Nelson Institute for Environmental Studies
UNIVERSITY OF WISCONSIN–MADISON

May 2023

THE COMMONS

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

No Mow May

Ready to save your yard's pollinators this month?

Celebrate 10 years of the Office of Sustainability. Page 4

Meet the newest Nelson faculty member, Tim Portlock. Page 17

Congrats, grads! Meet members of the Class of 2023 throughout the issue.

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From the Dean

Greetings, Nelson alumni and friends,

It's been over a decade since I started this position with the Nelson Institute, yet I continue to be surprised with how quickly each spring semester flies. We're on the heels of the 2023 commencement celebrations, where 400-plus Nelson Institute students joined the ranks of alumnihood. I'm excited to see what's next for these truly remarkable graduates.

Before we dive into the issue before you, I'd like to reflect on some of the highlights from the past academic year. In September, we welcomed Becky Larson as our newest full-time Nelson faculty member — a wonderful addition to the institute. The university also welcomed Chancellor Jennifer Mnookin as its 30th leader. October saw the first in-person Rendezvous on the Terrace alumni event since the pandemic started, and was met with a stand-out crowd of more than 250 alumni, donors, and friends. Then in December, Chancellor Mnookin and I met with members of the U.S. Department of Defense to launch a new partnership that the Nelson Institute is spearheading: a pilot program to help the DOD understand and plan for environmental issues.

In January yet another great partnership was established, this time the Rural Partnerships Institute which will help us reinvigorate the State Climatology Office *and* create a statewide mesonet. We welcomed Christopher Kilgour, our first outreach manager, in February, and he was instrumental in helping March's Tales from Planet Earth event be one for the books. We can't talk about April without talking about Earth Day. This year's two-day event — Earth Day 2023: Species on the Move — left me with a renewed sense of optimism. Which brings us to May, and I'm proud to say that the Class of 2023 was our biggest (yet!) cohort of environmental studies major and certificate students. If you get the impression there's a lot going on … that is because there is! You'll find some of these stories sprinkled throughout this issue, which is as exciting as it is diverse in content and activity.

As we look ahead to the fall semester, we've got some exciting developments on the horizon. The first I'll mention is a noteworthy new faculty hire who will join us in the fall semester: Tim Portlock, who comes to us from Washington University in Saint Louis's Sam Fox School of Design and Visual Arts. Read more about Portlock on page 17. There's some exciting work being done in the space of conservation genetics through our Global Ark Project, which you can read more about on page 34. This work is based on a simple notion: if we want to preserve the genetic diversity of the species we love, especially those in dangerous decline, we must act immediately to preserve their genetic heritage. That means protecting living animals, their habitats and the wild places they live, as well as preserving the living tissue of the plants and animals in the world around us *right now*. That is a choice for which future generations will thank us.

There's much more to this issue than I could fit into the word count allotted to me by our wonderful editorial team, but I promise you it's a real page-turner. Here's to a restful summer in Wisconsin — and to roaring back in fall 2023!

Paul Robbins
Dean, Nelson Institute

Bothersome Blooms

April showers bring May flowers … and toxic algae. With heavy rain comes heavy runoff from farms and cropland, causing a steady stream of phosphorus — an element in most fertilizers — into lakes and rivers. Phosphorus is a fertilizer super element because it causes rapid growth, and its properties hold up even when it's runoff into nearby bodies of water, thus causing algae explosions. A recent study by UW–Madison researchers shows just how long it takes after a rain event for phosphorus to, essentially, fertilize the algae. Learn more from the Nelson Institute's Steve Carpenter, the study's lead author.

Photo by Bryce Richter / UW–Madison

To Instill the Spirit of Conservation

On the Office of Sustainability's 11th birthday, we look back to the first decade — and forward to the next.

By Marek Makowski

Office of Sustainability interns gather around a giant, inflatable globe at Sustain-A-Bash 2022. Photos courtesy of the Office of Sustainability (2)

Fifteen years ago, the University of Wisconsin–Madison campus was covered in statistics about recycled tons of bottles, cans, and paper; images of the planet earth; and the logo, or plea, repeated on the facades of buildings: WE CONSERVE.

The imagery is apparent in a short student film submitted to the Student Sustainability Film Festival in 2010, and it allows us to glimpse the origins of efforts to improve campus sustainability, which began with We Conserve, a campaign that began in April 2006 as part of the university's $29 million investment to increase the energy efficiency.

"At that time, we set the goal to reduce our consumption by 20 percent, compared to 2006, and to instill the spirit of conservation in the community's consciousness," Faramarz Vakili, the campus director of the initiative, says in the film.

A carpenter installs a blue ribbon with the words "We Win" on a We Conserve sign located on Engineering Hall. The blue ribbons, which were placed on all We Conserve signs across campus, marked the success of the environmental stewardship program. Photo by Bryce Richter / UW–Madison

By updating lighting, as well as heating and cooling systems, We Conserve achieved a 25 percent annual energy reduction by the end of 2010. Yet Vakili's second, more ambitious, goal remained. In the film, the interviewer asks students on campus whether they know about the movement. When they say they do not, they are directed to turn around, where they spot a long We Conserve banner hanging on the side of a building and displaying a simple message: Who Cares.

"I cannot sit here," Vakili says, "and look somebody in the eye and say, yes, we instilled the spirit [of conservation]."

The early efforts of Vakili and We Conserve led to the creation of the Office of Sustainability (O.S.). Now, as the office begins its second decade on campus, and as humanity approaches the 2030 deadline to halve global emissions and avert the worst effects of climate change, we can look back at the interviews, the campaigns, the press releases and news stories to ask: How did we get here? What have we achieved in sustainability, what can we change? And the spirit — the spirit of conservation — has it been instilled?

A Decade of Rapid Change

We Conserve's progress and success — which, Vakili said in a 2009 article, "frankly, nobody thought … was going to happen," — inspired then-Chancellor Biddy Martin to launch the UW–Madison Sustainability Initiative in 2010. Paul DeLuca, the provost at the time, and Darrell Bazzell, the vice chancellor for finance and administration, "convened a campus-wide Sustainability Task Force," according to the official O.S. history, "and charged it with recommending goals, policies, governance structure, and pilot projects related to sustainability."

"The two of them gave us a very tight timeline," said Cathy Middlecamp, who, with Vakili, coauthored the 17-person task force's report. "I remember saying at the time, 'A year is not enough to assemble all the pieces.' And they said, 'Cathy, it needs to get done in a year. Do it.' "

The October 2010 report concluded with several recommendations. First: "Create an *Office of Sustainability*." Then "support the Office of Sustainability communications by establishing a web portal"; "amplify the formal and informal educational programs in the domain of sustainability to enhance awareness, knowledge, and personal and professional capabilities of our students and staff"; and "encourage and expand UW–Madison as a living laboratory in sustainability through seed grants that would fund projects to bring education and research to bear on our operational practices."

Cathy Middlecamp, professor emerita at UW–Madison and former director of sustainability education and research.

On March 9, 2012, UW–Madison launched the Office of Sustainability. Following the task force's recommendations to incorporate facilities and research and education, the university created the O.S. with a bi-divisional structure: it would report to both Facilities Planning & Management and the Nelson Institute for Environmental Studies, under two codirectors. Vakili was named the director of sustainability operations, and Craig Benson became the director of sustainability research and education. When Benson left for another university, Middlecamp took his position, which is now held by Andrea Hicks, an associate professor in the Department of Civil and Environmental Engineering.

"I always viewed it as an experiment," Jill Sakai, the former communications director (2013–17), said of the bi-divisional structure. "There was an acknowledgement that sustainability aspects span both operational and academic sides of campus. In the university, the operational and the academic sides of things run very differently — they're run with different structures, they're run with different sets of expectations — so [we were] trying to bridge those, work together, and find common ground."

Sakai characterized the early years of the O.S. as a time

Students visit tables on Gordon lawn during Sustain-a-Bash 2017.

of "letting the campus community know what was going on" while soliciting "information about what people were interested in doing." Before the inception of the O.S., she collaborated with the Sustainability Task Force in her position as a science writer for University Communications, and she noticed a strong excitement and motivation to make positive change.

"It felt really momentous," Sakai said. "You can look at the roster from that task force: it was huge. It involved people from all over campus, from all layers of campus, from students all the way to administrators. That feeling of people gathering in pursuit of this common goal for the campus was really tremendous."

In 2018, after a brief period without a facilities co-director for the O.S., the university hired Missy Nergard as the inaugural full-time director of sustainability. She chose UW–Madison, she said, because of its distinctive focus on both operations and students and education.

Missy Nergard, UW–Madison's first full-time director of sustainability.

"The intent was to really bring [sustainability] up to an enterprise level," said Nergard, who came to Madison after working for seven years as director of sustainability at Illinois State University. "To me that's where the mission and the strength of the university lies: in our education and our research enterprise."

Students of — and for — Sustainability

The task force report's directive "to honor and engage students" became a common refrain for Middlecamp during her tenure with the Office of Sustainability.

"If we were going to do anything right in the Office of Sustainability," Middlecamp said, "it had to be bringing students into the mix. That's not normal for facilities[-focused sustainability offices]."

From the beginning the O.S. has supported, educated, and involved students through various programs, most notably the Green Fund, which awards monetary support and campus resources for student sustainability proposals, and the highly competitive Office of Sustainability Internship, which draws applicants from a variety of academic majors and has hired at least 10 interns nearly every semester since 2012.

"The Office of Sustainability Intern Program brings passionate students from different backgrounds together to make transformational change on the UW–Madison campus and within the campus community," said Tim Lindstrom, the current intern program manager. "Interns put the promise of sustainability into practice by embracing the UW–Madison campus as a living laboratory where creative solutions to sustainability problems are conceived, implemented, and evaluated."

