

UNIVERSITY OF WISCONSIN-MADISON LAKESHORE NATURE PRESERVE 2019 ANNUAL REPORT



lakeshorepreserve.wisc.edu • lakeshorepreserve@fpm.wisc.edu • 608-265-9275

Preserve Serves as Lab to Study Forest Functioning

Phil Townsend, Professor, Forest and Wildlife Ecology



The Lakeshore Preserve is an ideal laboratory for teaching and research. Our research group uses the Preserve to study the functioning of forests, for example how the cycling of nutrients such as nitrogen and phosphorus is influenced by the species in the forests, and how it influences tree growth rates. We use a variety of techniques in which we link field samples to airborne remote sensing imagery to map ecosystem processes.

In particular, we have been using an airplane-flown hyperspectral imaging camera that measures hundreds of wavelengths of reflected sunlight. These hyperspectral images (see attached image) show many patterns related to both the species present on the Lakeshore Nature Preserve as well as the foliar (leaf) chemistry of the canopies of those species.

How and why can we map canopy chemistry? Different molecules absorb and reflect light at different wavelengths based on their chemical bonds. By measuring so many wavelengths, we can actually detect some of the chemical constituents of canopies much like a laboratory spectrometer would. We do this because foliar nutrients such as nitrogen are probably the best indicators of potential photosynthesis and tree growth. We use these maps to predict carbon uptake, but also to identify places where vegetation might be stressed.

I also teach Forest Ecology. With a nice mix of mature forests and differing management histories, the Lakeshore Nature Preserve is an extraordinary setting for teaching, particularly in that it is just outside our doorstep, providing ready access for class labs and instruction. For the lab section of Forest Ecology, starting in 2017 we installed ten permanent 20x20 meter plots across the range of forest communities present on the Preserve. Every year, our students tally species present on the plot, and measure tree regeneration, diameter growth rates, foliar productivity and decomposition rates. The students learn how to interpret the data, and over the years will build a comprehensive understanding of forest dynamics on the Lakeshore Preserve.

"With a nice mix of mature forests and differing management histories, the Lakeshore Nature Preserve is an extraordinary setting for teaching... it is just outside our doorstep, providing ready access for class labs and instruction."

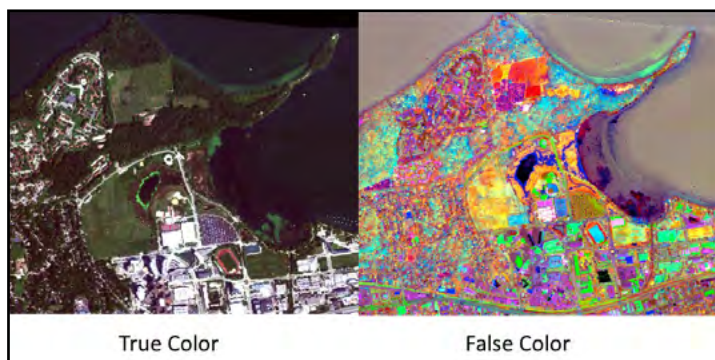
-Phil Townsend, Forest and Wildlife Ecology



Left: Phil Townsend uses a pole pruner to collect leaf samples.



Right: Former PhD student Tedward Erker installing a band dendrometer on a tree in the Preserve to measure tree growth.



Hyperspectral imagery of the the Lakeshore Nature Preserve and UW-Madison campus.

In 2019, 73 teaching/research permits were issued to 31 UW departments & programs, 4 government entities, and 6 community organizations.



Bryn Scriver

From the Director....

Gary Brown, PLA, FASLA, Director

Another year has passed, and the Preserve has officially entered its 20th year under the management of Facilities Planning & Management. I'm happy to report that we are well on our way in completing our first ever Strategic Plan with a very successful and transparent public process. With over 8 public and focus group meetings and 600+ people participating in an on-line survey, we worked with the Preserve Committee to finalize our collective recommendations for moving the Preserve forward. They include: 1) consolidate/clarify mission & vision statements; 2) develop/implement a communications plan; 3) grow resources and volunteer capacity; 4) nurture strategic partnerships; 5) continue process improvement initiatives; and 6) update the 2006 Preserve Master Plan. We look forward to publishing the final document on our website for your review. Note that several initiatives are underway including prep for a communications plan and work toward defining the scope/schedule/budget for an update to the 2006 Master Plan. I'm also proud to report that we have a new mission and vision statement, as approved by the Preserve Committee at their November 2019 meeting:

Our Vision: *To foster biodiversity on campus and cultivate lifelong environmental engagement.*

Our Mission: *The Lakeshore Nature Preserve shelters natural environments and cultural resources through active learning, research, and outreach in a place of respite and well-being.*

