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Nelson Institute for Environmental Studies
UNIVERSITY OF WISCONSIN–MADISON

THE COMMONS

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

WICCI report addresses climate impacts and solutions

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Gilbert Creek in Dunn County. Project began in 2003 and still on-going. Photo credit: Duke Welter. Above right: Pipe exposed by flood waters. Photo credit: City of Madison Engineering staff Below right: Tainter Creek in Crawford County. 2019. Long bank being sculpted. Photo credit: Duke Welter

WICCI releases assessment report, ten years in the making

By Bekah McBride

The Wisconsin Initiative on Climate Change Impacts (WICCI), a nationally recognized collaboration of scientists and stakeholders working together to help Wisconsin policymakers and citizens understand the impacts of climate change, has released an assessment report that outlines the latest climate impacts and solutions.

Led by the UW–Madison Nelson Institute for Environmental Studies and the Wisconsin Department of Natural Resources (DNR), WICCI has been a resource on climate change, providing information and research to the Governor's Task Force on Climate Change and publishing a previous assessment report in 2011. This latest report follows-up on the 2011 report, showcasing how the climate has continued to change over the past decade and how new data and insight is leading to adaptation, mitigation, and solutions. The report is the prod-

uct of 14 working groups that include over 200 scientists, practitioners, and Wisconsin residents representing more than 50 national, state, and local agencies, non-profit organizations, and universities. The final report was also peer reviewed by a Science Advisory Board.

"The launch of the updated WICCI report has been a rewarding, scientific collaboration," said Pam Porter, a Policy Advisor with Wisconsin Department of Natural Resources. "We are grateful for the leadership from WICCI's working groups, who have spent countless hours analyzing climate impacts to Wisconsin and identifying practical solutions. The information will be valuable as Wisconsin takes its next steps to becoming more climate resilient."

The assessment report includes details on the continued warming and increased rain and snow that has been seen throughout the state. Research shows that the statewide temperatures have increased about three degrees Fahrenheit since 1950, with the last two decades being the warmest on record. Rain and snow have also increased by nearly twenty percent during this same period, and the past decade was the wettest on record. Additionally, the report showcases the ways in which climate change is impacting communities through several community member interviews from around the state. For example, those in the Driftless region noted that an increase in flooding has deeply impacted agriculture as well as homes across the region. In the Northern regions of the state, a warmer and wetter climate has meant changes to flora and fauna. Meanwhile, along the coasts, communities have seen eroding bluffs and infrastructure issues due to the fluctuating water levels.

"I think what I like best about this report is that it is part of an ongoing conversation," said Dan Vimont, a WICCI co-director, Nelson Institute Center for Climate Research (CCR) Director, and professor in the Department of Atmospheric and Oceanic Sciences. "WICCI is unique because it's set up as a conversation through which we collectively learn about the ways that climate change is affecting our State. Working together, we develop new knowledge that helps protect what we all care about in our state. It's a modern Wisconsin Idea in action."

> ***"I think what I like best about this report is that it is part of an ongoing conversation."***
>
> –Dan Vimont

Understanding how climate change is impacting communities is key, and a part of that is understanding how climate change is impacting the most vulnerable. Studies indicate that low-income communities, communities of color, Tribal Nations, and other indigenous communities are first and worst impacted by climate change, so including all groups in the climate change conversation will be an important part of ensuring climate change solutions are effective and equitable.

"Climate change tends to disproportionately affect people who either contributed less to the problem or are less able to cope with the impacts," said WICCI co-director and Nelson Institute Senior Scientist, Steve Vavrus, "It is not our imagination that extreme weather in general is getting more pronounced and the price tag for the extreme events is rising."

Wetland protection and restoration make Wisconsin more resilient to extreme precipitation. Photo credit: Katie Hein

Hiking in Kettle Moraine State Forest, Wisconsin. Photo credit: Shruti Sarode, WDNR

While the report does outline sobering data about the future of the planet, scientists and community members expressed hope throughout the report. For example, scientists noted that changes in attitudes towards climate change and an improved understanding of climate change has led to creative solutions. Other organizations, farmers, business leaders, and community members also expressed hope for the future as mitigation and solutions are discussed and implemented.

Some of the hope is thanks to solutions and steps that can be taken to protect communities, natural resources, and the economy. The report outlines many of these solutions including reducing greenhouse gasses, increasing continuous living cover and rotationally managed pasture on farmland, implementing habitat management changes, and designing and building infrastructure that accounts for future climate conditions.

"It is clear that climate change is already affecting our state and will continue to do so in the coming decades," Vimont said. "This report illustrates that all of us are affected in individual ways by our changing climate. And each of us can contribute to solutions."

To learn more and view the report.

Support WICCI

Gifts to the Wisconsin Initiatives on Climate Change Impacts (WICCI) Program Fund provide general, discretionary program support and are used to enhance and expand WICCI's teaching, research, and public service roles. Gifts are also used to support partnership-building activities, including faculty, staff, and student recruitment, retention, and morale.

Flooded stormwater structure. Photo credit: City of Madison Engineering staff

In memoriam: Sharon Dunwoody

Sharon Dunwoody, a faculty affiliate, and friend to the Nelson Institute, died February 4, 2022, after undergoing treatment for cancer in recent months.

Dunwoody served as the Evjue-Bascom Professor Emerita of the School of Journalism and Mass Communication and was deeply involved with the Nelson Institute for Environmental Studies as a faculty affiliate, Academic Programs Chairperson, and numerous initiatives, including Earth Day, the Wisconsin Initiative on Climate Change Impacts (WICCI), and more.

She was well-known for her pioneering work in the field of science communication, spending more than 30 years focusing on questions ranging from how science news is constructed to the effects of those messages on knowledge and attitudes. Dunwoody also co-authored or authored more than 50 peer-reviewed articles, more than 25 book chapters, and five books.

The Nelson Institute faculty and staff extend our condolences. Read more

United Nations Director Barbara Hendrie to speak about plastic pollution at March 24 Weston Roundtable

By Bekah McBride

It is estimated that about 60 percent of the plastic produced in the last seven decades is in a landfill or natural environment. This sobering statistic is part of what motivates Barbara Hendrie, the Director of the United Nations Environment Programme (UNEP) North America Office, to create change. As a UN Director, Hendrie leads a variety of initiatives aimed at tackling environmental issues, but the growing crisis of plastic pollution in freshwater and ocean systems has been a particular focus of her office's work. As a part of these efforts, Hendrie will be speaking at the Nelson Institute Weston Roundtable Lecture on March 24, where she will share more about this growing crisis as well as her journey to becoming an environmental leader.

In fact, Hendrie describes her career path as circular. Having pursued English Literature as an undergraduate, Hendrie then turned her focus to social anthropology, pursuing a master's degree followed by a doctorate. As a part of her educational journey, she spent two years living in a village in the north of Ethiopia, which, Hendrie says, was life changing.

"I wanted to be a documentary film producer for public television, originally, and spoke to a producer at WGBH in Boston, who said "That's okay, but do you have anything to say? You're a fresh out of college graduate? Go get some life experience, and then you might have something to say," so I moved to the Horn of Africa to do famine relief, and it kind of took off from there in terms of my international work," said Hendrie.

After her experience in Africa, Hendrie expanded her work

Hendrie and actor Adrian Grenier in New Orleans for World Environment Day, June 5 in 2018, participating in a Beat Plastic Pollution clean-up with local community members. Photo credit: Laura Fuller

"We're working with mayors and local communities to create the first ever plastic pollution map on the shores of the Mississippi River and we're doing it just using ordinary people."

- Barbara Hendrie

into international development and poverty reduction, as well as humanitarian crises. For many years, she lived in London and worked as a senior official of the Government of the United Kingdom, on a variety of international development initiatives. She was then invited to return to the United States by the Obama administration, to become a presidential appointee in the U.S. Agency for International Development where she worked on international poverty reduction.

When the administration changed, Hendrie was looking for a new opportunity and was offered the job with the UN working on environment issues.

"I hadn't really worked on the environment agenda as a focus. This was the first time that I became aware of some of the massive environmental challenges we have," Hendrie said. "I knew about them as you do when you're an informed citizen, but the scope and the depth and the criticality was new to me when I joined UNEP four and a half years ago."

When Hendrie became aware of the crisis, she immediately went to work developing a plan to collaborate with policymakers to tackle the plastic pollution problem in North America.

"Plastic is made out of fossil fuel, so we're also contributing to our climate problem," Hendrie said of the multilayered issues associated with plastic pollution. "Most of the 70 to 80 percent of the plastic that we find in the ocean and in the environment is what we call single use plastic. It's a wrapper or a plastic bottle that we use for two minutes and then throw away. Only about seven percent of that globally ever gets recycled. The rest of it leaks into the environment, from landfills, rivers, drainage systems. That's the sort of plastic we have to tackle. It's the water bottle, it's the plastic bag, it's the candy wrappers, or the cigarette butt, which is made of plastic fibers. It's all that stuff that we use and throw away and there's no need."