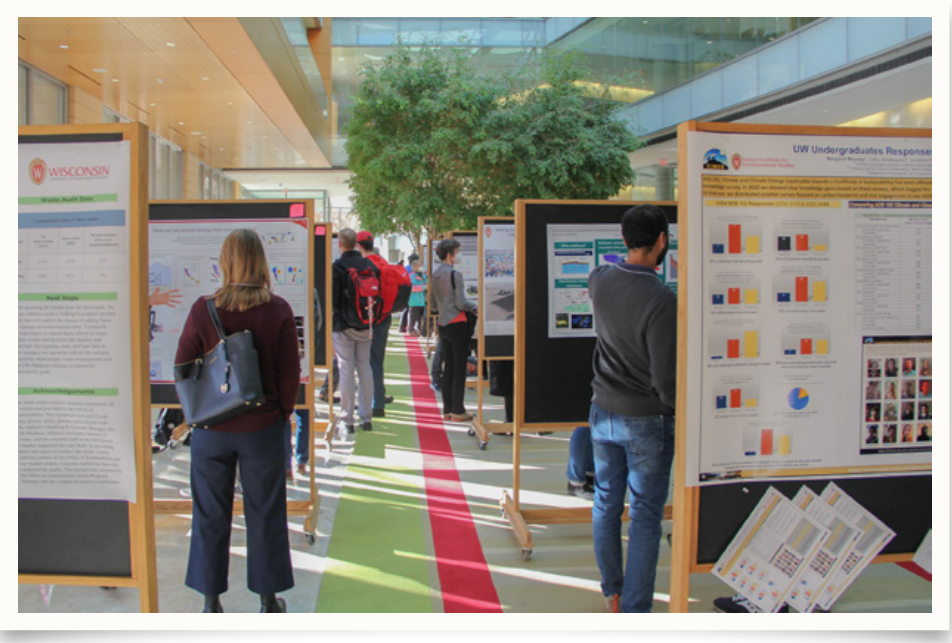
The first annual UW–Madison Earth Week poster from 2018.

The associate director of sustainability, Nathan Jandl, stressed the importance of interns in creating and marketing events to engage other students in sustainability — most notably the Sustainability Symposium, an afternoon of flash talks and poster presentations, which more than 200 students, faculty, and staff registered to attend in October 2022; Sustain-A-Bash, an introduction to sustainability for new students hosted in collaboration with University Housing on Gordon Lawn at the beginning of every fall semester; and Earth Week, a series of events hosted each April "to celebrate as well as critically examine our relationships with the natural environment and with each other."

Green Fund participants gather to discuss projects at an info session held outdoors in 2021. Photo courtesy of the Office of Sustainability

"It's been an exciting growth space for the office," Jandl said. "We started the first Earth Week about five years ago: that went from two or three interns and me putting together some activities to a relatively well-recognized campus event" that includes more than 20 campus partners, and a week-long schedule of programming.

The emphasis on students surfaces in the O.S.'s philosophical approach to sustainability, which in the past decade has grown beyond the waste and energy



UW–Madison Sustainability Symposium poster session. Photo by Bailey Kestner

aspirations of We Conserve to include economic and social sustainability. Nergard offered the example of how large, bright field lights drain electricity when not in use late at night while also affecting the quality of sleep and learning of students living in nearby residence halls. In the long term, she said, success with all kinds of sustainability depends on student engagement, as having thousands of inspired students graduating and each individually benefitting sustainability in their communities would make a more significant effect than organizational directives. Current and former O.S. staffers praised Nergard in interviews for her ability to establish structures to facilitate dialogues with students and other communities and entities on campus.

"When I first came to the office [in 2017], because we had some staffing turnover, including the loss of our codirector in the facilities space, there was a period when things were pretty quiet," Jandl said. "We were just trying to keep ourselves going. Since Missy has been hired, I've sensed quite a bit more connection, communication, and conversation between top leadership and the O.S."

The Next 10 Years: Challenges, Opportunities, and Goals

Now, several years into Nergard's tenure, the Office of Sustainability continues to embrace a unified approach to human, environmental, and economic well being. This brings new opportunities as well as new challenges for the next decade of the O.S. It will need to further progress toward the Second Nature Resilience Commitment, Jandl said, work to achieve a gold rating via the STARS assessment, and create " a Climate Action Plan that we can pursue — not just words on a page and aspirational targets — for how we are going to reduce our emissions." Part of the climate action plan will include continued work on programs such as the Zero Waste initiative, which was hampered by the loss of the university's composting vendor in July 2021.

"Our campus community has great interest in responsibly purchasing materials, dutifully utilizing our existing resources, and correctly discarding items at their end-of-life," said Travis Blomberg, the campus resource coordinator, who is in charge of university's Zero Waste efforts.

Graphic from announcement for a pilot compost program at UW–Madison in 2022, featuring Zero Waste interns Rachel Schumacher and Olivia Grose.

Nergard identified the continued challenge of overcoming "that legacy understanding that sustainability is just environmental and it's someone else's responsibility." The O.S. has managed to connect more student organizations to promote sustainability, and Lindstrom similarly views students as crucial to overcoming misconceptions and to accelerating sustainable procurement and divestment.

"Sustainability efforts at UW–Madison always have been and will continue to be driven by the energy, creativity, and leadership of the students," he said. "Be it through remaking campus systems or re-envisioning a just campus community, the actions and voices of students play a critical role in pushing the envelope of sustainability at UW–Madison by holding the university accountable and challenging those with power and influence to do more."

Jandl also spoke of the actions of those with power and influence, as he noted the broader difficulty of practicing sustainability in Wisconsin's political context.

"UW–Madison is a large, complex public university that is both benefited and impacted by its relationship with the state … so it is understandable there would be a slower rate of change in terms of certain sustainability measures," he said. "Advocating for change can be perceived as partisan, or look like a kind of activism. There are people on this campus that wish we were a lot more aggressive in terms of what we were demanding or asking for, but it's always a balance. Building enduring change requires that we build good relationships. In a way, we look to our stakeholders to be the activists, and we want to help amplify and channel what we're hearing from our stakeholders so that we can use that to help drive how the university runs."

The Office of Sustainability will also need to find ways to keep pace with the growth of its large, far-reaching expectations. With the worsening of the climate crisis, students, community members, and local media have looked to the O.S. to expedite university action on climate change.

The Charter Street Heating & Cooling Plant at UW–Madison runs on natural gas and provides steam and chilled water to campus buildings. Photo by Nathan Jandl

Office of Sustainability interns Mark Boeve and Hannah Schilling pose in front of their poster at the UW–Madison Sustainability Symposium. Photo by Bailey Kestner

The office, however, only staffs eight full-time employees, and, given its place in the university structure, can only advocate for university policy and action.

"One of the misconceptions is where exactly the Office of Sustainability sits in the university and where we have delegation power," Jandl said, noting the support of the central administration in creating the O.S. and supporting its student programs. "We're not sitting at the tippity top of the university telling all the divisions, 'Here are your new standards and guidelines and policies and procedures to make sure everything is sustainable.' "

"I think it's still crucial that the mission of the university — teaching and research — is built into the way we strategize to make operational change on campus. But our efforts have been, for a long time, divided between two different branches within the academic space and the operational space, and that can be confusing for our stakeholders. In the end, we are greater than the sum of those things because we are the institutional office."

Graphic from the first Amplifying BIPOC Voices in Sustainability event in September 2020, hosted by student interns at the Office of Sustainability.

As Nergard spoke on the growth of the office and how it could achieve ambitious future goals, she called the current structure "a challenge."

"Everything we have to do is through influence, or altruism," Nergard said. "We have recommended a different organizational structure that would allow a different line of sight and more positional authority to affect policy."

Middlecamp, now professor emerita and retired from the O.S., voiced the same opinion, stressing that a new structure would elevate sustainability at UW–Madison.

"I'll be candid: I think we still have a lot of work to do," Middlecamp said. "Other universities — I could reel them off — are way ahead of us academically in establishing it as a field, hiring faculty, getting students through at the undergraduate level and the graduate level, having the discipline well-funded … we're still struggling with that. There's so many things that have to do with sustainability on our planet, and they're not all in the Nelson Institute."

One idea Middlecamp offered would be to reward teaching and researching sustainability as part of the tenure process, which would not only motivate faculty to consider sustainability as a crucial, interconnected aspect of research and life, but it would allow them to involve more students across various departments in thinking about sustainability.

Nergard also described the need to strengthen the university's message about sustainability, especially to engage alumni, as crucial to UW–Madison's future efforts, noting that "in the last alumni survey, sustainability was the number one priority of interest."

When asked about the future of the Office of Sustainability, Sakai, the former communications director, looked to its origins.

"It was born out of this desire to do the right thing now and set up the university to be sustainable into the future," she said. "A campus that's larger than small cities, and this academic juggernaut — how can we put all of these capabilities and assets together to be able to create something really positive for the future?

"I hope that, whatever shape the office moves forward, [it] can keep some feeling of that aspiration. I think that's the drive that needs to be there to keep things moving forward, staying focused on what was really the big-picture goal that everyone is trying to achieve."

This story was originally published by the Office of Sustainability.

Promoting Pollinators, One Unmowed Lawn at a Time

Sun Prairie is taking the No Mow May community initiative to the next level with the Wisconsin Wild Bee App.

By Abigail Becker

Photo by Jeff Miller / UW–Madison

With the help of an app developed by University of Wisconsin–Madison entomologists, Sun Prairie residents are becoming scientists studying bees in their own yards this May.

