Nelson Institute for Environmental Studies
UNIVERSITY OF WISCONSIN–MADISON

September 2024

THE COMMONS

For alumni and friends of the Nelson Institute for Environmental Studies at the University of Wisconsin–Madison

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Stay connected by updating your contact information or by joining our LinkedIn group.

We're reducing our carbon footprint! We hope you enjoy our digitally published magazine, sent monthly to Nelson alumni, students, and friends.

Cover courtesy of Waubesa Wetlands Film

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From the Dean

Greetings, Nelson alumni and friends,

The fall semester is off to the races, friends. If this first week is any indication of what the rest of the semester will look like … well, buckle up. On the first day of classes, we convened Nelson faculty and staff, graduate and undergraduate students for a welcome-back party unlike anything Nelson has seen before! We covered a lot of ground, and I want to share some highlights with you — our community at large. Our biggest advocates, our dearest friends.

I took the opportunity to provide a brief "State of the Institute" address, which was packed with updates. Overall, our position is strong; more students are enrolled in our programs, major, and certificates than ever, at both the undergraduate and graduate level; we serve more than 1,100 students now. The new Sustainability Research Hub is going great guns, having submitted or supported more than $77 million worth of external grants in its first six months (!). This puts us in a position to think afresh about our expanded role on campus.

As our student body and campuswide impact increases, so must our faculty. And in case you missed it, earlier this year, Chancellor Mnookin announced a landmark hiring initiative: RISE-EARTH. Between central funding and funds from schools and colleges, RISE-EARTH will bring 80 new faculty in sustainability onto campus. Nelson will be hiring at least a half dozen of these, increasing its faculty size by more than 50 percent. New Nelson faculty will work in the areas of land use, supply chains, environmental justice, energy infrastructure, environmental impacts and more. These hires will be crucial to solving real world problems (e.g., scaling solar and wind buildout in a way that is just and sustainable), training the next generation of leaders (e.g., hundreds of majors in environment and sustainability), and exploring the most interesting questions confronting the planet (e.g., How do we apply AI tools to environmental change?). This is the biggest single faculty investment in sustainability for UW–Madison, ever. And Nelson is certainly keen to help lead the charge.

But excitement for our future certainly doesn't diminish our pride for our present. We're where we are today because we can stand on the shoulders of those who built this institute: you. This issue is filled with achievements that are only possible because of the will and fortitude of the Nelson Institute community. Thank you for being a part of it.

On, Wisconsin, and forward, Nelson!

Paul Robbins
Dean, Nelson Institute

The Batteries on the Bus Go Spark, Spark, Spark

L-R: Steph Tai, Nelson Institute associate dean for education and faculty affairs; University of Wisconsin–Madison Chancellor Jennifer L. Mnookin; and Bucky Badger take a ride on one of campus's new, 60-foot electric buses
Photo by Bryce Richter / University Communications

Feature

An Invitation to Wonder

Explore the Waubesa Wetlands through a new documentary, screening across Madison for free though the Tales from Planet Earth film series.

By Shelly Torkelson,
Natural Resources Foundation of Wisconsin

Waubesa Wetlands: An Invitation to Wonder tells the story of a hidden wetland left undeveloped by humans, a scientist dedicated to preserving it, and his grandson: 20-year-old documentary filmmaker Ben Albert.

Albert grew up exploring Waubesa Wetlands almost every weekend with his grandparents. His grandfather, Calvin DeWitt, is an 87-year-old scientist and teacher, who has lived on the edge of the marsh for over 50 years.

Inspired by his childhood experiences, Albert came back to the wetlands in the spring of 2020. Unsure of what he would find, he set out into the marsh to explore its beauty and try to understand his grandfather's deep relationship with it.

As one of the highest quality and most diverse wetlands in Wisconsin, Waubesa Wetlands is one of Natural Resources Foundation of Wisconsin's priority conservation sites. We are proud to support the production of this film, which debuted in the spring of 2024.

Read on to learn more about the film and Albert's experiences in the marsh.

Albert (left) and DeWitt (right) paddle through the Waubesa Wetlands. Photos courtesy of Ben Albert (2)

Why did you make this film?
A major goal of this film is to build a greater understanding and appreciation of wetlands. With 50 percent already gone in Wisconsin, it seems like we are destroying wetlands without an understanding of what is being lost. I wanted to focus on a positive story that genuinely portrays the wonder, mysteries, and value of these environments.

What's it like to be filming out there in the wetlands?
At first, it can be an extremely harsh, challenging place to be in, especially with camera equipment. Everything's getting wet, everything's getting dirty. Hundreds of mosquitos swarmed me, and I was sinking waist-deep into the peat. You can completely forget that you're surrounded by the urban and agricultural setting of Madison and get lost in this wilderness. Near the end of filming, I started to feel very small in comparison to the marsh. I was a guest, entering this incredibly old, complex, and beautiful system.

> *"[Waubesa Wetlands] have become a symbol of hope for the future of our natural spaces across the state."*
>
> — Ben Albert

What does Waubesa Wetlands mean to you, personally?
Waubesa Wetlands is deeply connected to my childhood. My grandparents would take me out canoeing and fishing for little insects in the creeks almost every Friday. That really sparked my love for nature. As an adult, I'm realizing that there aren't many places left like this. Waubesa Wetlands highlights the immense life and beauty that is preserved when local communities come together to protect these special areas. For me, it has become a symbol of hope for the future of our natural spaces across the state.

Tell us about your grandfather.
My grandpa, Cal DeWitt, is a huge inspiration to me. Even at the age of 87, he's never lost his childlike wonder and curiosity for the world. He's lived on the edge of Waubesa Wetlands for over 50 years and has dedicated much of his life to discovering what's in his backyard. Cal worked with his neighbors to establish the marsh into a 1,000-acre nature preserve. He later used the wetland as an outdoor classroom to teach hundreds of UW–Madison graduate students. My grandfather often refers to the marsh as a hidden gem.

Cal DeWitt, Nelson Institute emeritus professor and grandfather of filmmaker Ben Albert, shares stories of growing up in the wetlands.

What do you want the film to accomplish?
I want people to know that if you want to be awed by the natural world, you must only go as far as your own backyard. I hope this film inspires people to discover what's all around them, whether it's a wetland, a park, or out their own backdoor. And I hope they ask themselves, "What areas still need protection? What can I do here at the local level?" We are surrounded by the hidden wonders of the natural world if we only take a closer look.

This story was originally published by the Natural Resources Foundation of Wisconsin.

Watch *An Invitation to Wonder: Waubesa Wetlands*

The Nelson Institute is thrilled to host DeWitt and Albert as they offer free screenings* of *Waubesa Wetlands* for the Tales from Planet Earth film series.

In Madison

Sunday, Sept. 29, 3:30–7 p.m.
Lussier Family Heritage Center

Monday, Sept. 30, 6–8 p.m.
Marquee Cinema at Union South

Online

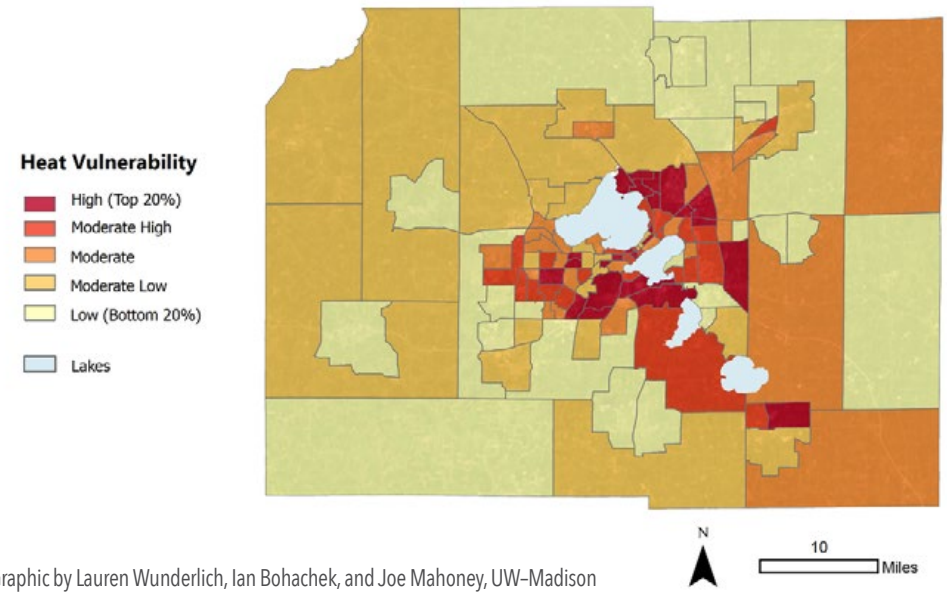
Sign up for a free streaming link, then watch the movie on your own anytime between September 26 and 28.