To address these issues, Hendrie is working with mayors and other local actors who are focused on reducing plastic waste. A key initiative of her North America Office is in partnership with over 100 mayors along the full length of the Mississippi River. The Mississippi River is a major drainage system for plastic waste into the Gulf of Mexico and from there to the Atlantic Ocean. The Mississippi River Plastic Pollution Initiative. aims to create the first ever plastic pollution map of the river. With this information, communities can plan how to reduce

Mississippi River Plastic Pollution Initiative:

Clean River, Clean Seas

Mississippi River Cities and Towns Initiative (MRCTI). Photo credit: unep.org

their waste and, collectively, contribute to massively reducing the flow of plastic from the river into the ocean.

"We're working with mayors and local communities to create the first ever plastic pollution map on the shores of the Mississippi River and we're doing it just using ordinary people," Hendrie said of the project. "We're enlisting them as "citizen scientists" to go out with their mobile phone. They load a free app called The Marine Debris Tracker, and they log every bit of plastic they see. The effort of lots of individual people is creating a detailed data base of the river, the first of its kind in the world".

Hendrie is happy to see that the map is generating more awareness for the problem, and she is also proud to see that mayors and individuals from all political parties are involved.

Hendrie shared, "What I love about it is I don't even know which mayor is a Democrat and I don't know which one is a Republican, and it doesn't matter because they're completely focused on solving the problem," Hendrie said.

Hendrie plans to share more about this project and other UN efforts at the Weston Roundtable. She says she hopes that attendees will be inspired as they learn more about what ordinary people can do. She hopes people will attend for the conversation, but that they will leave ready to take action.

"I want them, every time a supermarket offers them a plastic bag, to say "Don't offer me this plastic bag. Do you realize this plastic bag is toxic?" You know, the more people say that the more people tell their managers and then their managers tell their managers and actually, you know, consumer power," Hendrie said. "If we all speak up, it has a big impact."

Hendrie's lecture "Tackling Environmental Challenges (Including Plastic Pollution) Globally and Locally: A Conversation with the UN Environment Programme, North America" will take place March 24 from 7-8 p.m. CT in room 1106 Mechanical Engineering, 1513 University Ave, Madison, WI 53706.

The Weston Roundtable Lectures are open to the public and designed to promote a robust understanding of sustainability science, engineering, and policy. Made possible by a generous donation from Roy F. Weston, a highly accomplished UW-Madison alumnus, and co-sponsored by the Center for Sustainability and the Global Environment (SAGE), the Department of Civil and Environmental Engineering, and the Office of Sustainability, these lectures are interactive and allow for questions and conversation. See the remainder of the upcoming calendar here.

Nelson Institute and Marathon County partner on UCY project assessing riparian and wetland resources

By Bekah McBride

Rib Mountain State Park, in Marathon County, includes one of the oldest geological formations on Earth and includes ecologically important areas, including riparian land. Photo credit: Marathon County Conservation, Planning, and Zoning Department

Protecting wetlands and riparian land, or the area between land and a river, is a complex task that blends science with community engagement. Understanding and protecting these essential resources, which provide flood protection, erosion control, and a variety of other benefits, is a primary goal for Marathon County conservation leaders who recently partnered with the University of Wisconsin–Madison UniverCity Year program and the Nelson Institute Environmental Observations and Informatics (EOI) master's program, to gain insight into the county's wetlands.

This collaboration was facilitated by the UniverCity Year program, which brings faculty, students, and members of Wisconsin communities together to address local challenges through engagement, university research, and state-of-the-art problem-solving approaches. In this case, UniverCity Year partnered with Marathon County Conservation, Planning, and Zoning Department leaders Paul Daigle and Jeff Pritchard with students in two different Nelson Institute courses; Environmental Studies 950: Remote Sensing Seminar taught by Sarah Graves, Program Coordinator for EOI, and Nathan Schulfer, director of international and professional programs at the Nelson Institute and Environmental Studies 978 GIS for Environmental Observation & Informatics, taught by Nelson Institute PhD student Naomi Louchouarn. Together, course instructors and students used Global Information Systems (GIS) mapping to analyze wetland and riparian resources throughout Marathon and answer questions and concerns that were posed by Marathon County conservation leaders.

"I saw the possibility to get a lot of smaller projects done within our department, especially from the environmental side," said Paul Daigle, county conservationist. "We submitted a number of projects [to UCY] and didn't know what to expect, but I knew working with the students that they would try their best to meet our goals."

The projects submitted by Marathon County included the wetlands project as well as those relating to data on groundwater protection, promoting soil health, and more. For the wetlands project, Daigle and Pritchard set clear goals for the students in terms of the data they wanted to gather on wetlands in the area. The students then utilized their skills in GIS to answer a variety of questions identified by Marathon County. Daigle and Pritchard worked directly with the class and the instructors as a client, often meeting with the students virtually. Although this did require a time commitment, Daigle noted that the students worked efficiently and effectively.

"It was not even close to the amount of work it would have taken if we did it ourselves," Daigle said of the project. "It was a win-win situation and I really found that if we spent the time

prepping these students and telling them the outcome we wanted within that first two weeks of class, it helped us get the product and the quality we wanted."

The students also benefit from the hands-on learning, as the project gives them a chance to engage with a community and address challenges at a local level.

"GIS is, from my experience, hard to teach in a way that is exciting and useful because it's easy to create step-by-step instructions but it's hard to apply that in the real world. It just doesn't really translate well," shared course instructor, Naomi Louchouarn. "So, we designed this class to give students an opportunity to do a project that allowed them to be flexible and apply the tools that they were learning in the real world. This was an actual client that really needed GIS help. They knew what they were looking for, they just needed someone to come in and do it for them. And that was perfect for our students and a perfect collaboration in that sense."

Paul Daigle, County Conservationist with the Marathon County Conservation, Planning, and Zoning Department. Photo credit: Marathon County Conservation, Planning, and Zoning Department

Schulfer echoed Louchouarn's sentiments, noting that community-engaged classes, such as those in partnership through UniverCity Year, are an ideal learning tool for students.

"Students learn a lot through client-based courses like this because lots of data exists, but it really does take some time and effort to track it all down and organize it," shared Schulfer. "One of the most important things that comes out of these projects, it seems to me, is students can start to understand where the gaps in data are. This is challenging for students, but eye opening, because in a world where we're collecting lots of data all the time, there's still always gaps. In the end, our students have the chance to help create a more complete picture of issues which seemed to be very unique to the client. As an example we learned that Marathon County has some unique geologic features, like layers of bedrock that sometimes make understanding water issues in the community challenging."

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–Paul Daigle

Timothy Babb, a graduate fellow and EOI student confirmed Schulfer's statement, noting that identifying the most applicable and useful datasets was a challenge on this project. But, these are the lessons he was hoping to learn as a part of the program.

"The Marathon County Project taught me that there is no perfect plan, dataset, or solution to solving environmental problems so as conservationists we must always be ready to adapt to changes," Babb said.

Fellow cohort member Ben Bagniewski also appreciated the lessons in data management and the technical skills he gained but noted that the greatest lesson from this project was the realization that it's okay to not have an immediate answer to every question a client is asking.

"It's okay to pause, brainstorm, strategize with teammates or cohort members, advisors, technical forums, etc., and come back and try something else," Bagniewski said. "Utilizing the resources at your disposal – those with more experience and knowledge than you – has been an important lesson through our time in the EOI program."

As a part of this project, students in the Environmental Studies 978 course spent the fall 2021 semester working with Daigle and Pritchard to learn more about the county's unique needs before presenting data and their GIS findings in a virtual meeting between the class and Marathon County leaders in December.

"In those presentations they took a large amount of information and synthesized it in a way that was easy to understand and apply, and that's huge," said Louchouarn. "Seeing improvement in how the students manage their data, how they produce the maps, and then how they write up and communicate those results were some of our learning goals and I was very impressed with the students."

The findings shared in the December presentations will be captured in a report that will be shared with Marathon County, posted to the UniverCity Year website, and used by UniverCity Year and Marathon County to implement suggestions outlined in the report. While the final report is still

pending, the presentations were met with positive feedback.

"I do think that the partner gets a helpful product," Schulfer said. "Jeff and Paul seem to feel like they will be able to use a lot of these deliverables and maps pretty quickly to start either more effective planning, or really just to show the community in and around Marathon County a little bit of a visual story about what's happening with their water resources."

A rotationally grazed dairy herd near wetlands in Marathon County. Photo credit: Marathon County Conservation, Planning, and Zoning Department

Daigle noted that he plans to use this data to inform their work with farmers who have an interest in water quality improvement projects, soil erosion control, farmstead runoff control and more. He said this work will also be used to educate and inspire farmers and other community members to protect these areas. Overall Daigle shared, "It's been a positive outcome."

Lost Lake is an important part of the Marathon County ecosystem and serves as a popular spot for fishing and boating. Photo credit: Marathon County Conservation, Planning, and Zoning Department

In the future, the Nelson Institute courses and Marathon County hope to continue to partner with the UniverCity Year program on a variety of other projects. For Daigle, the program provides quality assistance that he says saves the county time and money. For the Nelson Institute, the program provides students with a unique learning opportunity that supports hands-on education and community building.