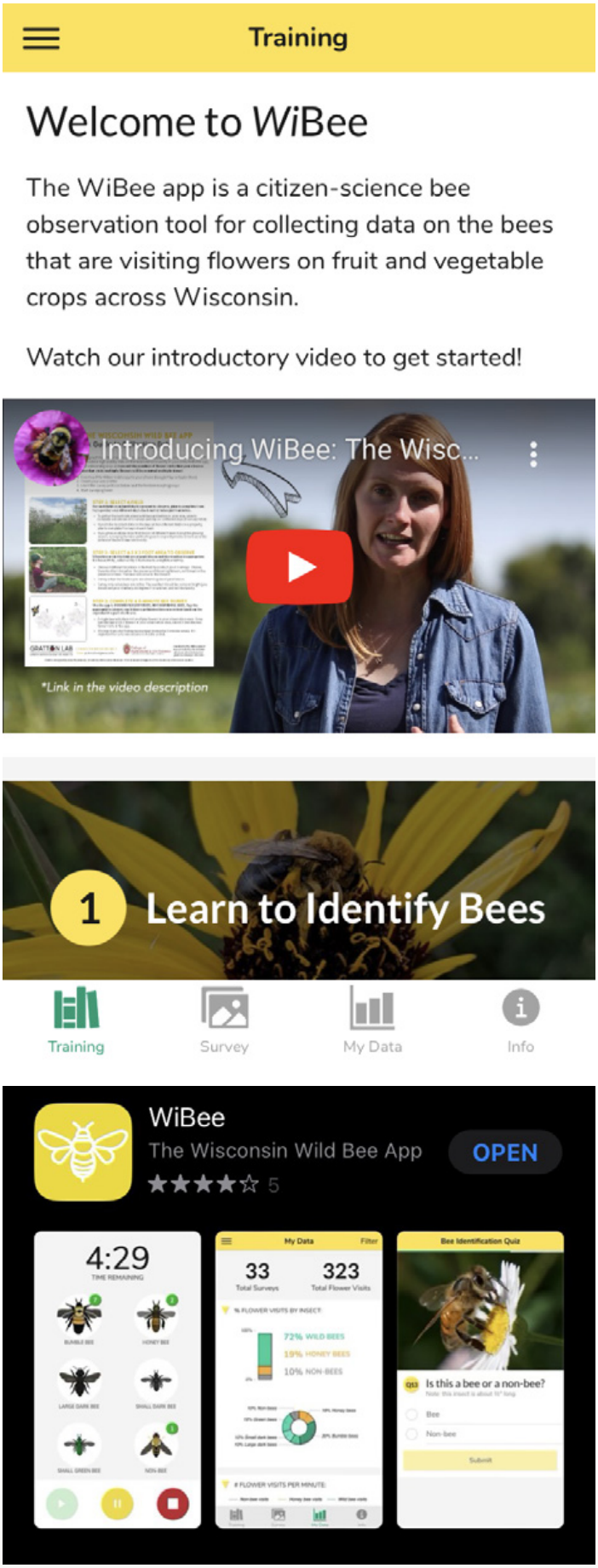
The city of Sun Prairie, Wisconsin, located northeast of Madison, is participating in the No Mow May conservation initiative for the second year. With support from Thriving Earth Exchange — an AGU program that advances local solutions to community priorities — the city hopes to expand on results of the first year by collecting more robust information from community members.

"We wanted to enable our community to explore different mowing strategies during a critical early foraging season for pollinators, and we did," Sun Prairie sustainability coordinator Scott Semroc said. "The Sun Prairie community interest and response was incredible."

In 2022, 342 properties registered to participate in the conservation initiative with most participants opting to refrain from mowing for the entire month of May. But Semroc said about 95 expressed interest in participating as citizen scientists. "What I noticed is that we simply ran out of time and capacity to fully realize one of our secondary objectives, which was community science and resident education," Semroc said about the pilot year.

Through Thriving Earth Exchange, which is supported by UniverCity Alliance (UCA) and Educational Partnerships for Innovation in Communities Network (EPIC-N), Sun Prairie connected with two UW–Madison entomologists who are supporting data collection through the Wisconsin Wild Bee App (WiBee) data analysis and educational efforts.

In 2023, those who want to take No Mow May to the next level can observe pollinator activity and contrib-



Screenshots from the WiBee app, which is free to download and use through Google Play and the Apple App Store.

ute their observations to WiBee (pronounced Wee-bee). The data collected will help scientists determine how pollinators are affected by mowed versus un-mowed lawns.

Semroc said the partnership with Thriving Earth Exchange provided the resources not only to collect data specific to Sun Prairie, but also to help residents get involved in No Mow May in multiple ways. Community members can participate by mowing less frequently and take the extra step and track how pollinators react to their yards. "That capacity building, the education, and having a ready-made app — city staff and researchers alike often don't have app development resources available," Semroc said. "Having everything in one place is immensely valuable for us."

Sun Prairie's No Mow May effort is one of 14 projects being conducted in Thriving Earth Exchange's cohort of Wisconsin communities. The program pairs participating communities with a community science fellow, like a volunteer project manager, who then connects them with technical experts.

"By having the space to ask a question that is pertinent to their community, Sun Prairie's sustainability team is demonstrating the impact the process of community science can have, while also allowing residents the opportunity to actively participate in an issue they care about," AGU Thriving Earth Exchange director Natasha Udu-gama said.

This is also a first-of-its-kind partnership where Thriving Earth is working with a statewide cohort. UCA, housed on UW–Madison's campus, connects local governments across the state with university resources to solve community problems. The goals of UCA — supporting communities to become sustainable and resilient — align with Thriving Earth Exchange.

"We know that universities have a lot to offer and learn from communities, but sometimes there's no structure to unlock the potential of these partnerships," UCA managing director Gavin Luter said. "Thriving Earth Exchange is a fellow traveler in the journey of creating such structures to facilitate community-university partnership, and I think this project show's what's possible when these structures are activated."

'Patchy' Resources

First popularized in Appleton, Wisconsin, No Mow May is a conservation initiative that asks property owners to

limit mowing during May — a crucial time for pollinators — to provide more foraging resources in urban landscapes when few floral options are typically available.

This is important for bumble bees, which emerge in spring and fly all summer into early fall, and solitary wild bees that only fly for short periods in the spring. Hannah Gaines Day, a research scientist at UW–Madison's department of entomology in the Gratton Lab, said resources for pollinators are "patchy" during May in Wisconsin when temperatures vary.

"In No Mow May, what we're hoping is that people can provide resources during this time of year when there aren't many that will help the bees to survive the spring, get to the summer, and to provision their offspring with food," Gaines Day said.

Gaines Day and Genevieve Pugesek, a postdoctoral researcher in the same lab, were connected to Sun Prairie after the project's community science fellow, 1000 Friends of Wisconsin's community programs director Susan Gaeddert, reached out to the Gratton Lab. The No Mow May project sparked their interest because of their extensive background studying wild pollinators, managed honeybees, and bumble bees. Additionally, Gaines Day said the city's project was a "perfect partnership" for the WiBee app.

WiBee was designed to be a tool for growers. However, Gaines Day said the app's convenient way of collecting data on insects visiting flowers prompted interest from non-grower groups. "Even though the ultimate idea has always been that it will be a tool for farmers, other people have embraced it, and it's become mostly non-farmers using it," Gaines Day said. "This seemed like a perfect opportunity to use it."

Inspiring Pollinator-Friendly Actions

Participating Sun Prairie residents will choose a section of lawn they want to study and only mow half of it, leaving the other half growing for the entire month. Then, they will document their observations. The city also plans to create a few demonstration plots to showcase what this approach will look like, and take additional observations at these locations. One example is at Sheehan Park, which is located across from the Sun Prairie Public Library.

The reason for this, Gaines Day said, is that bees are sensitive to differences in microclimates, like whether a part of the yard is sunny or shady. "What we want them

Bumble bees gather pollen on echinacea flowers outside of UW–Madison's Agricultural Hall. Photo by Bryce Richter / UW–Madison

to do is have a mow and no mow (area) that's basically the same microclimate, so that the differences that they see, we can attribute to them mowing or not mowing," Gaines Day said.

Pugesek highlighted the outreach component of the community initiative. Being aware of pollinator gardens and No Mow May signs can prompt community members to think about science in a new way. The No Mow May program can also encourage people to take stock of the natural environment they have immediately around them in their yards and inspire them to protect pollinators in other ways, like growing more pollinator-friendly plants.

While not everyone may appreciate a shaggy, unkempt lawn, the benefits are real. Studies in the United States show that dandelions and clover support a high diversity of bees and that reduced mowing can lead to higher bee abundance.

"Seeing the excitement and the enthusiasm that the community has shown over supporting pollinators has been really awesome and super great, even if that means giving up having a nice, neat lawn for a little while during the springtime," Pugesek said.

Overall, Pugesek said a benefit of the Thriving Earth Exchange partnership was formalizing the relationship, which prevents the project from falling to the wayside. "We're there for multiple steps in the process," Pugesek said. "That's been really useful just in terms of making sure that this stays a collaborative effort."

How to Embrace No Mow May

Interested in adopting No Mow May in your lawn? Here are some tips to get you started.

1. **First, check the rules.**
   Make sure your community or homeowners association doesn't have any rules prohibiting overgrown lawns. And if they do, seize the learning opportunity! Penn State Extension offers a robust myth-busting fact sheet to help you start the conversation.

2. **Add a sign.**
   If worrying what the Joneses will think is holding you back, consider installing an informational sign in your yard. Bee City USA offers a free toolkit, including printable signs and social media posts for you to share with your community.

3. **"Low mow" is an option, too.**
   Just can't bring yourself to let the lawn go? "Low Mow May" (or even "Low Mow Spring") is a great second option. Try going an extra week between mowings or bring your blade height up. (The latter is a good lawn-care habit anyway, says UW–Madison professor Doug Soldat.)

