Nelson Institute for Environmental Studies
UNIVERSITY OF WISCONSIN–MADISON

August 2023

THE COMMONS

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

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EDITORIAL STAFF

Kevin Berger, Graphic Designer
Anica Graney, Assistant Editor
Eric Klister, Web Editor
Chelsea Rademacher, Editor
Diane Stojanovich, Managing Editor

STAFF WRITERS

Rachel Carrier
Laila Smith

CONTRIBUTORS

Abigail Becker
Dea Larsen Converse

DEAN'S OFFICE

Paul Robbins, Dean, Nelson Institute for Environmental Studies
Colleen Godfriaux, Interim Director of Budget and Financial Management
Anna Gade, Associate Dean for Research and Education
Diane Stojanovich, Distinguished Associate Dean for Communications
Shelly Strom, Assistant to Paul Robbins
Ann Swenson, Associate Dean for Advancement
Steph Tai, Associate Dean for Education and Faculty Affairs
Jenna Weidner, Associate Dean for Administration

CONTACT US

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Nelson Institute for Environmental Studies
550 Science Hall
Madison, WI 53706
communications@nelson.wisc.edu

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

Cover photo by Jeff Miller, University Communications

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From the Dean

Greetings, Nelson alumni and friends,

Happy August! It's been a unique summer here in Wisconsin — and across the globe, for that matter. We seem to have traded clear days and muggy nights for smoke-filled air and drought-like conditions. It's impossible to look away from the effects of climate change when they're right outside your front door. But when conditions feel dire, I look to the incredible work being done right here on campus and in the Nelson Institute; work that not only examines how we got to the current climate crisis, but how we can adapt and move forward.

For example, many members of the Nelson Institute community were able to add to the national conversation around air quality when smoke from Canada's wildfires descended on the lower 48. Turn the page to see some headlines — as well as staggering photos that show how different the campus skyline looked during the June smoke event. Back on the ground on campus, new climate mitigation tactics are continuously being explored and implemented. A team of folks from across campus — led by Ian Aley and the Office of Sustainability's Green Fund — helped turn the lawn of Tripp Residence Hall into a pollinator garden. Learn more about the importance of these kinds of changes on page 10.

When it comes to preparing for our future in the changing climate, what better place to start than with the next generation of scientists? At the forefront of this work is Michael Notaro, director of our Center for Climatic Research (CCR), who is tearing down barriers to STEM education that exists for neurodivergent youth. For the second summer in a row, he ran The Sky's the Limit STEM Camp which, thanks to a National Science Foundation grant, is open for *free* to autistic youth. Go on-site for this summer's final day of camp on page four. You can read about more of the great stuff going on in CCR on page 23.

I would be remiss to not take the opportunity to express my gratitude to Steph Tai, our new associate dean for education and faculty, who started with us in May and has the Nelson Institute ready to roll for the fall semester. Steph brings expertise in law, a passion for the environment, and thoughtful pragmatism that has been hugely exciting to watch. More than this: Steph is insanely curious and energetic about what everyone around here does. Welcome again, Steph!

As always, this issue is jam-packed with great stories, and this letter has only skimmed the surface. And if you have feedback to share or topics you'd like to read about, I'd love to hear from you.

Read on!

Paul Robbins
Dean, Nelson Institute

Haze on the Horizon

Throughout June and July, Madison — like much of the United States — found itself under a thick haze of smoke produced by wildfires in Canada. Experts from the Nelson Institute community were tapped for a variety of interviews, including Jonathan Patz, who spoke to Wisconsin Public Radio; Tracey Holloway, who told Madison's NBC15 that this may be a rising trend; and alumnus Vijay Limaye, who appeared nationally on CBS Sunday Morning. These "before and after" photos captured by the Atmospheric, Oceanic, and Space Sciences Building's rooftop cameras, show just how different our smoke-covered campus looked compared to a normal day. *Images courtesy of Tim Wagner, Cooperative Institute for Meteorological Satellite Studies*

Learning without Limits

At The Sky's the Limit, a STEM camp for autistic youth, campers aren't "allowed" to be themselves; they just are.

By Chelsea Rademacher

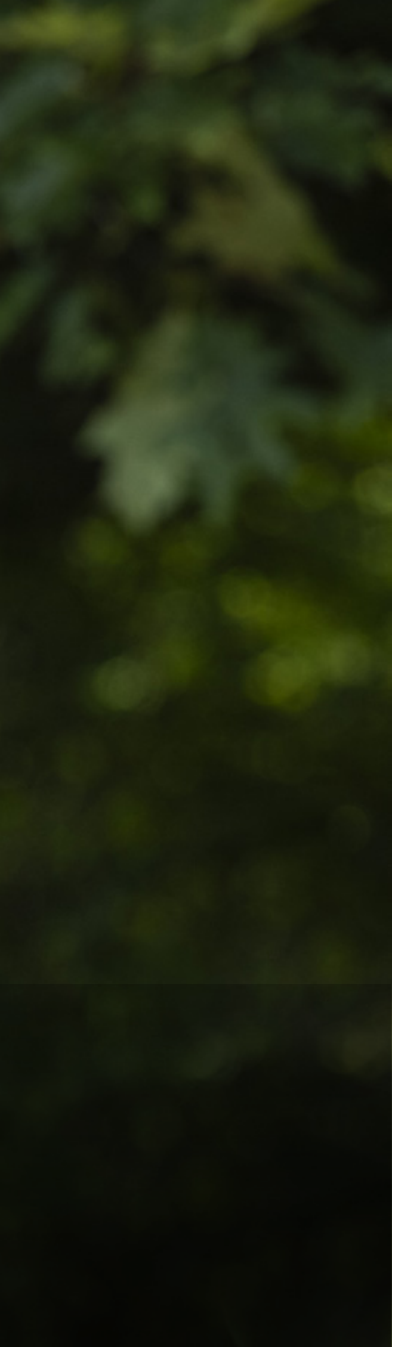
Camper Flynn (going by Alienname for this activity) uses a handmade clinometer to triangulate and estimate tree height. Photos by Jeff Miller, University Communications (8)

"I think a lot of people see autism as a disorder or a disease you try to fix. That's not the case."
— Michael Notaro

Ship's log, stardate 101149.99.

Our exploration crew has safely landed on the alien planet called "Earth." We're here on a peaceful mission: to gather observations on the planet's land cover. Fortunately, this planet has the same air composition and gravitational force as our home planet, our leader, Greedo, tells us. Exiting the ship, we walk a dry, dusty path to a shaded forest. Greedo — with help from his second in command, Vader — teach the crew's youngest members, Relyt and Alienname, how to collect observations. They determine that the forest has 100 percent canopy cover, with trees measuring between 19 and 22 feet high.

Okay … so maybe there wasn't an alien invasion on Earth recently. But there was a place where aliens were real and possibilities were endless. The alien spaceship is actually the Welty Environmental Center in Beloit, Wisconsin,



and its leader, Greedo, is none other than Michael Notaro, director of the Nelson Institute's Center for Climatic Research. We're at The Sky's the Limit STEM Camp, a summer day-camp for autistic youth.

Created by Notaro in the summer of 2022, the camp offers hands-on, exploratory learning experiences for free, thanks to a grant from the National Science Foundation's GEOPaths program. Notaro's motivation to create safe and meaningful learning opportunities for neurodivergent kids came from his son, Hayden, who is autistic. "I think a lot of people see autism as a disorder or a disease you try to fix. That's not the case," he says. "Neurodiversity is something we want to support." Plus, when it comes to neurodiversity in STEM, support — and representation — are severely lacking. While autistic students tend to have a higher interest in STEM fields than neurotypical students, Notaro explains, fewer continue on to STEM degrees or jobs. With the Sky's the Limit, Notaro is working to fix that disparity.

This summer's camp lasted six weeks, with a different session held each Friday afternoon. Parents drive from as far north as Madison and as far south as Chicago to give their kids a chance to drive a remote-controlled TerraRover, fly drones, and measure water quality in the nearby Goose Creek — just some of this year's session topics. The camp's programming uses NASA's GLOBE (Global Learning and Observations to Benefit the Environment) Program learning protocols as a guide, each day centering on a specific protocol: atmosphere, biosphere, hydrosphere, and pedosphere. This year, the camp added a second branch — Nature's Navigators — held at the Upham Woods Learning Center and facilitated by the UW–Madison Division of Extension.

It's July 21, the last day of camp, and today's theme is the biosphere — or all parts of the earth where life exists. The classroom's own biosphere is remarkably diverse. Buckets of leaves, sand, and grasses line the long table at the front of the room. By the window, a mesh hamper is alive with monarch butterflies. As campers and their parents arrive, everyone gravitates to something different. Flynn, a 12- (almost 13-) year-old from Janesville makes a beeline for the butterflies. Tyler, who came with his grandfather, browses a table filled with games and fidget toys before selecting an Angry Birds building-block game. Several campers walk in and head straight to an oversized sticky note which, as always, has the day's activities written out in various colors.

Around 1 p.m., Notaro gets camp started — the same way he does each time. Standing in front of the group, he holds several sheets of paper, each printed with a different affirmation. As he holds up each sign, he reads it aloud:
"Neurodivergence is wonderful."

"Your feelings are important to us."

"If any camp activity makes you feel uncomfortable, you can choose not to do it and camp helpers will offer alternatives."

"The best science is done by a diverse set of scientists from different neurotypes, races, and genders."

