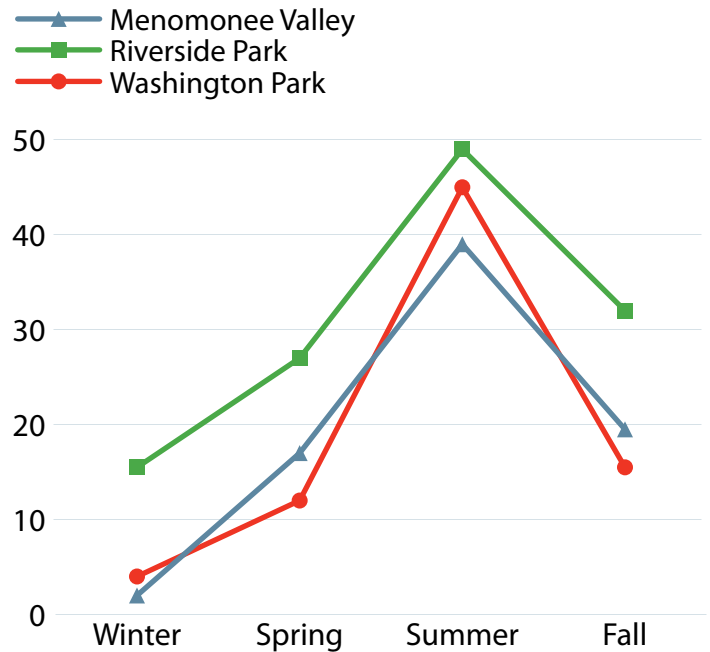


Urban Ecology Center educator Kelly Ostrenga leading a Menomonee Valley summer camp focused on biking—one of many types of recreational park uses.

Annual park use is estimated from year-round surveys conducted largely by community scientists. Surveys last approximately one hour and consist of four fixed points where visitor use is recorded for ten minutes. Additional observations are made when moving between survey points. We record how people are using the park (biking, running, walking, fishing, etc.) and then extrapolate from these observations to estimate park use for the entire year using an adjustment factor specific to each branch, season, and year.

Median number of park users per survey

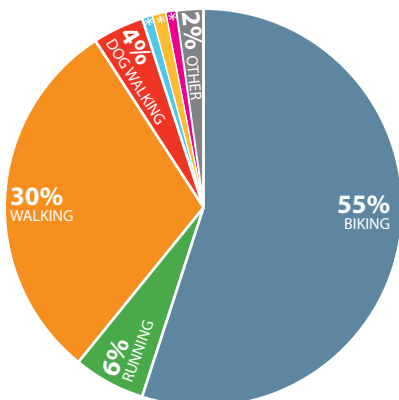
2013 – 2015 observations by season and branch



Park user activities vary at each of the three Urban Ecology Center branches

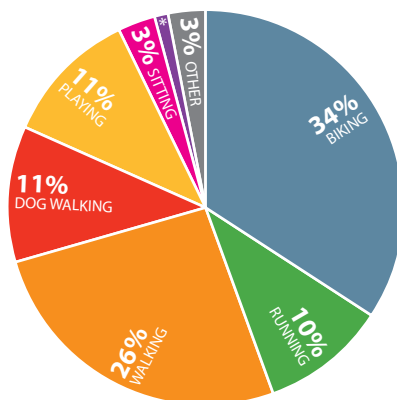
2013 – 2015 park use monitoring based on year-round surveys of the green spaces surrounding each branch