4. **Download WiBee!**
   Already a no-mow expert? If you live in Wisconsin, take No Mow May to the next level by downloading the free WiBee app and tracking pollinator activity in your yard.

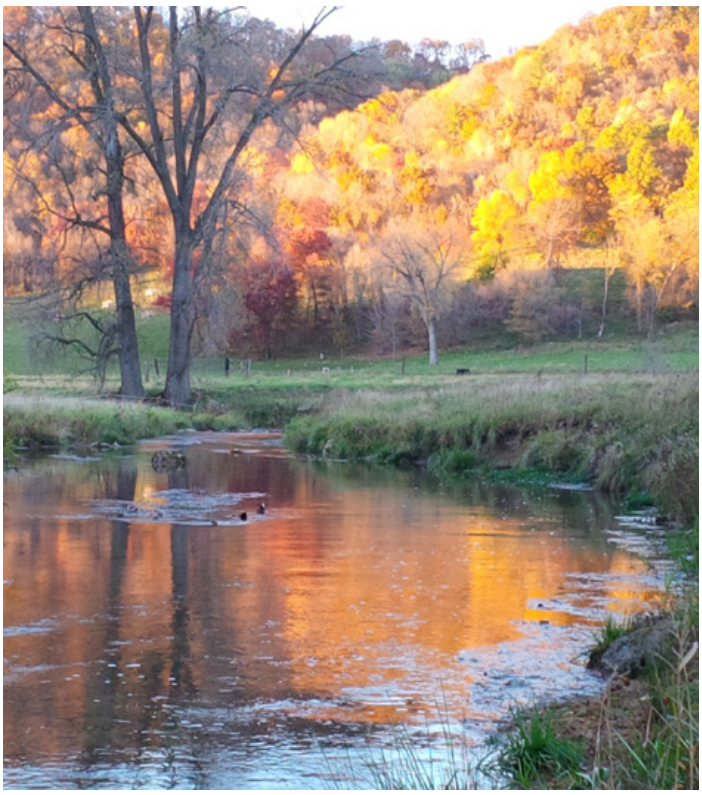
Fishing on the Line

Report indicates that fisheries are changing as the climate warms.

By Dea Larsen Converse, Wisconsin Initiative on Climate Change Impact

Fishing is an important part of the culture and economy in Wisconsin. As water temperatures warm, Wisconsin's cool- and cold-water fish habitats are particularly at risk, and those habitats harbor some of Wisconsin's most popular and sought-after fish, like brook trout, lake trout, cisco, lake whitefish, walleye, yellow perch, and muskellunge. The most recent report from the Wisconsin Initiative on Climate Change Impacts (WICCI) describes climate impacts to fisheries, including warmer water temperatures and more frequent, extreme storms and heat events.

> *"Without action, habitat loss, combined with overfishing and expansion of invasive species and warm-water competitors may cause local cold- and cool-water fish populations to decline in Wisconsin as the climate continues to warm."*
>
> – WICCI Fisheries Working Group



Driftless area trout stream in Vernon County. Photo by Matthew Mitro

A decline in ice cover and increasing variability in ice-on and ice-off dates in Wisconsin's lakes are having significant impacts. From the duration of ice thick enough to be safe for ice fishing to the increasingly unpredictable timing in annual freezing and thawing dates that set up lake and tributary environments for fish spawning, climate change is impacting fish and anglers alike. Ultimately, these changes are reducing the survival of iconic fish like walleye and perch.

Fish communities are also changing as waters warm. By mid-century, models project a decline of 68 percent in stream habitat for brook trout and 32 percent for brown trout. Cisco have already disappeared from 29 percent of lakes in which they used to thrive, and lake whitefish have disappeared from 33 percent. Within a century, warm-water species like bass and bluegill will likely dominate Wisconsin's inland lakes. In Lakes Michigan and Superior, warmer-water species, such as smallmouth bass, would be able

Warming temperatures will reduce available habitat for cool and coldwater fish such as brook trout. Photo by Matthew Mitro

to compete in the more southern and shallower habitat currently occupied by cool-water fish like walleye.

A combination of invasive species expansions, excess nutrients, and less well-oxygenated habitat can exacerbate these losses. While smaller, shallower and more productive lakes will be the most vulnerable, deep lakes may also be at risk.

Yet, there is hope. Protecting stronghold fish populations, preventing overharvest, enhancing cooler water habitats, and reducing runoff are among the solutions recommended by the WICCI Fisheries Working Group. There is hope for the future, but it's up to us.

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 article is part of a series highlighting the contribution from each WICCI Working Group for the 2021 WICCI Assessment Report. Next month: learn about tourism and outdoor recreation.

A warming climate will put some of Wisconsin's most sought-after fish, such as walleye, at risk. Photo by Greg Sass

Fisheries *Working Group*

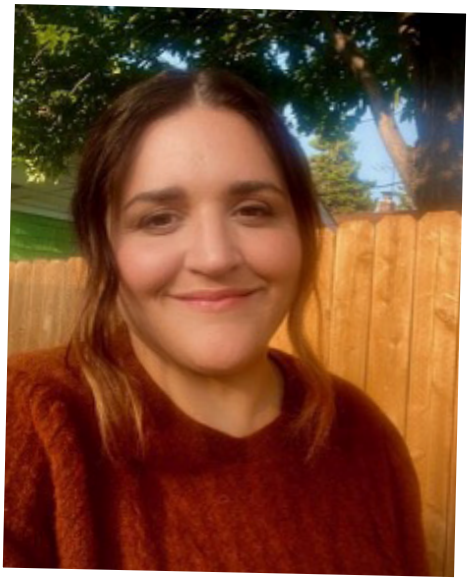
The impact of climate change on walleye

Climate impacts to fisheries in the Driftless area

Trout Fishing in Bayfield County

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 graduate project assistant Ashley Monterusso.



As someone who has worked in the hospitality industry for the past several years, my path to sustainability has been somewhat unconventional. However, when the COVID-19 pandemic brought that industry to a standstill, it afforded me time to reflect on my values and explore new ways to serve others.

During my tenure in hospitality, I observed a growing interest in coworkers adopting sustainable practices. As a collective, we explored methods of creating sustainable systems by reducing food waste, sourcing locally grown ingredients, and giving back to our communities. These interests helped steer me towards the field of urban and regional planning.

As I turned my attention to graduate school, I came to see how sustainability was the common thread running through both my professional and academic pursuits. My research is focused on issues like food-waste reduction and community development, with a particular emphasis on the hospitality sector, naturally. This lens has allowed me to explore sustainability from a unique perspective.

Presently, I work as a graduate project assistant with the UW–Madison Office of Sustainability where I have the privilege of working on student-led sustainability projects across campus. Through my work with the Green Fund, managed by Ian Aley, I am able to apply the skills and knowledge I have gained to make meaningful contributions towards advancing sustainability in our communities and beyond. Please don't hesitate to reach out if you'd like to chat about sustainability.

Monterusso will be graduating in May 2023 with a master's degree in urban and regional planning. Congratulations, Ashley!

New Faculty Hire: Tim Portlock

Contemporary landscape artist joins the Nelson Institute this fall.

The Nelson Institute is thrilled to announce its newest faculty member: Tim Portlock, who will join the UW–Madison community in the Fall 2023 semester. Portlock comes to the UW from Washington University in Saint Louis's Sam Fox School of Design and Visual Arts, where he has served as the chair of and a professor in the undergraduate art program. He has previously taught at Hunter College SUNY and l'Université Paris-Sorbonne and has shown his award-winning work in galleries both nationally and internationally.

A joint hire between the Nelson Institute and the School of Education's Art Department, Portlock will open new doors between environmental scholarship and creative arts. "Tim Portlock's arrival is a huge opportunity for campus," says Nelson Institute Dean Paul Robbins. "We need a vision for the planet, both as it is now and in a range of Earth Futures. Portlock's visionary graphic art provides that."

Inspired by his home in Philadelphia, his current work simulates both real and imagined spaces using 3D gaming technology. His most recent solo exhibition, "Nickels from Heaven," showed at Philadelphia's Locks Gallery in 2021. Using both 3D animation software and drone footage of actual places, Portlock creates sublime compositions that both draw you in and push you away: juxtapositions of glass skyscrapers with rooftop gardens next to dilapidated, graffiti-covered brick buildings; futurist statues awash in the warmth of a sunset positioned behind a scene of shadowy demolition. "The work is not science fiction or futuristic," Portlock told St. Louis Public Radio of the exhibit. "It's actually describing what's happening now."

Portlock will be based in Science Hall, the Nelson Institute's home. "We are bringing a visionary artist to Science Hall who can graphically explore global environmental challenges and work with our interdisciplinary scholars and students to provide a fresh view into environmental research," Robbins adds. "Tim is a one-of-a-kind resource. We are enormously excited to welcome our newest Nelson scholar."

Tim Portlock, "Sundrenched," 2020, archival pigment print, 58 x 43.25

Tim Portlock, "Soaring and Idyllic," 2020, archival pigment print, 43.25 x 58

How to Shop More Sustainably

SoHE professor and Nelson affiliate Majid Sarmadi says there's more to being green than recycling.

By Hayden Lamphere,
Wisconsin Foundation and Alumni Association

Photo by iStock / azmanders

"The environment is not a component of our life. We are a component of the environment," says textile chemist Majid Sarmadi. "If all insects die, life really stops in this planet. If humans die, life flourishes." For him, knowing not only how textiles are made but also how they break down is more important than ever. Each year, humans create 85 million metric tons of textiles while sending more than 11 million tons of textile waste to landfills. Sarmadi — the Rothermel Bascom Professor in the School of Human Ecology, director of the textile science specialization graduate degree in the Design Studies program, and Nelson Institute affiliate — has spent the last 40 years studying the chemical and structural properties of textile fibers and creating sustainable solutions for excessive textile waste.