2019 Lakeshore Nature Preserve Staff

- Gary Brown, Director, gary.brown@wisc.edu
- Laura Wyatt, Program Manager, laura.wyatt@wisc.edu
- Bryn Scriver, Volunteer & Outreach Coordinator, bryn.scriver@wisc.edu
- Adam Gundlach, Field Projects Coordinator, adam.gundlach@wisc.edu
- Jeff Schneider, Seasonal Invasive Species Specialist
- Jacy Swiggum & Tucker Sanborn, Student Natural Areas Assistants

Lakeshore Nature Preserve Committee

Established by the UW provost in 2000, the Lakeshore Nature Preserve Committee is charged to ensure the integrity of these cherished campus resources through the provision of necessary and appropriate oversight, policies, guidelines, stewardship and management. We thank the current members for their time and service.

2019-20 Preserve Committee

Voting members

- Sara Hotchkiss–Faculty, Botany (Committee Chair)
- David Bart–Faculty, Planning & Landscape Architecture
- Anna Pidgeon–Faculty, Forest & Wildlife Ecology
- Janet Batzli–Academic Staff, Biology Core Curriculum
- Rob Beattie–Academic Staff, Nelson Institute
- Joe Webb–Academic Staff, Outdoor UW
- Andrew Busker–Student
- Morgan Grunow–Student
- Alexis Paus–Student

Non-voting ex-officio or consultants

- Gary Brown–Director, Lakeshore Nature Preserve
- Stephen Sentoff–Board President, Friends of the Lakeshore Nature Preserve
- Kelly Ignatoski–Director, University Apartments
- Rhonda James–Senior Landscape Architect, Campus Planning & Landscape Architecture
- Karen Oberhauser–Director, UW Arboretum

Preserve Supports Teaching and Research with Student Engagement Grants

In 2019, the Lakeshore Nature Preserve Committee awarded two Student Engagement Grants through a competitive process, totaling \$2,000. These grants provide financial support to undergraduates and faculty or staff working with undergraduates to use the Preserve as a resource for research and education. The grants are made possible through the Preserve's Academic Endowment Fund at the UW Foundation, established by former faculty members Robert M. Goodman and Henry Hart.

Since 2014, the Committee has awarded a total of \$19,912 to 21 projects, impacting 517 students.

2019 Awards:

Quantifying Associations Between Buddings Yeasts and Tree Species in the Lakeshore Nature Preserve

Awardee: Rachel Schneider (undergraduate, UW-Madison)
Co-advisors: John Wolters and Chris Hittinger (Genetics)

Forming Connections Using Sweet Potatoes

Awardee: Savannah Holt (undergraduate, Int. Business, Marketing, Spanish, and Sustainability) Co-advisors: Tom Bryan (GreenHouse Learning Community) and Malachi Persche (USDA Dairy Forage Research Center)



Adam Gundlach

Volunteers by the numbers...

| | |
|--|---|
| 616 volunteers (62% students) | 2,434 service hours |
| \$61,896 estimated value | 45 campus & community groups |

Land Management Impact

Adam Gundlach, Field Projects Coordinator

While land management in the Preserve is conducted by professional staff, contractors, interns, student employees and volunteers, the impact is the same; more diverse plant communities, less erosion, safer trails, protected cultural landscape features, improved habitat for wildlife and pollinators, improved teaching and research outcomes, and better visitor experiences. We break down the impact of our work by the numbers below:

- 35** Acres of brush treated (thickets cleared and resprout control)
- 14¼** Acres treated with prescribed fire
- 32** Species of native seed collected in the Preserve
- 8** Acres of seed sown
- 27** Brush piles burned
- 2** Weeks hosted an AmeriCorps NCCC crew
- 8** Interns and seasonal staff groomed for a career in ecological restoration

Volunteers

Bryn Scriver, Volunteer and Outreach Coordinator

Volunteers build capacity for the Lakeshore Nature Preserve to serve the teaching and research mission of the university, improve the functioning of campus ecosystems, and enhance visitor experiences. Our small staff simply cannot meet these needs alone. Volunteering is also a way for staff to engage students and community members in the intellectual, health, psychological and social benefits of ecological restoration and land management work.

In 2019, 616 individual volunteers (62% of them students) and 45 volunteer groups contributed 2,434 hours of service to the Preserve. The monetary value of this volunteer work adds up to an impressive \$61,896.

Volunteers restored Preserve lands by planting 650 plants, clearing 35 acres of woody invasive shrubs, collecting 32 species of seed, sowing 8 acres, and scouring 85 acres for garlic mustard. They monitored 12 miles of trails, sharpened tools, assisted with vegetation surveys, and collected research reports.

Many volunteers report they donate their time in order to give back to this special campus resource where they socialize, exercise, and enjoy respite from the stress of school and work.

If you would like to learn more about volunteering for the Preserve, contact the Volunteer Coordinator at bryn.scriver@wisc.edu.