**Movie screenings not your thing? Check out our additional outdoor activities happening over the weekend, including a guided wetland walk with Cal Dewitt, a paddling tour of the wetlands, and more!*

Heating Up Research

Extreme heat in focus for Nelson Institute capstone students.

By Abigail Becker, UniverCity Alliance



Graphic by Lauren Wunderlich, Ian Bohachek, and Joe Mahoney, UW–Madison

As the Midwest continues to experience rising temperatures in a warming climate, University of Wisconsin–Madison graduate student Becky Rose reminds her students to consider more than just the numbers on a thermometer.

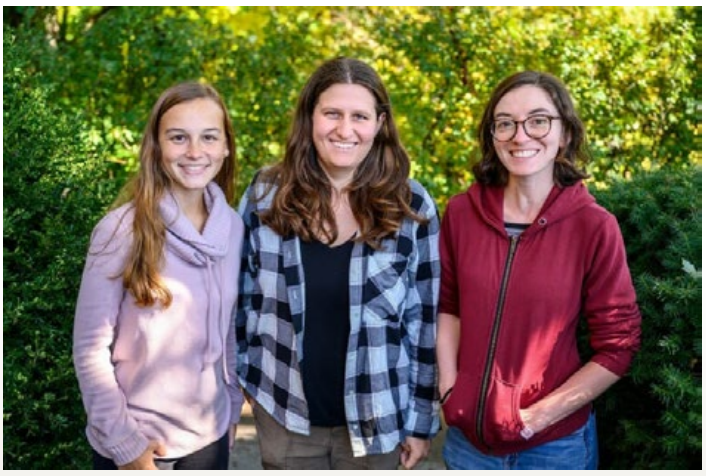
"It's not just heat," said Rose, who is a Nelson Institute and geography department PhD student. "[Extreme heat] is connected to so much about society. It's also housing rights and quality, and it's economic wellbeing and justice, and oppression and equity, and labor, and rural-urban divides."

A challenge in Wisconsin, Rose said, is that there are many climate and heat efforts happening across the state, but many don't have a way to be aware of others. This challenge has informed the focus of Rose's work as a heat researcher. She documents the efforts in Wisconsin related to climate and heat to have a greater understanding of what's working and lessons learned. Rose is also contributing to research on extreme heat through her work with the Wisconsin Heat Health Network, which is supported by UniverCity Alliance.

During the spring 2024 semester, a group of undergraduate capstone students contributed to heat research in Wisconsin through Rose's course, Environmental Studies 600: Building Resilience to Heat.

It's an apt topic for students to work on in partnership with the community, according to Steve Vavrus, state climatologist and director of the Wisconsin State Climatology Office. "Heat is this country's number one cause of weather-related fatalities, and heat waves are increasing in frequency and intensity around the country and world as the climate warms. At the same time, deaths from heat stress are very preventable with appropriate preparation and intervention," Vavrus said. "Therefore, addressing heat resilience has the potential for huge public health benefits."

Rose wanted the students' projects to meet established needs. She first connected with community partners – including the Wisconsin Department of Health Services Climate and Health Program, Milwaukee County Office of Emergency Management, the Oak Creek Health Department, and Great Lakes Community Conservation Corps – to identify what research topics would be the most beneficial.



Becky Rose (right) and fellow graduate students Sara Pabich and Elizabeth Berg of the Wisconsin Heat Health Network. Photo by Althea Dotzour, University Communications

Over the semester, students in five groups explored different facets of extreme heat and resilience. They asked how and why high temperatures occur where they do and what are their effects on people, infrastructure, and society. The students also researched different approaches to addressing high temperatures with a focus on justice and equity and wondered what creates vulnerability to hazards.

These questions resulted in five projects: 1) building heat resilience in rural Wisconsin, 2) heat resilience in Wisconsin schools, 3) renewable energy budget for cooling center, 4) updating the heat vulnerability index for Dane County, and 5) emergency heat responses best practices. "My hope is that the projects aren't just an abstract thing on a shelf but that they are used, passed along, and become the inspiration for something else," Rose said.

While the projects addressed the needs of community partners, they also provided students with a unique opportunity to put their classroom knowledge into practice. Max Prestigiacomo took Rose's class in his final semester. Prestigiacomo, who majored in sociology and environmental studies and earned a certificate in public policy, said it was refreshing to work on a community-based project. "It's the closest you can get to the Wisconsin Idea," he said. "Connecting all this curiousness and the interest of students wanting to get their foot in the door and learn firsthand how local governments work, I thought was a really great idea."

Connecting Students and Community

Rose said she plans to reconnect with the community partners to discuss the projects and if there are future ideas her students could investigate in the fall 2024 semester.

Chris Litzau, the director of the Great Lakes Community Conservation Corps (GLCCC), said addressing extreme heat has become a priority for the organization. GLCCC works with veterans experiencing homelessness and youth by providing them job skills training. Partnering with Rose and her students was a first step in brainstorming ways to support the broader community and those served by GLCCC who are affected by extreme heat. "We have older veterans who are going out and trying to make a difference, but they're also highly susceptible to extreme heat conditions," Litzau said.

Creating an opportunity where research conducted by students can be informed by the community – a "two-way street," Litzau said – results in impactful work. GLCCC is already considering how to implement some of the research related to cooling centers. "It's an example of a platform that (the students are) springboarding on and we're able to then jump off of that," Litzau said.

"Not All Doom and Gloom"

The five capstone projects add to a growing body of research on extreme heat in Wisconsin. Vavrus said UW–Madison can play a big role because of its large research and outreach capacity. "In recent years, Wisconsin has been very fortunate in mostly dodging severe and deadly heat waves that have afflicted other parts of the country and world. But our luck will eventually run out, and we need to be prepared for that," Vavrus said. "Studies like these capstone projects help to raise awareness of the dangers of extreme heat and to propose ways in which communities can be proactive to better prepare for heat waves."

"Addressing heat resilience has the potential for huge public health benefits."

— Steve Vavrus

In particular, Vavrus highlighted the project related to building heat resilience in rural Wisconsin. This work aligns with his work through UW–Madison's Rural Partnerships Institute to help rural Wisconsinites use weather and climate information most effectively as weather extremes amplify. "Not only did the students address heat resilience as a very important and timely topic, but their projects produced specific, evidence-based recommendations and acknowledged the limitations or barriers associated with them," Vavrus said.

With many efforts happening across Wisconsin, Rose said it's encouraging to discover news of what's working in communities across the state related to extreme weather. She said it's much needed for her and her students growing up in what feels like an "extended climate apocalypse."

But Rose said gathering productive efforts and amplifying them so others can join is hopeful. She referenced added protections for migrant workers during excessive heat and the work of Milwaukee-based environmental community organizations as examples of productive steps forward. "There's so much action. There's so much promise," Rose said. "You learn that it's not all doom and gloom. There are people doing amazing work, more than you can imagine."

Sensory Friendly Explorers

Henry Vilas Zoo partners with the Nelson Institute for their first-ever autism camp.