Acting sustainably does not have to be limiting. In fact, it is opening doors around the world for scientists, farmers, artists, and even corporations, to innovate and work to protect the planet. For someone looking to consume more sustainably, it's not realistic to buy nothing or avoid plastics altogether. Instead, Sarmadi is advocating for education and innovation. "Unsubstantiated claims lead to people becoming careless: 'Oh, this is sustainable. I can consume more, I can do this, I can do that,' " he explains. "We must rethink theoretical, technical, and practical aspects of everything that we are creating. Sustainability must be forefront [in] every single decision."

What is your approach to textile sustainability?

My philosophy is to improve the products to be less toxic to humans and to the environment, so that all textile products [are] safer for [the] environment and for human consumption, whether these textiles that you wear are less toxic to you when you're living with them, to the workers that are making them, or from an environmental point of view. And we have to think about what we do with the afterlife of products. Are we creating a product that [is] easily re-

cyclable, easily converted back to oil, or are we creating a headache? It is a vicious cycle. To create the products, you create CO2. When they decompose, you create CO2. We have to do things differently. … So, all of my 37 years of research was all on the processes that can reduce the amount of chemicals used, [reduce the] amount of energy used, and make materials sustainable.

"What is the most dangerous thing to our environment? Our attitudes."

— Majid Sarmadi

Is natural better?

The word *natural* has been misused more than anything else. Crude oil, poison ivy, snake venom — these are all natural, but that doesn't mean they are good for you or the environment. There are times that you pay a higher price for the environment, and I'm not talking about monetary, if you go natural. Natural dyes need farmland to cultivate. We need farm equipment; we need fresh water; we need fertilizer, pesticide, herbicide. And leaves for dye are very low-yield — only 0.2 percent of each leaf is useable — and [they] have very limited color change, fastness, and range. You need water, you need heat, you need lots of resources. It is mind-boggling.

What should people look out for when trying to shop more sustainably?

Don't be fooled by buzzwords.

The word biodegradable alone means nothing. … My question to scientists is when you create something that is biodegradable, what is it being degraded to? Is it another microplastic [that] becomes smaller and goes in water resources, goes to the river, goes to the fish, goes to the marine environment? I'm not against biodegradation. I'm against [a] lack of transparency to show what [the product] is breaking into, and what the effect is on the environment.

Ask questions.

If you are unsure of whatever brand you want to buy from, write them. Say, "You claim these are sustainable. What is your data? What is your information? Why is [the information] not on your websites?" You have to be vigilant. You have to see the data or information for yourself.

Majid Sarmadi, professor of materials science and engineering at the University of Wisconsin-Madison, teaches during a DS 251: Textile Science course in Nancy Nicholas Hall. Photo by Bryce Richter / UW–Madison

Consume mindfully.

How many times can you withdraw from your bank account without putting anything back in? The resources in this world are like money in the bank account. One day, there is nothing to withdraw. What is the most dangerous thing to our environment? Our attitudes. Our attitudes are the most dangerous thing to the environment. There is a difference between need and want. We must make sure that we provide for the needs of every single person. Don't destroy the planet for future generations. We must be good stewards of our resources.

This story was originally published by the Wisconsin Alumni Association's Badger Vibes.

Director's Cut

A quarterly update from Carol Barford, director of the Center for Sustainability and the Global Environment.

The Weston Roundtable lecture series is all about the science, technology, and policy of environmental sustainability. Supported by a generous gift from UW alumnus Roy F. Weston, we offer the roundtables to the UW–Madison community and the general public every week of the academic year. This is an important mode of outreach for SAGE — and lots of fun for me as the host, since keeping up on a wide range of cutting-edge topics is built into my schedule! Contact me to receive emailed lecture announcements, or check the Nelson events calendar to stay informed.

If you can't make it to a roundtable that interests you, don't worry – they're recorded! Here are some of my recent favorites from non-UW guest speakers. They are in no particular order, but each one serves a generous helping of interdisciplinary ideas on environmental sustainability. Enjoy!

Carol Barford
Director, Center for Sustainability and the Global Environment

***Getting to Zero: Strategies for Deep Decarbonization of Electricity Generation*, by Jesse Jenkins (Princeton University)**
Learn about the challenges and workable strategies for >50 percent reduction in GHG emissions from the electricity sector. Watch this lecture and you'll be on firmer footing when discussing the topic!

***First We Must Consider Manoomin: Tribally Directed Collaborative Research on Wild Rice*, by Crystal Ng (University of Minnesota)**
This lecture gives an impressive and inspirational example of cross-cultural research and the long-term commitment needed to share in traditional ecological knowledge.

***Taking Action to Protect the Health of All: Science and Conservation at Zoonotic Spillover Interfaces*, by Sarah Olson (Wildlife Conservation Society)**
In the post-COVID world, it's good to understand how economic demand and land use reduce wildlife habitat, which in turn creates opportunities for zoonotic infection. Watch Sarah (UW alumna) as she assesses the health of a bat!

***Understanding How Policy Shapes Inequality in Risk Is Crucial to Foster Climate Justice*, by Paty Romero-Lankao (National Renewable Energy Laboratory)**
Climate adaptation plans often overlook people who are homeless, who don't speak English, or other vulnerable groups. Learn how we can ensure that policy "umbrellas" cover everyone.

***Wild Engineering: Conservation Technology. Conservify, FieldKit and Open Hardware*, by Shah Selbe (National Geographic)**
See how a former aerospace engineer created gizmos, apps, open data, citizen science and breathtaking images from eco-adventures all over the world!

***Recovery of Cities After Disasters and Pandemics via Mobility Data Analytics*, by Satish Ukkusuri (Purdue University)**
A tour-de-force of big data. See how cell phone locations and time-stamps are used to redesign infrastructure and model the recovery of day-to-day urban life.

Public Engagement Excellence

Zuzana Buřivalová honored with new UW–Madison award for public science engagement.

By Chelsea Rademacher

If you search the internet for "rainforest sounds," you'll find thousands of relaxation videos with millions of followers. For most people, the tropical ambiance is a relaxing soundtrack. But for Nelson Institute professor Zuzana Buřivalová, the sounds of the rainforest are a critical research topic. As the principal investigator for UW–Madison's Sound Forest Lab, Buřivalová's work analyzes soundscapes to investigate how human behavior impacts the biodiversity in tropical rainforests.

"Our discoveries help satisfy curiosity. We nourish personal growth and development. We cultivate creativity. We foster community appreciation of science."
— Bassam Shakhashiri

A researcher in the Nelson Institute's Center for Sustainability and the Global Environment, much of Buřivalová's work has been done with an eye toward public engagement — particularly engaging children with science (she even published a children's book, *What does the rainforest sound like? A Sound Forest Lab Story*). In March 2023, Buřivalová's outreach efforts were recognized by UW–Madison as she was named an inaugural recipient of the Bassam Z. Shakhashiri Public Science Engagement Award. The award recognizes two UW–Madison faculty and academic staff who lead the way in engaging the public in their work in STEAM (Science, Technology, Engineering, Arts and Math) research.

This new award honors emeritus professor Bassam Shakhashiri, a household name in the UW community. Shakhashiri joined UW–Madison's chemistry department in 1970 and quickly became an integral part of UW culture. He's perhaps most well known for his annual televised program, "Once Upon a Christmas Cheery, in the Lab of Shakhashiri," as well as his colorful and explosive (literally) lectures and "Science is Fun" programming.

"The hallmarks of UW–Madison are scholarly research, classroom teaching and public engagement," Shakhashiri said. "Our discoveries help satisfy curiosity. We nourish personal growth and development. We cultivate creativity. We foster community appreciation of science. We work to advance knowledge and to serve society."

Buřivalová was selected for her work with her Sound Forest Lab, which partners with communities, non-governmental organizations, and government entities on research projects. "Making science engaging and fun for everyone, especially children, is something that I spend a lot of my free time on," Buřivalová said, "and so it is wonderful to be recognized for this effort."

Buřivalová's fellow honoree is Andrew Greenberg, is a distinguished teaching faculty member in the College of Engineering's Department of Chemical and Biological Engineering, where he created and teaches an outreach course — Chemical Engineering in the Community — that helps students learn to effectively communicate STEM research.

Learn more about the award, Buřivalová, and Greenberg.

Embracing Cultures and Making a Global Impact

Sustainability certificate student Angie Kettleson featured in the Wisconsin School of Business's "Next Generation of Business Leaders."

By the Wisconsin School of Business

Angie Kettleson is preparing to take on the world.

Originally from Madison, Kettleson first came to the Wisconsin School of Business (WSB) through the precollege Business Emerging Leaders (BEL) Program, which introduced her to the foundational nature of business. "I figured that it would open up a lot of pathways for me," she says of business' appeal.

In college, the particular pathway that caught Kettleson's eye was international business. She got involved with AIESEC, a club that supports students in global exchange programs, and during her senior year she had the opportunity to participate in an exchange program herself. Her experience in Barcelona served as a powerful demonstration of how connected the world is.

"We're going through a digital transformation," Kettleson says. "Studying abroad really showed me how open the world has become, especially in the business landscape. I was also able to see the different stores there, the cultural differences, consumer behavior, those things that go into how a business functions. It was really interesting."

"There are a lot of different social issues that I really care about. I try to make sure that I'm doing my part to contribute to society at large."