"We have worked with UCY for a number of years now, but mainly in our conservation planning course in the Environmental Conservation program. UCY is a really great partner for us because their work is client-based," Schulfer said. "And we really lucked out with Jeff and Paul because they committed themselves to being involved in the project and they provided tremendous support to our students. Hopefully the work of the EOI students has an impact on their work far into the future."

UniverCity Year announces new partnerships

The Nelson Institute is a proud partner of the University of Wisconsin–Madison program UniverCity Year, which will be expanding its impact across the state by partnering with several communities including the City of Stoughton, the Town of Germantown, and Columbia, Outagamie, and Polk County. Additionally, UniverCity Year will be a part of a special partnership between the City of Sun Prairie, the Towns of Deerfield and Cottage Grove, and the Friends of Koshkonong Creek to study and recommend upgrades to the creek.

Launched in 2016 with the Wisconsin Idea in mind, this three-year program facilitates engagement between the UW–Madison learning community and localities, ultimately bringing faculty, students, and community members together to address some of the greatest challenges facing Wisconsin's local governments. UniverCity Year has engaged with thousands of students and faculty members on hundreds of projects in counties, towns, villages, and cities across Wisconsin. Read more

Corn ethanol – made at refineries like this one in Minnesota – has driven land-use changes and crop choices that have resulted in carbon emissions negating any climate benefits from replacing gasoline with ethanol. Photo credit: Tyler Lark

Tyler Lark and Holly Gibbs contribute to study on the impacts of ethanol

New research led by experts at the University of Wisconsin–Madison, in partnership with several other universities, suggests that carbon emissions from the land used to grow corn can negate or even reverse any climate advantages of corn ethanol relative to gasoline.

The study, which was published in the *Proceedings of the National Academy of Sciences of the US* this week, was led by Nelson Institute Center for Sustainability and the Global Environment (SAGE) scientist Tyler Lark and SAGE and Department of Geography professor Holly Gibbs. Using prior modeling studies, the team conducted an analysis of the connections between policy, ethanol development, land use, and environmental outcomes. The findings show that changing land use patterns, including the expansion of agricultural land dedicated to commodity crops such as corn, have contributed to an increase in pollution.

Lark, who has spent years researching U.S. agricultural land-use change and its impacts on the nation's land and water resources, pointed out that a possible solution is the use of next-generation biofuels, such as those made from perennial, non-food plants that are grown on land less suited for conventional agriculture. The study also showcases that way in which policies around fuels and agriculture can have unintended impacts on the environment. Read more

Professor Gibbs featured in *The Guardian*

Deforestation in the Amazon. Photo courtesy of the Gibbs Lab

Nelson Institute Center for Sustainability and the Global Environment (SAGE) and Department of Geography professor Holly Gibbs is featured in a recent article from *The Guardian* highlighting the challenges surrounding a landmark Amazon soy moratorium.

The article, "Loophole allowing for deforestation on soya farms in Brazil's Amazon," details the extent of deforestation still occurring after the introduction of the Amazon soy moratorium that banned the sale of soya grown on land deforested after 2008. According to the article, findings indicate that while many companies are following the moratorium regarding soya, deforestation is still occurring for the benefit of other commodities such as maize and cattle. Essentially, because the moratorium only applies to soya, companies are able to sell their soya as deforestation-free while still clearing land for other uses. Read more

Three Nelson affiliates named Vilas Associates

By Bekah McBride

The Nelson Institute is honored to announce that three affiliates have been named Vilas Associates by the Office of the Vice Chancellor for Research and Graduate Education at the University of Wisconsin-Madison. The recipients include Nelson Institute Center for Sustainability and the Global Environment (SAGE) and Department of Forest & Wildlife Ecology assistant professor Zuzana Buřivalová, Department of Agronomy Chair and Professor Christopher J. Kucharik, and Department of Agriculture and Applied Economics Associate Professor Dominic Parker.

As a part of the award, the recipients will be recognized for their "new and on-going research of the highest quality and significance" and receive salary support and research funding over two fiscal years.

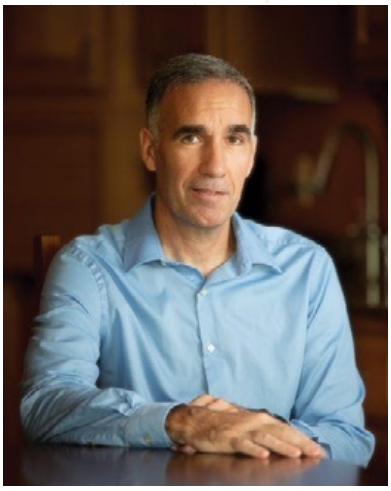
Zuzana Buřivalová

Buřivalová will receive support for her novel research into rainforest biodiversity in Gabon. Buřivalová is the principal investigator of the Sound Forest Lab at the University of Wisconsin–Madison and has focused much of her research on soundscapes, which are defined as a collection of all sounds in a landscape, and their use in biodiversity monitoring for conservation. Buřivalová also recently published the online children's book What does the rainforest sound like? A Sound Forest Lab Story. This book includes detailed illustrations and the accompanying sounds of common as well as rare animals heard throughout the Borneo rainforest. Meant to be an eye-catching and ear-catching, educational tool, the book is ideal for ages six to 12, but will capture the attention of anyone interested in the sights and sounds of the rainforest.

"I am honored to be selected for the Vilas Associate award - it means a lot for me and my lab to have our work recognized in this way"

-Zuzana Buřivalová

"I am honored to be selected for the Vilas Associate award – it means a lot for me and my lab to have our work recognized in this way," Buřivalová said. "My lab uses sounds in rainforests to monitor which animals are impacted by humans. Combining this approach with other technologies, like environmental DNA, remotely sensed dataset on forest structure, and camera traps will let us get a near-complete picture of rainforest biodiversity. Our goal is, ultimately, to create an easy-to-use tool for NGOs, communities, companies and government to monitor biodiversity in forests that they are responsible for."



Christopher J. Kucharik

Kucharik will receive support for his project, "Development of decision-support tools to help improve water resources across Wisconsin," which will support the advanced development of agricultural Decision Support Tools (DSTs). Using the Agro-IBIS agroecosystem model that Kucharik has been developing for 20 years, he will simulate scenarios and collect data that will help farmers and other stakeholders to learn how different land management practices may influence water quality under a changing climate.

"This is a very exciting and fun project for my group, and some of the ideas have already been partially supported by the Wisconsin DNR as part of their efforts to help improve water quality in the state. I feel like this project is another great example of the Wisconsin Idea," Kucharik said. "Though our preliminary work, I found the design and development of apps and the necessary programming is a significant challenge. Running Agro-IBIS and analyzing output data from that model is straightforward given our long track record of

experience. Developing support tools and apps that connect people with our data is a long overdue step, but not something we have a lot of experience with. Therefore, the funds from the Vilas Associate award will help to support personnel that will devote their time to helping in the design and programming of the decision support tools over the next two years. I sincerely appreciate the support of the Vilas trustees and my department colleagues who nominated me for the award. To me, it is definitely a proud moment in my long career at UW-Madison and a great honor to be recognized."

Dominic Parker

Parker will receive support for his project "Reversing Local Extinctions: The Economic Effects of Reintroducing Wolves in North America and Europe" which will quantify and monetize the effects of wolves in the United States, Canada, and Europe – on agriculture and forestry profits and damages, vehicle collisions, and disease incidence. This research is inspired by the Parker's findings in a paper he co-authored with a UW colleague and former PhD student entitled "Wolves make roadways safer". Through that research, published in PNAS (Raynor et al. 2021) the team discovered that wolf presence in Wisconsin counties reduced deer-vehicle collisions by an average of 24 percent.

"I'm honored to win a Vilas Associates award and grateful to be at a university that provides such opportunities," Parker said. "It will support research important to Wisconsinites and stakeholders throughout the world. With a team of other researchers, we aim to measure the effects of wolves on human life and property. The goal is to provide concrete estimates that can help guide wolf policy. We will build from prior research in economics, ecology, and other fields – including the great scholarship conducted here at UW-Madison – to better understand the indirect value of wolves to local economies through their effects on ungulates and meso-predators and, ultimately, on livestock, crops, forests, disease, and human safety. Thanks to the Vilas Award we can cast a wide net in our attempt to do a full accounting of the benefits and costs of this apex predator."

Carpenter honored as an AAAS fellow

Stephen Carpenter

By Bekah McBride

The American Association for the Advancement of Science (AAAS) has granted fellowship status to Stephen Russell Carpenter, a Nelson Institute affiliate and a professor emeritus of integrative biology at the Center for Limnology. Carpenter is being recognized for his contributions to the field of ecosystems biology as it relates to lake ecosystems and the resilience of social-ecological systems.

As an emeritus professor at the Center for Limnology, Carpenter writes about long-term change and is currently developing a new quantitative tool to measure resilience of complex systems.