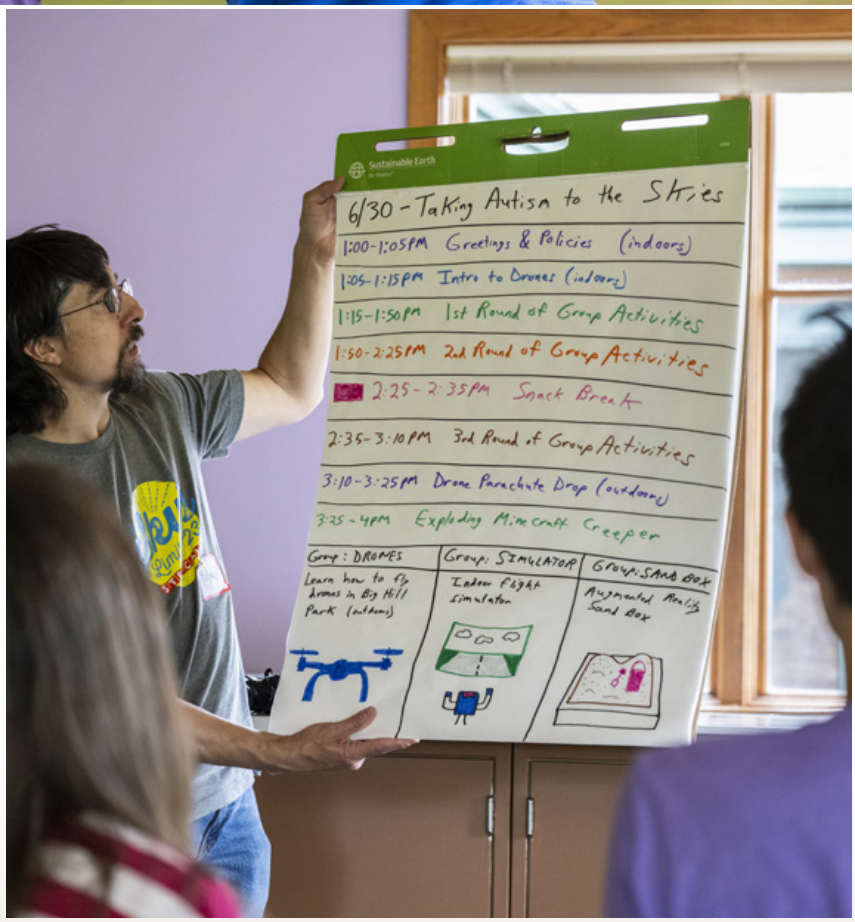
"While science textbooks are useful, science is best learned hands-on while following the scientific method."

And with that, the exploration begins.

A More Perfect Classroom

Imagine a classroom where you can move around when you need to or get up and look closer at something if you want to — and the teacher doesn't assume you're being naughty. Imagine a classroom where the operating assumption is that all pupils are listening, engaged, and learning, even if they aren't all sitting upright in their chairs, scribbling notes, eyes glued to the chalkboard. *This* is the kind of classroom Notaro creates at The Sky's the Limit.

The first activity of the day is an investigation of leaf pigments. After heading outside to collect a sample of different colored leaves, the campers sit at long tables



Top: Camper Mairead (left) learns to fly a drone with the help of Dan Frye, a volunteer with the nonprofit group Taking Autism To The Sky during the camp's third session. Above: Notaro shows a collection of paper samples from the day's first experiment, which depicts varying amounts of liquified and absorbed leaf pigment. Right: Notaro starts each day of camp by sharing a visual list of planned activities.

and, with mortars and pestles, grind the leaves up into small fragments. There's a camp helper at each table: many of whom are Welty staff members. Once the leaves are crushed up, the campers and helpers put the fragments into a beaker filled with water, stir it around, then pour it into a large mason jar.

Mairead, who just graduated high school, takes her time, deliberately separating her leaf from its vein before, piece by piece, dropping each crumb into the water. This is Mairead's first summer with The Sky's the Limit. "It's a nice experience," says Mairead's mom, Margaret, who makes the drive in from their home in Rockford, Illinois. "They don't always get a lot of time to be around other [autistic] kids that are like them."

As Mairead finishes adding her leaves to the water, Tyler is watching Notaro complete the final step: pouring alcohol over the watery leaves. "You have to wait a while now," Helper Raven tells him. "Fine," Tyler sighs, his nose pressed against the jar. Holden (today going by Krang, the name of his favorite Ninja Turtle), checks out everyone else's jars while Helper Rebecca finishes his. We're all learning, but it looks different for everyone. In Notaro's biosphere, campers aren't "allowed" to be themselves — they just *are*.

> *"The best science is done by a diverse set of scientists from different neurotypes, races, and genders."*
>
> — Michael Notaro

A Thriving Ecosystem

The day continues with a split into three small-group activities: two campers to a group, led by one or two camp helpers. The campers get to choose their own adventure to start, and Tyler and Flynn head over to Helper Raven, who's stationed at a table up front that's littered with tree rings, twigs, and microscopes. Here, they're learning to calculate a tree's age by both counting rings and by measuring the circumference. Tyler picks up a giant, orange magnifying glass and inspects a tree ring. "Think I can count every single one?" he dares himself. Helper Raven eggs him on: "I don't know … wanna try?" "Yeah!" Tyler exclaims" "One, two, three …" he gets to 13. "Never mind."

After a brief interlude for ice cream (a hit for both campers and parents alike), it's time to switch groups. Tyler and Flynn head over to their next activity, led by Notaro and Helper Aaron, the Welty Environmental Center's program director. Notaro delivers some shocking news: "As of this moment, from this point on, you're no longer human. You are now an alien," he says. "I am an *alien?!"* Flynn exclaims and starts making alien sounds. "This is our mothership. We landed here, and we're going to explore this planet Earth and its vegetation," Notaro continues.

With renewed energy, Tyler (Relyt) and Flynn (Alienname) follow Notaro (Greedo) and Helper Aaron (Vader) out of the building to the start of a wooded hiking trail. Using a densiometer (a device to measure forest density) fashioned from a toilet paper tube and dental floss and a clinometer (an instrument to estimate tree height) made from a straw, a string, and a washer, Notaro guides Tyler and Flynn in measuring the forest's attributes using GLOBE's Modified UNESCO Classification Guide — or MUC.

As Tyler takes observations of the canopy cover, his grandfather Richard, who's been coming with him to camp, stands back and takes observations of his own. This is Tyler's first year at The Sky's the Limit, and for Richard, it's been a unique experience. "I get to see him

The Sky's the Limit STEM camp participant Tyler uses a magnifying glass to count tree rings.

engaged and interacting with adults and other children. I don't really get to see that at school," he reflects. "There's parent-teacher day, but that's a different thing. I don't get to observe him in the classroom. This is the closest thing I have to see how he interacts with other children and adults."

Back inside, Tyler and Flynn head to their final station, "Ecosystem in a Jar," led by Helpers Justin and Candis. As the name suggests, in this activity, the campers create their own living worlds in large mason jars. First, they add a layer of river rock, scoop in some fresh dirt, sprinkle a layer of chia seeds, and top it with tree moss and water. "What do we know about ecosystems? What's an ecosystem?" Helper Justin asks as the activity starts. "It's a thing that lives," Flynn responds with confidence, his eyes transfixed on the jar's lid that makes a satisfying "pop" each time he presses and releases. Among the campers, Flynn is a veteran: he was part of the inaugural camp cohort. "We made it every week last year, and we only missed one week this year," says Flynn's dad, Jason. The environment isn't Flynn's *favorite* topic — he's much more into computers (he once built the Windows operating system into a MacBook) — but opportunities for hands-on learning tailored to neurodivergent youth are few and far between … and they usually cost a lot of money. And for Jason, the camp is just

Notaro (left) helps camper Tyler (or "Greedo" and "Relyt" for this activity) use a compass, the first step in the activity to measure canopy cover.

Left: Camper Tyler uses a handmade densiometer to estimate tree-canopy cover. Right: Camper Benicio mixes crushed plant leaves into a pigment solution during the final day of camp.

as beneficial to the parents as it is to the kids. "It's good to talk with other parents who can relate to you," he says. "There's a lot of networking and sharing ideas."

Forest for the Trees

As the day (and the campers' energy) winds down, Notaro calls the group together for one last activity. Helper Aaron takes over, leading the campers and helpers through an interactive game called the "Forest Succession Game." Each participant sits on a plastic square, where they have to stay throughout the game. Helper Aaron opens a small container of confetti made from large pieces of construction paper and dumps it over the campers, eliciting delighted squeals and giggles. "I'm gonna give you 20 seconds to get as many resources as you can," Helper Aaron instructs. "Ready … go!" Seated on their squares, the campers reach as far as they can and scoop up piles of confetti. "In order to survive as a tree," Helper Aaron says when the 20 seconds are up, "this year was very, very dry. You need to have at least six blue [pieces] to survive." The room erupts into out-loud counting. Helper Justin is the only tree to not get six blues, so he has to throw his resources back into the forest and exit the game. The sequence repeats, this time focusing on yellow confetti — sunlight.

By throwing, gathering, and counting confetti, they learn how forests grow and evolve — and how it's affected by changing resources. It's a simple lesson, really: if you have the right resources, you'll thrive. Share the resources, and you'll help others to thrive. With The Sky's the Limit, Notaro takes this lesson one step further: different trees need different resources. One wouldn't consider a singular method for managing the growth of a large, diverse forest, if it supports one type of tree but not others. Notaro sees the forest for the trees. And what happens when each type of tree is given the unique resources that it needs? Diversity thrives, and the forest grows larger and stronger.

"The best science is done by a diverse set of scientists from different neurotypes, races, and genders."

"Neurodivergence is wonderful."

Promoting a Pollinator Paradise

The new installation of a pollinator lawn at Tripp Residence Hall will (hopefully) be the first of a campuswide movement to benefit the bees.