— Angie Kettleson

Kettleson completed two internships, both of which allowed her to grow her understanding of leader-

ship, culture, and global commerce. Her first internship was in social media with EventBuzz360, an Australian event management company — which she recalls required her to rethink her writing style in favor of the more casual Aussie language. Her other internship was with a company based closer to home, Target; through this experience she got a valuable look at the inner workings of retail.

Kettleson is determined to use both her college experience and future career to make the world a better place. "There are a lot of different social issues that I really care about," she says. "I try to make sure that I'm doing my part to contribute to society at large." Kettleson makes a point to implement her passion for these social issues into her daily life; her interest in sustainability, for example, led her to become a leader in the student organization Social and Environmental Business Advocates, and her passion for social equity inspired her to get involved in WSB's Multicultural Center.

For Kettleson, the most effective way to spark change in her career is through a leadership position. "I'm hoping to use the power a company currently has and develop my way into it as a leader to have an impact on people on a larger scale," she says.

While Kettleson isn't sure of her next steps just yet, her desire to combine international business with societal impact has led her to consider either joining the Peace Corps or working for an environmentally conscious retailer in an international setting. But no matter what corner of the globe she finds herself in, or in what role, she plans to start paving her path to leadership.

"A leader is not isolated," she explains. "You have to work with other people in order to have that larger success. So that's my initial goal — to make those connections and leverage the ones I made in college to really develop my own leadership style."

Read about Angie Kettleson's twin sister and fellow sustainability certificate student, Lissy Kettleson, on page 24. This story was originally featured in the Wisconsin School of Business's Trusted to Lead campaign.

Who inspires you?

My parents. My mom works as an advisor for UW–Madison in the College of Letters and Science. Ever since I was young, she showed me the importance of education and how powerful knowledge can be when you are trying to become a leader and create next steps for yourself. And my dad taught me the significance of having a strong work ethic and setting long-term goals.

What are some of your hobbies?

Staying active: weightlifting, badminton, and soccer. I also enjoy art forms like pottery and ceramics, as well as music. Right now I'm learning to play guitar.

What are you most proud of?

Being promoted to manager at the Nicholas Recreation Center. I started as a freshman with Rec Well and worked my way up, and I've been able to get feedback from my different leaders about how I've improved. It's been the most telling, comprehensive experience that shows my growth in leadership.

Linking Business and Sustainability Through Supply Chain

Sustainability certificate student Lissy Kettleson featured in the Wisconsin School of Business's "Next Generation of Business Leaders."

By the Wisconsin School of Business

For Lissy Kettleson, business represents much more than an opportunity to establish her career. It's an opportunity to make the world a better place.

The issue particularly close to Kettleson's heart is environmental sustainability. She is determined to use her business background to help companies decrease their footprint and create a more circular economy.

"As a generation, if we want change to happen, sustainability is something that we all have to take an interest in and really push businesses to focus on," she says.

Kettleson's path to business began after her sophomore year of high school when she joined the Business Emerging Leaders (BEL) Program, a college preparatory program for students from diverse backgrounds who have strong academic records and leadership skills. Through BEL, she was directly admitted to the Wisconsin School of Business. Today, Kettleson is a senior studying supply chain management and marketing with a certificate in sustainability.

"As a generation, if we want change to happen, sustainability is something that we all have to take an interest in and really push businesses to focus on."

— Lissy Kettleson

Because of the holistic nature of supply chain — encompassing material procurement all the way through the end of a product's life cycle — Kettle-

son believes this field may be the key to unlocking better sustainability practices in business.

"I know that, at least in some companies, there are chances for me to have really substantial impacts in their realm of supply chain," she says. "I could potentially change a whole process, whether that's to use less water in production or use less packaging in shipment, things like that. Those are really obtainable metrics that I could help achieve."

Through her internship at the Trek Bicycle Corporation, Kettleson has been able to witness firsthand how a company can use its platform to create positive change. When she expressed her interest in sustainability to her employer, she was given the opportunity to speak to the company's head of sustainability, who shared some of Trek's initiatives with her.

"I have been able to see the potential and the growth that have definitely been taking place," she says of her time with Trek. "And that's made me really excited to step into a future role."

Kettleson believes doing good in the world is not only an opportunity for businesses, but also a responsibility.

"It's really hard to separate business from community because businesses are innately part of the community that they're in," Kettleson says. "Something that our generation has been moving more towards societally is making an expectation that businesses should take a stand and impact what's around them, which has made more of them refocus. I think that's a great thing for me to be stepping into environmental-wise, and I'm really excited to try to help."

Read about Lissy Kettleson's twin sister and fellow sustainability certificate student, Angie Kettleson, on page 22. This story was originally featured in the Wisconsin School of Business's Trusted to Lead campaign.

Who inspires you?

My mom. Her mom immigrated here from Mexico, so my mom was the first person in her family to go to college, and then she got her graduate degree. She's just worked so hard.

What do you like to do for fun?

Painting, roller skating, Lego-building nights with friends, and going dancing.

How would your friends describe you?

Optimistic, loud, and exciting, hopefully.

A Liberated Intellectual

Robert Hall's path to UW–Madison has been winding, but his trajectory since arriving has been a straight shot upward.

By Chelsea Rademacher

When Rob Hall accepts his offer to attend Stanford University as a PhD candidate in their Cell, Molecular and Organismal Biology program, it will be exactly two years after he almost gave up on academics altogether.

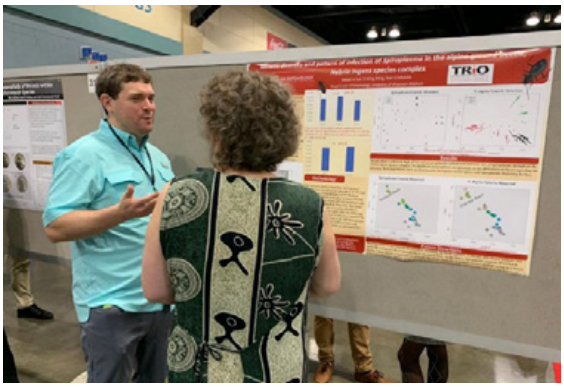
Hall started his academic journey in an atypical setting. A few mistakes led to nonviolent convictions, and Hall became incarcerated. Scared of what to expect, he reached out to his online community. "I'd never met these people, but I told them that I was going to jail, and I was scared," Hall remembers. "Somebody said, 'Well, you're going to need a reading list.' And they gave me a reading list of philosophy, psychology, evolutionary biology, political science … all these different things."

While incarcerated, Hall worked his way through the list. He read Richard Dawkins' *The Selfish Gene*. He read Steven Pinker, an evolutionary psychologist, and he read E.O. Wilson, a biologist. He read Russian, European, and American literature. Shortly after release, he enrolled at UW–Waukesha. He made the Dean's List, the honor's program, and earned his associate degree summa cum laude.

"I had come to school to be an intelligent scientist, but also to help communities of people like me who are disadvantaged in life."

Hall then transferred to UW–Madison — a school that's 98 percent larger than Waukesha. "I lost a lot of that network," he says. "It felt like the floor just dropped out beneath me." Frustrated, Hall left. "It wasn't soul searching or anything. I was just falling into bad habits," he reflects. "I got out of that though, and I decided to re-enter." When he left, he was majoring in genetics. When he came back, he added a second major — history — and an environmental studies certificate through the Nelson Institute's Community and Environmental Scholars Program. He is also a McNair Scholar and works in the Molecular Ecology Lab run by the Nelson Institute's Sean Schoville, who has become one of Hall's strongest mentors.

Though Hall's path to UW–Madison has been winding, his trajectory since arriving has been a straight shot upward. He jumped back in,



Top: Hall visited Stanford University for a preview of their graduate program, which he plans to enroll in this fall. Middle: Hall presents at the Promega campus in Fitchburg, Wisconsin, where he was awarded the company's DOORS scholarship. Bottom: Hall shares his work in Sean Schoville's lab at the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science held in San Juan, Puerto Rico. Photos courtesy of Rob Hall (6)

Top: Hall's first international trip was a summer 2022 study abroad in Ghana after receiving the Nelson Institute's James A. Schleif and William H. Morley Undergraduate Study Abroad Travel Award. Middle: In spring 2023, Hall traveled to Costa Rica with Francisco Pelegri to research biobanking possibilities of the paca, a small, nocturnal rodent.

taking full-credit semesters and getting *A*s across the board. One of the first classes he took was Genetics 527 with Francisco Pelegri, genetics department chair and professor. "He was using developmental genetics to enhance dwindling populations within the wild," Hall explains. The idea is to collect tissue samples from species — both threatened and thriving — and cryogenically preserve them through a process called biobanking. Then, in case of future threats or extinction, those species could be reintroduced. This has already been achieved with the reintroduction of the black-footed ferret, the first North American native, endangered species to be cloned. The Nelson Institute is also working in this space through its Global Ark Project, led by Dean Paul Robbins with collaboration by Pelegri.

This spring break, alongside Pelegri and 14 other UW students, Hall traveled to Costa Rica to put some of this biobanking work into practice. Hall's team focused on the paca — a small, nocturnal rodent that has recently become overhunted, but isn't yet endangered. "If we were to do biobanking," Hall explains, "we could feasibly reintroduce them to Costa Rica because, one, their habitat still exists there, and two, they belong there."

With Pelegri, Hall also designed a proposal using zebrafish cell cultures to identify pluripotent factors, or small pieces of genetic material — a proposal that won him the Diversification of our Research Scientists (DOORS) Scholarship from Promega, a biotech company based in Madison.

Now it's May 2023, and Hall is ready to graduate. Since returning to — and thriving in — academia, Hall works to help other formerly incarcerated folks pursue paths to higher education. "When I re-entered, I made it a personal thing," he says. "I had come to school to be an intelligent scientist, but also to help communities of people like me who are disadvantaged in life."