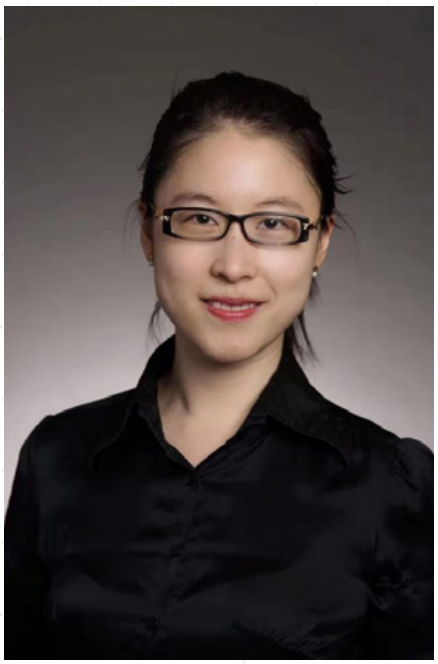
Carpenter is among 13 University of Wisconsin–Madison scholars, and 564 total scholars selected by the organization for fellowship status. This honor has been presented annually since 1874. Carpenter and this class of AAAS fellows will be celebrated during an in-person event in 2022 and they will be featured in the AAAS News & Notes section of Science.

Carpenter shared, "I was honored to be named an AAAS fellow, and it was especially nice to be listed among so many excellent colleagues from UW–Madison." Read more

Chen and Shaw use data science to assess soil conservation stories in Wisconsin agricultural media outlets

By Bekah McBride

The adoption of soil conservation practices by farmers offers the potential to greatly improve soil health and water quality in Wisconsin and beyond. Farmers learn about these practices from many sources, including agricultural media outlets, which constitute one of the main channels farmers use to learn about methods to help conserve Wisconsin's fertile agricultural soils and protect the state's abundant water resources.



Kaiping Chen

"Our study is the first to use computational methods to assess the entire body of online articles from agricultural media outlets related to the important context of soil conservation practices."

-Kaiping Chen

To better understand the media coverage about soil conservation practices, Nelson Institute affiliates Kaiping Chen, an assistant professor in the Department of Life Sciences Communication and Bret Shaw, an associate professor in the Department of Life Sciences Communication and an environmental communication specialist for the Division of Extension at UW–Madison, used advanced data science methods to collect and analyze online stories about soil conservation from Wisconsin's most-read agricultural print media outlets: *Agri-View, The Country Today, Wisconsin Agriculturalist, and Wisconsin State Farmer*.

To better understand the media coverage about soil conservation practices, researchers used advanced data science methods to collect and analyze online stories about soil conservation from Wisconsin's most-read agricultural print media outlets: *Agri-View, The Country Today, Wisconsin Agriculturalist, and Wisconsin State Farmer*.

"In considering the potential benefits of soil conservation practices, it is important to understand where farmers get their information about these practices and what types of information they are exposed to and by whom," says study co-author Bret Shaw, associate professor in the Department of Life Sciences Communication and environmental communication specialist for the Division of Extension at UW–Madison. "We know these media outlets reach a lot of farmers, and it's valuable to know the role they play in getting information out about soil conservation, given how important agriculture is in Wisconsin."

The researchers focused on 10 different soil conservation practices and found that, overall, the most frequently written-about soil conservation practices were tillage agriculture, manure management and grazing. In more recent years, however, coverage has grown significantly for other soil conservation practices such as cover crops. Generally, articles tended to mention environmental and economic benefits more than agricultural benefits across all soil conservation practices.

The study also found that there was a much greater use of positive than negative words for each practice, suggesting that editors and journalists for these publications are generally casting soil conservation practices in a positive light. The researchers also examined the message sources for stories on soil conservation and found that Extension and the federal government were the most frequently cited in stories about soil conservation.

Bret Shaw

The UW–Madison study examined a total of 68,401 news stories from the four agricultural print media outlets between the years 2002 to 2020. In order to do such a large-scale analysis, the researchers had to develop a computer program that utilizes custom-built dictionaries to find and assess soil conservation-focused articles on the outlets' websites.

"Our study is the first to use computational methods to assess the entire body of online articles from agricultural media outlets related to the important context of soil conservation practices," says lead author Kaiping Chen, assistant professor in the Department of Life Sciences Communication. "The volume of stories we studied would be an overwhelming task using the traditional manual content analysis methods. With computational communication methods – an emerging sub-area in communication and social science research in general – scholars can scale up their research to examine news coverage at a regional or national level, and over a much longer period of time."

The researchers hope their study results can be used by organizations, Extension professionals and researchers working to promote soil health and water quality to assess their efforts to educate farmers about soil conservation practices through agricultural media outlets. For instance, the USDA has spent billions of dollars on soil conservation efforts and wants to use "big data" to inform agriculture practices. Findings from this study will allow these organizations to better understand how the coverage of soil practices align with their strategic priorities to maintain a strong, sustainable agricultural systems in the United States.

The study was published in the most recent issue of the Journal of Soil and Water Conservation.
This story was originally published on CALS News.

SOIL AND WATER CONSERVATION SOCIETY

From the desk of Andrea Hicks

Andrea Hicks

A monthly column from Andrea Hicks, Director of Sustainability Education and Research, an assistant professor in the Department of Civil and Environmental Engineering, and the Hanson Family Fellow in Sustainability

Spring heralds a great many changes in the natural world. Nature no longer appears dormant as the snow melts and the landscape blossoms with color. Changes are afoot as well with the Office of Sustainability. In January, both divisions of the Office of Sustainability—the group homed in the Nelson Institute for Environmental Studies and the group homed in Facilities Planning & Management—were united for the first time in one location and under one roof. We have moved to the sixth floor of 21 North Park Street and are settling in nicely. We are excited to embrace this new working environment that showcases our strengths as a unified office serving the University of Wisconsin–Madison.

Aside from our move, we have also led other united campus efforts in recent months. During the fall 2021 semester we deployed a campus sustainability survey, which was sent to every student, staff, and faculty member on our campus. We will be using these results to better understand where we are doing well in sustainability, and where there is room for improvement on our campus. You can also read our fall 2021 Sustainability Report here to get a sense of the events, initiatives, and achievements of the last several months.

In February we initiated regular gatherings for faculty and staff to enjoy coffee and doughnuts together and build our campus sustainability community. These will be held on the last Friday of each month from 9-10:30 a.m. We hope these "sustainability coffee hour" events will become a casual way for faculty and staff to engage with one another and regain some of the sense of community that has been lost during the pandemic. Pending the success of these events, we are also considering starting a student gathering as well.

Lastly, in the fall 2022 semester we hope to hold a new sustainability forum on campus. This will include lightning talks and posters along with a keynote speaker. There is remarkable and exciting sustainability work happening in all corners of our education and research enterprise at the University of Wisconsin–Madison but it's all too easy to interact mainly with members of our own departments and units. As with the sustainability coffee hour, we hope that the forum will bring people together. Just as we are uniting our own office, we hope to help unite UW–Madison around the shared cause of sustainability.

DNR section chief fulfills his dream of continuing education through the WRM program

By Bekah McBride

As a section chief with the Wisconsin Department of Natural Resources, Ben Callan has seen the impact that flooding and water quality issues can have on a community. With more than 30 years of work experience in the sciences, he has honed his professional skills, but in an effort to do more to help his community, and fulfil his dream of continuing higher education, Callan has joined the Nelson Institute Water Resource Management (WRM) master's program.

Ben Callan

The Nelson Institute Water Resources Management (WRM) program provides students with the knowledge they need to manage this critical natural resource. This is done through a combination of courses and hands-on education that includes a practicum where graduate students work on an issue facing a local community. Callan was drawn to the program as it has an interdisciplinary approach with a community focus.

"The Water Resources Management Program seemed like a really good fit," Callan said. "It is not a research and thesis based program. It is a practicum project, which I think is a very good skill to have no matter what profession you want to go into. Working with other people with diverse backgrounds to achieve a common task or objective is an extremely valuable asset."

Callan also appreciates that the program is supportive of returning students and that it provides individuals with the opportunity to apply their skills and interests in a way that helps the cohort and the community.

"Working with other people with diverse backgrounds to achieve a common task or objective is an extremely valuable asset."

-Ben Callan

For Callan, his years of professional experience and unique educational background offer him many ways to contribute to his cohort. In fact, Callan's journey to the WRM program began in 1987 when he graduated with his undergraduate degree. From there, he immediately went on to graduate school at San Francisco State University with the intent of studying marine biology, animal behavior and marine mammals. For financial reasons, he decided to leave the program and return to Wisconsin where he worked for a while before returning to graduate school to focus on animal behavior, studying captive primates. Callan says the project was not a good fit, so he left the program and went back to being a professional. During this time, he got married and had a family, which he says became his top priority.

"That's about the time I started my professional career with the Department of Natural Resources," Callan said of his next steps. "Fast forward to my kids wrapping up their college careers, and that's when I realized there was a little bit of extra time and funds

available for me to go back and check a box on my list. So, my perspective is, I think, a little different than most students."

Callan is happy to say that the WRM program has been a good fit and he is excited to be moving forward with his dream to earn a graduate degree.