Menomonee Valley



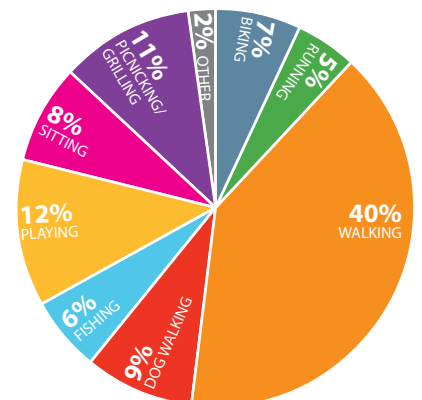
*1% each FISHING, PLAYING, SITTING

Riverside Park



*1% PICNICKING/GRILLING, <1% FISHING

Washington Park



ADDITIONAL RESEARCH

Community science at the Urban Ecology Center extends beyond the Research and Citizen Science Department. We are humbled and inspired to be able to bring research and monitoring efforts to environmental education and community programs led by our colleagues. These efforts include a summer camp for young ornithologists in the community, after-school programs for the Young Scientists Club, and a photodatabase documenting phenology (seasonal and annual changes) in our parks—as seen through the lenses of staff and community photographers. We are honored to work in an organization full of talented and passionate educators, land stewards, community engagement and visitor services specialists, facilities staff, and administrators.



Research and Citizen Science staff and volunteers supporting I Spy...Birds! summer camp at Washington Park, created and led by Urban Ecology Center Educator Tory Bahe.



Raccoon in Riverside Park. Photo by Urban Ecology Center educator and phenology enthusiast Matt Flower on May 10, 2014. Our fellow phenologists have a friendly competition each spring to see (or hear) the first arrivals and emergence of spring indicators such as the Red-winged Blackbird, Mourning Cloak, Butler's Gartersnake, and Eastern Chipmunk. By tracking these occurrences, we can begin to understand how events and species are inter-related and piece together the fascinating mosaic of the seasons.



Menomonee Valley's Young Scientists Club presented their own original research to professional scientists at University of Minnesota's Ecology Fair in December 2015 as part of the Driven to Discover program. Led by our Urban Ecology Center Community Programs colleagues Lainet Garcia-Rivera and Michael Espinoza.

GREEN BIRDING CHALLENGE

In 2015 we completed the 5th annual Green Birding Challenge. In coordination with International Migratory Bird Day, the event is a unique fundraiser, community celebration, and community science project. Teams compete to record the most bird species—without using any fossil fuels. Starting and ending at Riverside Park, participants sit, walk, and/or bike to identify nearby resident and migratory birds. Some biking teams are even able to bird at all three of our branches during the challenge!

This annual event has grown from 4 teams in 2011 to 17 teams in 2015



Team Pleased to Beatcha spotting one of their winning 65 species during the 2015 Green Birding Challenge. Photo by event volunteer Matt Corbett.



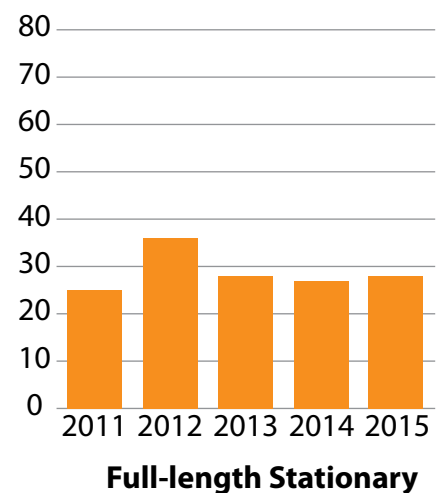
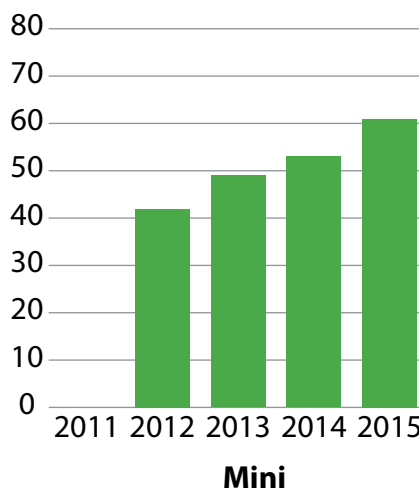
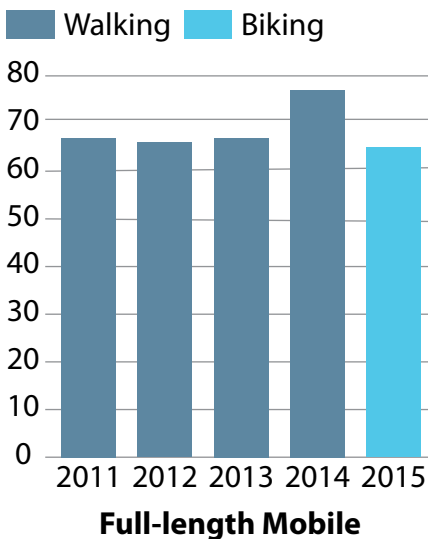
107 species recorded within walking and biking distance of Riverside Park

