Dear Friends,

We are thrilled to present the first ever Research and Citizen Science Annual Review. This publication has been a personal goal for a decade and now, thanks to the addition of some amazing and talented staff, this dream has finally become a reality.

Due to generous funding from the Environmental Protection Agency’s Great Lakes Restoration Initiative, we were able to hire a team consisting of long-time volunteers Jennifer Callaghan (Research Assistant) and Anne Reis (GIS Specialist). We were also able to hire a talented team of field techs (Maggie Tarrasewisz - invertebrates, Julia Robson - snakes, Katie Matulis - turtles, frogs, and Ethan Bott - High-school Outdoor Leader). This has strengthened our research program dramatically, resulting in a data management overhaul and the creation of a long-term monitoring plan.

Other 2011 highlights:

- The Center was selected through a competitive process to advise the future of Citizen Science as a field in an international symposium at the American Museum of Natural History in New York.
- The Center was invited to help plan the first large-scale, open conference on Citizen Science in Portland, OR.
- The Center held its first annual Green Birding Challenge fundraiser that raised $1700 while promoting healthy birding and friendly competition.
- The Washington Park branch captured and marked its first (and only) Butler’s Gartersnake and Riverside Park documented its first (and only) American Badger.
- We received $1000 from the Wisconsin DNR Citizen Based Monitoring Program to help manage our growing database.

None of this would be possible without the continuing support of hundreds of dedicated Citizen Science Volunteers. Thank you! We look forward to future successes in 2012.

- Tim Vargo, Manager of Research and Citizen Science
The bird banding research team conducted 10 banding sessions at Riverside Park and 3 banding sessions at Washington Park. The team consisted of a primary investigator, two master banders, three subpermittees, and a large and dedicated group of over 50 volunteers. Spring banding sessions ran April through May and the fall banding sessions ran September through October. The banding effort included eight mist nets for 360 net hours at Riverside Park and five nets for 67 net hours at Washington Park.

The team banded a total of 155 birds representing 37 species at Riverside Park and 46 birds representing 21 species at Washington Park. Nine of the birds at Riverside Park were recaptures previously banded at the site. The top 10 birds banded at Riverside Park are shown below.
Bird Surveys by Tim Vargo, Manager

Volunteers and staff from the Urban Ecology Center performed 104 weekly surveys between the Riverside Park and Washington Park branches. Monitoring teams recorded 120 species of breeding and migrating birds, including 12 species of ducks, 6 raptors (including Osprey and Peregrine Falcon), Yellow-billed Cuckoo, Sandhill Crane, a nesting Ruby-throated Hummingbird, 6 woodpecker species, 6 flycatchers, 22 warblers, 10 sparrows and a rare Summer Tanager.

The Annual Big May Day in 2011 produced 102 birds, including 33 at Washington Park and 49 at Riverside Park. The Christmas Bird Count in December produced 26 species along the banks of the Milwaukee River between North Ave and Capitol Dr.

After more than a decade of weekly bird walks, we are now able to analyze long-term trends in bird species. In the graph on the right, note the increase in Cooper’s Hawk and Peregrine Falcon sightings at Riverside Park. The increase in Peregrine Falcon sightings is most likely due to a pair that nests atop the UW-Milwaukee Physics building just north east of the Center.
During 2011, 15 bat surveys were conducted at the three Urban Ecology Center branches, including nine surveys at Riverside Park and three surveys each at Washington Park and Menomonee Valley. We used a mobile Titley Scientific Anabat Bat detector to record the echolocation calls that bats make during flight and foraging. Of the seven bat species in Wisconsin, four of them were recorded and identified with certainty at our three branches, including Hoary, Big brown, Silver-haired and Eastern red.

The important data gathered by Center volunteers is sent to the Wisconsin DNR so that they may learn more about the bat populations in our region. With the western spread of White-nose syndrome, bat surveys are of the utmost importance. Many of our recorded calls were simply not long enough or were too faint for positive identification to be made. These calls were lumped into High Frequency or Low Frequency groups and species complexes like the Eastern red/Eastern pipistrelle, Big brown/Silver-haired and *Myotis* spp. (Northern long-eared and Little brown) as seen in the Figure below. Over 20 volunteers helped with the surveys, providing over 60 hours of volunteer bat monitoring. Stephanie Franczak conducted surveys at Washington Park and Menomonee Valley. She found that bats show a preference for open water and forested habitats along the Menomonee River.