By Jess Thompson, Henry Vilas Zoo

It was a sunny Saturday morning before opening hours at the zoo, and the grounds were especially serene and quiet; no carousel music, no crowds, no vehicles driving back and forth. This was the perfect environment for the first ever Zoo Explorers Sensory Friendly Mini Camp designed for neuro-divergent campers entering fourth through 10th grades. Registration for this camp was free of charge thanks to support from the Nelson Institute Center for Climatic Research at the University of Wisconsin–Madison which runs similar camps in Beloit and Wisconsin Dells. The Center also brought in Kim Van Wiepz from Van Wiepz Consulting for a two day neurodiversity inclusion training for all zoo camp and guest services staff.

"This camp is something we've wanted to make happen for a long time," said conservation education curator Jess Thompson. "When we opened registration it filled up and had a waiting list in just a few hours. Clearly there is a need and desire for this type of supportive programming in Madison."

Campers and their adults were able to explore the zoo before it was open to the public, getting to feed the goats and the koi, ride the carousel and train without loud music, and journey through the Aviary with the waterfalls turned off. They got to go into the flamingo yard to collect some water samples, then it was back to the classroom for some hands-on science experiments led by Nelson Institute Center for Climatic Research director Michael Notaro. Campers were transformed into scientists, producing a heat map on zoo grounds using a remote-controlled Terra-Rover and analyzing water samples from some of the zoo's exhibit pools.

Notaro summed it up this way, "Zoo Explorers Mini Camp is a celebration of neurodiversity. We strive to make sure each of our autistic campers feels welcomed. They are truly a joy."

The zoo has been working to increase inclusiveness for all guests, and is certified as a Sensory Friendly site by Kulture City. Guests are able to see a "social story" of the zoo online before their visit, as well as check out backpacks with headphones, fidget toys, and visual cue cards. Signs around the zoo indicate whether an area can expected to generally be quiet, or noisy (headphone zone).

During the sensory-friendly experience at the zoo, kids explored exhibits, conducted experiments, and met some of the zoo's resident animals. All photos courtesy of Henry Vilas Zoo

> *"Zoo Explorers Mini Camp is a celebration of neurodiversity."*
>
> — Michael Notaro

As for more camps in the future? "This was a huge success, and we had some valuable take-aways for next time," says Conservation Education Manager Heather Merewood. "We definitely want to keep this going next year, so stay tuned!"

This story was originally published by the Henry Vilas Zoo.

Zedler vs. The Woodpecker

Despite recently retiring, Paul Zedler isn't done with nature. Or is it the other way around?

By Anica Graney

Paul Zedler has devoted his life's work to studying ecosystems and teaching the next generation of environmental professionals ... but it seems nature isn't done with him yet. "Right now, we have a woodpecker pecking on the outside of the house. We love woodpeckers. They're great, but not when they decide that they want to pound on the side of your house," said Zedler, a recently retired professor of 55 years. "Nature can be out to get you sometimes."

Zedler and his wife, Joy Zedler, a fellow UW–Madison ecologist and now emerita professor of botany, purchased their house and the 38-acre property that surrounds it over 10 years ago. The house has cedar siding which, coincidentally, woodpeckers love because it resonates like a drum. "Much better than a dead tree," he said.

"If you look at any ecosystem, the one thing that's consistent is that it's always changing. There is no true stability — only greater and lesser degrees of change."

— Paul Zedler

While maintaining and restoring his land takes up most of Zedler's time these days, he hasn't always lived in such proximity to the great outdoors. Zedler grew up in the city of Milwaukee, surrounded by his two older siblings, his German heritage, and his father's refrigeration business. His mother grew up in Michigan's Upper Peninsula. Their family trips "up north" were a return to her woodstove-wrangling and blueberry-picking past, and for Zedler, an opportunity to experience wildness, if not exactly wilderness, and to launch his nascent interest in ecology.

For college, Zedler stayed close and enrolled in the University of Wisconsin–Milwaukee shortly after the school transitioned from a two-year program to a four-year institution. Considering himself more of a "feckless student," he majored in English and enrolled in whatever class suited his fancy. "I just wandered around looking for something," Zedler said. "Oh, you can read books, and they give you credit for that? I'll become an English major."

After completing his undergraduate degree, Zedler attended UW–Madison where he approached the botany department to continue his studies. His first interviewer pointed him in the direction of the still-emerging science of ecology, noting that Zedler had taken two semesters of calculus in undergrad which would be an asset to the blossoming quantitative efforts of the ecological field. He was then set up with a teaching assistantship and started his master's in botany, continuing through to a PhD. Zedler found himself fortunate enough to obtain the now-extinct position of Arboretum botanist, which allowed him, among other things, to wander the region for seeds of native plants to be made available to researchers on an international seed exchange.

"My last class was a capstone class, and I ended up with only four students because we had quite a large number of sections that particular semester. That was one of my most enjoyable classes because I got to know all four students pretty well."

— Paul Zedler

During this time, he met Joy Buswell, a fellow graduate student and teaching assistant, and the two got married while they were still students together. "In those long-ago days, you could actually survive on two teaching assistantships," he said. The couple went on to graduate the same year, 1968. "She graduated in four years, and I in five, if that gives you a hint as to the differences between my wife and myself," Zedler chuckled. After graduation, he was offered a postdoc position at the University of Missouri–Columbia where he spent a year at the School of Forestry.

Post-postdoc, Zedler moved to San Diego to start teaching at San Diego State University, which at the time was expanding its faculty in Ecology. Joy followed him there, receiving her own teaching position shortly after. There, Zedler worked on fire ecology, endangered species, and ephemeral wetlands research, and enjoyed how species-rich the area was compared to his home state of Wisconsin. "I love Wisconsin, but if we put them side by side, California has a little bit more interesting biology and ecology, shall we say," Zedler said. While in San Diego, the Zedler family expanded by the birth of twin daughters, Sarah and Emily, now both PhD holding scientists.

In 1997, it was his turn to follow Joy Zedler as she was offered a position as the Aldo Leopold Professor of Restoration Ecology at UW–Madison. Zedler, faced with unemployment, benefitted from the administrative creativity of colleagues in the then Institute for Environmental Studies and the UW Arboretum and obtained a tenured teaching-research position. He dabbled (his term) in university administration, serving as the chair of the environment and resources graduate program (2008–10) and associate director/dean of the Nelson Institute (2010–19).

Now retired, Zedler reflects on his time teaching, noting that the last class he taught was also one of the most enjoyable. "This was a capstone class, and I ended up with only four students because we had quite a large number of sections that particular semester," Zedler said. "It was a project-based class, so it wasn't just me giving lectures and them taking notes. It was me helping them select the project and then execute it. What made it enjoyable was that I got to know all four students well."

Zedler continues to work on ecological projects and research, most recently co-publishing a paper about a flooding event that occurred at the Faville Prairie, one of the UW–Madison Arboretum's outlying properties. As his career culminates in the research he's conducted, papers he's published, and students he's taught, Zedler has been following the current enthusiasm for "sustainability." He cautions that sustainability is about managing change. "If you look at any ecosystem, the one thing that's consistent is that it's always changing," Zedler said. "There is no true stability — only greater and lesser degrees of change, and to survive change the necessary quality is resilience."

And if there's one thing he hopes will change soon about nature, it's the woodpecker drilling holes into the side of his house.

What's Your Job?

Learn how the Office of Sustainability's Ian Aley helps campus be sustainable and successful.

By Anna Krawczyk, Division of Facilities Planning and Management

Two workers install window dots as part of the bird-friendly glass Green Fund project. Photos by Lauren Graves (4)

In recent years, sustainability has become a top priority for many organizations, including UW–Madison. This February, Chancellor Jennifer Mnookin announced a new cross-campus initiative focused on reducing the campus's environmental impact while also developing a culture of sustainability and climate resilience.

One effective and innovative approach UW–Madison has already implemented is the Green Fund program, launched in the fall of 2016 by the Office of Sustainability, a department of both the Division of Facilities Planning and Management (FP&M) and the Nelson Institute for Environmental Studies.

While the Green Fund defines itself as a program that "supports student-initiated projects that address the environmental footprint, social impact and operating costs of campus facilities," its reach often spans far beyond that.