\$8,000 raised to support Research and Citizen Science

150+ individual donors plus prize donors and event sponsors

Five years of green birding, fundraising, and International Migratory Bird Day celebration

Total number of species recorded by winning teams for full-length (5-hour) and mini (3-hour) challenges



ECO-TRAVEL

While we love working in the amazing green spaces surrounding the three Urban Ecology Center branches, it's also important to make connections with other communities and organizations across the globe. Urban Ecology Center Eco-travel trips are more than just an exciting way to explore the world. Participants:

- Get the local experience with staff members and local guides who have often lived or traveled extensively in the area and can provide experiences off the beaten path
- Become familiar with new organizations aligned with the Urban Ecology Center's mission
- Build camaraderie and friendships with fellow travelers



The Eco-travel program is a unique way to explore local and international destinations with a sustainability focus. Your participation supports the Urban Ecology Center's mission!



Returning to the Lewis R. French (the oldest schooner operating in the U.S.) after an excursion to shore during 2011 Eco-travel in Maine. Travelers explored the coast by one of the greenest energy sources we have: wind!

We've traveled near and far, from northern Wisconsin and the Florida Everglades, to Costa Rica and Denali National Park. We hope you can join us for another adventure soon.



Hiking during 2013 Eco-travel to Bosque del Apache Wildlife Preserve, New Mexico. Photo by Menomonee Valley branch manager and trip leader Glenna Holstein.

(Clockwise from top) Urban Ecology Center Eco-travelers have explored the Dry Tortugas National Park (almost 70 miles offshore Key West and only accessible by ferry), taken the helm at sea aboard the oldest schooner in the U.S., kayaked in the Florida Everglades National Park, and ziplined through the rainforest in Costa Rica.