### Bats by Anne Reis, GIS Specialist

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Snakes by Julia Robson, Field Technician

In 2011, 20 surveys were conducted in Riverside Park starting June 1st and ending October 8th with the help of 20 dedicated volunteers. Each individual survey consisted of checking 69 cover boards and collecting mark-recapture data on garternakes. A total of three different species were found within the study area, Butler’s gartersnake (*Thamnophis butleri*), Common Gartensnake (*Thamnophis sirtalis*), and Brown (Dekay’s) snake (*Storeria dekayi dekayi*).

For all three species mass, sex, gravidity, snout-to-vent length, scars, and half-ventrals were recorded. Only *T. butleri* and *T. sirtalis* were marked with individual codes. After 20 surveys were completed a total abundance of 1,299 *T. butleri* and 4 *T. sirtalis* were found within the study area. Individual recaptures for *T. butleri* over all surveys declined from June to August as seen in the Figure below. Average snout-to-vent lengths were calculated for the adult male and adult female populations. Adult female *T. butleri* average snout-to-vent length was 360.82 mm, compared with 315.21 mm for adult males.

In 2012, we will start surveys earlier in the year, at the end of April or early May.

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**20 volunteers/ 188 volunteer hours**

Julia is working toward a double B.S. in Biological Sciences and Conservation and Environmental Science from UW-Milwaukee. She has been a field technician since 2011.
In 2011, the mammal monitoring team conducted a total of 12 surveys in Riverside Park from September through October. In addition to the principal investigator, there were two field technicians, two research credit interns and three volunteers. Two live Sherman folding traps were placed every 10 meters along hexagonal transects, yielding 80 traps per hexagon. In locations where the terrain would not support this design, a wandering transect design was used. Previous research at this location encountered disturbances to traps, most likely by raccoons and dogs, which presented a chance to study the effectiveness of a simple trap exclosure. Three species of small mammals were identified through live-trapping, including *Peromyscus leucopus* (White-footed Mouse), *Microtus pennsylvanicus* (Meadow Vole) and *Tamias striatus* (Eastern Chipmunk). The most commonly caught mammal was *Peromyscus*, (34), followed by *Tamias*, (7), and then *Microtus*, (6). 18% of all captures were recaptures from this season. 20.2% of traps with exclosures were tampered with, compared with 36.2% for traps without exclosures. The molestation rate throughout the season is shown in the figure below. The start of the 2011 monitoring season was delayed as a result of an organization-wide decision to form an Institutional Animal Care and Use Committee (IACUC), which now allows us to publish our research. In 2012 we plan to refine the trap exclosure design and continue to test the disturbance rates of covered vs. open traps.
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Wildlife Camera Monitoring by Evan Banach, Intern

During 2011, three motion detector cameras were placed strategically in 13 locations in Riverside Park. Each camera provided eight sessions of photos. Over 10 species of large mammals were recorded in 24 recording sessions as seen in the chart below. Of interest are two possible sightings of an American Badger (*Taxidea taxus*), seen in the photo below. These sightings were preliminarily confirmed by Liz Kierepka, a UW-Milwaukee graduate student working on Wisconsin badger populations. False absences include red fox, mink, gray fox, skunk and muskrat.

![First Badger Sighting in Riverside Park at left](image)

![Raccoon captured on camera foraging at night](image)

5 volunteers/20 volunteer hours

Evan is working toward a B.S. in Conservation and Environmental Science with a minor in Biological Sciences at UW-Milwaukee. He was a research intern in 2011.

![2011 Large Mammal Camera Survey Species Sightings](chart)
Frogs and Turtles by Katie Matulis, Field Technician

During the 2011 field season, 36 frog and turtle surveys were conducted in Riverside Park with the help of 19 volunteers. Surveys consisted of five turtle visual surveys, seven frog call surveys, and 24 turtle trapping surveys.

Three species of turtles were trapped, which include one *Chelydra serpentina* (Common snapping turtle), one *Apalone spinifera* (Spiny softshell turtle), and three *Chrysemys picta marginata* (Painted turtle). None of the turtles trapped were recaptures from previous years. Two species of frogs were observed during the monitoring season, which include three *Rana catesbeiana* (Bull frog) and 15 *Rana clamitans melanota* (Green frog).

The unseasonably cold weather delayed species activity and mating, which may have resulted in lowered species richness and abundance. For future turtle trapping, we suggest using watermelon as bait and using smaller traps. It would also be interesting and beneficial to incorporate water quality testing into the turtle trapping surveys.