Aley smiles at the Dejope Watch Party, as attendees observe the window dot installation.

At the heart of the program is Green Fund project manager Ian Aley. When students or employees come to the Green Fund with project ideas related to sustainability, Aley helps connect them to the right individuals on campus to get feedback, find out how feasible they are and take steps to translate their ideas into reality.

Students working on Green Fund projects may need to connect with building managers, purchasing staff, FP&M Physical Plant trades, faculty with subject matter expertise and other campus stakeholders to get their projects started. Aley helps make those connections and conversations happen.

Before he joined the Office of Sustainability in 2016, Aley's journey led him through a diverse array of locales and professions. His roles spanned from urban farming to telecommunications engineering and even providing entrepreneurial support to small-business owners. These varied experiences have given him the skills to thrive as the Green Fund leader.

Green Fund projects often start small, focused on one building or area of campus, and then expand further across campus if they are successful. For example, a Green Fund project that replaced high-intensity discharge light bulbs with LED light bulbs at D.C. Smith Greenhouse inspired several other greenhouses on campus to switch out their bulbs for LEDs — saving a total of 833 megawatt hours of electricity and over $90,000 each year.

Another example is bird-friendly glass, a project the Green Fund worked on with staff from FP&M's Campus

Planning & Design department as well as faculty and students from UW–Madison's Wildlife Ecology department and the Southern Wisconsin Bird Alliance, a local non-profit. This project, which installed dots on large glass windows of Ogg Residence Hall in 2020, helps prevent birds from flying into it and led to a 90 percent reduction in bird deaths at the building.

"One thing that I really love about the job is when there can be this moment of recognition of the value that the different parties are bringing to the table."

— Ian Aley

The success of this project informed policy change at UW–Madison, as well as throughout the City of Madison. New construction or renovations of buildings 10,000 square feet or larger must now have these dots on their windows to prevent bird collisions. The City of Madison ordinance inspired Middleton and other Wisconsin surrounding communities to establish similar requirements.

Aley and crew at the Green Fund Dejope Watch Party on May 13, 2024.

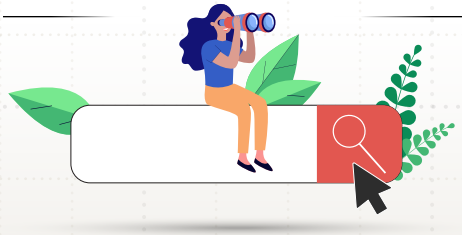
Existing buildings are exempt from this policy unless there are renovations underway. The Bird Collision Corps, a citizen science effort, identified Dejope Residence Hall as a location on campus with one of the highest incidents of bird collisions. This summer, the Green Fund is adding dots to these windows. All the students, staff and external partners who contributed to this Green Fund project were invited to watch the start of the installation and celebrate together.

Project partners gather in celebration beneath a newly completed solar bus shelter by the Walnut Street Greenhouse.

Aley said it's sometimes hard to keep up with all the student interest in the Green Fund. He pointed out, however, that it's good that there is so much interest in sustainable projects and solutions on campus. Ideas can come from faculty, staff and students, who all spend time on campus in different ways. He encourages everyone in the campus community to learn more about Green Fund projects and look out for them on campus.

Aley said working with students is energizing and helps him feel hopeful, even when climate change can feel so overwhelming and out of his control. "I love it when an idea that feels just so far out and just like 'Whoa, how on Earth are we going to do this?' actually ends up happening after a couple years of good conversation," he said.

This story was originally published by the Division of Facilities Planning and Management.



What's Your Job?

Current students often ask us, "What can I do with an environmental degree?" Complete our alumni employment survey to help us guide current and future students as they find their future in the Nelson Institute!

From the Office of Sustainability

A monthly update from faculty, staff, and students in the Office of Sustainability - Education and Research. This month's column is from Nathan Jandl, associate director of sustainability.

Nathan Jandl

Another academic year is upon us: another change in the seasons, another new class of first-year students, another semester that will tumble from the first week of September to Thanksgiving break before we know it.

Yet for all the familiarity, this year is different. Sustainability has burst into view at University of Wisconsin–Madison and the Office of Sustainability and the Nelson Institute are right in the busy middle of it, doing everything we can to make use of the new momentum.

So, what's changed? This past February, Chancellor Mnookin announced five institutional sustainability goals that will help set the course for our collective sustainability efforts for the next two decades and beyond. Zero waste, net-zero emissions, cross-campus involvement, educational experiences, research and innovation: these are major focal points for a new sustainability strategy that joins our university mission with a vision for a livable future, both here in Madison and across the planet. I invite you to learn more about each goal on our website, which will be updated as we have more information, engagement opportunities, and news to offer.

Happily, we are already making progress towards these goals. The Sustainability Research Hub has supported over $77 million in grant submissions while building toward more than $100 million in submissions and connecting with divisions across campus. This spring, the Zero Waste team collected public comment on its draft action plan and initiated pilot projects that leverage artificial intelligence to assist user behavior and use dumpster sensors to optimize collection routes. On the emissions front, the Utility and Energy Study — which will help campus determine options for decarbonizing our heating and cooling systems — is well under way, and we are working on analyses of campus rooftop solar opportunities as well as renewable energy potential on UW–Madison's outlying lands. The graduate certificate in sustainability is attracting new students and our intern programs (campus and corporate) are thriving. And we do expect UW–Madison to earn STARS Gold this year — a marker of our sustainability progress across many categories — though we await with fingers crossed a final points tally in the coming months.

If there's one thing that connects these pieces of progress, it's involvement: partnerships, collaboration, and community are all central to our success. In the coming year, there will be opportunities to provide feedback on our progress as well as join your peers and colleagues at some exciting sustainability events, such as the Sustainability Symposium in the fall (October 23) and Earth Fest in the spring (April 21–29). We hope you'll join us!

Director's Cut

A quarterly update from Michael Notaro, director of the Center for Climatic Research.

The summer of 2024 has been a productive and exciting time for the Nelson Institute Center for Climatic Research (CCR).

Professor Tristan L'Ecuyer's Atmospheric Radiation and Climate Research Group successfully put its polar climate-focused satellite mission, the Polar Radiant Energy in the Far Infrared Experiment (PREFIRE), into operation to examine the spectral character of Arctic and Antarctic thermal emissions. Professor L'Ecuyer received a great honor by being named as a fellow to the American Meteorological Society.

Professor Till Wagner received an NSF CAREER Award, "Constraining Iceberg Size Distributions and Their Climate Impacts in Models."

Under the mentorship of CCR's new assistant director, Professor Ankur Desai, **undergraduate Liz Sanchez Garcia** in the Letters & Science Summer of Excellence Research Program program led a solar agrivoltaics study, exploring if plants are carbon sources or sinks under solar panels.

Professor Hannah Zanowski continues to provide outstanding leadership for the NSF Research Experiences for Undergraduates (REU), Student Training in Oceanography, Remote Sensing, and Meteorology (STORM), which included a 10-week undergraduate mentoring period during this summer, culminating in flash talks and posters at the Wisconsin Institute for Discovery.

The **Wisconsin State Climatology Office** hosted student intern **Courtney Vanorio** from Nelson's environmental observation and informatics professional master's program to develop an interactive online tool that depicts Wisconsin's historical climate variability and change through climate analogs. The climatology office cohosted the U.S. Drought Monitor Workshop in July 2024 on the UW campus in partnership with the USDA Midwest Climate Hub and National Drought Mitigation Center.

PhD student Emma Blackford was awarded a Midwest Climate Adaptation Science Center Fellowship, focused on Predicting Season-Ahead Oxythermal Habitat Conditions in Wisconsin Lakes.