By Laila Smith

The current status of the pollinator lawn. Photos courtesy of Ian Aley (3)

Last fall students from the Green Fund, a UW–Madison Office of Sustainability program, worked with staff from UW Grounds, the department of Campus Planning & Landscape Architecture, Lakeshore Nature Preserve, the UW Arboretum, and University Housing to install a pollinator lawn outside Tripp Residence Hall. These lawns are specifically designed to promote pollinator activity in the area where they are planted.

What makes a pollinator lawn different from regular lawns? According to Green Fund Project Manager Ian Aley, pollinator lawns contain greater plant diversity than conventional grass lawns, creating a much more welcoming environment for pollinators. Popular species planted in these lawns are white clover, plantain, dandelions, self-heal, and other plants that grow low to the ground and flower.

Aley directs anyone wishing to plant their own pollinator lawn to the University of Minnesota's pollinator lawn "toolkit." Sunny areas with minimal foot traffic tend to make the best environment for a pollinator lawn, but don't be discouraged from planting pollinator lawns in other places: "The Tripp site itself is a mix of sun and shade," says Aley, "and it's doing really well."

A key reason for Tripp Residence Hall being the location of the pollinator lawn was the way the land was already being maintained. "UW Grounds does not spray herbicides on lawns within a certain radius of Lake Mendota to avoid runoff into the lake," Aley explains. Because Tripp Hall is situated close to the lake, herbicides are not sprayed on its surrounding lawns — meaning that some plant diversity was already present, making the Green Fund's work a little bit easier.

Last November, just before the temperatures took a turn towards winter, UW Grounds overseeded the Tripp lawn with self-heal, an edible broad-leafed plant with a purple flower and medicinal uses, to add to its existing plant diversity. During that time, Green Fund students and Professor Paul Koch's Sustainable Turfgrass Management lab course gathered to observe and learn about the planting process. The students, faculty, and staff discussed equipment and techniques for planting and maintaining the pollinator lawns, debated the use of pollinator lawns on golf courses and other settings, and learned about the UW's recent Bee Campus USA certification.

Today, a few clumps of the self-heal's purple flowers

now complement green plantain flowers, white clover globes, and yellow dandelions. Due to the dry period at the beginning of this summer, Aley and the rest of the Green Fund "expect that more of the self-heal seed will sprout and establish over time." He explains that they might do a second seeding sometime in the future, but they are "happy with how the lawn is establishing itself." For now, Aley shared that the only thing left to do before the pollinator lawn is complete is to install a sign that engages the campus community in learning about the lawn.

"We want people to know that the pollinator lawn is intentional, rather than being neglected or overgrown," Aley clarifies. "When we have visitors on campus who see dandelions, we want them to say 'Oh, this is a pollinator lawn!' instead of asking 'Who's not doing their job?'" By normalizing diverse plant growth at Tripp Residence Hall, the Green Fund hopes to convince others to avoid using herbicides, plant a greater diversity of species, and mow their lawns less frequently. For students (or other visitors) that may not maintain their own lawns, Aley and the Green Fund encourage them to advocate for pollinator lawns at their apartment buildings, in their hometowns, and across the city of Madison.

Green Fund students, students from Sustainable Turfgrass Management, Professor Paul Koch, Robert Scott and Will Dvorak from UW Grounds, and Ian Aley from the Green Fund work on planting the pollinator lawn.

Aley hopes the pollinator lawn installation at Tripp will follow a similar trajectory as other Green Fund projects. He compared it to a past Green Fund project where students worked with the Bird Collision Corps to add small dots to window glass at Ogg Residence Hall to prevent birds from colliding with the glass. Initially, the glass was only introduced to one building on campus, but the movement later spread to all new buildings being built on the UW–Madison campus and inspired a city ordinance that requires new constructions of large sizes to incorporate bird-friendly glass. Similar to this project, Aley illustrates that "the vision [of the pollinator lawn] was to do a pilot, see how it works, and then slowly creep across campus until it's a pollinator paradise."

Government, Meet Academia

Since 2016, UniverCity Year has connected 29 local governments with university resources to solve community-identified challenges.

By Abigail Becker, UniverCity Alliance

Meet the UCY crew: (L-R) Abigail Becker, Paul Robbins, Lori DiPrete Brown, Gavin Luter, Joel Rogers, Shelly Strom. Photo by Hedi LaMarr Photography

Six years after the conclusion of its inaugural partnership with the city of Monona, UniverCity Year has partnered with 29 Wisconsin communities, connecting local governments with UW–Madison resources.

These partnerships are yielding tangible results across the state — from a digital public art inventory in Wisconsin Rapids to a public health navigator position in Green County to strategies to improve emergency medical services staffing in Marathon and Columbia Counties.

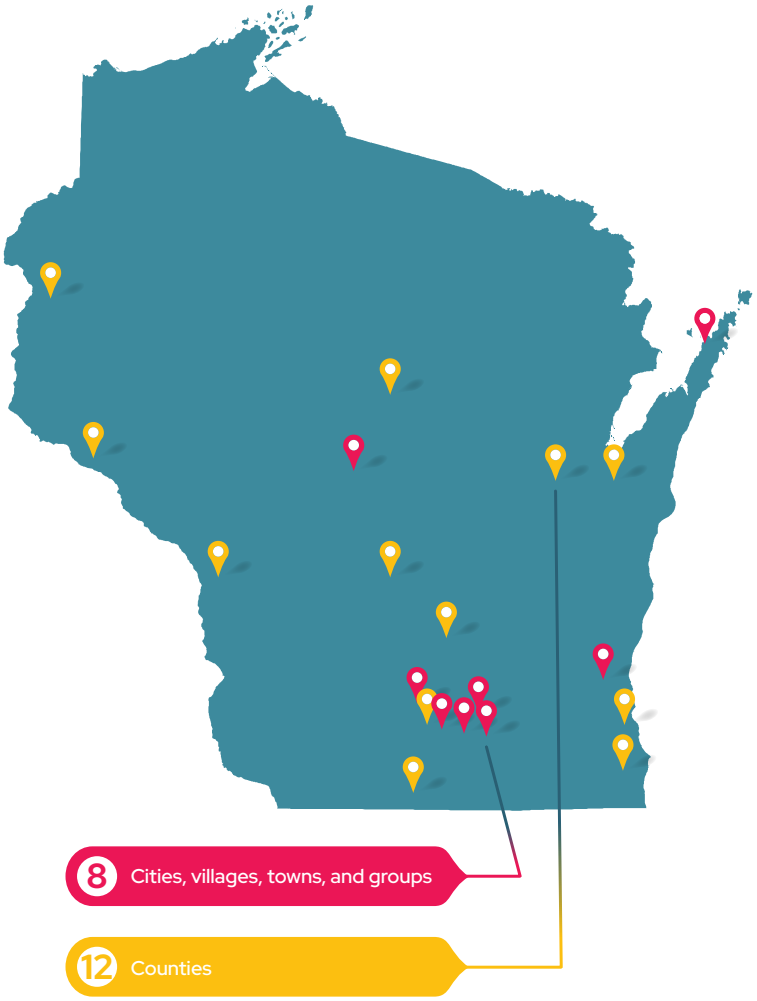
"We know local governments crave thought partners, and universities can be a natural fit, but UW can sometimes be tough to access as such a large university," says Gavin Luter, managing director of UniverCity Alliance (UCA), UCY's umbrella program. "UCA is trying to organize the UW to be more accessible and responsive to these communities across Wisconsin. "We make the Wisconsin Idea come to life and make it a two-way street."

UCY is a three-year program that works with local government partners to identify meaningful issues that could benefit from UW–Madison expertise. Staff match projects with courses, independent research, and internships on campus and at other partner institutions. Then, students research those issues and questions and deliver implementable recommendations to local governments.

"An individual project will have an impact, but the trust won't have gone away. The community will know that it's got the university as a partner."

— Paul Robbins

Since working with Monona, UCY evolved from a one-year partnership to its current three-year model and accommodates more than one local government partner at a time. During the 2022–23 academic year, UCY worked with six community partners and 28 community project leads, pairing 61 projects with 35 courses, 359 students, and 54 faculty, instructional staff, and researchers. These courses fell within eight UW–Madison



schools and colleges, and one of them took place through UW–Milwaukee.

UCY's growth means that the cumulative impact of the program is expanding across the state.

Over the history of UCY, the program has engaged 2,453 students, 101 unique faculty, instruction staff, and researchers, and 142 community project leads in 29 Wisconsin communities.

Paul Robbins, dean of the Nelson Institute and a cochair of the UniverCity Alliance Advisory Board, said the real cumulative impact is about trust building. "An individual project will have an impact, but the trust won't have gone away," Robbins said. "The community will know that it's got the university as a partner."

Applications for the 2023-26 UCY cohort were due August 1, and the new community partners will be announced in the coming months.

2,453
students

325
projects

9
partner institutions

*data collected from 2016–23

From up north to southeastern Wisconsin, counties to towns, UniverCity Year exemplifies the Wisconsin Idea. Graphic by Kevin Berger

The Impact of Climate Change on Walleye

Max Wolter, senior fisheries biologist, shares why walleye are at risk — and what can be done to help.

By Dea Larsen Converse, Wisconsin Initiative on Climate Change Impacts

Published in 2021, the Wisconsin Initiative on Climate Change Impacts (WICCI) assessment report reviewed climate impacts across the state, spanning industries from fisheries to forestry. For the next several months, we'll be highlighting interviews with some of the people who provided critical background and context to WICCI's 14 working groups. This month, hear from Max Wolter — senior fisheries biologist with the Wisconsin Department of Natural Resources (WDNR) and colead of the WDNR walleye management team — who explores the climate impacts on Wisconsin's walleye population.