Callan conducting field work as a part of his role with the Wisconsin Department of Natural Resources. Photo credit: Wisconsin DNR

"UW and the Nelson Institute really focus on how to support students so that they can get the most out of their educational experience and utilize that experience to do great things down the road, no matter what it is, whether it's continuing academic pursuits, or, nonprofits, government, private sector," Callan said.

He is also thankful for the support the DNR has shown him as he continues his education.

"The Wisconsin Department of Natural Resources has a long history of supporting the professional development and continuing education of our employees, and Ben's enrollment in the Water Resources Management program is as much an investment in the department's organizational effectiveness as it is in his own professional development," said Greg Pils, the director of the Bureau of Environmental Analysis and Sustainability and Callan's supervisor. "As manager of some of the department's most complex and high-profile programs and supervisor of eight technical professionals statewide, the challenge of concurrently fulfilling his academic and professional commitments is pretty substantial, but Ben is an excellent time manager and skilled communicator, and the experience has been emphatically positive for all of us."

Callan is currently a part-time student in his second year of the program, with plans to graduate in spring 2023. He and his cohort are working on their applied project, which is a two-year project that culminates in a report that provides water management recommendations to community leaders.

"There's six of us and we function like a lot of other professional teams I've participated on," Callan said of his cohort. This WRM team is focused on improving water quality in the Lake Wingra watershed by promoting effective green infrastructure (GI) projects. "So far, we've talked with a number of stakeholders that have been working on that very same objective in order to find a niche for us to support their efforts. There are governmental organizations, neighborhood associations, nonprofits that all have an interest in and have been working toward that very same objective and what we've tried to do is develop a project that supports all of those efforts without taking any of the responsibilities away from those other entities. It's really looking at trying to enhance those efforts and yet gain the knowledge and experience to feel like you're doing something productive as a cohort to accomplish that goal."

In the coming months, Callan and his cohort will be finalizing their survey results and data analysis, then compiling their report, but Callan is also thinking about how he can apply this to his current role with the DNR.

"Professionally, I'm very happy with where I'm at. My team of experts has diverse responsibilities and often deals with high-profile and controversial projects," Callan said. "I'm trying to take advantage of all the different experiences, through coursework, this practicum project, and other activities to gain new knowledge. I would say that it's really kind of expanded my perspective. A lot of what I do professionally is so focused on meeting statutory requirements, overseeing the regulated community, and making sure projects are completed in compliance with those requirements. It's difficult sometimes to pull back from that focus, to really ask questions like are we doing the right work, or is it or is there a better way to do what we're doing? Can we get better results or make better decisions? And so, I think that's where kind of this educational experience has opened up some additional opportunities to gain insights."

For professionals or undergraduate students considering returning to graduate school or taking another big step in their life, Callan says, if there's one thing he's learned during his journey, it's to not shy away from a challenge.

"I think oftentimes people get intimidated and tend to shy away from really difficult tasks." Callan said. "It's something that took me a while to learn, that you want to take advantage of those really challenging situations when they present themselves because they offer the most opportunity for fulfillment and satisfaction."

Learn more about the WRM program and how you can support the program.

Nelson Institute Professional Programs offer community, mentorship, and networking

By Bekah McBride

Combining hands-on technical training with a strong support system of fellow students, alumni, staff, and faculty is a hallmark of the Nelson Institute Professional Master of Science programs. With two distinct programs including Environmental Conservation (EC) and Environmental Observation and Informatics (EOI), the programs prepare students to become future environmental leaders, while connecting students with a network of current environmental professionals and organizations around the world. Some of these connections come through informal events such as the "Where are they now? Alumni Panel," held in early 2022.

During this event, current and prospective students had the opportunity to virtually meet four EC and EOI alumni who shared their Nelson Institute experience as well as how the program has impacted their current professional role.

"The opportunity for current students to connect with our program alumni who have walked their same path and are now successfully applying their expertise is one that's richer than we pictured it could be," said Meghan Kautzer, who is the EC program coordinator.

"Through alumni events, our students become integrated into a global network of conservation professionals, and they receive advice on how to get the most of their time in the program while connecting with mentors that have an impact far beyond their time on campus," added Sarah Graves, the EOI program coordinator.

Josh Daniels

The four alumni who presented at the event included Josh Daniels ('19) who works as a freelance data scientist/consultant for Stratos Spatial LLC and does cybersecurity for Epic Systems, Sharanya Madhavan ('21) a data scientist at Greenlink Analytics, Adrienne Marvin ('17) who is a program officer and senior facilitator with Foundations of Success, and Adam Pereira ('20) who is serving as the conservation director for the Royal River Conservation Trust. These individuals are among the 200+ program alumni who are working on a vast range of environmental specialties.

Throughout the event, the alumni shared their advice for academic and professional pursuits as well as some of their most relevant experiences at the Nelson Institute.

Adrienne Marvin

Marvin, who works at the intersection of conservation and human development, shared that she was thankful for the leadership seminar and conservation planning courses.

"What I found is that it's usually people who more or less agree with one another, we just can't quite get on the same page, which actually makes it more difficult in some ways. One of the first things they taught us was the importance of having a common language so that everybody is using the same terminology for the same things. I don't think I fully internalized how important that was until I started to talk about conservation with groups...learning to sort of bridge the gaps between related fields and have meaningful conversations about things that we all care about, while thinking differently has been really important."

Marvin shared that she utilizes these lessons in her current role with Foundations of Success, an organization that provides conservation practitioners with "the skills and tools needed to be more effective and efficient in their efforts". In her role, Marvin supports the planning, implementation, and growth of projects designed to produce both human well-being and conservation outcomes. She has been directly involved with efforts to combat wildlife trafficking and has helped teams design projects using the best practices in adaptive management. She hopes that her work has a lasting impact for biodiversity and

Adam Periera

the communities that depend on it.

Fellow alumnus and speaker Pereira echoed Marvin's sentiment, stating that the courses have provided him with skills he continues to use in his career. "With GIS, I had no experience until I came into EC and we took a semester long class. I really, you know, was drawn to it and excelled in it...working for a small nonprofit you'd be surprised how quickly you become the expert in something [like GIS]."

> ***"In conservation, it's all about people and it's all about negotiating and playing with individual dynamics."***
>
> –Adam Pereira, EC alumnus

In addition to the technical skills, Pereira appreciated the program's emphasis on communication skills and navigating interactions with stakeholders. This has been particularly useful in Pereira's role with the Royal River Conservation Trust in Maine. There he focuses on planning and acquisitions and is in the process of writing the land trust's first conservation plan in twenty years.

"In conservation, it's all about people and it's all about negotiating and playing with individual dynamics," Pereira said. "People are so different, every landowner's different, you really have to cultivate a relationship with each person."

During the event, the alumni also shared some of their professional challenges and offered advice to students who may also face these challenges in their leadership projects or as future professionals. One challenge the EOI alumni noted is that it's easy to get carried away with data and big ideas and communicating data limitations can be tricky. Another challenge voiced by several alumni is communicating the data in the right way to the right user.

Daniels, who works with environmental "big data" and has experience on more than 30 projects as a freelance spatial data scientist, noted that working with clients who aren't as knowledgeable about the data space can bring about many of these challenges. He also shared that there are lots of ambitious people, so it can be challenging to set reasonable goals and expectations.

The alumni also noted their appreciation of the individualized attention that small cohorts allow. They acknowledged the sense of community they felt while in the program as well as the community they gained while participating in their final leadership project, which requires students to engage with an outside organization. The alumni noted these projects resulted in robust network connections and even jobs. Additionally, some alumni have gone on to serve as on-site project host supervisors to students currently in the program, a particularly significant full-circle outcome for those who developed the programs.

Sharanya Madhavan

"Don't be afraid to reach out, if you think an organization looks cool," shared Madhavan, who now works for her project organization, Greenlink Analytics in Atlanta, GA. "Don't be afraid, because some of these organizations are smaller than you think or you might have expertise that they're looking for, especially if you are in the geospatial field. It's much needed, everyone's looking for you."

Madhavan, who has experience as an engineer and now utilizes geospatial data science techniques to assist cities with combatting equity related issues, also advised students to use the leadership project as an opportunity to gain new skills and to let that desire to learn guide the project.

Overall, the alumni shared that the Nelson Institute Professional Programs offer students unique opportunities to explore topics through workshops and courses and to build friendships and professional networks that will last beyond graduation.

"We're lucky to have so many alumni who want to give back to our programs through interactions like this with current students," said Nathan Schulfer, director of international and professional programs at the Nelson Institute. "We also could not be prouder of the incredible work our alumni are doing, around the world, to help solve really big environmental challenges."

To learn more about the professional programs and the rich network and mentorship opportunities that come with being a student visit here.

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!

Community Environmental Scholars Program celebrates 10th anniversary

The Community Environmental Scholars Program (CESP) recently celebrated its 10th anniversary. The program is designed for students who want to link their passion for the environment with a commitment to the community. Undergraduates are provided with the opportunity to work with community-based environmental organizations, professional training, and a place to explore and discuss the links between environmental studies and community service.

This cohort-based program provides a supportive and welcoming community for traditionally underrepresented students, such as first-generation, Black, Indigenous, Latinx, veterans, etc. Nearly 450 scholarships have been distributed since the program's inception.

