

Director's Note

By Brad Herrick, Lakeshore Nature Preserve Director

The Society for Ecological Restoration (SER) defines ecological restoration as “the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed.” There are several key elements to this process: 1.) assessing the site’s current condition and outlining clear goals, 2.) implementing the restoration activities such as removing invasive species and introducing native plants and animals, and 3.) monitoring the progress of the restoration efforts. However, this last step is often left out due to resource and capacity limitations. This is true at the Preserve. This season, however, with the help of our partners, we are able to conduct extensive monitoring and surveys of not only specific restoration projects, but the entire Preserve!

In June, we teamed up with post-doctoral researcher Christopher Warneke and other researchers in Ellen Damschen’s Lab (Dept. of Integrative Biology) to conduct a 15-hour bioblitz across the 300-acre Preserve. Participants

recorded an extensive list of almost 1,000 species, including plants, birds, fish, arthropods, insects, fungi, and more! This list provides a great baseline dataset of the rich Preserve biodiversity. Another ongoing project conducted by Emeritus Scientist (Dept. of Botany) Susan Will-Wolf, Adam, Bryn, and cohorts of Preserve student interns are vegetation surveys of Eagle Heights Woods. The surveys track changes in the plant community following restoration (primarily invasive woody shrub removal). Data from these surveys will be compared with pre-shrub removal data to provide insight into the success of the ecological restoration work. Finally, Phil Townsend’s Lab (Dept. of Forest & Wildlife Ecology), led by scientist Sarah Graves, is collecting baseline data on ecosystem services such as carbon storage and nutrient uptake in trees and prairie vegetation.

These projects and many others help to inform our management goals and fulfill our mission as a living laboratory for research, teaching, education, and outreach.

First Preserve Bioblitz is a Success!

We had a wonderful inaugural bioblitz on June 7th! Around 150 participants joined us in person to record more than 985 species in the Preserve—253 of them recorded here for the first time! Another 330 people helped to verify those species on [iNaturalist](https://www.inaturalist.org). We were thrilled to see so many people getting excited about our local biodiversity. In addition to bringing together community to identify the organisms that can be found here, the data we gathered at the bioblitz will help guide ecological restoration and management of the Lakeshore Nature Preserve and bring attention to its teaching, research, and outreach value.



Bioblitz participants gathered for an evening firefly walk.



Brad Herrick demonstrated a mustard pour to extract earthworms from the soil.



Some participants collected, identified, and photographed aquatic invertebrates.



Ecologist Miriam Kishinevsky led a search for parasitic wasps.



All observations were posted to iNaturalist.

All photos by Bryn Scriver

How Microclimate Shapes Bumblebee Behavior: Insights from Automated Tracking

By Andrzej Affek, Honorary Associate Professor at UW-Entomology Department, Crall Lab

Have you ever wondered how the location of a bumblebee's nest can influence its behavior and success? At the Lakeshore Nature Preserve, we're exploring this question through a cutting-edge research project that uses automated tracking to study bumblebee colonies in different microclimates.

Bumblebees are crucial pollinators, essential for maintaining biodiversity and supporting agricultural productivity. However, their populations are declining due to environmental pressures like climate change and habitat loss. To help conserve these vital insects, we need to understand how factors such as nest location and microclimatic conditions – temperature, humidity, and solar radiation – affect



The BumbleBox is an automated bee tracking system created by the UW Crall lab.

their behavior and colony performance. That's where the BumbleBox comes in. It's a state-of-the-art system developed by the Crall Lab at UW-Madison. This automated tracking system allows us to monitor individual bumblebees 24/7, providing unprecedented insights into their lives.

In our study, we've placed common eastern bumblebee (*Bombus impatiens*) colonies in varied settings at the Lakeshore Nature Preserve: some in the sunny Biocore Prairie, others in the shaded Second Point Woods, with nests positioned both above and below ground. Each colony consists of 50 tagged bees, including a queen and workers, whose movements are recorded continuously using cameras, UV lights (invisible to bees), and environmental sensors. These tools, powered by solar panels and batteries, capture data on bee activity (e.g., nursing, foraging, or patrolling), foraging trip frequency and duration, and nest conditions. We also monitor ambient weather using two weather stations, one in each habitat.



Affek is tracking colonies with tagged bumblebees that were placed above and below ground in sunny and shaded locations in the Preserve.

Preliminary results from our pilot study in fall 2024, based on 10 million tag detections and 3,500 foraging trips, revealed fascinating insights. Nests below ground are better insulated from temperature extremes and solar radiation, leading to more active and productive colonies. These bees spend more time nursing their young, which is critical for colony growth. In contrast, while bees in the prairie are

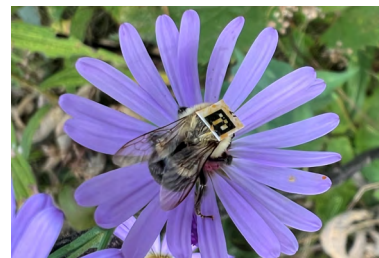


Colonies include 50 tagged bees. The tracking system continuously records their movements. At right a tagged bee (circled) returns to the nest.



All photos by Andrzej Affek

busier, their efforts are less effective, likely due to harsher environmental conditions. Foraging trip duration varies significantly with weather – rain, high temperatures, or humidity – and nest environment (prairie vs. forest, above vs. below ground). We also observed variability in colony performance, suggesting genetic differences or the complex social dynamics of bumblebee colonies play a role.



Foraging bumblebees sporting tags that allow them to be monitored by the BumbleBox.