What has been happening with walleye because of climate change?

Walleye are one of the most important native fish species in Wisconsin. It is highly prized by anglers. Walleye are also very important to tribes of Wisconsin, primarily the Lake Superior Ojibwe. We are seeing declines in the amount of successful natural reproduction of walleye in the last two decades. Lakes where they had been reproducing, they are not doing that successfully anymore. Even where they are successfully reproducing, it's often happening at a lower level than the past. We have a lot of research on the topic of climate change impacts on walleye populations. In a lot of cases the lakes are becoming clearer as the climate changes. That is generally not good for walleye. They are a low-light predator that likes darker, stained water, or water that is not ultra-clear. The warming water temperature is pretty

A naturally born "young of year" walleye from a Wisconsin DNR fall electrofishing survey. Lakes that produce walleye through natural reproduction are becoming rare. Photos by Max Wolter (2)

significant: just a few degrees of warming in our lakes can put walleye outside of the optimal range for successful reproduction.

"By mid-century we're going to have maybe half of the naturally reproducing walleye populations that we have today."

— Max Wolter

What do you see for the future for walleye in Wisconsin?
It's not a rosy picture. The modeling shows that we're likely to continue to lose some of the walleye populations that had been naturally reproducing. By mid-century we're going to have maybe half of the naturally reproducing walleye populations that we have today.

What can help walleye populations adapt?
A lot of it comes down to watershed protection. We want to make sure we don't have excessive nutrients that come into the lake and eat up oxygen, especially in the deeper water parts of the lake where walleye might like to spend their time. We are looking at shoreline erosion in places that walleye like to spawn.

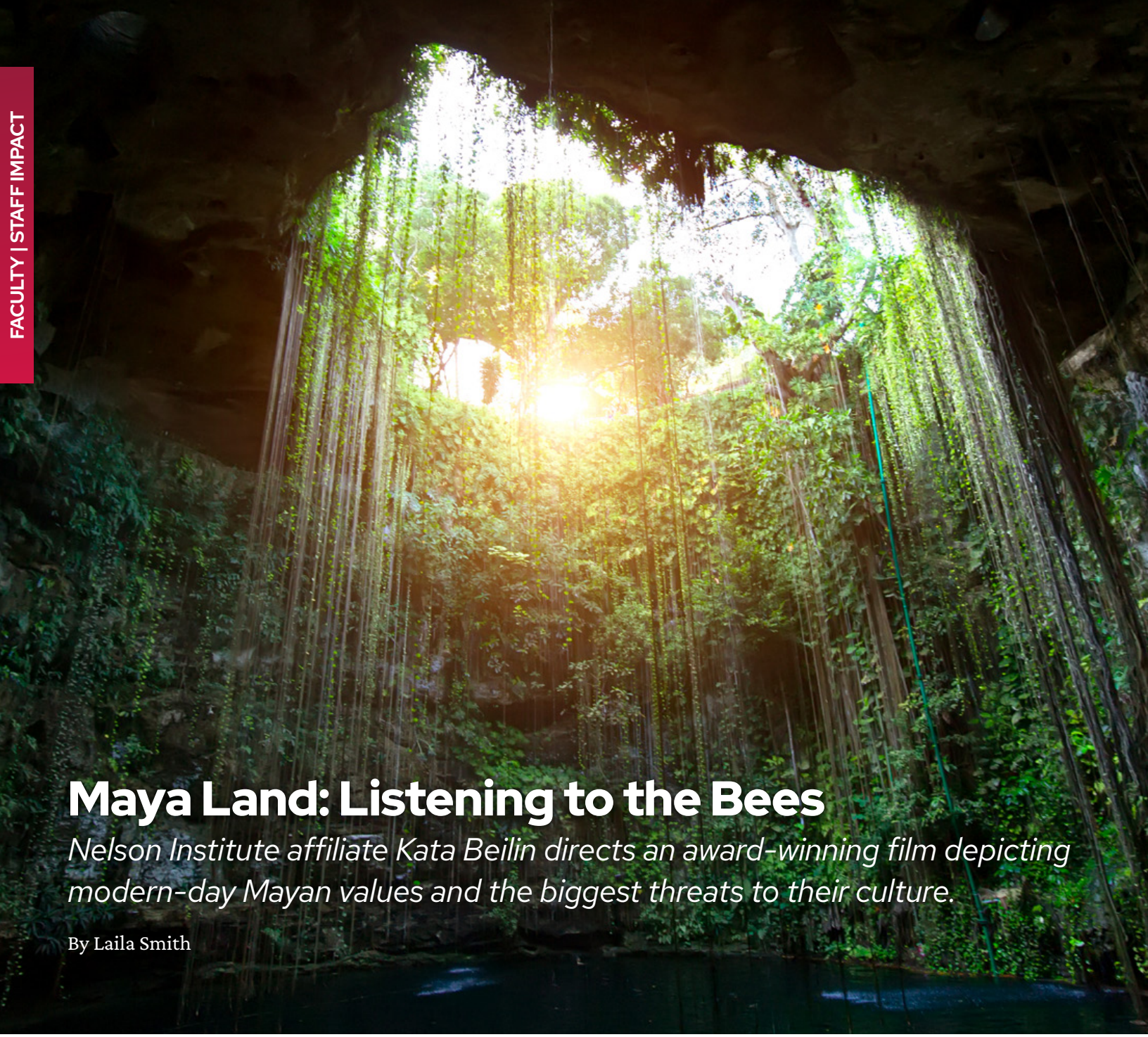
Do you have hope for the future?
Yes, I can find some hope. We still have habitats where walleye are going to be well suited, like rivers and deeper lakes. We can try to make some positive changes through management strategies to benefit walleye. There are still going to be cool places in Wisconsin to fish for walleye.

Read an extended version of this interview.

Support WICCI
The Wisconsin Initiative on Climate Change Impacts (WICCI) is a statewide collaboration of scientists and stakeholders formed as a partnership between UW–Madison's Nelson Institute for Environmental Studies and the Wisconsin Department of Natural Resources. WICCI's goals are to evaluate climate change impacts on Wisconsin and foster solutions. Gifts to the WICCI Program Fund provide general, discretionary program support and enhance and expand WICCI's teaching, research, and public service roles. Gifts also support partnership-building activities, including faculty, staff, and student recruitment, retention, and morale.

This condensed interview is part of a series highlighting interviews done for the 2021 WICCI Assessment Report. Next month, learn about the impacts of climate change on the Mississippi River.

Wisconsin DNR fisheries technician Evan Sniadajewski holds a walleye captured in a spring fisheries survey.



Maya Land: Listening to the Bees

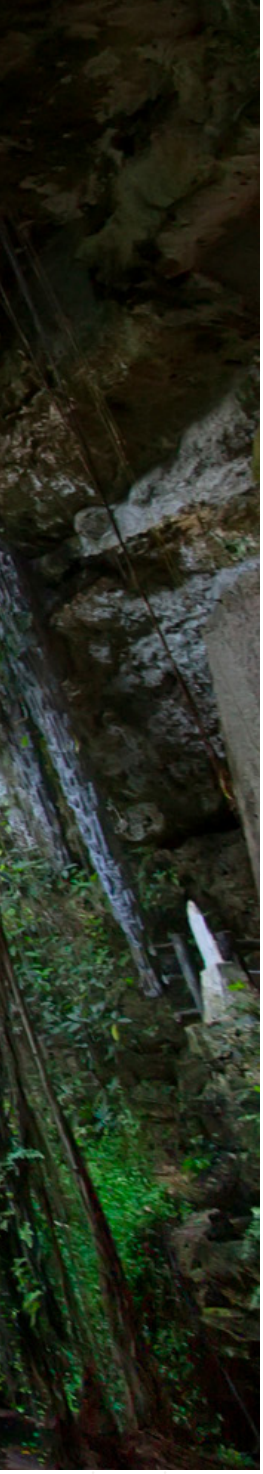
Nelson Institute affiliate Kata Beilin directs an award-winning film depicting modern-day Mayan values and the biggest threats to their culture.

By Laila Smith

Ik Kil Cenote located in the northern center of the Yucatán Peninsula, a part of the Ik Kil Archeological Park near Chichen Itza. Photo by iStock / Elijah Lovkoff

Like many other Indigenous groups, the Maya don't view nature as a resource to take from, but as a collection of subjects to build reciprocal relationships with. A cornerstone of Maya culture is the relationship they have with sacred *Melipona* bees and the forests that these stingless bees live in. Unfortunately, in Mexico's Yucatán Peninsula, these forests are being cut down in order to develop plantations that are fumigated with toxic pesticides. These farming practices that have spread across Yucatán kill bees, contaminate water, and encroach upon Maya land — all threatening Maya culture.

The struggle of the Maya against this model of development is depicted in the documentary film *Maya Land: Listening to the Bees*, which was released last fall and codirected by Kata Beilin and Avi Paul Weinstein. Beilin earned her PhD as a literary scholar, but soon transitioned into the field of environmental humanities. "I was always very interested in what was happening around me, and advocating for the environment felt very important," she says. Today, she is a professor in UW–Madison's Department of Spanish and Portuguese and an affiliate of the Nelson Institute's Center for Culture, History and Environment.



Drawn to the relationships between man, culture, and nature, Beilin began to research the protests of Maya beekeepers against genetically engineered soy farming. While working on a paper with Sainath Suryanarayanan about this issue, the idea for a film emerged. "An image can say more than thousands of words," Beilin explains, "and we thought that these issues could be of interest to a wider public." The pair had already recorded 40 interviews with Maya people and others involved in the conflict, giving them a great starting point for the rest of the film.