**Research and Citizen Science**

Katie has a B.S. in Conservation and Environmental Science from UW-Milwaukee. She has been a field technician since 2008.
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Invertebrates by Maggie Tarasewicz, Field Technician

A survey of the Arthropods in Riverside Park was initiated in May 2011 and concluded in October of 2011. The initial survey goal was to obtain a baseline species list, utilizing various traps and hand collecting methods in different habitat types. Trapping included barrier pitfalls, unbaited Lindgren funnels, leaf litter samples and hand collections.

Spring weather conditions were cold and rainy, resulting in low numbers during the normally productive spring months of May and June. Hand collection proved to be more productive in the remaining summer and early fall months. Hand collection efforts were conducted approximately bi-weekly throughout July, August and into September. Seven different volunteers assisted with collection efforts, most of them on multiple occasions. We continue to utilize volunteers throughout the fall and winter months at specimen identification and mounting workshops.

Samples have been initially sorted and identified to family level and, where possible, to species. The remaining individuals have been placed into morphospecies. A number of insects associated with standing, hanging and downed timber (Coleoptera: Melandryidae, Passandridae and Tenebrionidae) were collected, indicating a starting population of dead wood guild insects. The collection of insects from vegetation in the forest understory (Mecoptera: Bittacidae, Diptera: Empididae, Asilidae, Dolichopodidae and Micropezidae) indicates a starting population forest understory guild. A substantial number of pollinators were collected from the prairie and savanna habitats, including Hymenoptera: Apidae, Halictidae, Megachilidae, Lepidoptera: Sphingidae. In summary this initial collection indicates that a fairly diverse fauna exists in this urban environment.

### Insects

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### Non-insect Arthropods

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<th>Orders</th>
<th>Families</th>
<th>Species</th>
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<tr>
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<td>35</td>
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Maggie has a B.S. in Zoology and Environmental Studies from UW-Madison and an M.S. in Wildlife Health and Population Management from the University of Sydney, Australia. She has been a field technician since 2011.

David Snell collects invertebrates in the Else Ankel Prairie
Monarchs by Ethan Bott, Outdoor Leader

In 2011 we monitored Monarch butterfly larvae and eggs in Riverside Park, conducting a total of 12 surveys. We used the Monarch Larvae Monitoring Project’s protocol: www.mlmp.org.

Overall, we counted 353 Monarch eggs and 13 larvae. Six volunteers participated in the surveys. In the future, we will record the condition of the milkweed plants in Riverside Park because then we can see if monarchs choose healthier plants over weaker plants.

Tree Herbivory Protection by John Becker, Intern

The hypothesis of my project was that plastic placed around the top end bud of small oaks is sufficient to protect oaks from herbivory in Riverside Park and on the bike path. Plastic around the top end bud is much quicker, cheaper, and less unsightly than the hardware cloth cages which have been used to protect small oaks for the last four years. Previous work showed that plastic successfully protected 20 of 20 small oaks at a lot in Mequon the previous winter. The results for Riverside Park were inconclusive. I found that plastic on the top end bud does not work on oaks less than 20 inches because rabbits or humans destroy the entire tree. This test will be repeated with 22 trees marked well and numbered consecutively on the Olmsted circle and 17 trees along on the bike path.
Vegetation by Joel Springsteen and Caitlin Humber

In 2011, the Center’s land stewardship team commenced a long-term vegetation monitoring project in Riverside Park. A 40 m grid of over 100 points covers the entirety of Riverside Park and the Milwaukee Rotary Centennial Arboretum as seen in the figure below. At each of these points, a 50 m transect is laid out on a random azimuth. Every 10 meters along this transect, the herbaceous vegetation in square meter plots is tabulated. In addition, information on shrubs and downed woody debris is recorded. As of October, the vegetation in over 64 of the 111 points has been recorded.

These surveys will be conducted every five years. Caitlin Humber, Forestry Specialist, has commenced the tally of all of the trees in the arboretum—quite an undertaking! This information will help distinguish community types within the Milwaukee Rotary Centennial Arboretum.