Students Today Leaders Forever volunteers

Bryn Scriver

Our Partners Make Things Possible...



Preserve visitors enjoy the sunset with s'mores

Laura Andrews/GatherX

Fire Circle Tradition

Laura Wyatt, Preserve Program Manager

A relaxing stroll, or run, to the tip of Picnic Point is a tradition for many within the UW community. The sweeping views and proximity to the heart of campus makes it an ideal refuge from busy university and city life.

A popular feature along the way are six reservable fire circles for visitors to enjoy a crackling fire or tasty cookout with family and friends. While fire circles are maintained by the Preserve team, we are thankful for **UW Event Services** who manage reservations and the **FP&M Physical Plant Grounds** staff for providing firewood.

A quick overview of 2019 reservation records indicate an estimated 1,400 reservations with a projected 26,400 guests attending. These numbers are estimates provided when reservations are made and do not include impromptu uses.

Over the years, three of the six fire circles have been renovated through designated gifts by generous donors. Three fire circles, #1, #4 and #5 are in need of renovation, especially due to high water coupled with heavy use. If you would like to make a lasting gift...something to be enjoyed by those who cherish this precious land, please consider investing in a fire circle renovation. Each fire circle requires a unique level of attention with cost estimates of approximately \$65,000, making it an ideal gift from a family group or organization.

For additional information, please contact Gary Brown, Preserve Director at gary.brown@wisc.edu.

Fire circles by the numbers...

1,400
fire circle
reservations

26,400
estimated fire
circle users

Friends of the Lakeshore Nature Preserve Support

Stephen Sentoff, President Friends of the Lakeshore Nature Preserve

The Friends of the Lakeshore Nature Preserve is a volunteer-run, private nonprofit organization that inspires people to connect to and care for the Lakeshore Nature Preserve. Through monetary donations, volunteering, and engagement, they have helped protect the Preserve and further the University's mission of education and research.

For the last few years, their largest single contribution has been funding the Prairie Partner Interns. In 2019 they funded five undergraduates from UW-Madison and UW-Stevens Point to work one day per week, for ten weeks in the summer. This is a terrific educational opportunity for the interns and also ensures completion of a significant amount of restoration work.

In 2019 over 600 participants attended field trips sponsored by the Friends and led by knowledgeable and enthusiastic experts who give their time freely. These events covered a full range of topics from flora, fauna, history, and geology to ethnobotany and climate change.

By creating these connections to the Preserve, the Friends also encourage their members to volunteer through the drop-in workdays or become a Preserve Steward and to donate directly to the Preserve through the UW Foundation.



Friends members plant wildflowers in Fruitschi Woods

Bryn Scriber

Eagle Heights Community Gardens

Laura Wyatt, Preserve Program Manager

The Gardens, located within the Preserve footprint, and established in 1962, is one of the oldest community gardens in the US. Located adjacent to Eagle Heights Apartments with a smaller unit near University Houses, they offer an opportunity to enjoy the outdoors, meet neighbors, and grow food and flowers. Organic and non-organic garden plots rent for a small fee, which finances their operation. A volunteer committee manages the garden operations, and new members are always welcome.

In 2019, Eagle Heights hosted 471 garden plots and University Houses hosted 107 garden plots, engaging more than 900 people in healthful gardening. The installation of a rain garden was a major improvement at the Eagle Heights unit. The garden committee is happy to report the plants settled in and the garden handled rains very well, keeping neighboring plots dryer – a success!



Outdoor UW rents equipment to explore the outdoors

Wisconsin Union

Outdoor UW

Joseph Webb, Director Outdoor UW

Outdoor UW and the Lakeshore Nature Preserve are natural partners. Outdoor UW, located in Memorial Union is the UW campus communities' outlet to outdoor recreation and education. It is the official home of Wisconsin Hoofers, the historic club organization that serves over 2,000 students, faculty, staff, and community members annually with clubs and competitive teams. In addition, Outdoor UW offers various outdoor rentals including equipment for camping, hiking, snowshoeing, paddling, and climbing.

Outdoor UW has created structured educational experiences in the Preserve and on Lake Mendota through various workshops, private/group experiences, certification courses, and clinics. In 2019 we utilized the Preserve for three wilderness medicine courses and two *Leave No Trace* courses. Our instructors (contracted through NOLS-National Outdoor Leadership School) often say this is one of the most beautiful locations for hosting courses and are really impressed at the resources and proximity of the Lakeshore Nature Preserve.

Visit union.wisc.edu/outdooruw to learn more about getting involved or utilizing our services!