Please consider making a gift today in support of this outstanding program!

2011 Environmental Studies major celebration. Photo credit: Nelson Institute archive.

From internship to full-time position, WRM graduate continues hydrology work at USGS

By Anica Graney

Growing up in Vilas County, Wis., Water Resources Management (WRM) graduate Robert Rosner said his interests have always revolved around being outdoors. Whether it be going fishing, reading a book, taking a hike, or playing sports, Rosner enjoyed spending time outside in the north woods of Wisconsin.

While studying biology at Ripon College for his undergraduate degree, Rosner's passion for the outdoors led him to apply for an internship with Clean Boats, Clean Waters in the county that he grew up in. "For two summers I worked at boat landings talking to the boaters about invasive species and basic natural resources management," Rosner said.

Rosner's internship experience opened his eyes to the issues facing water bodies. "I took it for granted as a kid having access to immaculate water bodies. Especially when I left and realized not everybody has that," Rosner said. This realization led Rosner to apply for the Nelson Institute WRM program during his senior year at Ripon College.

The WRM program is a 45-credit Master of Science degree that prepares students to face the complexities of managing water resources. Students choose an area specialty and follow a core curriculum that reflects the diversity of knowledge and interdisciplinary experience needed in water resources planning and management.

Robert Rosner

Rosner then began looking for internships in the Madison area to supplement his graduate studies. In May 2019, Rosner accepted a position as a student hydrology trainee at the U.S. Geological Survey (USGS) in Middleton, Wis. There, he worked on data collection for local waterways and helped determine water quality.

"You can collect all the data and do all the science you want, but to make it work you have to turn it into actual policy that brings about change."

–Robert Rosner

"I worked at USGS throughout my time in the WRM program," Rosner said. "It helped my coursework and guided my interest in water resources management."

A major component of Rosner's role with USGS is working with the Dane County Water Quality Monitoring program where he collects data through water quality monitoring stations that test for phosphorus, nitrates, suspended sediments and potential contaminants that flow into Lake Monona, Lake Mendota and the Yahara River Basin. The data collected is then used for water quality management decisions.

The hands-on experience Rosner gained from working at USGS carried over as he began the WRM interdisciplinary practicum, a two-year applied project focused on a contemporary challenge in water resources. Rosner's cohort, advised by assistant research scientist Eric Booth, focused their efforts on the Coon Creek Watershed of La Crosse County, Wis.

"The watershed experiences floods and our goal over the two years of the program was to look into it, work with stakeholders, do some hydrology-based work, and provide a report with recommendations of what can be done moving forward," Rosner said. The report analyzed the institutional challenges facing flood resiliency and offered recommendations on how to mitigate flood risks.

While completing the WRM program, Rosner enjoyed classes that focused on hydrology and water resource engineering. "The first intro course I took was Hydroscience with Dan Wright which was a great water resource engineering course," Rosner said. His work with Nelson Institute Assistant Professor Dan Wright continued outside the classroom as he worked a bit with Wright on the Coon Creek practicum.

Along with other field-based classes, Rosner took a policy-based course with Ken Genskow, associate professor of Urban and Regional Planning, water resources specialist with

Rosner fishing on a northern Wisconsin lake. Photo credit: Sawyer Rosner

UW-Extension and director of UW-Extension Basin Education Initiative.

"It was a really great overview of the policies and government surrounding how water bodies are managed," Rosner said. He continued by saying how the class opened his eyes to how policy brings action to data collection. "You can collect all the data and do all the science you want, but to make it work you have to turn it into actual policy that brings about change."

Infiltration measurement at a Cashton, WI farm for the WRM Coon Creek practicum with students Raj Grewal (center) and Kayla Wandsnider (right). Photo credit: Rachael Sodeman

After graduating from the WRM program in December 2021, Rosner accepted a position as a full-time hydrologist at USGS. "I'm really happy with how everything turned out with the program and internship and I'm looking forward to continuing with USGS. It's a lot of the same work I've done as a student but with more responsibility," Rosner said.

Rosner encourages those with interests in water conservation and management to consider applying for the WRM program. "I think it's a really unique program and really flexible," Rosner said. "You can make the classes work for you. There's so many things you can do with it."

Learn more about the Water Resource Management MS and how you can support the program.

Alumnus Reynaldo Morales **promotes environmental education and indigenous rights**

By Bekah McBride

Implementing strategic ways that universities can promote sustainable education, action, and social justice is a primary goal for Nelson Institute alumnus, Reynaldo Morales. As a filmmaker and assistant professor in the Medill School of Journalism, Media Integrated Marketing Communications at Northwestern University as well as faculty fellow of the Buffett Institute for Global Affairs, Morales engages in academic efforts that promote environmental action, with a specific focus on engaging with and showcasing the efforts of indigenous populations.

Morales has always had an interest in education, having completed his master's degree in curriculum and instruction and a bachelor's degree in Latin American, Caribbean, and Iberian Studies, prior to beginning his PhD in Curriculum and Instruction with the School of Education, and later adding a joint PhD in Environment and Resources at the Nelson Institute. Morales says he was drawn to the Nelson Institute because he wanted to expand his research beyond what happens in schools and, and instead focus on how environmental education promoted service learning, action research and positive impact outside of schools.

"I was looking for applications outside of the realm of schools and to explore other complementary fields in which indigenous peoples could be best served, and I could learn from them and understand different processes that were specifically applicable to these world populations," Morales said.

Morales with an Indigenous leader from Brazil at the United Nations Climate Change Conference of the Parties (COP 26). Photo courtesy of Reynaldo Morales

Having previously struggled to find courses that met this need, Morales said he was excited to learn that the Nelson Institute had courses that would allow him to research the many facets of education applied to sustainable development.

"One of the greatest advantages of the Nelson Institute was the interdisciplinarity and the opportunities to explore a diverse study program with the participation of multiple schools and disciplines," Morales said.

He noted that one of the most helpful courses was the sustainability education course taught by Pro-

fessor Noah Feinstein, his 7-joint-faculty dissertation committee supervisor, which highlighted actionable research including what kind of actions different stakeholders could play at policy level, and what policy, cultural, and economic differences need to be taken into consideration when promoting action and sustainable development.

Morales also had the opportunity to expand his education outside of the classroom. During his time as a student at the University of Wisconsin-Madison, Morales worked with the Department of Biochemistry in a large USDA science education with the Menominee and Oneida nations, The Institute for Regional and International Studies (IRIS) facilitating an international seminar called "Global Indigeneity and Sustainability" with LACIS Associate Director Alberto Vargas at the Menominee Nation and Nelson Institute during 2016-17.

Through these interactions, Morales was able to work on films and research, but he says more importantly, he was able to connect with indigenous people from around Wisconsin and around the globe. One connection that was particularly important to Morales was meeting and observing the United Nations Permanent Forum on Indigenous Issues (UNPFII).

Morales with Don Feliciano, a member of the Mayan Peoples organization Ka Kuxtal Seed Keepers from Hopelchen, Quintana Roo, in Mexico, December 2021. Photo courtesy of Reynaldo Morales

"Since 2016, I've worked to connect issues of global indigenous peoples to issues of sustainable development, and connecting specifically to the Sustainable Development Goals," Morales said. "I became associated with the Indigenous Media Caucus at the UN Permanent Forum at the United Nations Permanent Forum on Indigenous Issues. I also became involved in different International Union for Conservation of Nature commissions; a conglomerate of NGOs and research think tanks all related to UN."

From there, Morales became connected to the Convention on Biological Diversity and attended their Conference of the Parties (COP) 14 in 2018. While there, Morales was a part of an international indigenous forum for biodiversity which led to roles with different technical committee on policy analysis and language review along with representatives from other Indigenous communities from across the world. Through these connections and roles, Morales also joined a technical committee and a group of negotiators on Article Six of the Paris Agreement, which was discussed during the United Nations Climate Change Conference of the Parties (COP 26) in fall of 2021.

Morales says he is grateful for the connections that he made as a student which have continued to help him beyond his 2021 graduation. But he says he is also grateful for the challenges that his education presented, as they helped him to confront equity and social justice issues while contributing to solutions.

"I was looking for applications outside of the realm of schools and to explore other complementary fields in which indigenous peoples could be best served, and I could learn from them and understand different processes that were specifically applicable to these world populations."

–Reynaldo Morales

One challenge Morales says he encountered during his education, was a focus on American, or European histories or perspectives, that he felt often left out the histories of indigenous populations.

"I had a very conflictive relationship with some courses because I was looking for a research method that could be used for my dissertation, or a specific form of lenses in which we could see certain processes, historical processes and cultural processes, but I couldn't use it as a method because the contribution of indigenous peoples, not only from United States but from around the world were not considered. I had a class where we were people from Burma, Peru, Korea and China, and we were discussing only the American side of the environmental education and celebrating western culture and settlement processes," Morales said of his classmates and courses. "I didn't say it was wrong. I said it is unacceptable, really. I wanted to make my point, you need literature written by indigenous peoples, indigenous scientists, indigenous geographers, because the history of indigenous peoples didn't start or could not be seen properly through the lens of the history of capitalism."