WP and MV Snakes and Mammals by Tina Kroening, Intern

As part of her position as a Research, Stewardship, and Facilities Intern this summer at the Center, Tina set up snake and small mammal monitoring projects in the Menomonee Valley and Washington Park branches. Five Butler’s garter snakes (Thamnus butleri), 15 white-footed mice (Peromyscus leucopus) and two meadow voles (Microtus pennsylvanicus) were found in one survey at Menomonee Valley. Only one Butler’s garter snake was found at Washington Park, and three white footed mice, one chipmunk, and one house mouse (Mus musculus) were found during the mammal survey.

Joel has B.A. in Linguistics and is working toward a B.S. in Biological Sciences from UW-Milwaukee. He has been the Land Steward since 2006.

Caitlin has a B.S. in Forest Management from UW-Madison. She has been the Forester since September 2010.
GIS Projects

Six GIS Interns from University of Wisconsin-Milwaukee helped create web maps to showcase the Washington Park 100 year restoration plans and the bat and bird walks for the Milwaukee Biodiversity, Monitoring and Education (BIOME) Program. Thanks to Adam Metaxas, John Hyden, Brennan Kreiman and Patrick Ryan, Melanie Mossing, and Tim Schierenbeck. These maps will be linked to the Urban Ecology Center website in early Spring 2012 and will provide access to and visualization of Citizen Science data.

Researcher Testimonials

“I worked with many dedicated volunteers who contributed so much time and effort to the project. Seeing the volunteers grow an appreciation and understanding of the snakes was one of the biggest highlights for me.”
- Julia Robson

“The highlights of the season were the number of volunteers that participated and capturing the soft-shell turtle!”
- Katie Matulis

“The members of the Bat Squad were dedicated and hard-working. I can’t wait for the upcoming season!”
- Anne Reis

“The highlight of the monitoring season was when we collected an instar, successfully reared it, and then released it as a Monarch butterfly!”
- Ethan Bott

“This year represents my first year as bird banding station manager for the Urban Ecology Center. Sessions ran smoothly because of incredible help from faithful volunteers that care a great deal for the project. I enjoyed learning from and sharing with them and greatly appreciated the enthusiasm they continued to bring to the project week after week.”
- Jennifer Callaghan

“I am impressed by the Urban Ecology Center’s ability to recruit, train, and retain a large network of volunteers. Equally impressive is the breadth and quality of research and monitoring being conducted with citizen scientists.”
- Owen Boyle
WDNR Citizen Based Monitoring Coordinator Research Advisory Committee Member
EPA Great Lakes Restoration Initiative Grant

In 2010, The Environmental Protection Agency (EPA) awarded the Urban Ecology Center with a $950,000 Great Lakes Restoration Initiative Grant to restore and improve the habitat in Riverside Park and the surrounding areas. The Research and Citizen Science program has utilized some of this funding to conduct and initiate monitoring projects along the eastern corridor of the Milwaukee River from the Locust St. bridge to the North Avenue bridge. As a part of this grant, a post-industrial parcel donated by Pieter Godfrey will be converted to an arboretum showcasing some of Wisconsin’s native plants and communities. With this grant, the monitoring projects at the Urban Ecology Center will continue to provide essential data for assessing the health of the Milwaukee River corridor plant and wildlife communities.
Research and Citizen Science