Professor Paul Stoy's team has brought the Advanced Baseline Imager Live Imaging of Vegetated Ecosystems (ALIVE) project online through five-minute estimates of terrestrial ecosystem carbon dioxide uptake based on machine learning and satellite observations. Professor Stoy received an NSF Hydrological Sciences award to expand ALIVE to evaporation and transpiration. Under the direction of Angela Waupochick, Anam Khan, and Professor Stoy, coding tutorials are being developed for Menominee Indian High School students in support of youth forestry education on the Menominee Indian Reservation.

In addition to teaching a course for the UW Summer Collegiate Experience program, I focused on expanding STEM programming for autistic middle and high school students through The Sky's The Limit STEM Camp at the Welty Environmental Center, Nature's Navigators STEM Camp at Upham Woods Outdoor Learning Center, and Zoo Explorers Sensory-Friendly Mini-Camp at the Henry Vilas Zoo.

We're looking forward to what the fall semester has in store for CCR.

Michael Notaro

Michael Notaro

Ankur Desai Named CCR Assistant Director

The professor of atmospheric and oceanic sciences will help lead the center starting this fall.

By Chelsea Rademacher

Ankur Desai introduces a student-led demonstration of monitoring equipment at an Earth Fest 2024 event. Photo by Sirtaj Grewel / SMPH Media Solutions

Professor Ankur Desai will be stepping into the role of assistant director for the Center for Climatic Research this fall.

An expert on climate change, carbon cycling, and micrometeorology, Desai is currently a professor in and chair of the Department of Atmospheric and Oceanic Sciences. He also holds affiliations with the Nelson Institute and its Center for Sustainability and the Global Environment, the Department of Civil and Environmental Engineering, the College of Letters & Science's freshwater and marine sciences program, and the College of Agricultural and Life Sciences agroecology program.

Across campus, Desai is perhaps best known for his Ecometeorology Lab, which "explores the complicated relationship between the Earth and the atmosphere." The lab skyrocketed to the global stage in 2018 with his aptly named CHEESEHEAD19 project which, with a $1.6 million grant from the National Science Foundation, established a new approach for measuring how vegetation and atmosphere influence each other on a hyper-local scale.

Since he arrived on campus in 2007, Desai's lab has published more than 200 articles, and he has mentored students at both the undergraduate and graduate levels with a philosophy rooted in communication and respect.

During a dawn team meeting at UW-Madison's Kemp Natural Resources Station in Woodruff, Wis., still-sleepy staff review CHEESEHEAD project plans for the day. The regional area is the site of the CHEESEHEAD (Chequamegon Heterogeneous Ecosystem Energy-balance Study Enabled by a High-density Extensive Array of Detectors) field experiment and research project, led by Ankur Desai (pictured at right). Photo by Jeff Miller / UW–Madison

The assistant director position was formerly held by Steve Vavrus who, last fall, was named the state climatologist in the newly restructured Wisconsin State Climatology Office.

tales from planet earth

Embark on a journey into Waubesa Wetlands as Calvin DeWitt, a wetland scientist and Nelson Institute faculty emeritus, shares the knowledge and wisdom he has found from living on the marsh for over 50 years. Taking these lessons, his grandson, a 20-year-old filmmaker, sets out to gain a deeper understanding of the marsh and his grandfather's unique connection with it.

Screenings

Sunday, Sept. 29, 2024 | 3:30–7 p.m.
Lussier Family Heritage Center

Monday, Sept. 30, 2024 | 6–8 p.m.
Marquee Cinema at Union South

More information and registration at **nelson.wisc.edu/waubesa**

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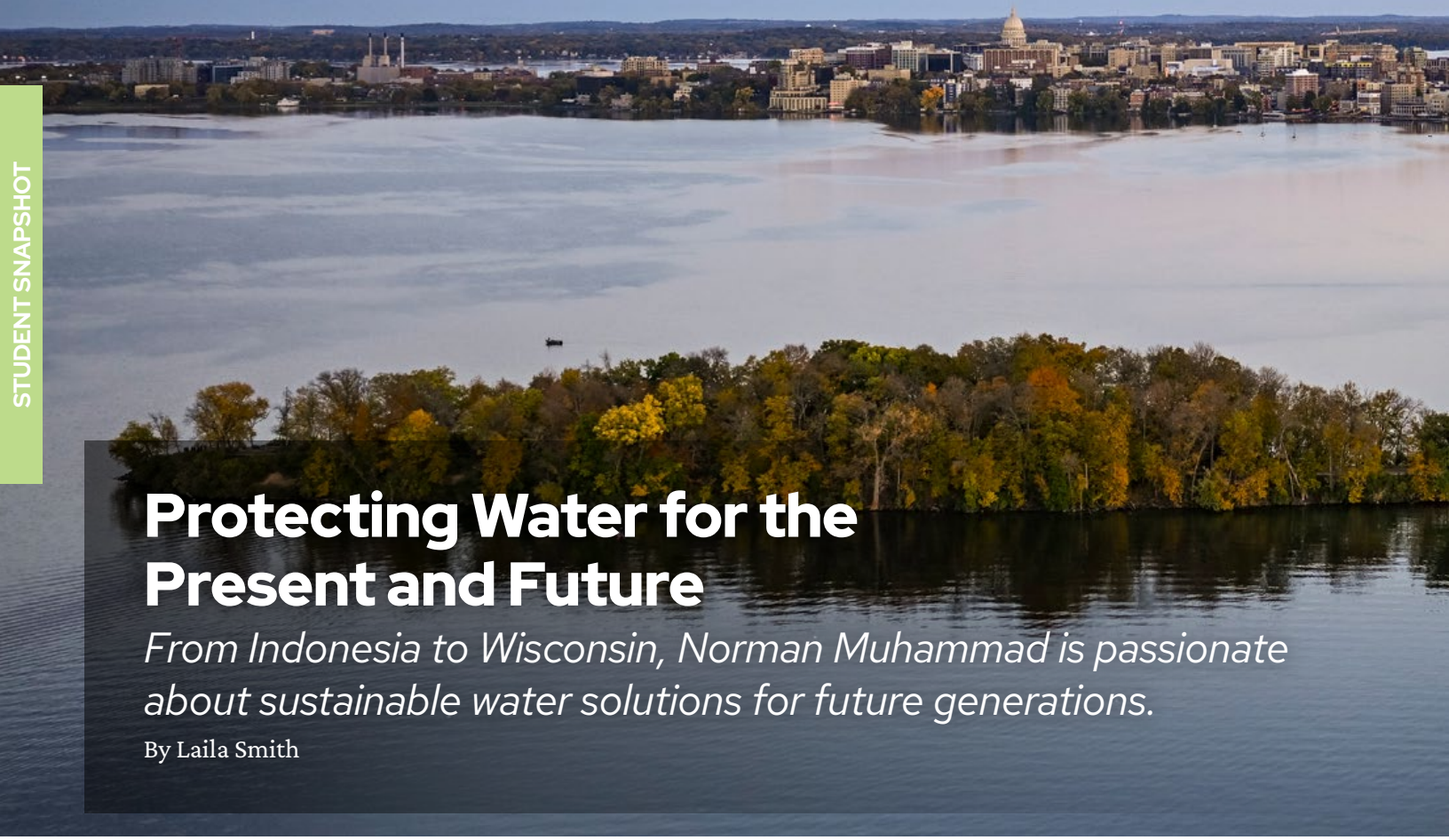


Protecting Water for the Present and Future

From Indonesia to Wisconsin, Norman Muhammad is passionate about sustainable water solutions for future generations.