Morales worked with UW-Madison faculty and leaders on this challenge, but also noted the ways in which the Nelson Institute and UW-Madison are working to improve these issues. Morales is particularly proud of the UW-Native Nations Partnership work happening on campus.

"I think one of the greatest contributions from the Nelson Institute is to be part of that discussion and lead that effort to promote different research activities, programs, and interventions," Morales said. "And with that, we are all learning what is the best ways in which we can effectively help communities to work with their own resources and with their own knowledge."

Alberto Vargas

Alberto Vargas, associate director for the Latin American, Caribbean and Iberian Studies Program and a mentor to Morales, complimented Morales for his continued efforts to make educational institutions, and the world, a more just place. Vargas also praised Morales for his ability to complete all his degrees from bachelor's to doctorate in eleven years, while contributing to these efforts.

"He never stopped, and he always found a way to connect with important issues and problems and colleagues in a positive and methodical way," Vargas said. "I have great admiration for his determination and persistence to fulfill his goals."

As Morales has moved away from campus efforts and into his professional work, he says he continues to expand on the lessons he learned, both in terms of what went well, and what can be done better to avoid challenges like those he raised.

As a professor at Northwestern University in Chicago with a focus on international issues of indigenous peoples and a faculty fellow with the Buffett Institute for Global Affairs, Morales makes every effort to bring indigenous perspectives to his classroom and to his professional pursuits.

"Indigenous perspectives about their contributions to sustainability, biodiversity conservation, complex knowledge systems applicable to many fields were consistently removed or absent from the academic discussion, so it's up to us to bring all that content to a new era on Indigenous studies and research," Morales said of the indigenous perspective.

To assist with these efforts, Morales is currently working with Medill School and the Buffett Institute on a 12-part international documentary related to the rights of indigenous peoples, which will be released over the coming years. He is also working with universities and various organizations to identify ways for indigenous students to engage in academia without implying leaving their home and culture, and to restore their governance and territorial rights in the most important biodiversity hotspots, protected areas, and the environmental sensitive areas where world Indigenous Peoples live for millennia.

"I am interested in indigenous peoples because they reveal different vulnerabilities from evolving nation states constitutions, from mainstream western societies, institutions and governance systems that continue displacing Indigenous Peoples from their territories, knowledge systems and resources, while they are actively working for restoring their cultural, economic and political world," Morales said. "The assimilation or incorporation of indigenous students from tribal communities into the university, I'm conflicted

Morales at the Indigenous Peoples reserved space during the United Nations Climate Change Conference of the Parties (COP 26) Plenary. Photo courtesy of Reynaldo Morales

with that part, because that would mean for many of them to leave their reservations forever. So, who's going to run these reservations in 15 years? I see wonderful examples of some of my friends who are now heads of key tribal organizations, heads of sustainable development programs, some of my own former Indigenous students are very successful leaders in academic programs, research programs. But nonetheless, I see that there are still a lot of individuals in tribal communities not only in the US but around the world who have no opportunities or interests on participating in education, or for whom the assimilation into western culture, and a western university is not an option at all."

To address this, Morales suggests policies as well as intentional efforts by educational institutions to not only teach indigenous perspectives, but also to play a role in engaging with indigenous peoples' governance, research, and educational institutions appropriately. Morales notes that this is particularly true when it comes to addressing climate change and environmental issues as they often directly impact indigenous communities, both locally and internationally in complementary ways.

"So, what will be the role of research universities in the close future? I think that needs to be taken into consideration," Morales said. "We have a good start in the national, regional scope, but how will we incorporate the international side? Because many of those issues are much more directly related to international indigenous communities. Lots of these issues pertain to specifically governance issues and the way in which culture and institutions have informed about consistent issues of displacement in science research and sustainable development, preventing them from meaningful participation in decision making and policies review that affect them directly or indirectly."

While these issues are complex, Morales is proud to be a part of the conversation and thankful to the Nelson Institute for their efforts in this area as well as the experience his Nelson Institute experience provided.

"I've been honored, greatly, hugely honored to be part of the Nelson's community," Morales said. "I greatly benefited from two fellowships from the Nelson Institute and as a part of the graduate research community, I was always helped and assisted. For me, one of the greatest honors is my recognition as a scholar. It comes from my affiliation with the Nelson Institute, it proved to me that it is a powerful degree and a powerful source of knowledge and prestige."

Learn more about Environment and Resources and how you can support the program.

Sustainability at UW–Madison: Fall 2021

Strategic Initiatives

- UW–Madison is a founding partner of the Midwest Climate Collaborative, a cross-sector collaboration of key organizations across the region that represents a dedicated Midwestern response to the climate crisis.
- In partnership with dozens of campus data stewards, the Office of Sustainability will complete the university's second STARS assessment by summer 2022.
- The Office of Sustainability is establishing several action groups to fulfill the recommendations of the Sustainability Advisory Council. These action groups will also inform a Climate Action and Adaptation Plan under the UW–Madison Resilience Commitment.

Research

- The Office of Sustainability's Green Athletics intern team conducted game day waste audits to analyze and eventually improve the sustainability of Badger athletics.
- PhD candidate Gesangyangji is analyzing climate modeling data in unprecedented ways to reimagine how we design buildings in the face of climate change.
- A student team from UW–Madison was one of the top winners in the $5 million XPRIZE for Carbon Removal Student Competition, a contest funded by the Musk Foundation that kickstarts projects that could mitigate the impacts of climate change by removing carbon dioxide from the air, ground, and oceans.

The Green Athletics intern team completes a waste audit at a soccer game during the fall 2021 semester.

48

majors represented by undergraduate students enrolled in the sustainability certificate

$3.2 million

strategic allocation by the university for renewable energy and energy efficiency projects for fiscal year 2022

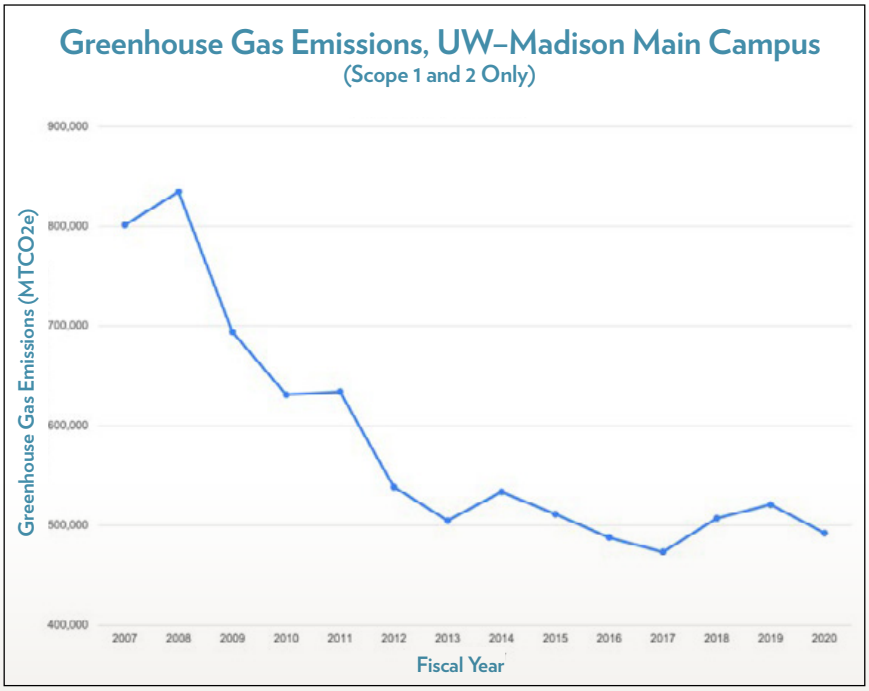
Student Involvement

- The SustainUW Podcast and the Amplifying BIPOC Voices in Sustainability series, both hosted by Office of Sustainability interns, kicked off their second seasons with conversations about mental health, indigenous activism, single-use plastics, and sustainability careers.
- Sustain-a-Bash 2021, co-organized by University Housing and the Office of Sustainability, featured 26 different sustainability-related organizations.
- Office of Sustainability interns are working with university staff to 'green' Commencement and spread awareness about the Sustainability Graduation Pledge.

Green Fund

The Green Fund offers support for student projects that make campus more sustainable. Recent highlights include:

- Bird-strike mitigation: Students, faculty, and staff installed window glazing at Ogg Residence Hall designed to reduce bird collisions with the glass. Data collected through a citizen science effort suggests that the glazing is highly effective.
- EV Food Truck: Students and Dining staff will launch an electric vehicle food truck in spring 2022 that will minimize packaging and highlight locally-sourced seasonal ingredients.



- Art Contest: Students submitted original artwork that focused on diversity, equity, and inclusion to be considered for the new Multicultural Center at the Wisconsin School of Business.
- Pollinator Lawns: Students are collaborating with the UW Arboretum and Campus Planning and Landscape Architecture to establish pilot sites with flowering plants that offer habitat for pollinators. A Psychology PhD student is designing signage to encourage adoption of these "pollinator lawns."