Volunteers

Paul Aldrich
Tim Allen
Michael Anderson
Howard Aprill
Renee Asmann
Sarah Aumann
Kara Baldwin
Anne Bales
Jon Bales
Evan Banach
Stacey Bast
Kathy Beaver
Suzanne Benford
Sue Blaustein
Liz Boeckmann
Ethan Bott
Owen Boyle
Arie Brenner
Nick Bruckner
Calanetta Burrows
Carol Caldwell
Dennis Casper
Jean Casper
Tim Christensen
Lisa Cwikla
Dominique Diop
Rebecca Dreyer
Kari Ehler
Barbara Eisenberg
David Fenner
Jeff Filipak
Jacquie Flohr
Neil Franzen
Lara Ghisleni
Christine Goldsworthy
Stacye Greeffes
Norm Gunder
Ron Gutschow
Katie Halmo
Ben Hammelman
Alicia Hanson
Debbie Hartman
Brooklyn Henke
Jake Hennig
Adam Hermans
Dave Herrwig
Joan Herriges
Jesse Hill
Alexa Hollywood
Suzy Holstein
John Holton
Steve Horvath
Roz James
Karen Johnson
Max Jitney
Rachel Keuler
Judi Kistler
Sara Klemm
Dolores Knopfelmacher
Michael Koester
Tina Kroening
Linda Laev
Lenore Lee
Seth Lerner
Mitch Levenhagen
Sally Lewis
Carla Losin
Amy Macemon
Dennis Mack
Steve Marshall
Patrick Martin
Jim Matulis
Mary Jo McDonald
Andrew Meyers
Madeline Midbon
Ryan Mikrut
Joey Moore
William Mueller
Tom Nelson
Maryanne Niesen
Peg Noonan
Meghan O'Brien
Sonny Ost
Mitch Ost
Corinne Palmer
Brittany Pierpont
Jeanne Prochnow
Katie Rakowski
Katie Ranney
Liz Rasper
Mike Reis
Jennifer Rey-Guertin
Chuck Ritzenthaler
Julia Robson
Christine Robson
Bill Rumpf
Shaun Sacho
Jess Schaeffer
Mary Schley
Beca Setzer
Jason Severn
Jessie Severn
Erin Shawgo
Al Sherkow
Jamie Shorts
David Snell
Zach Snell
Dale Snider
Robin Squier
Anna Stemberger
Jonathan Stenitzer
Kate Stewart
Derek Strohl
Joshua Sutton
Lisa Sutton
Jack Swartz
Maggie Tarasewicz
Maria Terres
Laura Thiessen
Barbara Todd
Demetra Toniolo
Jim Toth
Richard Toth
Carolyn Vargo
Victor Vargo
Kirk Varney
Kelly Voigt
Elaine Vokoun
Carol von Ott
Bethany Vanderhoof
Maureen Vanderhoof
Jim Vineyard
Kadijah Wainwright
Katherine Walton-Meyers
Carolyn Washburne
Neil Weber
Chris West
Rayme White
Jennifer Wilson
Leslie Winkelman
Dave Winston
Jessica Wirth
Renate Witt
Jayme Wittke
Jazmin Wong
Sarah Zahner
Dmitry Zaretser
Gordon Zion

Snake survey participants watch as Julia Robson measures a snake.

Staff Educator Matt Flower shows NEEP students a bird in the hand.

Participants of the First Ever Green Birding Challenge.

Volunteers Dennis Mack and Patrick Martin prepare for a mammal survey.
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2010-2011 Research Lecture Series Speakers

“Birds and Wisconsin Wind Farms”, Julia Garvin, Environmental Consultant

“Organic Lawn Care for Healthier Soils and Healthier Communities”, Darrell Smith, Earthcare Natural Land and Landscapes

“Microbial Communities as Indicators of Pollution Impacts: Tall Tales from Small Things”, Sandra McCellan, Great Lakes Water Institute

“A region built on water: Milwaukee’s use and abuse of a vital resource”, John Gurda, Milwaukee Historian

“The past, present and future of bird identification”, Richard Crossley, author of the Crossley ID Guide (right)

“Healing the people, healing the land”, Venice Williams, Alice’s Garden

“Changes in Populations, Distribution, and Abundance of Wisconsin’s Bird Species”, William Mueller, Western Great Lakes Bird & Bat Observatory


“Climate Change: Who started it and what’s going to happen?”, Roger Kuhns, SustainAudit LLC

“Prairies are grasslands: the evolution, biology and ecology of grasses”, James Reinartz, UW-Milwaukee Field Station

Citizen Science Advisory Council (Active members)

Else Ankel, UWM Chemistry, Emeritus (right)

Robert Anderson, Wisconsin Lutheran College Biology

Craig Berg, Milwaukee County Zoo Curator Reptiles and Aquarium

Jill Birren, Marquette University College of Education

Owen Boyle, Wisconsin DNR Endangered Resources

Rebecca Burton, Alverno College Biology

Gary Casper, Great Lakes Ecological Services, LLC

Noel Cutright, Western Great Lakes Bird and Bat Observatory

Peter Dunn, UWM Biological Sciences

Tim Ehlinger, UWM Biological Sciences

Glen Fredlund, UWM Geography

Maureen Leonard, Mount Mary College Health Sciences

Susan Lewis, Carroll University Biology

Sandra McCellan, UWM Great Lakes Water Institute

Gretchen Meyer, UWM Field Station

Mai Phillips, UWM Conservation and Environmental Science

Maria Terres Sandgren, Milwaukee Institute of Art and Design

Linda Whittingham, UWM Biological Sciences

Will Wawrzyn, Wisconsin DNR Fisheries Management

Richard Crossley showcases his Crossley ID Guide for birds

Else Ankel plants native forbs in the Else Ankel Prairie