Poster for the film *Maya Land: Listening to the Bees*. Photos courtesy of Kata Beilin (6)

Maya Land: Listening to the Bees "explores the pre-colonial and ongoing relationship between Maya people and their environment, in particular the *milpa* agricultural system (and its main crop, *maize*), sacred sinkholes (called *cenotes*), and sacred stingless bees, the *Melipona*," according to Beilin and Weinstein. The film also examines how these cultural cornerstones are being threatened by genetically engineered soy plantations, which have quickly spread across Mexico in the 21st century due to their economic benefits. These monocrop plantations introduce pesticides which poison the bees, leach dangerous chemicals into the soil, and contaminate water pooled in cenotes and the underground basin. "Maya people are fighting against this to keep their culture alive," Beilin explains. She hopes the film will draw attention to issues the Maya face.

The film — which can be viewed for free online — has been returned to the Maya people at a screening at the Mayan Intercultural University of Quintana Roo in José María Morelos. Since its release, *Maya Land* has been screened at universities, conferences, and film festivals in the U.S., Mexico, Uruguay, Spain, and Germany. This spring, Beilin's film won the documentary feature category of the SR Socially Relevant™ Film Festival in New York. Above all else, Beilin takes the most pride in how her film is being used. She reports that the film is being used in "Maya beekeeping seminars, classes, and as an outreach method to search for more allies for the Maya."

Kata Beilin

While the Maya have won the legal battle against genetically engineered soy planting (thanks to alliances with scientists,

Melipona bees in their nest. Photo by iStock / Carlos Davila

Beilin turning *Maya Land: Listening to the Bees* over to Doña Rosa, a Maya elder.

A Maya woman standing by Melipona beehives.

lawyers, and international activists), Beilin shares that the crop is still being planted illegally in Yucatán and illegal pesticides are being used on other crop plantations. Maya beekeepers continue their fight in the newly formed *Kaabnalo'on* Alliance, which connects 83 Mayan beekeeping communities that advocate for environmental action on behalf of the bees. "In Maya, *Kaabnalo'on* means 'we are beekeeping people,' " Beilin says, "and they believe that in places where bees are healthy, people and other creatures are healthy as well."

The fight against genetically modified soy plantations is only a small chapter in a long history of resisting colonization, Beilin claims. Last spring, she was awarded a Fulbright Fellowship to further research the history of Maya resistance and is working on publishing a book about it. "Maya resistance can take different forms," says Beilin. "Sometimes it's violent, sometimes it's silent, sometimes it's a legal battle or artistic protests." Because this resistance always returns, she is titling her book *The Return of the Mayan Moment*, which will combine the historical context of Maya resistance with the struggles they face in the 21st century.

"Mayan people are fighting to keep their culture thriving."

— Kata Beilin

Beilin hopes that through her book and film, Maya culture will inspire people to think about the relationships they have with forests, water, all living creatures, and land. She particularly emphasizes the reciprocity, respect, and identification with the territory that all foster Maya spirituality. "I think the Maya are wiser in the way that they structure their dialogue with nature," Beilin shares.

A cenote in Mexico's Yucatán peninsula.

Finding the Fun in Bureaucracy

With an interdisciplinary background and passion for processes, Steph Tai joins the Nelson Institute as associate dean for education and faculty affairs.

By Chelsea Rademacher

Steph Tai

At the end of the spring semester, the Nelson Institute welcomed the newest member of the senior leadership team: Steph Tai, professor of law, who joined the institute as its associate dean for education and faculty affairs.

Tai steps into the role not just with an appreciation for the institute's emphasis on interdisciplinarity, but a background that's steeped in it. After studying chemistry and literature as an undergraduate at Massachusetts Institute of Technology, they went on to earn a PhD in chemistry from Tufts University where they studied the global warming potentials of different refrigerants. "During that time, I got more interested in science policy because I was concerned that people weren't *actually* listening to scientists," Tai says, so they decided to go to law school to pursue a career in science-based environmental advocacy. After earning their JD from Georgetown University, Tai spent some time in the governmental sector working for the U.S. Department of Justice's environment and natural resources division. Hoping to make even more of a difference, they shifted into academia — and a position at University of Wisconsin Law School where they've been since 2006.

With a background in environmental law, Tai immediately became a Nelson Institute faculty affiliate. Many of their classes are frequented by Nelson students: Tai regularly teaches courses on environmental and natural resources law, as well as a law and the environment class related to food systems. "I think students in general are more engaged than ever in terms of caring about both the environment in general and climate in particular," Tai says. "I've seen much more engagement both in law students, but also among grad students and undergrads than I have in a long time."

> *"It's fun in this role that I get to learn even more about the weird eccentricities of the UW."*
>
> — Steph Tai

With their new Nelson Institute appointment, Tai will maintain a half-time teaching appointment at the Law School and shift the other half of their time to the Nelson Institute. The role of associate dean, as Tai explains, involves two key components: administrative and leadership. On the administrative side they'll help Nelson staff members with tasks like staffing teaching assistants, shepherding promotions, and overseeing annual reviews.

From a leadership lens, Tai will work closely with Dean Paul Robbins to help take the Nelson Institute to the next level. "I would love to expand the national profile of Nelson," Tai says, particularly looking at increasing the visibility of faculty and students in the national media. Tai themself used to be apprehensive about participating in media interviews but has grown more comfortable after years of practice. "I think I can take that [experience] and cheerlead others into doing it," they say. "We're in a climate emergency right now, and it's really important to get voices coming from scientists, social scientists, and humanists out there to advocate for the importance of caring for the environment."

Tai's other big-picture goal is to create an even stronger community and ideas-sharing network within the Nelson Institute. "Nelson has a small group of core faculty, and around 200 affiliates … but a lot of people don't know what each other are doing, and don't know that they might have overlaps," they say. "I'd like to try to do more matchmaking between faculty and between grad students from different groups."

"We're in a climate emergency right now, and it's really important to get voices coming from scientists, social scientists, and humanists out there to advocate for the importance of caring for the environment."

— Steph Tai

Aerial view of Science Hall. Photo by Jeff Miller / UW-Madison

For Tai, the world of academia has never been solely about teaching, but also about service. Since arriving on campus, they've served on more than 20 committees, working groups, and councils, including the Nelson Institute admissions committee, the Graduate School Academic Planning Council, and the UW System Sustainability Waste and Procurement Working Group. "This is where my lawyer part comes in. I [also teach] administrative law, which is law regarding agencies and bureaucracy and all the processes that they have to follow. What that means, though, is that I love bureaucracy!" Tai laughs. "It's fun in this role that I get to learn even more about the weird eccentricities of the UW and how all the pieces fit together — and how to make those pieces work for Nelson."

A Fresh Outlook: Student Perspectives on Sustainability at UW–Madison

A monthly update from faculty, staff, and students in the Office of Sustainability – Education and Research. This month's column is from Brynne Hill, Chandler Wells, Winston Thompson, Kylie Schedler, and Thomas Hadcock.

What better way to understand sustainability on the UW–Madison campus than through the fresh perspectives of our students? As undergraduate interns at the Office of Sustainability, we have compiled insights on some recent accomplishments and opportunities that have made UW–Madison a more sustainable institution.

Firstly, UW–Madison has collaborated with Madison Metro Transit to provide public transit to students throughout the campus and city – increasing accessibility, safety, and social cohesion, as well as reducing greenhouse gas emissions and air pollution. With ongoing Metro Transit fleet electrification and the recent solar project from the Green Fund, this partnership reflects a commitment to both campus and global sustainability.

There are also exciting increases in sustainability-related academic opportunities on campus, such as undergraduate certificates in sustainability and engineering for energy sustainability, alongside similar graduate certificates and a course search tool that helps students find sustainability-related classes. Simultaneously, the Office of Sustainability itself continues to grow by adding new staff positions and increasing student engagement through campuswide events and communications.

The larger UW System has also shared their sustainability initiatives. Notably, in the effort to strengthen cross-campus collaboration, organizers hold annual UW System sustainability meetings for staff, faculty, and students, fostering new connections among colleges and universities across the state.

Even with UW–Madison's successes, we believe there are still many steps to take in the journey to becoming a sustainable institution.

The 2022 STARS report finds that UW–Madison ranks lowest in sustainability among participating Big 10 Academic Alliance universities. Our silver rating reflects performance across various categories ranging from "academics" to "operations;" the report highlights many specific areas in need of improvement. As such, there remains a considerable amount of work ahead to enhance sustainability efforts.

Furthermore, the constant presence of construction cranes on campus reminds us of the improvement in our buildings, yet conceals the unfortunate lack of sustainability parameters for some new infrastructure. We wish to see energy efficiency and additional sustainable initiatives integrated in all new construction endeavors. As the campus grows, it's also important to avoid displacing groups such as Mecha and Wunk Sheek as the existing campus master plan currently requires.

From our perspectives, UW–Madison has the opportunity to reflect on and reevaluate the path toward sustainability. We recognize the accomplishments made by this university and champion the larger actions needed to achieve a sustainable campus.

Director's Cut

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

The seemingly limitless successes and productivity of the Center for Climatic Research (CCR)'s faculty, academic staff, administrators, and students never ceases to amaze me. The last several months have been no exception.

Professor Paul Block has started his term as the Reid Bryson Distinguished Professor, succeeding Professor Ankur Desai. CCR's students continue to impress, with Evan Meeker being awarded a National Defense Science and Engineering Graduate Fellowship and Nicolas Sartore receiving the Ettenheim Scholarship Award to provide hands-on learning opportunities for atmospheric and oceanic sciences (AOS) majors.