Wisconsin Experience

- Students in Urban and Regional Planning conducted a campus transportation fleet audit and delivered recommendations to Transportation Services for a greener fleet.
- The annual Net Impact Sustainability Competition, a collaboration between the Wisconsin School of Business and the Green Fund, implemented projects at Grainger Hall including a safe, electric-current disinfection system for surfaces, an innovative catering cart, an HVAC update, and the installation of motion sensors on lighting in the building.
- Five UW–Madison students leveraged skills they learned from the Zero Waste Atlas Fellowship program to conduct the university's first Zero Waste Assessment.

5600
respondents to an all-campus sustainability survey distributed during fall 2021

84%
proportion of respondents to the Campus Composting Survey who stated they were moderately or extremely concerned about campus food waste

"I have been working with Office of Sustainability staff for two years. Everyone has a strong commitment to planning and implementation using a systems approach. There is a keen understanding that it takes a village to build a sustainable campus and world."

—Deb Gurke, Internal Consultant, Office of Strategic Consulting

Staffing

- Tim Lindstrom joined the Office of Sustainability as Intern Program Manager. Tim holds a PhD in Environment & Resources from the Nelson Institute for Environmental Studies, where he is also an instructor. Tim's research focuses on the intersection of sustainability science, life cycle assessment, and higher education institutions.

Alumni

- Josh Cook (Engineering '15), a project engineer for EDF Renewables, was instrumental in the construction of the 20MW O'Brien Solar Fields, the largest solar installation in Dane County.
- Michael Williams (Psychology '21), the first graduate of a precollege program for Native students and president of student org Wunk Sheek, also served as a student representative on the Sustainability Advisory Council.

Honors & Mentions

- UW became the second school in the Big Ten to be designated as a Fair Trade University.
- UW ranked among the top 30 college and university partners of the EPA's Green Power Partnership.
- For its award-winning sustainable commuting infrastructure, UW was recently recognized as a "Best Universities for Commuters."

Thick Sustainability on the Yellowstone River

Join the Nelson Institute for a discussion highlighting the link between sustainability and community. The conversation will be led by Susan Gilbertz a professor of Geography at Montana State University and Damon Hall an assistant professor and sustainability coordinator with the School of Natural Resources at the University of Missouri, who will share insight from their work with communities near the Yellowstone River of Montana and eastern Montana near the Bakken Oil Fields. They will share how to engage with communities and honor those voices as well as strategies they used to successfully report work to funders such as the U.S. Army Corps of Engineers. Gilbertz and Hall will articulate why Thick Sustainability, or sustainability that incorporates economy, ecology, and quality of life is key.

Susan Gilbertz, Professor of Geography
Montana State University

Damon Hall, Assistant Professor and
Sustainability Coordinator
School of Natural Resources
University of Missouri

April 6, 2022
4–5 p.m. CT
280 Science Hall

Register today

Water on the Rise April 21, 2022

Registration is open!

Join the Nelson Institute for Earth Day 2022: Water on the Rise. This day-long community learning event, featuring both in-person and virtual experiences, will examine how communities across the globe are facing, responding to, and mitigating critical water issues.

We are excited to announce that speakers will include Kelsey Leonard, a water scientist, legal scholar, policy expert, writer, and enrolled citizen of the Shinnecock Nation and Sandra Postel, director of the Global Water Policy Project.

This event will be in partnership with Water@UW, who will continue the conversation on Friday, April 22, 2022, at the annual Water@UW Symposium. Learn more and register

SAVE THE DATE
Tales from Planet Earth Film Screening: **Into the Okavango**

Wednesday, April 20, 2022

CHE Environmental Colloquia Series

The Center for Culture, History, and Environment (CHE) invites you to attend the Spring 2022 colloquia series. Mark your calendar for these upcoming events:

Tory Tepp's art is sited at the intersection of land art, agriculture, and eco-literacy. Working with soil as his primary medium, Tepp's systems-based process works to effect change, both personal and social, by re-forging intimate connections to the most basic natural elements and ecological systems. Through agricultural ritual, ecological poetics, and scientific theater, Tepp creates educational opportunities to connect communities to the land and to each other, hands getting dirty together.

Wednesday, March 23
The Alchemy of Dirt: Land Art and Agriculture as Social Practice
Tory Tepp
Noon–1 p.m. CT
Register today

***Sur les Bords* (*High and Dry*)** A film screening and discussion with co-director Marie-Anne Germaine

Join us for a screening and discussion of the film *Sur les Bords* (*High and Dry*). This film showcases inhabitants, fishermen, and users of a valley, as two hydroelectric dams built at the beginning of the 20th century are about to be destroyed. These two dams are located on the Sélune River (Manche, Normandie, France) near the Mont Saint-Michel Bay. Their removal is considered the most ambitious ecological restoration project in France. But this project is also controversial. In the documentary *Sur les Bords*, users and inhabitants share their relationship to this space as well as their emotions towards the project. This event will include a screening of the 39-minute film followed by a guided discussion with the film's co-director, Marie Anne Germaine, PhD.

Wednesday, April 13,
Noon–1:30 p.m. CT
Register today

Many interpretations of January 6, 2021, have portrayed it as a scheme to disrupt the presidential election by far-right agitators fueled by misinformation. This talk looks for deeper historical origins, such as conflicts between white settlers, Native people, and federal agencies over land management in the west, which led to a series of occupations in 2016 that foreshadowed how an armed seizure of federal buildings could be represented as a justified form of protest among aggrieved settlers.

Wednesday, April 20
The Headwaters of Insurrection: Origins of January 6 through Environmental History
Matt Villeneuve
Noon–1 p.m. CT
Register today

Weston Series

The Weston Roundtable Series is designed to promote a robust understanding of sustainability science, engineering, and policy through weekly lectures are co-sponsored by the Center for Sustainability and the Global Environment (SAGE), the Department of Civil and Environmental Engineering, and the Office of Sustainability. Lectures are held Thursdays from 4:15-5:15 p.m. CT in Room 1153 Mechanical Engineering, 1415 Engineering Dr. Some lectures will be presented online, which will require registration. Mark your calendar for these upcoming lectures:

March 24

Tackling Environmental Challenges (Including Plastic Pollution) Globally and Locally: A Conversation with the UN Environment Programme, North America

Barbara Hendrie, Director, North America Office, United Nations Environment Programme

March 31

Climate Crisis and the Global Green New Deal

Robert Pollin, Distinguished University Professor of Economics, University of Massachusetts-Amherst

April 28

Excessive Heat and Human Health: Defining the Problem and Implementing Solutions

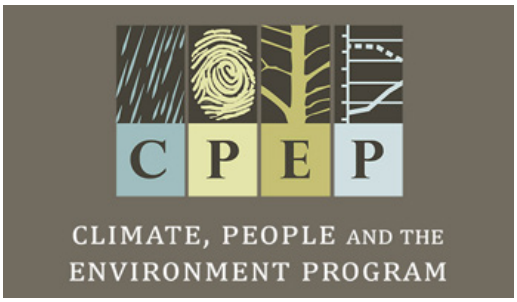
Larry Kalkstein, President, Applied Climatologists, Inc.

May 5

Can We Agree on the Truth of Climate, Health, and Elections? The Decline and Rise of Democratic Learning

Archon Fung, Winthrop Laflin McCormack Professor of Citizenship and Democracy, Harvard Kennedy School

Past lecture recordings are available for viewing here.



CPEP Series

Each semester the Climate, People, and the Environment Program (CPEP) hosts a weekly seminar featuring lectures by visiting speakers as well as presentations by CPEP faculty, scientists, and students. CPEP seminar presentations are held in conjunction with the Department of Atmospheric and Oceanic Sciences (AOS) and are open to the public. Lectures are held Tuesdays from 4-5 p.m. CT in Room 811, AOS, 1225 W. Dayton St. Mark your calendar for these upcoming lectures:

March 22

Under-Ice Physical and Biological Responses to a Multi-Year Snow Removal

Hilary Dugan, Assistant Professor, Center for Limnology, UW-Madison, and Ellie Socha, Graduate Student, Center for Limnology

March 29

Change is Rough: the Impacts of Changing Sea Ice on Arctic Winds

Alice DuVivier, Polar Climate Scientist, National Center for Atmospheric Research

April 12

Modeling Lake Ecosystem Change in Socio-environmental Systems to Improve Water Resources Management

Nicole Ward, Water Resources Ecologist, Minnesota Department of Natural Resources

April 26

A Nonlinear Dynamics Approach to Understanding and Measuring Sustainability

Dylan McNamara, Professor and Chair, Department of Physics and Physical Oceanography, University of North Carolina-Wilmington

May 3

Extratropical Impacts of the Madden-Julian Oscillation

Stephanie Henderson, Assistant Professor, Atmospheric and Oceanic Sciences, UW-Madison

Past lecture recordings are available for viewing here.

Video library of past lectures is available on demand

If you missed a Nelson Institute hosted event or lecture, you can view recordings in our video library.

Join us in celebrating the Nelson Institute year-round by purchasing branded merchandise, shirts, sweatshirts, jackets, bags, and more.

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