By Laila Smith

Aerial view across Picnic Point, Lake Mendota and the lakeshore path. Photo by Jeff Miller / UW–Madison

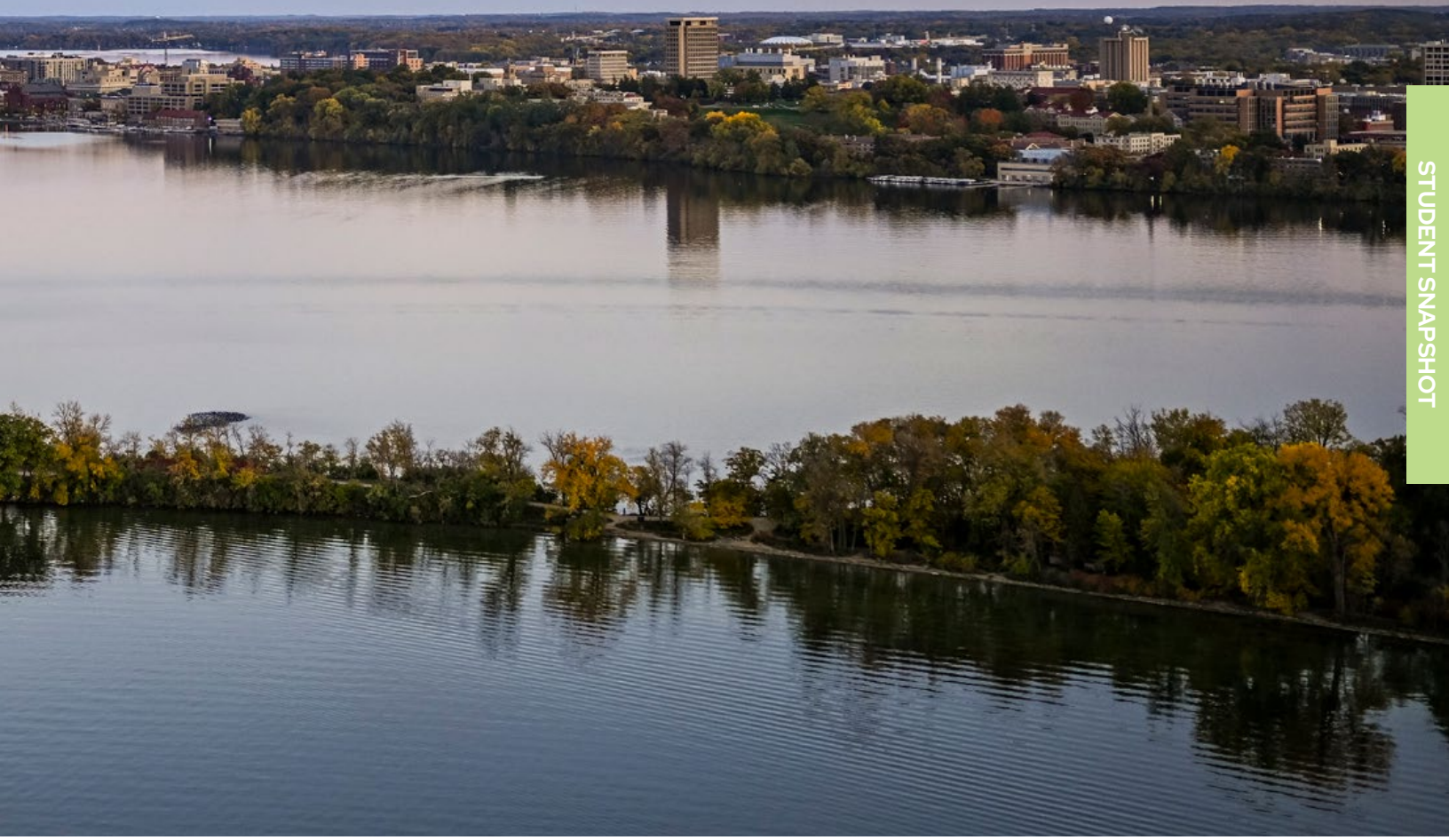
Water rippling. Birds chirping. Wind whispering. These are all sounds that can be heard while walking on the Lakeshore Path alongside Madison's Lake Mendota — a favorite trail of many University of Wisconsin–Madison students, including Norman Arif Muhammad, a master's student studying water resources management at the Nelson Institute for Environmental Studies. "When I explore natural areas, I'm always fascinated by the beauty of the environment around us. That's why I'm so concerned about sustainability — so our future generations can also experience what I enjoy right now on campus," he says.

Before coming to UW–Madison, Muhammad attended the Bandung Institute of Technology in Indonesia for his undergraduate degree in geodesy, learning how to create accurate representations of the Earth based on its geometric shape, orientation in space, and relationship with gravity. These attributes are known as the three fundamental pillars of geodesy. After graduating Muhammad worked as a research assistant for one of his professors to make gravity data measurement analysis software for government agencies. During this process, Muhammad focused on one of geodesy's three fundamental pillars — Earth's gravitational field — to help advance the creation of Indonesia's accurate vertical reference maps representing gravity variations around the globe.

Muhammad continued his career working with Indonesia's government in the water resource sector of the Ministry of Public Works and Housing. "It was a bit of a leap from a geodesy assistant to working in a water resource field," Muhammad says, "but it gave me a synergistic effect — I had a unique perspective and skillset to answer questions in water-related problems." With the Ministry, Muhammad was introduced to various water-related problems throughout Indonesia, such as flooding and drought, which piqued his interest in continuing his education to further tackle water-related issues.

Muhammad was given the opportunity to pursue higher education from the Indonesian Endowment Fund for Education, an entity within Indonesia's Ministry of Finance, bringing him to UW–Madison today. Through this program, he receives a scholarship to continue his education, with the understanding that he will return to Indonesia to implement his newfound knowledge in his former job with the Ministry of Public Works and Housing. "It's kind of my dream job because I get to travel often, which I love, and I also am able to contribute to society as an engineer in water resources, which I also love."

When researching water management programs, Muhammad was drawn to the Nelson Institute's water



resources management (WRM) program. In particular, he appreciates the freedom of curriculum choices and the Nelson Institute's interdisciplinary approach to education. He also was excited to learn that the program requires students to complete a practicum project, where they get hands-on experience solving real-world water resource issues.

"People really underestimate the importance of water within our society — it's very easy to access, which makes people take it for granted."

— Norman Muhammad

Through his WRM coursework, Muhammad is learning how to approach water resource issues from a new perspective. "Due to my work in the infrastructure department in Indonesia, my solution to a water-related problem is to build a structure to address it — but I learned about bioengineering this past fall, and I'm fascinated by it," he says.

"For example, bioengineering has been done in Lake Mendota to remove algae. Instead of installing a concrete or sediment trap, or using chemicals to get rid of the algae, they introduced large fish into the lake. The fish don't directly eat the algae but reduce the pressure on organisms that do eat the algae by eating their predators," Muhammad explains. "It's really interesting and shows me a new perspective on solving water-related issues — not just by infrastructure, but through biological systems."

Another takeaway Muhammad has from his WRM coursework is the significance of consistent water access. "People really underestimate the importance of water within our society — it's very easy to access, which makes people take it for granted," says Muhammad. Looking to the future, he hopes to champion the importance of clean water, perhaps by starting a water protection nonprofit. "Imagine if we didn't have tap water for a few days. We would see chaos throughout society because it's such a crucial resource," he says. "We have to protect these important resources for the future of humanity."

The Speed of Trust

Gloria Castillo Posada helps communities thrive on their way to a cleaner future.

By Chelsea Rademacher

Once a month, Castillo Posada (center) hosts Viviendo con Energia, a listener-focused segment on La Movida Radio. Photos courtesy of Gloria Castillo Posada (3)

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"This is a place I belong." That's how Gloria Castillo Posada felt as a girl growing up in Bogotá, Colombia. Exploring nature in the shadows of the Andes, she felt a sense of responsibility for supporting and maintaining the vast diversity of her country. It was the richness of her country and her identity that showed her how important communities are in working towards a sustainable future. Now in her current role, Castillo Posada helps Madison Gas & Electric bring enthusiasm for a clean energy future to Madison's diverse communities.

Driven by her interest in nature and how people connect with it, she started her academic journey at La Pontificia Universidad Javeriana in Bogotá, Colombia. After earning her degree in ecology, she sought out a graduate program that could expand her ecological knowledge in an interdisciplinary way. "I was very interested in gender studies," she says. "I wanted to understand how our work in sustainability is intersectional and diverse. I was initially driven by a desire to gain a deeper understanding of women's contributions and resilience within the environmental movement in Latin America, with a particular focus in Colombia."