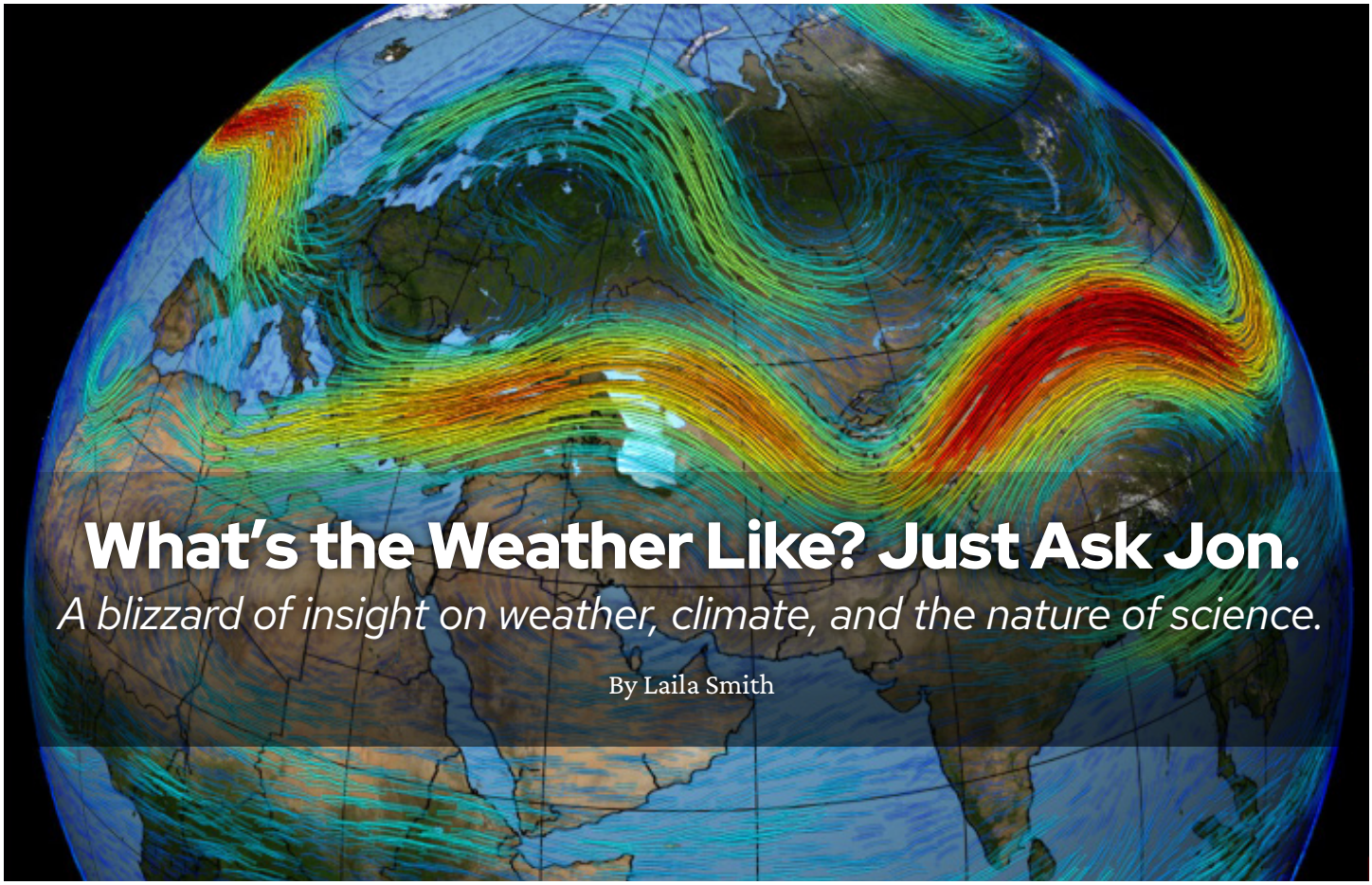
The NSF-supported STORM Research Experiences for Undergraduates, led by Professors Hannah Zanowski and Ankur Desai, has been providing outstanding mentoring and development opportunities to ten undergraduate students this summer. Congratulations are in order for the latest round of UW Research Forward award recipients, which include funded projects on agrivoltaics by Professor Ankur Desai, algal blooms by Professor Till Wagner, ancient environmental DNA by Professor Jack Williams, and terrestrial carbon uptake by Professor Paul Stoy. Furthermore, Professor Angel Adames-Corraliza has received an NSF CAREER Award for his research on tropical convection and circulation, Professor Ben Zuckerberg was awarded the H. I. Romnes Fellowship from the Wisconsin Alumni Research Foundation to support research on ecosystem management under a changing climate, and Professor Hannah Zanowski received the AOS Graduate Student Association Teaching Award.

CCR's research achievements have been numerous, but I do want to bring attention to Professor Jack Williams's newly-developed Range Mapper, which consists of a set of online interactive and animated visualizations of plant taxon range shifts since the Last Glacial Maximum. And finally, I will leave you with the exciting news of the upcoming CCR Climate Symposium in November 2023, which will consist of a panel of Oliver Buechse, Allie Tempus, and Steve Vavrus on the topic of Midwest climate migration.

Notaro (center) teaches at the 2022 The Sky's the Limit STEM camp. Read more about this year's camp on page 4.

Michael Notaro

Michael Notaro
Director, Center for Climatic Research



What's the Weather Like? Just Ask Jon.

A blizzard of insight on weather, climate, and the nature of science.

By Laila Smith

A diagram illustrates the waviness of a jet stream. Image courtesy of Jon Martin

Growing up in northeastern Massachusetts, the frequent winter snowstorms (and days off from school that accompanied them) piqued Jon Martin's interest as a kid. This childhood fascination turned into a professional interest in the systems behind visible weather patterns as Martin pursued an education in atmospheric and oceanic sciences. During his time at the University of Wisconsin–Madison, Martin's interest in cyclones (which are the behind-the-scenes weather systems that bring along the winter weather that he was most enthralled by as a kid) grew. He also developed a new interest in the way weather systems interact with and are impacted by climate change. Now a professor of atmospheric and oceanic sciences and affiliate of the Nelson Institute, Martin's recent research connected him with the Center for Climatic Research.

What is your current research focus?

I've been linking weather systems and their operation to how they alter — and are altered by — the climate system. Everybody's looking at this problem as the Holy Grail because some fraction of the public is still skeptical about whether or not our climate is changing to begin with. We may be able to convince them by showing them how changes in the weather are related to the changing climate, so we need to understand how climate change is imposing itself on changes in the weather. Wisconsin in particular is positioned to make great con-

tributions compared to our peer universities around the country. There's no better assemblage of scholars with knowledge about both weather systems and the climate system, and this group has proven to be adept at working together in a collaborative way.

"If you make a hypothesis and you're wrong, you still stand to learn something ... that's the great thing about science; nobody ever loses, things just may not come out the way you thought they would."

– Jon Martin

Is there a specific project you're working on right now?
Right now, I'm working on understanding the interannual variability of the Pacific Jet stream, which is the portion of the jet stream that has fairly important impacts on the weather in North America. The physical mechanisms that underlie changes to the complexion of the North Pacific Jet might be altered in a changing climate. Knowing how these physical changes are wrought in the Pacific could also be applicable to segments of the jet stream in different parts of the world.

What have your findings been so far?
In the northern hemisphere, there's a polar jet in the middle/higher latitudes, and a subtropical jet around 20 degrees north of the equator. There's evidence that both jets are becoming systematically wavier in the past six decades, but we don't know if that's a result of the changing climate or whether it exacerbates other phenomena that might be brought along with a changing climate. We've recently developed a simple, robust method for measuring how wavy the jet is – I think our method is better than prior competitors – so I feel like we are in a better position as a community to determine if the jet actually is getting wavier.

How might a wavier jet impact the weather we see?
The waves in the jet are the physical features that produce weather systems. I haven't proven it yet, but it stands to reason that there are strong connections between a wavier jet and more episodic extremes in the weather. If you have higher amplitude waves in the middle latitudes during the wintertime, for instance, there might be a greater frequency of both warm and cold spells – quite different from past patterns.

What do you wish other people knew about the field of science?
If you make a hypothesis and you're wrong, you still stand to learn something. When I first arrived in Wisconsin, I started looking at occluded cyclones, which are cyclones that have reached the late stage of their lifecycle. Occluded cyclones take on a whole different kind of thermodynamic structure than other cyclones and are accompanied by heavy snow production in wintertime. When I started investigating occluded cyclones, my initial hypothesis about their connection to heavy snowfall was entirely wrong, but the truth that the error revealed left me with a brand-new insight about the way the whole cyclone system worked. That's the great thing about science; nobody ever loses, things just may not come out the way you thought they would.

What is your favorite part of your job?
When it comes to weather and climate, everyone has an opinion, and everyone will tell a story about the weather or climate in their life; it makes an impact on all of us. As a meteorologist, anybody you talk to will have at least a slight interest in what you're talking about, and they'll have something to tell you in return. It's insightful and really neat.

The Psychology of Sustainable Farming

Environment and resources student Sophia Winkler-Schor carves a path in conservation psychology.

By Rachel Carrier

Winkler-Schor and team sporting badger gear during sunset. Photo courtesy of Sophia Winkler-Schor (2)

Nelson Institute environment and resources PhD student Sophia Winkler-Schor has spent most of her life fascinated with both the environment and Latin America. As a Fulbright-Hays Doctoral Dissertation Research Abroad Fellow, Winkler-Schor has been conducting her PhD research in Mérida, the capital of Yucatán, Mexico, since August of 2022, where she focuses on a large national government program called Sembrando Vida (or "Sowing Life").