With help from the Wisconsin Idea Fellowship and the Cyrena Pondrom Leadership Award, Hall created Liberated Intellects, a program designed to reduce recidivism and open educational pathways by helping formerly incarcerated people apply to college. His idea was to bring together formerly incarcerated people for a weekly meal and discussion on higher education pathways, but Hall is expanding the concept to include a more holistic, critical eye on the systems that lead to incarceration and recidivism.

Though Liberated Intellects started at UW–Madison, Hall plans to bring the work with him to California. "Somehow as a biologist, I will continue talking about that stuff," Hall says. "There's no way that I can go forward and not talk about how important these things are and my views on them." So far, Hall has only been able to help a few with Liberated Intellects. But if you've been paying attention, you'll know that Hall doesn't give up easily.

Hall collects *Sceptobius lativentris* (beetles) and *Liometopum occidetale* (ants) in the foothills while participating in the Amgen Fellowship at Caltech.

Mitigating Wildlife Conflict in Botswana

Environment and Resources PhD student helps to keep the peace in the wild.

By Rachel Carrier

"My battle is one of the driving reasons that I'm so focused and passionate about what I do today. I realized from a young age that no one is guaranteed time here."

— Gabi Fleury

From the age of three, Nelson Institute environment and resources PhD student Gabi Fleury wanted to travel to Africa and be a conservationist. Fleury, who uses they/them pronouns, has a passion for human-wildlife conflict mitigation that's evident in everything they do. From finding ways for humans and carnivores to coexist across the globe to designing a predator and livestock conflict prevention video game, Fleury truly does it all.

Fleury describes what they do as "interspecies diplomatic work," or making sure animals, livestock, and carnivores can coexist. They specialize in human-wildlife interactions, working on carnivore and livestock coexistence in the wild and non-lethal deterrents, which are tactics to scare carnivores away from farms without harming them. These tactics can be through sound, light, scent, or other methods.

Fleury is currently designing their PhD project, which will take place in Botswana. In collaboration with local nongovernmental organizations (NGOs), they're creating a carnivore-livestock conflict mitigation project to test new deterrents in efforts to reduce carnivore presence on farms in the Ghanzi District of Western Botswana. Cheetah Conservation Botswana (CCB) and Botswana Predator Conservation (BPC) will both play instrumental roles in helping Fleury conduct this project.

Prior to beginning their PhD, Fleury had formed strong relationships with partnering NGOs in southern and eastern Africa through other projects. They worked previously in Namibia—work that ultimately inspired elements of their PhD project.

"When looking at locations and partnerships for my project, I was drawn to Botswana for many reasons, and CCB felt like a natural group to reach out to because we built a relationship over time," Fleury said.

They plan to begin field work in summer 2024, which includes a long process of grant applications, completing ethics and research permits, all while solidifying logistics for the project. As Fleury designs their project, their hope is to positively impact the local community and provide sustainable relief for carnivore and livestock loss.

"Because of my existing relationships and the fact that [CCB and BPC] are tied into ongoing carnivore-wildlife mitigation strategies, my work can hopefully be more sustainable and contribute to a larger conversation," Fleury said. "I want to avoid what is known as helicopter conservation: beaming in on a community, collecting your research and leaving. I'm trying to be as responsible as possible when it comes to having a sustainable and impactful project."

Fleury at the University of Cape Town where they earned their master's degree. Photo by Cecelia Schieve

Carving Their Own Path

While beginning coursework for their PhD, Fleury published a paper in the Black Ecologist section of the Ecology Society of America under Frontiers in Ecology and the Environment, titled "Responsibility, equity, justice and inclusion, and dynamic human wildlife interactions." Fleury was empowered to work on the team and had admired the work of the project leader, Nyeema Harris, long before working together.

"It was a really cool team, because it was a group of Black ecologists working in the same space," Fleury said. "We'd connected previously though Twitter and past projects, and I thought it was really affirming working in an all-Black, female-led team."

Fleury's father is of Sub-Saharan African descent, which helped spark their passion for African conservation from a young age. At age four, Fleury contributed quarters to a "Gabi Goes to Angola" fund. But unfortunately, Fleury was not always able to connect with and explore wildlife the same way other young children could throughout their childhood.

At age seven, Fleury was diagnosed with osteosarcoma. They endured 21 rounds of chemotherapy and 10 years of physical therapy to learn how to walk again. Their unwavering passion for the outdoors led them to experience wildlife and conservation from afar during their battle, primarily through reading books. Once not knowing if they were going to have the ability to walk again, Fleury is appreciative of the opportunities they've had as a conservation biologist and are empowered to make an impact in the field.

Fleury, pictured here during chemotherapy, has always been a fan of animals. Photo by Cecelia Schieve

Fleury in an acacia tree during undergrad work in Kenya. Photo by Jeremy Goss

"My battle is one of the driving reasons that I'm so focused and passionate about what I do today," Fleury said. "I knew I wanted to do something cool and impactful because I realized from a young age that no one is guaranteed time here."

Fleury hopes to share with all students that opportunities come to those who create them.

"It's so important to create relationships with people, which will open doors you didn't even know existed," Fleury said. "Don't be afraid to put yourself out there, build skills, and get creative with what you do."

Fleury riding a donkey cart during their master's research in South Africa. Photo courtesy of Gabi Fleury.

While in South Africa completing their masters degree, Fleury and a colleague had an idea for a video game. With no investors or money, they used a free game-engine and PowerPoint clipart to design a game that was used to teach non-literate Mozambican villagers about the ecosystem.

"This project opened doors for me and help me create a partnership with an NGO in Mozambique that I would have had no chance making without creating this game," Fleury said.

Returning to Academia

Fleury at a human-wildlife conflict workshop in Namibia. Photo by Tyapa Toivo

To deepen their understanding and experience in wildlife conflict mitigation, Fleury decided to return to school. They were fortunate to have many options of institutions to attend for their PhD, and ultimately decided on the Nelson Institute for Environmental Studies at the University of Wisconsin–Madison because of their gut feelings about their direct advisor and the flexibility the program offered.

"[Professor] Tim Van Deelan checked all of my boxes as the perfect advisor," Fleury said. "I knew I needed an advisor who would support me, have my back when things get difficult, and offer expertise in the field. When I finally arrived on campus and met with the lab, I knew all my gut feelings were correct."

Fleury enjoys the freedom and creativity in designing their projects within the Nelson Institute. Despite the freedom and latitude given, Fleury feels like they are supported in every aspect of their experience so far, and that there is always someone around to help.

"What I love about Nelson is how interdisciplinary everyone is," Fleury said. "Whenever I hang out with people from the Nelson Institute, they are inevitably doing something really interesting from all over the world."

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

Congrats, Grads!

Last week, hundreds of Nelson students entered alumnihood.

Last weekend, more than 400 Nelson Institute students turned their tassels to become UW alumni. The Friday ceremony, held at the Kohl Center, celebrated doctorates, MFAs, and medical professionals, including seven Nelson PhD students. Then on Saturday, more than 380 Nelson undergraduates and 36 graduates tossed their caps with thousands of their peers at Camp Randall Stadium. Before the campus-wide celebrations, we celebrated our students at our annual Spring 2023 Graduation Celebration, held at Tripp Commons in Memorial Union. Check out the fun!

Photos by Anica Graney

2023 Spring Scholarship Recipients

Congratulations to the recipients of this semester's philanthropy-funded scholarship!

Each year, the Nelson Institute offers numerous scholarships for both undergraduate and graduate students, all of which are made possible by generous donor support. Congratulations to the winners of the spring 2023 philanthropy-funded scholarships!

Scholarship Name	Amount	Recipient
Arthur B. Sacks Award for Artistic Expressions of Human and Environmental Relationships	$500	Allyson Mills
Arthur B. Sacks Award for Graduate Excellence in Environmental Studies and Sustainability	$500	Erica Schoenberger
Arthur B. Sacks Award for Undergraduate Excellence in Environmental Studies and Sustainability	$500	Britta Wellenstein
Charles G. Meyer Undergraduate Study Abroad Travel Award	$5,000	Molly Patridge
Charlotte Zieve Scholarship	$3,000	Kristina Tran
Detering Gurfield Family Scholarship	$2,500	Eliot Ciuperca
James A. Schleif and William H. Morley Undergraduate Study Abroad Travel Award	$3,500	Gaby Johnson
NEW in 2023: Jim Miller Graduate Scholarship for Excellence in Water Resources Management	$1,000	Heidi Putnam
Kikkoman Environmental Studies Scholarship #1	$3,000	Evie Sellers
Kikkoman Environmental Studies Scholarship #2	$3,000	Anna Silverman
Linda Wernecke Marshall Graduate Award in Environmental Studies	$1,500	Laura Bates
Linda Wernecke Marshall Graduate Award in Environmental Studies	$1,500	Erica Schoenberger
Reid Bryson Undergraduate Scholarship	$3,000	Allyson Mills
Stephen M. Born - Henry's Fork Foundation Internship Scholarship	$6,000	Michael Hensley

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.

In addition to the philanthropy-funded scholarships, two of our research centers — the Center for Climatic Research (CCR) and the Center for Culture, History, and Environment (CHE) — also ran competition-based scholarships. Read about CCR's Reid Bryson Scholarship and its winners in last month's issue. This year, the following 12 CHE graduate student associates received travel and research awards, which are made possible by generous contributions from James and Renee Knight and the Bradshaw Knight Foundation.