AmeriCorps NCCC

Bryn Scriver, Volunteer and Outreach Coordinator

Last summer the Lakeshore Nature Preserve partnered with the UW Arboretum, Schumacher Farm Park (Dane County), and Community Action Coalition to host an AmeriCorps National Civilian Community Corps (NCCC) crew. AmeriCorps NCCC is a program that engages 18- to 24-year-olds in team-based national and community service in the United States. Crew members earn an educational stipend and receive room and board in exchange for learning and developing leadership skills. The Preserve benefited from the crew's youthful enthusiasm and strong backs for 2 weeks while they attacked an acre of invasive brush in Bill's Woods with saws, rehabilitated trails in Eagle Heights Woods, and cleared invasive thistles from stormwater bioswales.

Biocore Prairie integral to Biocore Program

Seth McGee, Biocore Laboratory Manager

Biocore is UW's Honors biology certificate program for highly motivated undergraduate students. Biocore emphasizes research, communication, integrative learning, and teamwork through four semesters of coursework; co-curricular research, outreach, leadership, and internship opportunities.

Much of the Biocore experience is centered on the Biocore Prairie, a 12-acre restoration located within the Lakeshore Nature Preserve. Biocore students and instructors began restoring the site from weedy field to tallgrass prairie in 1997 and continue to steward and study the restoration using an education/research lens.

The prairie is not only integral to Biocore, it functions as a living laboratory for courses and students across campus. Students and faculty use the Biocore Prairie for research projects with recent studies on bird behavior, soil microbial communities, and snowpack manipulation. Furthermore, it is the context for the Biocore Prairie Bird Observatory – volunteers gathering critical data on bird communities since 2001; for informal education, outreach, and a destination for community enjoyment. See biocore.wisc.edu!



Biocore students conduct research in the prairie

Seth McGee



The AmeriCorps crew hard at work removing thistle

Bryn Scriver

In 2019, the Preserve received gifts totalling \$185,569 from 87 donors.

2019 Donors

Gifts to Stewardship Fund:

Colleen E. Anderson
 Yuqing Bai
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 Paula E. Bonner
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Gifts to Endowment Fund:

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Gifts to Friends Eagle Heights Woods Project:

Colleen & Kenneth Albrecht
 Barbara & Theodore Crabb
 George & Joan Hall
 Debbi Peterson
 Kyle Schaible

Rayla Temin
 Paul & Coe Williams
 Sarah & John Williams

Gifts to the 1918 Marsh Healing Path Fund:

Blair Mathews & Karen Johnson Mathews

Gifts received in honor:

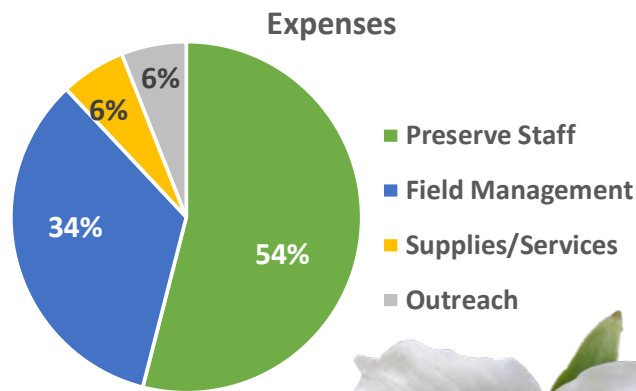
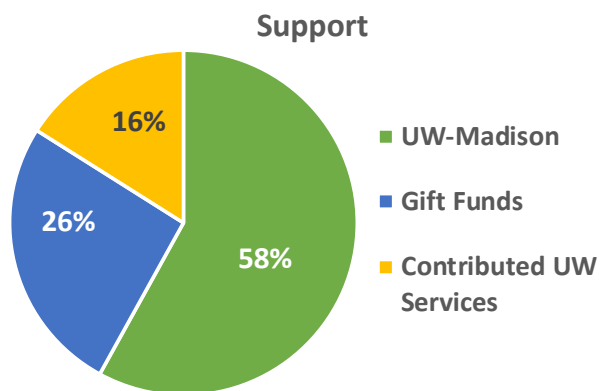
Doris Dubielzig – given by Richard E. Dubielzig
 Gracie May – given by Diane Grypp

Gifts received in memory:

Arthur Hove - given by Paul & Coe Williams
 Alice & Myron Pugacz – given by Laura & Dan Wyatt
 Anne Ohmen – given by Friends of Nicole & Richard Sachse and Danielle & Tyson Hall
 Lionel Jensen – given by Anne Turner
 Max Wyatt – given by Dorothy Getz
 the birds – given by Aaron Williams
 Washburn, Cadman, Fenska Wisconsin Pioneers – given by Edward Washburn

We strive for accuracy. If you have a correction, please contact laura.wyatt@wisc.edu or 608-265-9275.

2019 Financials—Budget \$317,793



Facilities Planning & Management
 UNIVERSITY OF WISCONSIN-MADISON

To support the Preserve's mission make a donation today!

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