OUR 2015 VOLUNTEERS

Adego Said	Dona Laufer	Juanita Malloy	Nancy Meske
Ahmad Hassan	Douglas Drysdale	Judi Kistler	Neil Houtler
Ahmed Teleb	Douglas Wiese	Judith Ormond	Nicholas Hightdudis
Alexa Hollywood	Elaine Vokoun	Julee Mitchell	Norm Gunder
Alicia Doberstein	Eliana Wasserman	Julia Robson	Olivia Loomis
Amanda Savngian	Elise Myers	Juliette Todd	Owen Jaglowski
Amberleigh Henschen	Elizabeth Kaplan	Jym Mooney	Peggy Noonan
Anjana Murali	Emily Kermath	Karen Crook	Randy Cerfus
Ann Graf	Emma Kate Stecker	Karen Haley	Rebecca Burton
Ann Leo	Eric Meils	Kasie Boodry	Richard Parks
Anne Bales	Erika Noble	Kate Hightdudis	Richard Ruppel
Annika Roberts	Ethan Bott	Katherine Fisher	Richard Toth
Anonymous	Ethan Keister	Kathleen Gallick	Robbie Johnston
Barb Kellerman	Eva Johnston	Kathleen Beaver	Robin Cornell
Barbara Eisenberg	Frank Toth	Kathy Beale	Robin Evans
Barbara Hall	George Liu	Katlyn Pluer	Robin Squier
Barbara Todd	Gordon Zion	Kayla Wasserman	Ronald Gutschow
Becky Schneider	Hanna Jeske	Kelley Jazinski	Rose Mary Matusinec
Beth Keber	Henry Fowler	Kelsey Pederson	Rose Mary Muller
Bob Stetson	Henry Vargo	Kelsey Crank	Ross Buckner
Brian Hagan	Ilya Slootsky	Kiara Graves	Ruth Kanklins
Brian Staehlin	Jacob Koepp	Kristin Gjerdset	Sam Van Akkeren
Briana Johnson	Jacqueline Weber	Lane Kistler	Sarah Aumann
Brittany Pladek	James Grass	Laura Pope	Sarah Fischer
Bruce Halmo	Jamie Bruchman	Lauren Snell	Sarah Goldberg
Calan Hess	Jan Slupski	Lea Cutsforth	Sarah Neilsen
Carol Hayes	Jane Gellman	Lee Ferdinand	Sarah Geise
Carol Johnstone	Jane Meske	Lenore Lee	Sean Draxler
Carolyn Washburne	Janet Carr	Lincoln Rice	Sharon Kay
Carolyn Vargo	Janet O'Donnell	Linda Frank	Sharon Wolf
Catherine Seelman	Janie Besharse	Linda Kraft	Siena Muehlfeld
Cecilia Vargo	Jason Schmidt	Lindsay Frost	Sonia Ost
Charles Hoying	Jean Casper	Lora Loke	Sophia Otap
Charlotte Catalano	Jean Zachariasen	Maggie Bales	Stacy Zacher
Chris Young	Jeanette Zevallos-Zelazoski	Maggie Cram	Stephen Gaza
Chuck Stebelton	Jeanne Prochnow	Maggie Hennig	Stephen Baldwin
Claire Zankle	Jeff Taylor	Maggie Madden	Steve Kaplan
Clayton Russel	Jeffrey Newlin	Marilyn Bontly	Steven Marshall
Courtney Allen	Jenna Cava	Marlee Lane	Sue Holcomb
Craig Berg	Jennifer Callaghan	Martin Pfeiffer	Sue Lewis
Dale Snider	Jennifer Lautz	Mary Mirasola	Susan Blaustein
Dan Gerard	Jessica Jaglowski	Mary Schley	Suzy Holstein
Daniel Jibson	Jessica Orlofsky	Mary Stetson	Tanya Havlicek
Danny Lynn	Jessica Wolff	Matthew Kettner	Tenzin Jaglowski
David A. Snell	Jessie Tobin	Megan Henson	Terry Parletic
David Axtell	Joanna Rotter	Megan Eimers	Thomas A. Moore
David Herrewig	Jocelyn Koss	Meghan Curtis	Thomas Grist
David Vogel	Joey Kilmer	Meghan O'Brien	Thomas M. Moore
Delainey Wedding	John Gnorski	Mehdi Nejatbakhsh	Thomas Nelson
Dennis Casper	John Tobin	Michael Costigan	Vicki Piaskowski
Dennis Cayer	Jon Bales	Michelle Les	Victor Vargo
Diane Weaver	Jonathan Abresch	Michelle Hawkins	Whitney Swanson
Dominick Reed	Josie Roberts	Michelle May	William Vuyk

“Scientific natural history is one of the few endeavors
in which any interested person can make original
contributions to science...



...there are just too many kinds of organisms [to study]
and too few professional scientists.”

—E.O. Wilson

Find this document online at:

www.urbanecologycenter.org/what-we-do/research-and-citizen-science-annual-reviews.html



Riverside Park

1500 E. Park Place
Milwaukee, WI 53211
P (414) 964-8505
F (414) 964-1084
jferschinger@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
Community Shares of Greater Milwaukee