Sembrando Vida pays farmers to implement agroforestry and sustainable agriculture across the country. The program is unique in its structure and design; it is one of the only existing programs to be fully funded by a large government and compensates participants for adopting sustainable farming practices.

Working in cohorts, participants learn sustainable farming practices such as making composts and natural fertilizers, then get to bring the new practices to their own land. Because the practices they're learning are innovative, participants get paid a living wage to take part in the program, benefiting both participants and the land around them.

"Traditional farming practices in the area are not as successful as they used to be due to rising temperatures and rain pattern variation," Winkler-Schor said. "So, the hope is that changing up farming practices with new ones that are outside of the traditional scope will help lead farmers to more success on their land."

Winker-Schor interviews participants in the program as part of her research to understand what the long-term implications of the program are. She seeks to answer the question, "Do payment programs, in any capacity, have long-term implications outside of the payment period?" She looks at what psychological factors influence partic-

ipation and what motivates them to continue engaging in the sustainable practices they learn in the program.

"There's very limited research on the long-term implications of payment programs within conservation … To my knowledge, there has never been a program that pays people full-time minimum wages to dedicate themselves to sustainable agriculture," Winkler-Schor said. "With 450,000 participants, this is an expensive program, and participants feel like the government really values agriculture because of it."

The program also fosters better social belonging. Winkler-Schor noted that many men have to leave their communities in search of work in new cities or even countries, so the government aims to pay people enough to stay in their communities for work.

Winkler-Schor and her team throwing Badger *W*s.

"In some ways, you could say this program is also a reclamation of the social fabric of these communities," Winkler-Schor said. "There are a lot of potential benefits within the program, extending from conservation to social factors."

Winkler-Schor was excited about the opportunity to integrate her interest in food with her PhD research. "I was really excited about this program because it's the first project where I'm really integrating agroforestry and food production," Winkler-Schor said. "My biggest side passion is cooking, and I love gardening, so it's been interesting to learn more about agriculture. It's always been a tangential topic I learn about through my education, but this is an amazing opportunity to integrate my passions within my research."

Winkler-Schor noted that engaging with participants in interviews has been one of her favorite parts of her research, as participants are both extremely knowledgeable and excited to share their experiences.

"Most people here are really passionate and excited about agriculture, and I am equally excited to learn about it," she said. "I've also gotten to try so many cool types of food from interviewing participants that are generous and allow me to try their crops."

"I really like the interviews because they give participants an opportunity to share how they think and feel the program is going," Winkler-Schor added. "The program is hard work and the reporting they are asked about from the government is usually only sharing quantitative data about their crops, so participants are excited to talk about their challenges and successes in these interviews."

As a side project, Winkler-Schor has been learning Maya, the native language of Yucatán, for the past three and a half years.

"It's been really fun to share cultural communication and experiences in these interviews through speaking Maya," she said. "Not many people still speak it, and it means a lot to native speakers when they are able to connect through it."

Winkler-Schor found her way to the Nelson Institute after long and hard research of different PhD programs. She was drawn to the Nelson Institute for the flexibility offered by the program, as she was looking to integrate environmental studies and psychology in a meaningful way with ample resources available to her.

"Conservation psychology is a fairly new field, and many PhD programs do not have an interdisciplinary nature about what it means to study environmental studies," Winkler-Schor said. "Nelson had a program that not only offered me the option to study environmental studies in tandem with psychology, but also had people available to assist me with that connection."

Learn more about the environment and resources MS/PhD and how you can support the program.

An On-Track Diversion

For Travis Blomberg, there's nothing off-course about a diversion — that is, when it comes to waste.

By Chelsea Rademacher

Blomberg visited Charleston, South Carolina, and snapped a picture in front of this red panda mural to share with his red-panda–enthusiast nieces. Photos courtesy of Travis Blomberg (3)

"We can purchase less, but for the things that we do need to purchase, how do we make sure that we source them responsibly?"

— Travis Blomberg

If Travis Blomberg is successful, only 10 percent of UW–Madison's waste will end up in a landfill. It's a lofty goal, to be sure, but the Nelson Institute graduate has already made impressive strides. As the campus resource coordinator at the Office of Sustainability, Blomberg pairs his environmental and economic backgrounds to enter the waste-reduction effort from a new angle: purchasing.

There are a great many things on the UW–Madison campus: boxes of printer paper in administrative offices, new carpeting in buildings, beakers and Bunsen burners in labs, dishes for scoops of Babcock ice cream. Everything is purchased from somewhere — and eventually, they all have to go elsewhere. Whether immediately after use or in 40 years when an old building comes down, "you have a point in which that item, material, or facility is no longer useful," Blomberg says, "whether it's reused, resold, recycled, digested, composted, or landfilled is up to us."

When Blomberg joined the Office of Sustainability's team in 2020, he was charged with developing an institution-wide zero-waste program. But anyone with a familiarity of the UW campus knows, based on its sheer size, how decentralized its operations can be. Blomberg is the connector:

he looks at all the materials we have, zooms out to see the larger systems that they're a part of, then starts connecting teams who interact with a product at each stage of its life cycle, from purchasing to delivering to installing to removing. "The goal," he says, "is looking at it in a more cross-functional way, of bringing all these stakeholders together."

Blomberg helps break down boxes during a UW–Madison residence hall move in.

Blomberg is well trained for pairing sustainability practices and business operations. He came to UW–Madison from Colfax, Wisconsin — which is actually 100-some miles closer to the University of Minnesota campus than the UW's. He knew he wanted to study the environment, so when it came to choosing between the two schools, it was a simple decision: "The Nelson Institute is named after the founder of Earth Day, so that certainly helped," Blomberg shrugs.

The plan was to use his double-major of environmental studies and political science to pursue a career in environmental law, but a sustainable business class with emeritus lecturer Tom Eggert changed his mind. He thought that, as an environmental lawyer, he'd be playing a reactive role where problems and issues have already occurred. "Visions of battling industry polluters like John Travolta in *A Civil Action* comes to mind," Blomberg says. Eggert's class offered a new perspective. "How do you actually do all this preventative change on the upfront? Can businesses operate with a more socially and environmentally responsible mindset without sacrificing profit?" he remembers thinking. (Blomberg himself went on to found his own business with this mindset, the Stripes Officiating Agency, which helped youth-sports games and tournaments hire referees — particularly refs who are young, former athletes like Blomberg.)

He finished his undergraduate degree in 2012, then dove deeper into that question by enrolling in the Nelson Institute's environment and resources master's program, which he paired with a certificate in business, environment, and social responsibility through the Wisconsin School of Business.

While studying at Nelson, Blomberg kept a lot of irons in the fire. He continued his work with his Stripes Officiating Agency while also working as a sustainability intern with Lands' End and a communications intern with Cool Choices, a Madison-based company that helps businesses make more sustainable choices.

After completing his master's degree in 2015, Blomberg jumped right into the professional world. He started with a summer fellowship through the Environmental Defense Fund's Climate Corps, which placed him with Transwestern Real Estate Service's sustainability services team, headquartered in Milwaukee. That led to a full-time job with Transwestern as a sustainability advisor, where he worked with both the company and its external clients on sustainability practices. He then became the executive director for WasteCap Resource Solutions, a Milwaukee-based non-profit that provides waste reduction and recycling assistance for the benefit of businesses and the environment, before finding his way back to the UW–Madison campus for his current role in the Office of Sustainability.

When he got back to campus as a professional, the landscape of campus sustainability looked much different than it did during his tenure as a student. For

one, the Office of Sustainability didn't exist while he was an undergrad and was only in its infancy through his graduate studies. Even the vernacular was different: "There was no 'sustainability;' that word wasn't even used that much, if at all. It was 'green,' " he remembers. The education around sustainability has changed, too. Now, there's sustainability-focused academic certificates, including the Nelson Institute's undergraduate sustainability certificate, and there's a repository of all UW–Madison classes that have a sustainability component. And perhaps most recently, the effort to make campus a sustainable operation has risen in priority from a grassroots effort to one of Chancellor Jennifer Mnookin's key initiatives.

In support of the university's invigorated efforts to save energy, reduce emissions, divert waste, and more, perhaps the largest project in Blomberg's queue is leading the newly assembled UW Zero Waste Team through a three-stage program. As soon as Blomberg started his job — in June 2020, the first COVID summer — so did step one: completing an assessment. "A lot of time, I wasn't even able to go on campus because of whatever new strain of COVID that was spreading," he remembers. So from a square on his computer screen, Blomberg drew on his student experience — which conveniently included a class he'd taught with the Nelson Institute's Cathy Middlecamp that used campus as a learning laboratory about sustainable operations — and assembled a team of cross-campus staff members to work on the assessment. With help from student interns in the Office of Sustainability, the zero-waste assessment was published in November 2021.

Enter stage two: strategic visioning, which wrapped up in spring 2023. In this stage, Blomberg's team hosted meetings with stakeholders across campus who work with materials at each stage of their life cycle. "Based on this assessment," they would ask, "let's talk about the areas of improvement. What would it take for you or your team to do this operation better?" For Blomberg, the critical component of step two was "to give time and space to staff members who perform these jobs on a daily basis to come up with these ideas," he explains, "and then utilize the Office of Sustainability as institutional-level managers to support it. In this way, we could collectively fit the puzzle pieces together."