She found the Nelson Institute's environment and resources master's program and made the move to Madison. Although with her family still in Colombia, she kept her ties to home. She returned to complete a research project where she explored the intersections between identity, gender, capitalism, and natural resources. She spent time in a small, predominantly

"Even if I'm not in the country, that is part of who I am. [It] colors what I do and shapes the way I relate to other communities."

— Gloria Castillo Posada

Afro-Colombian town where coal mining was the key economic driver. "How are people's gender, race, access to resources and resilience inform the ways environmental efforts emerge and define outcomes for the communities here?" she wondered. "I wanted to take a step further to understand the ways Afro-Colombian women were leading the way in forging a path for a more sustainable future, where aggressive economies impose a precarity for precious natural resources and compete with smaller local economies."

Castillo Posada stayed in Madison after earning her degree, devoting herself to community engagement and sustainability. After doing community and equity work for several local nonprofits, she joined the team at Madison Gas & Electric (MG&E). She now works as a customer engagement and community service manager, helping MG&E authentically connect with the myriad communities it serves.

"Besides providing a vital service to the community like energy, that is vital, we also want to make sure our communities are thriving," she says. To do so, Castillo Posada looks to community organizations and public schools, which act as a "hub" for the community. MG&E puts on elementary school Earth Day celebrations, participates in resource nights where families can learn about MG&E's services, and shares energy literacy with both kids and adults. Plus, all of their programming is offered in both English and Spanish.

Castillo Posada (standing, background) hosts la Lotería de la Energie, an educational game inspired by Mexican bingo.

"It is critical for our work that the next generations feel seen and represented in the clean energy future," she says, emphasizing the importance of active listening. "We put in the effort so kids and families can learn about energy in a way that speaks to them and provides a sense of ownership and active participation." Castillo Posada helps MG&E create educational materials that are culturally relevant, like their Lotería de la Energie, which draws inspiration from the iconic Mexican bingo game using art by local Latinx artist Rodrigo Carapia. "In many ways, these engagement efforts open conservations that inspire and encourage kids to explore and diversify the multiple careers in the energy sector, which is a key priority as we transition to a cleaner future."

The bingo cards used in La Lotería de la Energie were created by Rodrigo Carapia, a local Latinx artist.

Like La Lotería de la Energia, and their upcoming Día de Futbol, all of MG&E's community efforts are developed through collaboration. "We don't impose anything," Castillo Posada says. "We just want to listen and see how we can be of best support." One suggestion came in an unexpected form: a radio show. La Movida Radio 94.5FM y 1480 AM, Dane County's only Spanish-speaking radio station, offered Castillo Posada a regular spot to talk about energy. The second Wednesday of each month, her segment Viviendo con Energia (Living with Energy) shares success stories and takes listener questions. It's this type of authentic connection and continual work that helps create a sense of belonging and ownership in the clean energy future, which ultimately moves MG&E closer to its goal of being net-zero by 2050.

Madison's Latinx communities aren't the only ones that Castillo Posada's team is working to engage. They're also working to bring energy literacy and equity to Madison's Hmong and Black communities. "Authentic collaboration and mutual goals are the key, and this takes time," Castillo Posada reiterates. "We always say, 'We move at the speed of trust.' "

Scientific Service Provider

Recent PhD graduate Naomi Louchouarn puts her scientific communication skills to work with tribal river restoration.

By Chelsea Rademacher

Naomi Louchouarn never wanted to work with water. In fact, during her master's coursework in California where "every project was focused on either the ocean or the lack of water," she says, "I was actively fighting working on anything water related." But her passion for animals led to curiosities about the connections between animals, humans, and the land, which is where she ultimately found her niche as a "translator" between science and unique perspectives and knowledge systems. It's a set of skills that she now puts to use in her role as a river restoration project manager.

Louchouarn began her academic career at McGill University in Montreal. She'd thought, as most animal-loving kids do, that she'd become a vet. But when she attended the pre-vet major orientation, the advisor didn't waste time with pleasantries. "How many of you want to be vets?" he asked, and everybody raised their hands. "Well, probably none of you will be vets," he stated. Disillusioned, Louchouarn and a friend went to the wildlife ecology major orientation next. "The guy was like, 'Do you want to play with fluffy animals? Everybody gets to play with fluffy animals.' Sign me up!" she recalls. As her courses started, she was drawn to the ecology-based classes and fell in love with fieldwork.

She continued her studies at the University of California, Santa Barbara's Bren School of Environmental Science and Management, earning a master's degree in conservation planning. Following in her mother's footsteps, she then pursued her PhD in the Nelson Institute's environment and resources program. Curious about the connectivity between animals and people, she joined the Carnivore Coexistence Lab alongside Professor Adrian Treves. There, she published a number of papers, including a landmark study on range-riding as a nonlethal form of livestock management in carnivore country.

After her thesis defense, Louchouarn relocated to northern Michigan — "the tip of the mitt is what they call it," she explains, holding up a hand. She was hired as a river restoration project manager for the Grand Traverse Band of Ottawa and Chippewa

"Doing some of this restoration work ... makes the river more visible, and it makes the tribe more visible."

— Naomi Louchouarn

Louchouarn holds an arctic grayling, a fish that has gone extinct in the United States, while working as a field technician in Canada's Yukon Territory. Photos courtesy of Naomi Louchouarn (3)

Indians, one of the state's 12 federally recognized tribes. She's working to remove humanmade physical barriers that inhibit the passage of native fish like brook trout, perch, and lake sturgeon. "We tend to think of salmon that can jump up waterfalls, but a lot of native Great Lakes fish can't actually do that," she says. "Our rivers are quite flat, they're meandering, and they're pretty low gradient. So even the small barriers, like a culvert that's just sitting a little high, that's not good for our native fish in this region."

Louchouarn with some of the "fluffy animals" that her undergraduate advisor enticed her with when choosing a major. Top, she holds a snowshoe hare during a summer research project. Above, Louchouarn visited South Africa in 2011 for a field course about wildlife conservation and management.

The tribe and local partners have been working to improve connectivity for decades, but recent grants and the Bipartisan Infrastructure Law have jump-started the efforts. Just this summer, Louchouarn helped write a successful grant proposal resulting in nearly $12 million from NOAA to both conduct restoration work and return land to the tribe throughout the region.

The river restoration efforts have larger implications of cultural restoration, Louchouarn explains, which is partly what attracted her to the position. Running through the center of Traverse City is the Boardman River — formerly known as the Ottoway River, which was, and is, a vital resource to the indigenous communities that lived there long before colonizers came. When they did, they began to build the city around the river, ultimately hiding it. "All the alleys dump on the river," she describes. "This river is sort of invisible. In a lot of ways, so is the tribe. Most tribal nations in the U.S. have been made invisible. And so having the tribe lead some of this restoration work makes both the tribe and the river more visible again."

Traverse City, Michigan

Louchouarn will be the first to tell you that she doesn't have the strongest background in aquatic systems. Where she excels — and why she landed the job — is her communication around these complex systems. "My work in the Carnivore Coexistence Lab has helped me with being really sensitive to people's perspectives and being able to stand in between all of those perspectives and communicate across them," she says. Louchouarn has maintained a part-time appointment in the lab, allowing her to both publish and mentor the next crop of Nelson PhDs. One of her current students put into words what Louchouarn had long felt: "As scientists, we are service providers," she relays. "My skills as a scientist are that I know about ecology, and I know about systems thinking, but I don't know what you need to know. So …" she asks, "what are your questions?"

Miller poses with Bucky at an event on campus. Photos courtesy of Laura Miller (5)

Selling the Dream

For Laura Miller, loving your job and making a difference go hand in hand.

By Chelsea Rademacher

It's Friday night in Washington, DC's Anacostia neighborhood. Laura Miller is outside washing her car as a neighbor stops by the yard to borrow a few hand tools. Folks stop by to chat and extend cookout invitations. Everything you need is "just around the corner," from your library to your grandma's house. But the neighborhood has changed since Miller was young. Solar panels have appeared on rooftops. The river has gotten cleaner. Residents East of the River have full-service restaurants to enjoy. These are the changes that can happen when the government and the people work together. Working directly for her neighbors is what Miller does today as a program analyst with the DC Department of Energy & Environment.