These findings highlight the importance of microclimatic stability for bumblebee success. For example, below-ground nests in both prairie and forest settings showed higher activity and nursing time compared to above-ground nests, which faced greater temperature fluctuations. This suggests that stable microclimates could be key to supporting healthy pollinator populations, especially as climate change brings more unpredictable weather patterns. By identifying the best habitats for bumblebees, we can design

better conservation strategies to enhance their pollination services, benefiting both ecosystems and agriculture.

This research aligns with the Lakeshore Nature Preserve's mission to foster education, research, and conservation. If you've visited the Biocore Prairie, you may have noticed our BumbleBox setups. We're excited to share photos of our tagged bumblebees and their nests. For a closer look at our work, [check out this YouTube video](#). If you're curious to learn more or see the system in action, feel free to reach out to me at affek@wisc.edu. Together, we can help protect these amazing creatures and the vital role they play in our ecosystems.

Meet our Student Natural Area Assistants

This spring we added four Student Natural Area Assistants to our team! Our internship program aims to provide students in natural resource and conservation fields with relevant hands-on experiences to help them gain the skills they need to start a career. Donations to the Preserve makes these paid work experiences possible. We asked our interns to introduce themselves. If you meet them out in the Preserve, feel free to let them know how much you appreciate their hard work!



My name is Andi, and I am a Senior studying Conservation Biology. I have always loved the ecology of the Great Lakes region, especially the prairies, wetlands, and savannas. This is my third summer doing restoration work, and I hope to expand my skills in plant identification and using tools like chainsaws and herbicides. Of all the scenic spots across the Preserve, my favorite is the Biocore Prairie, with its blooming flowers and twittering Purple Martins. Other wildlife I've encountered include fawns, bald eagles, barred owl fledglings, and bumblebees. When not stomping around the Preserve, I like to crochet, paint, and play my electric guitar.

Hi! I'm Anna, and I'm a Junior studying Conservation Biology. I want to get more hands-on experience with Midwest landscapes and conservation techniques to complement my past experience as a naturalist intern. I've already learned how to identify a lot of plants. My favorite place in the Preserve is Raymers Cove because it's secluded and has a great view of the lake! Two highlights from this summer so far include witnessing a large snapping turtle laying eggs in a still warm fire pit on Picnic Point and discovering a group of newly hatched turkey chicks! Outside work, I love playing the piano and guitar, canoeing, and doing arts and crafts with friends!



My name is Eden. I will be a Senior majoring in Environmental Science with a certificate in Soil Science. I wanted an internship to get me outside and teach me new skills related to my field of study. I enjoy learning how a large and multi-purpose area of land is managed and how our work connects to the done by others, including volunteers and researchers. I also appreciate the opportunity to observe—being outdoors daily as the season changes and vegetation shifts. My favorite place in the Preserve is Eagle Heights Woods. My hobbies include being on the UW soil judging team, building a kayak, keeping pet spiders, and backpacking. I also recently became a Wisconsin Master Naturalist!

Hello! My name is Leah. I'm a senior working towards a double major in Conservation Biology and Environmental Studies with a certificate in American Indian Studies. This job allows me to get hands-on land management experience. So far, I've learned a lot about thinking at a landscape scale, taking into account an area's past, present, and planned future. My favorite place in the Preserve is Frautschi Point because there are so many trails to explore that make you feel far from the city. I've really enjoyed watching spring turn to summer. There have been so many baby-everything from turkeys, sandhill cranes, mallards, toads, and deer! Beyond my outdoor interests, I love to pencil sketch and I've just recently gotten into running.



Bryn Sriver



Adam Gundlach

Archaeological Sites Training

At the end of May, UW grounds workers, including Preserve staff and interns, received training from UW Historic and Cultural and Historic Resource Manager Daniel Einstein on ways to avoid and minimize harm to human burial sites and habitation sites as required by Wisconsin Statutes 157.70 and 44.40.

Following a presentation by Einstein, participants visited campus burial sites for more training at the:

- Observatory Hill Mounds Group
- Bascom Burial Ground
- Willow Drive Mound Group
- Picnic Point Mound Group
- Eagle Heights Mound Group

The university is committed to respecting and preserving our important archaeological sites. These sites are culturally and educationally significant for our indigenous and university communities.



Lakeshore Nature Preserve Staff

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Student Natural Area Assistants:

- Andi Hokanson
- Eden Milan
- Anna Swenson
- Leah Zuschlag

Student Research Assistants:

- Claire Foote
- Andrea Rodriguez Quiros



Sunday Aug 10 - Aldo Leopold and the Lakeshore Nature Preserve - 1:30-3:00 p.m.

MJ Morgan, retired environmental historian, will lead a walk using points along the trail to discuss Leopold's impact on the Preserve. Although there was no Lakeshore Nature Preserve at the time Leopold was at UW, he knew the land and water and he shaped policy as well as proposing innovative curriculum based on nature and place. Meet at the Picnic Point entrance kiosk (2000 University Bay Drive).

Sunday Aug 17 - Insects of Biocore Prairie - 1:30-3:00 p.m.

Join retired entomologist Tom Morgan to learn how insects evade predators through thanatosis, or playing dead. Bring a small umbrella or parasol to capture falling insects as we explore the edges of the prairie and nearby woodland. Meet at the Picnic Point entrance kiosk (2000 University Bay Drive).

Sunday Aug 24 - Effigy Mounds of the Preserve - 1:30-3:00 p.m.

Join State Archaeologist Amy Rosebrough for a fascinating nature walk to see and learn about effigy mounds at the Lakeshore Nature Preserve and other local Native American history, including the discoveries in the past several years of ancient canoes. Meet at the Picnic Point entrance kiosk (2000 University Bay Drive).

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