Now it's summer 2023, and Blomberg is leading his team through the final stage: action planning. This is where purchasing, infrastructure, and personnel all come into play. How do we achieve a goal of diverting 90 percent of our campus's waste? By not only considering how we deal with what goes out, but how we select what comes in. "We can purchase less," Blomberg explains, "but for the things that we *do* need to purchase, how do we make sure that we source them responsibly? Of the materials that we buy, how can we account for the full lifecycle of the product?"

If all of those questions leave you feeling a little overwhelmed, you're not alone. "It's always overwhelming," Blomberg says, acknowledging that it's easy to feel down sometimes. "Working with smart, ambitious students and staff members and faculty brings me hope that you can — and do — make a positive change." And that's certainly what this work is doing: in 2007, only about 27 percent of campus waste was diverted from a landfill; in 2021, more than 44 percent. At that improvement rate, and with Blomberg at the helm, campus will reach its goal in no time.

An avid traveler, Blomberg has also visited Darwin Bay on San Cristóbal Island, part of the Galápagos Islands.

tales from planet earth

Tales from Planet Earth film series hosts the cast of Blackwaters: Brotherhood in the Wild, a new documentary that follows five men on a journey to the Gates of the Arctic Circle National Park.

Three screenings available!

More information and registration: nelson.wisc.edu/blackwaters

Support NELSON

Interested in supporting the Nelson Institute? There are many ways to contribute to the Nelson Institute — participating in our events, mentoring our students, providing connections to your personal networks, and making financial gifts. All of these are necessary and important to us, and we invite you to invest in our community in the way that makes the most sense to you.

Learn more about all of the great academic programs, research centers, and public programs we offer.

Gifts in any amount are needed and appreciated!

Boots on the Sand

Nicole Leotaud has dedicated her career to conserving her Caribbean home by relying on its greatest resource: people.

By Chelsea Rademacher

In 2018, Leotaud (bottom right) trained a group of mentors from across the Caribbean to help strengthen civil society organizations working on biodiversity conservation. Photo courtesy of CANARI (5)

On the north coast of Trinidad, there's a long, remote stretch of beach. Unlike most of island's beaches — taken over by resorts — this one lies pristine, undeveloped. Behind the white sands and the sparkling blue of the Caribbean Sea, the beach is flanked by lush, green mountains. It's a rare sight in the Caribbean, but Trinidad was once connected to South America's mainland (Venezuela is less than 10 miles offshore) and retains much of the continent's biodiversity. For Nicole Leotaud, the beach is her church. "The Caribbean is *beautiful*," she emotes, and she's dedicated her career to keeping it that way.

The two-island nation of Trinidad and Tobago is Leotaud's home. It's where she grew up, where she went to university for her first degree, and where she found her calling for conservation. "It's so different to grow up in an island and to grow up in a country that's still developing," she says, reflecting that in a country that's faced with myriad challenges, it's hard to *not* become an activist in one form or another. "You just are immersed in an environment where you become an activist almost. I don't see how people are not," she says. Leotaud's first step was enroll at the University of the West Indies where she studied biology. For her, a science education was always applicable; never abstract. "You want to deal immediately to have impact, to stop things that you see are destroying the environment or destroying people," she says. "It's not a theoretical thing where [you say], 'I'm concerned about forest in the Amazon.' No, I'm looking at the area," she gestures outside her window, "and I'm seeing fire burning. It becomes very real for you."

By happenstance, while Leotaud was at the University of the West Indies, so was Stanley Temple, professor emeritus of UW–Madison's Nelson Institute and the College of Agricultural and Life Sciences. After analyzing different islands for their biodiversity and where he could have the most impact, Temple had chosen Trinidad for a year's long Fulbright sabbatical. "You have to understand, the universities here are so narrow. There's only a few professors," Leotaud explains. So given the opportunity to network with a world-class researcher, she jumped at the chance. "What should I do?" she asked him when she was offered a Fulbright scholarship for master's study in the U.S. He told her, "You can do anything."

education at Temple's stomping grounds by entering the Nelson Institute's conservation biology and sustainable development master's program. Apart from one trip to Florida, Leotaud hadn't traveled outside of Trinidad and the Caribbean. The culture shock was big, but not as traumatic as the change in climate. "When I left [Madison]," she remembers, "I told people, 'I'm never coming back. I love all y'all, my friends, but I'm not coming back. It's too cold!' "

"It's so different to grow up in an island and to grow up in a country that's still developing. You just are immersed in an environment where you become an activist."

— Nicole Leotaud

Watching how Temple learned from and genuinely engaged with her community, Leotaud was inspired. "I think he had a huge impact on a bunch of people here, and I was one of them," she says. After earning her bachelor's degree, she headed north to continue her education at Temple's stomping grounds by entering the Nelson Institute's conservation biology and sustainable development master's program. Apart from one trip to Florida, Leotaud hadn't traveled outside of Trinidad and the Caribbean. The culture shock was big, but not as traumatic as the change in climate. "When I left [Madison]," she remembers, "I told people, 'I'm never coming back. I love all y'all, my friends, but I'm not coming back. It's too cold!' "

And she didn't — after earning her master's in 1996, Leotaud took her new knowledge back to the Caribbean where she's been working in conservation and sustainable development since. For nearly two decades, she's worked for the Caribbean Natural Resources Institute — or CANARI — the region's leading environmental, nonprofit, technical institute. With just over 20 staff members, CANARI works across the entire Caribbean, plus neighboring continental nations like Belize, Guyana and Suriname, to equitably and effectively manage the Caribbean's resources. Leotaud started with CANARI as a senior technical officer, but now she leads the organization as its executive director. When she took the helm in

Leotaud (bottom left) at the Community Expo in Fondes Amandes, Trinidad and Tobago in 2011. Smokey is standing at the back in the middle (black bag in hand).

2010, she inherited a clear vision and strong set of values that she upholds today. "We have a fancy mission statement about facilitating and promoting stewardship of ecosystems and all of that," she says, but at the end of the day, "it's participation, it's voices, it's empowerment, it's justice." Whether they're working to restore forests or advocate for sustainable tourism, the topic is often secondary; for both CANARI and Leotaud, the work is about the people. "We're a technical institute," Leotaud explains, "but we operate very on-the-ground with people. It's about relationships."

By nature of the Caribbean's geography, interisland relationship building can be a challenge. "The U.S. is such a big country. You get in a car, and you drive. You don't understand what it's like to live on an island," Leotaud explains. "There are not ferries between most of the islands. You have to get a passport; you have to get on an expensive plane and fly somewhere. It's not easy. The connections among the islands are still hard for people who are not middle class or have those privileges." That's where CANARI comes in. Leotaud and her team go out to the islands to find community and national-level civil society organizations — or nonprofits — across the Caribbean, then connect them back with resources and expertise.

To connect locals with experts, Leotaud acts as a facilitator and a "translator," living out her first goal of keeping science actionable. "I could bring an expert researcher, some amazing academic, in the same room with fishers, farmers, local community people, government people, nonprofit people, NGO people, and facilitate a conversation where people are understanding each other," she says. "We need the science, but if it's not translated so people understand it and can use it, then there's no point doing it."

Leotaud meets baby leatherback turtles on Matura beach, located on the east coast of Trinidad and comanaged by community organization Nature Seekers.

"You learn a lot from people on the ground. They know more than you do as an outsider, for sure!"

— Nicole Leotaud

But Leotaud knows that scientists and academics aren't the only ones who have knowledge to share. CANARI places a large emphasis on local knowledge, another driver in their place-based approach. "It's a very valid form of knowledge," Leotaud stresses. One way that CANARI collects local knowledge is through using participatory geographic information system (GIS) approaches, which capture local knowledge from folks on the ground and logs it into a GIS map to be combined with scientific knowledge. Leotaud remembers an early project where she talked with farmers about how their planting seasons were changing. "They didn't know why. They didn't know it was because of

Leotaud (center) brought the experiences of female entrepreneurs in rural Caribbean communities to a 2019 regional conference on blue economy in the Caribbean, hosted by the Caribbean Development Bank.

climate change, but they knew what was happening. You have to be asking questions and listening to people to understand what's happening, and then be able to put it in a context and bring science in," she says. "You learn a lot from people on the ground. They know more than you do as an outsider, for sure!"

Leotaud's leadership with CANARI and across the Caribbean recently led to her being elected as a public representative to the groundbreaking Escazú Agreement, a regional treaty enacted in 2021 that solidifies the rights of all Latin American and Caribbean peoples, present and future, to live in a healthy environment. The treaty also protects "environmental defenders," or people who are environmental advocates or activists — like the folks Leotaud supports daily through CANARI's work.

From academics to politicians to community leaders to fisherfolk, the Caribbean people are at the heart of all that Leotaud does. "The Caribbean has a tremendous sense of identity and common culture and unity," she says. "What's been most impactful for me has been where I could see affecting people's lives in a local community." She has a favorite story to tell about seeing this kind of impact play out. In 2011, CANARI brought officials from governments and United Nations agencies to a Community Expo to dialogue with rural community entrepreneurs in Trinidad and Tobago about what they needed to build sustainable livelihoods. The group met at a small, outdoor venue, and gathered on benches underneath a bamboo canopy. The officials thought they'd be doing the talking, but arrived and were told to sit down and listen. "We flipped the tables totally. The big people came in their suits and their high heels, and they were sweating, *sweating* under the bamboo," Leotaud laughs. With tears in their eyes and full of emotion, the community members shared their experiences with the officials. Then, under the bamboo, the group shared a meal made by the communities. At the end of the meeting, an older man named Smokey — an eccentric character from Tobago — came up to Leotaud. "This is the best day of my life," he said passionately. "Smokey … I'll never forget him," Leotaud says. "When you can touch somebody like that, it's not the big projects or the big technical report. It's people."

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