Amount	Recipient
$1,700	Tessa Archambault
$2,500	Alicia Barceinas Cruz
$2,500	Kallista Bley
$2,500	John Canfield
$2,500	Tabitha Faber
$2,500	Kuhelika Ghosh
$1,000	Addie Hopes
$1,422	Weishun Lu
$1,484	Bri Meyer
$1,820.87	Rudy Molinek
$2,500	Anika Rice
$2,500	Nicolas Rueda

RED ENVELOPE CAMPAIGN

Each semester, aligned with graduation, the Nelson Institute holds its semi-annual student fundraising campaign: the Red Envelope Campaign. One hundred percent of donations received are used to support fun, community-building experiences for Nelson students. In honor of our Spring 2023 graduates, please consider making a gift that will benefit future generations of Nelson students and honor the strong tradition of community-building on which the Nelson Institute prides itself.

Gifts in any amount are needed and appreciated!

Global Ark Project

Led by the Nelson Institute, UW experts are working to reverse the tide of mass extinction.

Photo by iStock / Irfan Fuadi

Nearly one million species — one-eighth of all life on Earth — are threatened with near immediate extinction, and science suggests this is the beginning of a larger trend. As the number of these plants and animals dwindles, so do the odds of saving them.

A huge part of the tapestry of life is set to vanish from the face of the Earth … but we have the tools to reverse this trend. At the University of Wisconsin–Madison, we have the knowledge, science, and methods; countless existing community-based partnerships; and a whole new generation of energetic problem-solvers to rise to the challenge and reverse the tide of species extinction.

The effort, led by the Nelson Institute for Environmental Studies, is called the Global Ark Project. Its goal is to immediately address global species decline through cutting-edge efforts to store genetic samples and revitalize endangered — and possibly extinct — species. Leading the charge are Francisco Pelegri, professor of genetics, and Elizabeth Hennessy, assistant professor of history and environmental studies, with collaboration from faculty, staff, and students across campus.

We at the Nelson Institute are grateful to the generous donors whose contributions are not only bolstering efforts to halt biodiversity loss, but actually bringing species back from the edge.

Lauren Blough
Kathy and Bjorn Borgen
Dan and Joan Cloutier
Pat and Lloyd Eagan
Sonnet and Chris Edmonds
Amanda Fuller
Katherine Gensler
Steve Lawry
Karen Lied
John and Linda Nelson
Geri Nicholson
Virginia Schwerin

To learn more about the Global Ark Project or how to get involved, please contact Dan Fallon.

Science-Based Optimism

At Earth Day 2023: Species on the Move, experts from across campus and the country came together to share their takes on the future.

By Chelsea Rademacher

If you're like most people, the topic of climate change doesn't fill you with the warm and fuzzies. But at the Nelson Institute's Earth Day 2023: Species on the Move, the message surrounding climate change was one of hope. "I am an optimist," said plenary speaker Patrick Gonzalez, "and it's a science-based optimism." The two-day event brought together learners from across the globe to hear from leading experts, including dozens of UW–Madison faculty and staff.

Gonzalez, executive director of UC–Berkeley's Institute for Parks, People, and Biodiversity, opened the event with a discussion on human-caused climate change, highlighting recent changes in global surface temperature, biodiversity, and wildfire patterns, to name a few, as well as proven solutions. After learning about the human-caused effects of climate change from Gonzalez, Ryan Phelan — cofounder and executive director of Revive & Restore — took the stage to discuss innovative solutions of those effects: using genetics as a key tool in wildlife conservation. Rounding out the plenary sessions, Erica Bower, a climate displacement researcher at Human Rights Watch, focused on the theme of Species on the Move by discussing the challenges and opportunities of human mobility in our warming world.

Between talks, attendees networked and visited tables hosted by the event's campus and community partners, including Nelson Institute's Environmental Professional Programs, the Wisconsin Energy Institute, the Sierra Club, the Natural Resources Foundation, and more.

After an invigorating day of in-person learning, Earth Day 2023 went online for its Wednesday programming, featuring a collection of virtual breakout sessions led by UW–Madison faculty, staff, and affiliates on areas of expertise from forest dynamics to pandemic preparedness to naming processes and binary systems.

Andrea Akall'eq Burgess, the Nature Conservancy's global director of conservation in partnership with Indigenous peoples and local communities, closed out the event with a well-rounded discussion on humans on the move and how we can reset our relationships with nature by indigenizing conservation efforts. Her vision? "In 2030, critical lands and waters around the world are sustainably managed by the communities who depend on them for their spiritual and subsistence needs, according to their self-determined visions," said Burgess.

Catch up on this year's plenary and breakout sessions, and be the first to hear about Earth Day 2024 by joining our email list! (Check the "I would like to hear about upcoming Nelson Institute events" box.)

Scenes from Earth Day 2023's in-person day of learning. Photos by Chelsea Rademacher (3) and Anica Graney (1)

2-DAY EVENT

PARTICIPANTS FROM **14 COUNTRIES**

7,028 TOTAL PAGE VIEWS

2,224 TOTAL DAY-OF PAGE VIEWS

22,267 SOCIAL IMPRESSIONS

Paul Robbins, dean of the Nelson Institute for Environmental Studies; Jane Goodall; Chancellor Jennifer Mnookin; and Eric Wilcots, dean of the College of Letters and Science; chat following a private reception at the Memorial Union. Photo by Jeff Miller / UW–Madison

"There's Still Time for the Planet."

Jane Goodall spoke to a sold-out crowd with the Wisconsin Union Directorate's Distinguished Lecture Series.

By Emma Roberts, University Communications

At just 23 years old — still far from becoming one of the world's most famous scientists, but very close in age to many who packed Shannon Hall on Sunday, March 26, for her event in the Wisconsin Union Directorate's Distinguished Lecture Series — Jane Goodall shipped out for Africa on her own dime, looking for an opportunity to study animals.

What she found in wild chimpanzees wasn't unlike human behavior. She observed them using sticks as tools (to gather termites for a snack), holding hands, kissing, cleaning, grooming and maintaining strong familial bonds.

"Males competing for dominance, standing upright, swaggering, trying to look big and dangerous, might remind you of some male politicians," said Goodall, now almost 90 and the veteran of six decades of chimpanzee research.

Goodall, an internationally renowned ethologist and conservationist, spoke to a 1,160-person capacity crowd at Memorial Union's Shannon Hall.

It wasn't easy for a young Goodall to get other scientists to take her findings seriously, she recalled. Her professors at the University of Cambridge, where she was working toward a doctorate in ethology, only accepted her observations on human-like animal behavior after they joined her in Africa and experienced the chimps firsthand.

"My professor said he learned more in two weeks in Africa than he had his whole career," Goodall said.

One cannot study the natural world without noticing the impact humans have made, including climate change, according to Goodall. She experienced this with chimpanzees through direct observations of population decline, forest degradation, loss of biodiversity and more.

"When I flew over Gombe [a region in Tanzania], it used to be part of a great equatorial forest belt," Goodall recalled. "That was in 1960. When I flew over in the late '80s, it was a little island forest, surrounded by bare trees and bare hills, all the trees gone."

As her passion for preserving our planet and its creatures has grown, Goodall's focus has shifted to education, aware-

ness, and conservation efforts. She discourages dwelling on "gloom and doom," preferring a message of hope.

"Why do people rush to my lectures all over the world? If I go to speak, the tickets are sold out in record time. It's because I talk about hope," she says, from "amazing people doing incredible projects, nature's resilience, the human brain beginning to solve some of the problems that we have created, and the energy and passion of youth."

Goodall emphasized the pressing need for both individual and societal action to avoid environmental catastrophe.

"We've got this window of time, but it's closing," she said. "We really do have to take action to change the way we live, the practices of business, and very often politics. So, it seems very grim. But if everybody does their one bit to live with a lighter ecological footprint, then, with billions of people all doing their best, that's going to make a difference."

"It seems very grim. But if everybody does their one bit to live with a lighter ecological footprint, then, with billions of people all doing their best, that's going to make a difference."

— Jane Goodall

That would go a long way to heal the natural habitats of chimps as well, she said, much of which have been cut down by poverty-stricken people in order to survive.

"We need to help people to find ways of living without destroying the environment," Goodall said.

The Jane Goodall Institute puts this sentiment into practice through an approach it calls Tacare, starting conservation efforts by first consulting local communities about their needs, and then collaboratively developing solutions not only for a sustainable environment, but for sustainable economies. Tacare programs are operating successfully with more than 80 villages across six African countries.

Goodall continues to work tirelessly to spread messages of conservation and hope, and she encouraged her audience to make both key parts of their lives.

"Never forget: Every single day you make some impact on the planet," she said, with a goal of saving the world. "Together we can, together we will, together we must."

Learn more about Jane Goodall at janegoodall.org.

This story was originally published by University Communications.

Leaders Reunited

When Paul Robbins introduced Jane Goodall at the March 26 event, it wasn't the first time the Nelson Institute's dean shared the stage with the conservation hero. Almost exactly 10 years earlier, Goodall visited the UW campus as a keynote speaker at the Nelson Institute's seventh annual Earth Day Conference. "It is amazing how quickly the past 10 years have gone," Robbins said in his introductory remarks, "and how her message of conservation is even more relevant." At the April 2013 event, Goodall spoke about the importance of hope to more than 2,000 event attendees. "Yes, the world is filled with problems, but I haven't found a problem anywhere where there isn't a group of passionate people to address it and that's the greatest reason for hope," Goodall said in 2013. "I pray we will take Earth Day into our hearts and practice every day of our life."

Save the Date!

2023 Rendezvous on the Terrace

Friday, Sept. 29, 2023 | Tripp Commons, Memorial Union

Don't miss this chance to reconnect with your fellow Nelson Institute alumni, meet current students and faculty, and of course, enjoy a sunset over Lake Mendota! This year's Rendezvous event is part of the University of Wisconsin–Madison's year-long celebration of its 175th anniversary.

Registration and more information coming soon!

Rendezvous ON THE TERRACE