Miller was born and raised in DC, and the Posse Program brought her to the Midwest and to UW–Madison. Her journey began in nuclear engineering, but it didn't feel like the right fit. She continued on, changing her major to engineering physics. "This physics thing isn't it," she thought after trying it out. Inspired by Madison's culture of sustainability, she turned her focus to environmental work. She found herself in Becky Ryan's Science Hall office, relaying what she'd done so far. "What are you doing wasting your time with things you don't like? Get a grip!" Miller remembers Ryan, the Nelson Institute's distinguished advising manager, saying. Ryan continued to advise Miller and she found a home in Science Hall, double majoring in environmental studies and geography. "Becky changed my life."

Laura Miller

After graduation, Miller continued her studies at Unity Environmental University, where she earned a master's in urban ecology and sustainable planning. She wanted a school that walked the walk when it came to sustainability. "UW really instilled that in me," she says. By completing her degree online, she could return home to the District and

"You see the difference in your neighborhood because you're a part of that."

— Laura Miller

work in the city. "I love DC. That's why I came back, it's why I stay, and it's why I work for the city."

Today, Miller works for the DC Department of Energy & Environment, the leading authority on matters related to energy and the environment in the District that strives to improve the quality of life for all residents and natural inhabitants in the city. "I feel like I've always been a government girlie," she jokes. Both her parents worked in government, her mom with the U.S. Securities and Exchange Commission and her dad in the DC Department of Transportation. For her mom, a government career meant stability for her family and being able to spend more time with her kids. Her dad saw it as a way to give back. In the wintertime, he'd pick up shifts to plow snow off the city streets, like those in their neighborhood.

That type of life became Miller's dream. "Stable pay, simple living," she reflects. "You give back to your community; you see the difference in your neighborhood because you're a part of both it and the forces that impact it." She couldn't imagine doing anything else, and now she hopes to sell that dream to the next generation. She sees a future in which workers enjoy their jobs *and* contribute to the green economy. "I love my job. I dream others can too. You *can* have both. You *can* have it all," she says.

Whether waterfalls or cityscapes, Miller is eager to explore her surroundings.

In her role, she manages two of the department's workforce programs: the Green Fellow's Leadership and Development program, which trains local graduate students as program analysts;

Miller in front of the Washington Monument in her home of Washington, DC.

and the Green Trades DC Technical Training Program, a one-of-a-kind partnership with the local chapter of the International Brotherhood of Electrical Workers (IBEW). "Typically, unions are self-sufficient, so they do not take outside funds," she explains. "Through this partnership, though, we're able to offer support and services for District residents to pursue green careers in the trades that they might not have been aware of before via IBEW's pre-apprenticeship and apprenticeship programs."

Educating and inspiring the next workforce generation, Miller believes, is key in reaching a fully green economy. In her role, she's able to work across sectors — "unions, private sector, public sector, academia, you name it" — to inspire both the up-and-coming and existing workforces to see almost any job as a green job. But she also has bigger questions about the green transition; questions that she can't answer in her day-to-day work.

Washington, DC set a goal to beecome the "healthiest, greenest, most livable city for all [District] residents" by 2032. "What workforce is needed to *actually* make these things happen? How do we support the financing for this? We want this green economic transition so bad, but what is it going to take?" Miller wonders.

This fall, Miller was accepted into the urban leadership and entrepreneurship PhD program at the University of the District of Columbia, where she plans to investigate these questions and more. "It's expanding on questions that we and other folks have internally, but that nobody can focus on right now." But since these questions directly affect the wellbeing of her city and her community, Miller won't let them rest unanswered. If she can't make change as Laura the Public Servant, surely, she can as Laura the Scholar — or, perhaps, just Laura the Washingtonian.

Connect, Adapt, and Thrive

A product of diverse habitats, Anna Weinberg helps ensure a future where everyone can adapt and thrive.

By Chelsea Rademacher

Anna Weinberg has called many different habitats home. From the rolling hills of rural Georgia to the towering mountains of Montana, she can adapt and thrive just about anywhere. Now, in her current work at the University of Arizona's School of Natural Resources and the Environment, she's making sure that people across the globe will be able to adapt and thrive in our changing world.

Weinberg grew up around animals: dogs, "scrappy" cats, even the odd snake. Interested in animal behavior and intelligence, Weinberg looked only at colleges with zoology programs. She fell in love with the UW campus on a mid-February tour. "It was the worst time of year, but I still fell in love with it," she remembers. In her second year, she added an environmental focus to her coursework with a second major (conservation biology major) and the Nelson Institute's environmental studies certificate.

Weinberg enjoys the views during a hike through Zion National Park. Photos courtesy of Anna Weinberg (3)

"If somebody's going to figure it out, we're going to do it together."

— Anna Weinberg

Weinberg was also active in environmental groups on campus, interning with the Office of Sustainability and helping to establish CLEAN (Campus Leaders for Energy Action Now), a registered student organization that's been a key player in moving campus towards a more sustainable future. Weinberg, alongside founding members Kendl Kobbervig and Leah Johnson, saw a gap in the existing group of environmental organizations. "There wasn't a real space for that activism side," she says. "The impetus for it was to push the university to commit to 100 percent clean energy by 2035."

This was in 2017, and the effort wasn't well received by university leadership. However, through ongoing efforts from CLEAN, the Office of Sustainability, and other environmental groups, that tide has turned. In February 2024, Chancellor Jennifer L. Mnookin announced a sweeping environmental sustainability initiative with five goals, one of which is a transition to 100 percent clean energy by 2030. "Even if we didn't make

momentous movement at the time," Weinberg reflects, "clearly it's had an impact!"

Weinberg now works at the University of Arizona (U of A), which is seeing similar policy changes resulting from student efforts. Before heading to the southwestern United States, she lived in Missoula, Montana working in clean energy and food systems. "I'm really grateful for all of the places that my young career has brought me so far," she says. "I keep getting this crash course in the top climate and environmental priorities for all these different areas."

Weinberg (standing) teaches students at the University of Montana about Climate Smart, a climate-solutions nonprofit.

Today she weaves those priorities together as the codirector of the Conservation and Adaptation Resources Toolbox (CART) at the U of A's School of Natural Resources and the Environment. "The big goal of CART is to connect folks who are tackling similar conservation and adaptation challenges but across geographies or jurisdictions. We do this by sharing lessons learned from work on the ground," Weinberg explains.

CART maintains an extensive case-study library, the majority of which are lead-authored by U of A undergraduates through CART's internship program, which Weinberg helps oversee. The 200-plus studies live in an online dashboard, which is publicly accessible.

When Weinberg started at CART, the world was at the height of the COVID-19 pandemic. The internship program evolved to be fully remote and has continued that way since. In overseeing interns across the country, keeping everyone connected — to themselves and to the larger environmental community — has been a priority for Weinberg. "It was really important to me that they don't feel like they were just floating in the internet void," she says.

In fostering that sense of community, Weinberg is also careful to not put too much pressure on the next generation. At recent conferences and workshops, she's been hearing the same refrain from generations before her: "The young generation, they give me hope. They're going to figure it out," she quotes. "I don't know if they understand the frustration and anxiety that creates for all the young people in the room. We're trying our best, but you don't get to give up and tell us that it's our job now."

Surely there is hope to be found in the next generation — just look at the hundreds of case studies authored by Weinberg's interns. But it's the connectivity and knowledge sharing where Weinberg finds her optimism. "I've seen time and time again how valuable that is," she says of not just sharing knowledge, but getting in a room with people facing similar things. "These issues are tricky. I don't have all the answers; these people don't either. But if somebody's going to figure it out, we're going to do it together."

While working for Climate Smart, Weinberg engaged with the Missoula, Montana, residents at local events.

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